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OIL, DEVELOPMENT, AND MILITARY EXPENDITURE: 
A PANEL DATA EVIDENCE FROM THE MIDDLE EAST

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Abstract: In the Middle East, vast oil reserves led to economic modernization and prosperity in the region. However, it is one of the most conflict-prone regions. This paper studies the relationship between military spending, oil and development in Middle Eastern countries using a panel data fixed effect for country-level observations over the period 1986–2016. The relationship between development and conflict will not be uniform throughout the region. Therefore, to test this hypothesis, the study categorized oil exporting countries into three parts that are countries with above average oil export, below average oil export and no oil export. The estimates show a significant reduction in military spending over time and the most declines were observed in the countries where oil export is above average than the Middle East. The results indicate a significant inverse relationship between the military spending with exports and oil rents in overall Middle East analysis and for countries whose average oil export is greater than the Middle East. It is also found that the military burden adversely affects economic growth across all the model specification. However, military spending is declining over time which indicates that there is a reverse causality between development and conflict. It is crucial finding in the context of peace and development literature.

Keywords: Middle East; Oil; Development; Military expenditure; Panel data


JEL Classifications: F52, H56, O11

1. Introduction:

Middle East is considered as the “centre of gravity” for the world oil industry. The security and sustainability issues of this region are unique in nature (Sulphey and Alkahtani, 2017). Oil is one of the essential and important aspects in both foreign and domestic politics of every country for both oil exporter and importers. The discovery of oil in the Middle East and its use has a significant result on economic development. Before oil exploration, the Middle East was a weak region, “deprived economically with a very limited resource” (Gregory 1994). Before 1950, the countries in the regions unveiled some of the lowermost levels of socioeconomic development in the world (Yusuf, 2004). The start of the 20th century has become a central point in the development of the whole region. Discovery of oil in the region as well as its utilization has changed the situation intensely and played an essential role in supporting the growth model in both the oil exporting and non-exporting states (Chaudhry, 1997). The 1960s observed enormous public investments in development indicators such as education, health, infrastructure as well as state-owned enterprises in the Middle East. These efforts provided a boost to industrialization which boosted economic growth (Yusuf, 2004; Haque and Khan 2019).

Studies have opined that studying regional economy is an important pre-condition to look at overall development (Pietrzak et al., 2017; Prause et al., 2019; Zeibote, 2019; Humbatova et al., 2019). Middle East region has...
perceived substantial progress in economic, political as well as social spheres since the discovery of oil. It played a major role in shaping the politics, development of the economy, and foreign relations over the past century. Most of the oil producing countries in the world are in the Middle East region. According to recent estimations, 81.89% of the world’s oil reserves are in OPEC Member countries, with the majority of its reserves in the Middle East. The regions have enormous oil reserves, which accounts for 66 percent of the world’s supply. There is a understanding that the massive oil reserves led to economic transformation and wealth in the region, however, on the other hand, it had also created weak states that are independent of societal demands, political responsibility and transparency (Schwarz 2008).

Due to the importance of oil, the political turmoil in the Middle East region is a significant disruption factor in the international oil market (Darbouche and Fattouh 2011; Das et al. 1990; Masood et al. 2019).

The armed conflicts in the Middle East in which Western powers intervened, such as the Lebanese civil war (1975–1990), Gulf War of 1991, Iraq War of 2003, and the 2011 Libyan War, resulted in the most significant oil price fluctuations during the 1990s and 2000s (Ji and Guo 2015; Zhang et al. 2009). These conflicts were closely linked to the strategic goal of stabilizing the crude oil markets of major energy consumers, including the U.S., the world’s largest oil consumer. Among the significant armed conflicts fought since World War II, over half it involved the Middle East. Geopolitical conflicts in the Middle East are a considerable disruption factor in the crude oil market. Many studies consider the effects of political disputes in the Middle East on oil price volatility and behavior (Coleman 2012; Darbouche and Fattouh 2011; Das et al. 1990; Zhang et al. 2009).

Post-conflict retrieval depends on economic and institutional development of the country, the structure of the economy, the length of the war, and the involvement of the international community. The speediness of economic retrieval was wide-ranging significantly across countries. In Lebanon, it almost took 20 years post-war for the real GDP to improve to its pre-war level, it took seven years in Kuwait, and one year in Iraq (Sab, 2014). However, Lebanon has not yet completely returned to its pre-war level, and the existing ongoing difficult security and political environments continue to load down on growth. In Kuwait, just after two years, real GDP per capita was above its pre-war level. Iraq, it took three years for real GDP per-capita to completely improve to its pre-war level. Despite robust real GDP growth rates in Iraq, economic governance has worsened, resulting from an increasingly difficult political process and worsening security conditions (Sdralevich and others, 2013).

2. Background of the study: Oil reserves, trends, exports and trading partners in the Middle East

Saudi Arabia has the most massive stockpile of crude petroleum among the Middle Eastern countries. It has almost 32 percent share, followed by Iran (16% share), Iraq (14%), Kuwait (13%), United Arab Emirates (12%), Qatar (3%). These six nations in the Arabian Peninsula constitute almost 90% of the total reserve of Crude petroleum available in the Middle East region. Libya amongst the North African countries has the highest reserve share, nearly 5% of the total crude reserve available till date in the region followed by Algeria (3%), and Egypt (1%). The remaining 1% of the crude reserve is shared by Oman, Bahrain, Turkey, Syria, Israel, Jordan, Yemen, Tunisia, and Morocco). Rest of other countries in the region have a negligible share of Crude reserve (OPEC 2017). With changing technology and to attain economic, social and political benefits, the governments of the Middle Eastern region has tried their best to identify new areas of crude petroleum reserve, increasing in their existing production unit to meet the growing national and international demand for oil and its products. The reserve for crude oil has seen to be improved since 1990 in countries of Algeria, Iran, Iraq, Libya, and Qatar. However, Saudi Arabia the big oil giant among the Middle Eastern countries has seen a decreasing reserve. The reserve for crude was almost constant in countries like Iraq, Kuwait and UAE. The sharpest increase in the reserve can be observed in Iran and Qatar. The most acute decrease in the reserve can be noticed in Saudi Arabia among the major oil producing countries in the Middle East. Amongst the North African countries of the Middle East, Libya and Algeria have witnessed a sharp increase in the reserve since 1990 followed by Tunisia. However, Libya and Morocco have seen a decreasing reserve of crude since 1990 (Khan, 2015).
Saudi Arabia oil reserve had increased significantly since 1990 because of the identification of the new areas of the oil reserves, but from 2000 till 2009 the amount of reserve has decreased because of the growing production of oil from existing reserve to meet the increasing demand for the world market and not many new areas of the reserves were identified and explored. However, until Saudis have the most massive stockpile of Crude Oil, almost 32 percent of the total in the Middle East region. However, Iran had a sharp increase in reserve recently. Their stable government, internal peace, and their favorable government policies and their technological advancement have made them to explore new areas and add to their existing crude reserve (Khan, 2015).

Iraq has also witnessed an increase in its reserve after 1990. It saw significant growth in 2000, but the rates of increases were prolonged from 2000 to 2009. After the gulf war in 1990, the US and its allied countries that got significant gain after the war has set up many new companies for oil exploration, even the government wanted a vast amount to reconstruct the devastation done during the war, and this has resulted in an aggressive policy of oil exploration and identification of reserve regions by the local Iraqi government. After the US war on Iraq in 2003 and removal of Saddam Husain government, Iraq has witnessed an almost internal civil war situation, the growing insurgency, and ethnic conflicts, till the execution of Saddam.

This growing internal conflicts and instability in the country have hampered the developmental work and, in the identification, and exploration of new crude reserve in the country. Kuwait has an abundance of the crude reserve, it holds about 13 percent of the total oil reserve available in the Middle East, being small in area compared to other oil giants in the region like Saudi Arabia, Iran, and Iraq. It has witnessed an increasing trend in recent years. The United Arab Emirates is also naturally endowed by a surplus abundance oil reserve. Small in areas, this oil has boosted its economy. However, it has witnessed a decreasing crude reserve since the 1990s. Qatar is the only country in the Middle East which has seen an enormous increase in its existing oil reserve.

Like Iraq, Kuwait, Oman, Algeria also observed an increase in export for crude in the international market since 2000. Some countries also find a decrease in their current export; such as Iran, Iraq, Oman, Syria, and Yemen. Since the last 30 years (1990-2009), Algeria, Kuwait, and Saudi Arabia were the countries in the Middle East region who witnessed an increasing trend in their export since 1990. Saudi Arabia, UAE, Iran, Iraq, Kuwait, Oman, and Qatar are major crude petroleum exporting countries in the world. They have such surplus that they have never imported crude oil. While there are such countries in the Middle East, who do not have surplus crude oil to export after meeting their domestic need and have never exported the Crude to the world market, they are the major importing countries of Crude Petroleum in the Middle East region, namely; Israel, Cyprus, Jordan, Lebanon, Morocco and Turkey (Khan, 2015).

Energy is a crucial element in national security (Traversari, 2017; Rogalev et al., 2018; Dźwigoł et al., 2019; Prakash and Garg, 2019). It has always been about oil when it comes to the Middle East. Oil has given economic independence to try development policies and to establish political bonds that are excluded from poorer states. It has furthermore served as an opportunity that is military attributes of power, making other nations to re-scrutinize their foreign policies in the light of long-term economic interests. Thus, it has assisted in breaking down the post-war supremacy of the super-powers by providing encouragements for greater independence on the part of their association partners and extra-regional clients and their dependencies. Revenues from oil allowed Middle East governments to modernize countries through industrialization, economic, and social development.

The political stability is other significant concern in the middles east. Most of the countries fail to provide stable government. Some key parameters of governance indicators in the region included corruption control, government efficiency, political stability and absence of violence. Most of the countries are not able to achieve in all the three governance indicators. Although courtiers like Cyprus, Kuwait, Oman, Qatar, and United Arab Emirates performs good in all aspects of governance, and the rest of all countries have not performed throughout. For example, countries like Bahrain, Israel and Jordan have advantages in controlling the corruption and able to achieve effective government but they have lost control in achieving political stability and absence violence (Khan, 2015).
Military Expenditure and Economic Development

Oman and Saudi Arabia are the largest military spenders in the region and ranks third and fourth after the US and China. Their military spending increased by 74 percent, between 2008 and 2015, and attained a peak of $90.3 billion. UAE is the third largest military spender in the region. Considering ongoing military operations and large arms procurement projects, it is realistic to assume that its military expenditure remains the same. By 2014 Iran’s military expenditure had declined steadily from its peak in 2006. However, since 2014 the Iranian economy has profited from the gradual lifting of the European Union and United Nations sanctions, which in turn facilitated an increase in military spending. Following a peak in Israel’s military spending in 2014–15, which coincided with its military operations in Gaza in 2014, its expenditure dropped. Seven of the ten countries in the world with the maximum military spending in 2017 are in the Middle East. Oman spends around 12 percent of GDP on military spending, while Saudi Arabia (10 percent), Kuwait (5.8 percent), Jordan (4.8 percent), Israel (4.7 percent), Lebanon (4.5 percent) and Bahrain (4.1 percent) respectively (Tian, N, 2018).

In figure 1, it is plotted the Locally Weighted Scatterplot Smoothing (LOWESS) graph, and see that military expenditure for most of the countries such as Decline: Qatar, Syria, Israel, Cyprus, Egypt, Jordan, Kuwait, Libya, military expenditure is declined with the most significant decrease in Qatar. Some countries also have increased their military spending such as Algeria, Iraq, and Oman, while some other countries have somewhat stable military spending since 1986 to 2016.

![Figure 1: Country-wise military expenditure (% of GDP) from 1986-2016](Source: Authors’ calculation)

The GCC countries witnessed a significant rise in military expenditures in the recent decades is a result of several many interconnected factors. Among these factors, the real threats to their security are such as armed conflicts in the region, domestic disturbance, and the rising military influence in the Middle East. A significant increase in military spending in the Arab Gulf states initiated during the mid-1980s, sparking an upward trend, despite some interrupted fluctuations. The Iraq invasion of Kuwait in 1990 encouraged not only Kuwait but also Saudi Arabia and the U.A.E., to increase their military spending significantly. However, after 1992, most of the Gulf countries slightly reduced their military spending. The increase in military expenditure soon re-emerged in the region. Saudi Arabia increased its yearly spending on the military from $26.5 billion to more than $32 billion between 1997 and 2001, while the U.A.E. increased their expenditure from $6 to $10 billion in the same period. During the same timeframe, Bahrain roughly doubled its military spending, while the spending of Kuwait and Oman remained on the same level. Meanwhile, Qatar’s defence spending decreased.
3. Review of Literature:

Studies have identified not only economics and human development but also politics as a threat to sustainable economic development, highlighting the role of factors like natural resources, economic situation, and geolocation (Katina et al., 2018). Studies have highlighted the importance of both economic and political security (Stukalo et al., 2018). Studies have identified an ‘asymmetry of economic interest and geopolitics’ globally (Guliyera et al., 2018). Studies have identified a recent trend in literary circles wherein ‘sustainability of militarization’ is being discussed as increased militarization leads to more energy consumption and increased income inequality (Smaliukiene, 2018). Studies have also associated inverse trends in human capital with a wide range of threats to security (Shevyakova and Petrenko, 2018; Tvaronavičienė, 2018).

Numerous studies have investigated the economic impact of conflicts. Collier (1999) observed that civil wars consequence in the decline in real GDP per-capita. Gupta et al. (2002) for the low- and middle-income countries found that conflicts caused higher inflation and lower economic growth, tax revenues and investment. Addison et al. (2002) found that economic development is vulnerable to conflict and reduces the demand for domestic currency, which results in weak economic instruction leads to harms country economic growth. Others have studied the spillover effects of conflict in neighboring countries. Ades et al. (1997) got that political uncertainty in neighboring countries harmed a country’s economic growth. Similarly, DeGroot (2010) in Africa found that bordering countries; have an adverse spillover from conflicted countries, while non-bordering countries might have a positive overflow. Conflict is a serious security and sustainability issue (Kazansky and Andressy, 2019).

There are many studies which explore the association between military spending and economic growth. Benoit’s (1973) influential study, recommends that military expenditure have positive effects on economic development. Though there are alternative opinions concerning the adverse impact of military expenditure, however, new studies appear to be providing an adverse consequence of military spending on economic growth (Dunne and Tian, 2013). It has been said that an increase in defense expenditures possibly will hinder economic growth by pushing out investment on health, education and infrastructural improvement.

Lebovic and Ishaq (1987) for 20 Middle Eastern countries reported an adverse effect of military expenditure on economic growth for the period 1973–1982. Abu-Bader and Abu-Qarn (2003) for Egypt, Israel, and Syria, and DeRouen (2000) for Israel finds that the defense expenditures hinder economic growth while positive effects of Turkish defense spending advocated by Sezgin (2000) and Yildirim, et al. (2005). For Turkey, Karagol (2006) finds a definite connection between defense spending and external debt, and, Dunne et al. (2001) found an adverse relationship between economic growth and defense spending. Brzoska (1983) and Looney & Frederiksen (1986) recommend that borrowing finance for military spending will harm the country’s progress if it faces restrictions on international borrowing. Brzoska (1983) also estimated that the spending on arms was accountable for 20% to 30% of external debt in developing countries. A study from six Middle Eastern countries, it is estimated that a 1% increase in military expenditure results in between a 1.1% and 1.6% increase in external debt in the long run, and it increases external debt by 0.2% in the short run (Smyth and Kumar, 2009).

Some studies recommend that increase in government spending on the military may decrease the risk of civil conflict beginning (Hegre and Sambanis, 2006; Basedau and Lay, 2009; Taydes and Peksen, 2012). In the oil and gas-rich countries, conflicts are less expected when military expenditure is more. However, countries with low natural resources, an increase in military expenditure is associated with a greater risk of conflict. While greater spending on education, health, or social security is associated with a lesser risk of conflict, regardless of the level of oil revenue (Bodea et al. 2016). Henderson and Singer (2000) claim that higher military expenditure crowds-out social spending, economic growth, and investment.

Dunne and Uye (2010) in a review of 102 studies show that adverse effects of military spending on growth in 35% of case studies and only 20% found of them have positive effects, while for over 40% case studies found unclear results. Using data for 106 countries from 1988–2010, the study finds that military burden harms growth in both
the short and long run. For Lithuania, Rackauskas and Liesionis (2013) found that the relationship between government expenditure on defence, safety, and public order impacts economic situation. However, others suggest that for some countries military spending has no significant effect on growth (Dunne and Tian, 2015).

For Algeria, Duella (2014) for 1988-2010, suggests that there is unidirectional causation running from military expenditure to economic growth, with overall adverse effect in the long-run. For Jordan, Abu Al-Foul (2014) for the 1988-2007 period also finds unidirectional association running from military expenditure to economic growth. More recently for Jordan, Abu-Ghunmi, D., & Larkin, C. (2016) finds that during 24 years of regional chaos, the country lost 40–72% of its 2012 gross domestic product (GDP). Furthermore, it has also lost US$2.3 billion of foreign direct investment (FDI). Al-Jarrah (2005) for Saudi Arabia 1970-2003 period, find bidirectional causation among military expenditure and economic growth and unidirectional from non-oil economic growth to defense expenditure; with the adverse effect of defense spending in the short run. A more recent study from Saudi Arabia, suggests that defence expenditure harms economic growth, which worsens during times of conflicts (Serkan et al. 2016).

2. Research objective and methodology

In the academic world, the substance of studies regarding the military expenditure and growth relationship, in general, more for NATO, OECD, and Latin American countries. Though Middle East nations spend a greater share of their GDP in defence, yet there were very few studies on the whole Middle East region. This paper studies the effects of military expenditures on economic growth for Middle Eastern countries using the longitudinal data for the period 1986-2016. For this analysis, panel data sets are created for 20 major countries to examine the relationship between the indicators of conflict and the indicators of development. Ideally, data needed on incidents of terrorist killing normalized by the population as the indicator of conflict. Because of data constraints, this paper used a share of Military expenditure to Gross Domestic Product as the proxy for conflict. For the indicator of development, this paper used the Gross Domestic Product (GDP), Export, Import, Oil Rent, etc. The association between military expenditure and economic growth is examined by using panel data fixed effect regression model.

Military expenditures data obtained from the Stockholm International Peace Research Institute (SIPRI), which comprises total current and capital expenditures on the armed forces. These expenditures include military and civil staffs, including retirement pensions and social services of military personnel; operation and maintenance; procurement; research and development; and military aid. However, it excluded civil defense and current expenditures for previous military activities, such as for veterans’ benefits, retirement, conversion, and demolition of weapons. This measure is advantageous because it negates the differences between economies. Besides, it should also measure the comparative rate of participation in the conflicts that they join because if a country is severely involved in a conflict, it follows that their military spending of GDP will increase. Gross domestic product (GDP) is collected from the world development indicator (WDI) of the World Bank. Oil rents are taken by WDI; it is the difference between the value of crude oil production at world prices and total expenses of production. It also measures wealth in some aspects, and it can be assumed that wealthier countries will have more oil rents as a percent of GDP.

Our empirical strategy exploits the variation in the indicators of development over time to examine the association of Military Expenditure with GDP. The study used a panel framework with the fixed effect specification to pin down the relationship between these indicators. In the second stage, it classified Middle East countries into three groups based on the table below; where the first group comprises of those countries where average oil export is higher than the Middle East average. The second group comprises of those countries where average oil export is lower than the Middle East Average. The third group comprises of those countries where average oil export is almost zero. This strategy helps in empirically testing the role of oil in the Middle East conflict.

The study used the following panel data fixed effect estimation equations to study the relationship between Military Expenditure, export, oil rent, and GDP: The functional estimate takes the form:
\[
\ln(Y)_{it} = \beta_0 + C_{it} + T_{it} + u_{it} \quad (1)
\]
\[
\ln(Y)_{it} = \beta_0 + C_{it} + T_{it} + \beta_1 \ln(\text{export})_{it} + u_{it} \quad (2)
\]
\[
\ln(Y)_{it} = \beta_0 + C_{it} + \beta_1 T_{it} + \beta_1 \ln(\text{export})_{it} + \beta_2 \ln(\text{oilrents})_{it} + u_{it} \quad (3)
\]
\[
\ln(Y)_{it} = \beta_0 + C_{it} + \beta_1 T_{it} + \beta_1 \ln(\text{export})_{it} + \beta_2 \ln(\text{oilrents})_{it} + \beta_3 \ln(\text{gdp\_growth})_{it} + u_{it} \quad (4)
\]

Where \( \ln(Y)_{it} \) is the dependent variable which is the military spending (percent of GDP), subscript \( i \) and \( t \) denotes country and time, \( \beta_0 \) is the intercept and \( \beta_i \) is the estimated coefficients of the independent variables (natural log of percent of GDP export, percent oil rents and percent growth rate of GDP), \( C \) is the country fixed effect which captures the heterogeneity across Middle Eastern Countries and \( T \) is the time fixed effect which captures the technological change and \( u \) is the error term. The study used four different models based on the country classification based on the oil exports into three groups discussed above to explore the heterogeneity. Therefore, this paper attempts to fill this gap in the literature with an assessment of military spending with economic growth in the Middle East.

4. Results and discussion:

The paper checked the model specification for fixed versus random effect regression model for panel data. To test this hypothesis, this study used the Hausman test. It has set null hypothesis \( H_0: \) difference in coefficients not systematic. It has estimated the Hausman statistics for model selection, where \( b \) is consistent under \( H_0 \) and \( Ha \); obtained from fixed effect and \( B \) is inconsistent under \( Ha \), efficient under \( H_0 \); found from random effect model.

<table>
<thead>
<tr>
<th></th>
<th>Fixed effect (b)</th>
<th>Random effect (B)</th>
<th>Difference (b-B)</th>
<th>Standard Error sqrt(diag(V_b-V_B))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export (% of GDP)</td>
<td>-0.01887</td>
<td>-0.0220613</td>
<td>0.003193</td>
<td>0.002846</td>
</tr>
<tr>
<td>Oil rent (% of GDP)</td>
<td>-0.07355</td>
<td>-0.0657984</td>
<td>-0.00776</td>
<td>0.004577</td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>0.060309</td>
<td>0.0584897</td>
<td>-0.001819</td>
<td>.</td>
</tr>
<tr>
<td>Crude-oil export (1000 metric tons)</td>
<td>-2.99E-06</td>
<td>2.71E-06</td>
<td>-5.70E-06</td>
<td>2.39E-06</td>
</tr>
</tbody>
</table>

Source: Author’s calculation

Note: \( \text{chi2}(4) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 10.74 \) and \( \text{Prob} > \text{chi2} = 0.0296 \)

Hausman statistic explains a large and significant difference; therefore the paper rejects the null hypothesis. Hausman test statistics is significant; therefore it discards the random effects and will use the fixed effects instead. The study also finds that \( \text{Prob} > \text{chi2} = 0.0296 \) (less than 0.05); therefore it will use fixed effect regression. Thus, it used Panel data fixed effect methods for this analysis. The advantage of fixed-effects (FE) method is that it controls for all the unobserved characteristics that are time invariant. For example, one country differs in agro-climatic conditions, culture, etc. The primary assumption of the FE model is that time-invariant characteristics are uncorrelated with the error term. With this assumption, the study will be able to eliminate the biases that may come across because of the correlation between the time-invariant characteristics and the error term.
Table 2: Comparison of selected characteristics of critical variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Middle East overall</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military expenditure (% of GDP)</td>
<td>7.08</td>
<td>4.34</td>
<td>4.81***</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>4.64</td>
<td>4.13</td>
<td>0.75</td>
</tr>
<tr>
<td>Oil rent (% of GDP)</td>
<td>12.41</td>
<td>17.58</td>
<td>-3.90***</td>
</tr>
<tr>
<td>GDP per capita income (US $)</td>
<td>7070.40</td>
<td>15743.00</td>
<td>-7.70***</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>35.42</td>
<td>46.69</td>
<td>-6.70***</td>
</tr>
<tr>
<td><strong>Countries with the export of crude oil above average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military expenditure (% of GDP)</td>
<td>10.42</td>
<td>4.51</td>
<td>2.67***</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>5.63</td>
<td>3.93</td>
<td>0.86</td>
</tr>
<tr>
<td>Oil rent (% of GDP)</td>
<td>22.80</td>
<td>37.36</td>
<td>-7.54***</td>
</tr>
<tr>
<td>GDP per capita income (US $)</td>
<td>11300.00</td>
<td>19124.00</td>
<td>-3.90***</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>31.95</td>
<td>54.39</td>
<td>-7.32***</td>
</tr>
<tr>
<td><strong>Countries with the export of crude oil below average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military expenditure (% of GDP)</td>
<td>6.31</td>
<td>4.53</td>
<td>3.26***</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>4.30</td>
<td>4.36</td>
<td>-0.09</td>
</tr>
<tr>
<td>Oil rent (% of GDP)</td>
<td>15.26</td>
<td>17.02</td>
<td>-1.10</td>
</tr>
<tr>
<td>GDP per capita income (US $)</td>
<td>5143.80</td>
<td>15321.00</td>
<td>-4.67***</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>40.27</td>
<td>47.84</td>
<td>-2.58***</td>
</tr>
<tr>
<td><strong>Countries with no export of crude oil</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Military expenditure (% of GDP)</td>
<td>5.88</td>
<td>3.97</td>
<td>5.19***</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>4.21</td>
<td>4.03</td>
<td>0.19</td>
</tr>
<tr>
<td>Oil rent (% of GDP)</td>
<td>0.02</td>
<td>0.02</td>
<td>1.17</td>
</tr>
<tr>
<td>GDP per capita income (US $)</td>
<td>6229.40</td>
<td>12959.00</td>
<td>-4.94***</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>32.28</td>
<td>37.65</td>
<td>-2.41**</td>
</tr>
</tbody>
</table>

Source: Author’s estimate

Table 2 above shows the t-test difference in means across all the three categories on the basis of crude oil export. The research divided 30 years of data in two; each consisted of 15 years to show how things have changed across the Middle East. It sees a decline across all the three groups in military expenditure with the highest decline in countries where oil export is higher than the Middle East average. There is no significant change in GDP; however, across all the groups, there is an increase in GDP per capita income. This is the initial observation from the descriptive statics, and it will be explored in detail using the econometric results.

The impact of military spending on economic growth has been observed broadly in recent years. Defense expenditures have both costs and benefits. The costs of defense expenditures are mostly highlighted as opportunity costs, as it involves reductions in public and private spending and investment. It might have growth endorsing possible benefits: An increase in defense expenditure result in higher aggregate demand, production, and employment. Figure 1 plots the share of Military Expenditure and GDP per capita for the Middle East countries. The vertical axis shows the Military Expenditure (% of GDP) as an indicator of conflict. The horizontal axis plots real GDP per capita. The graph shows mixed results. Oman has the highest share of military expenditure, and around 14 percent of GDP goes to the military expenditure, followed by Saudi Arabia which accounts for around 10 percent. Before a couple of years, Saudi Arabia had the highest share in the region. However, Oman has recently increased its share.
What is striking in the figure is that most Middle East countries (except Tunisia, Egypt, Turkey, and Cyprus) have more than 2 percent of GDP to the Military Expenditure. It is also important to notice that countries with very low per capita have less share of Military Expenditure except for Algeria.

Moreover, countries with higher per capita GDP have military expenditure share to the GDP except for Cyprus, Bahrain, and others. It indicates both a negative and positive relationship exists between per capita income and Military Expenditure. It did not find any consistent association between these two. This graphical analysis is only indicative. It is not possible to infer the causal link from this graph. This study plotted the Military Expenditure (% of GDP) across different periods to understand the growth in military spending share better. The figure below shows the military spending share for three periods throughout ten years.
From the above figure 3, it shows the heterogeneity in military spending across countries for different periods. It reported the average military spending for each country for each phase of 10 years. Most countries have allocated more to military spending in the first phase (1987-1996) which includes Saudi Arabia, Oman, Qatar, Israel which is mainly because of the Gulf war, and Iraq invasion on Kuwait. However, for Iraq, there is no data available for that period. Later in the second phase (1997-2006), all these countries have reduced military spending. However, still countries like Saudi Arabia, Oman and Israel have kept a good share of military spending, while Qatar has reduced it drastically. In the third phase (2007-2016), it sees a sharp increase in military spending in Oman, and in the rest of the Middle Eastern countries, it is decreased or remain constant to the second phase. In general, there is a decline in military expenditure as a whole in the Middle East. To understand how the military spending affects the economic growth indicator, this research studied the association between Oil, Conflict, and Development in the next section in the panel framework using data on 20 Middle East countries from 1986-2016.

Regression Strategy

Based on table crude oil exports, the study classified Middle East countries into three categories; where the first group includes of those countries where average oil export is higher than the Middle East average. The second group comprises of those countries where average oil export is lower than Middle East average. The third group comprises of those countries where average oil export is almost zero. This strategy helps in empirically testing...
the role of oil in Middle East conflict.

**Table 2:** Country classification based on the export of crude oil in the Middle East

<table>
<thead>
<tr>
<th>Country</th>
<th>Crude Oil exports in (1000 metric tons)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td>330042.2</td>
<td>Above average</td>
</tr>
<tr>
<td>UAE</td>
<td>104020.4</td>
<td>Above average</td>
</tr>
<tr>
<td>Iran</td>
<td>103777.9</td>
<td>Above average</td>
</tr>
<tr>
<td>Iraq</td>
<td>67370.93</td>
<td>Above average</td>
</tr>
<tr>
<td>Kuwait</td>
<td>65297.61</td>
<td>Above average</td>
</tr>
<tr>
<td>Libya</td>
<td>49488.04</td>
<td>Above average</td>
</tr>
<tr>
<td>Oman</td>
<td>35973.04</td>
<td>Below Average</td>
</tr>
<tr>
<td>Algeria</td>
<td>26297.04</td>
<td>Below Average</td>
</tr>
<tr>
<td>Qatar</td>
<td>25859.59</td>
<td>Below Average</td>
</tr>
<tr>
<td>Syria</td>
<td>11179.52</td>
<td>Below Average</td>
</tr>
<tr>
<td>Yemen</td>
<td>10219.85</td>
<td>Below Average</td>
</tr>
<tr>
<td>Egypt</td>
<td>7314.407</td>
<td>Below Average</td>
</tr>
<tr>
<td>Bahrain</td>
<td>3571.37</td>
<td>Below Average</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2894.593</td>
<td>Below Average</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0</td>
<td>No Export</td>
</tr>
<tr>
<td>Israel</td>
<td>0</td>
<td>No Export</td>
</tr>
<tr>
<td>Jordan</td>
<td>0</td>
<td>No Export</td>
</tr>
<tr>
<td>Lebanon</td>
<td>0</td>
<td>No Export</td>
</tr>
<tr>
<td>Morocco</td>
<td>0</td>
<td>No Export</td>
</tr>
<tr>
<td>Turkey</td>
<td>0</td>
<td>No Export</td>
</tr>
</tbody>
</table>

*Note: Middle East average is 42165.32*

**Table 3:** Middle East

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year (time trend)</td>
<td>-0.1743***</td>
<td>-0.1069***</td>
<td>-0.1399***</td>
<td>-0.1105***</td>
<td>-0.0633***</td>
</tr>
<tr>
<td></td>
<td>(0.0284)</td>
<td>(0.0309)</td>
<td>(0.0280)</td>
<td>(0.0081)</td>
<td>(0.0099)</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>-0.1359***</td>
<td>-0.2450***</td>
<td>-0.0408***</td>
<td>0.0033</td>
<td>(0.0092)</td>
</tr>
<tr>
<td></td>
<td>(0.0275)</td>
<td>(0.0363)</td>
<td>(0.0139)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil rents (% of GDP)</td>
<td></td>
<td></td>
<td>-0.0008</td>
<td>0.0035</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0125)</td>
<td>(0.0120)</td>
<td></td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>0.0001***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP precipitate (Current US $)</td>
<td>354.5636***</td>
<td>225.1436***</td>
<td>289.1538***</td>
<td>226.5052***</td>
<td>133.2373***</td>
</tr>
<tr>
<td></td>
<td>(56.8188)</td>
<td>(61.4622)</td>
<td>(55.8659)</td>
<td>(16.1688)</td>
<td>(19.6267)</td>
</tr>
<tr>
<td>Number of Observation</td>
<td>526</td>
<td>513</td>
<td>523</td>
<td>510</td>
<td>500</td>
</tr>
<tr>
<td>Adj-R2</td>
<td>0.0326</td>
<td>0.0670</td>
<td>0.1119</td>
<td>0.2503</td>
<td>0.3622</td>
</tr>
</tbody>
</table>

*Source: Author’s estimation*

*Note: Standard errors are in parenthesis, and ***,* ** and * denotes significance at 1, 5 and 10 percent respectively.*
Table 3 presents the result of the Middle East as a whole. The result of model 1 as specified in column 1 above, in which shows regressed the military expenditure with time trend after controlling country fixed effect, it is revealed that the Military expenditure is declining over the time. On average, in the past 30 years (1986-2016) military expenditure in the Middle East as a whole is declined by 5.22 percent of the total GDP. This is consistent with all the model specification, and results remain similar even after controlling other explanatory variables. The declining Military Expenditure can be interpreted as the reduction in the conflict in the Middle East from the earlier years. In model 2, the paper found a negative relationship between military expenditure and export (% of GDP) and a one percent increase in military expenditure will reduce export by 13.5 percent. This is predictable as the increase in military expenditure causes a decrease in investments and exports and therefore delays the economic growth which means that there is an indirect adverse effect of military expenditure on real income. This result is consistent with the Heo (1999) for South Korea.

In model 3, it shows a negative association with oil rents (difference in the value of crude oil production at world prices and total costs of production) and the increase in military spending. As oil rents are considered as revenue from the oil industry, increase in military spending reduces the value of oil rents and hurts the economy. Similarly, for model 4, we did not find the significant coefficients for GDP and however in the final model with all the explanatory variables, it did not find the negative association with GDP per capita which shows an inverse relationship between development and conflict. Our results are consistent with the findings from earlier studies, (Yakolev Pavel 2007, Davis and Weinstein, 2002, Blomberg, Hess and Orphanides, 2004, and Barro, 2006; Abu-Bader, Sulaiman, et al. 2003) which shows that military burden negatively affects economic growth. However, it is revealed that military spending is declining over time. Therefore this indicates that as the country is developing, there is a reduction in conflict. It is crucial finding in the context and peace and development literature.

| Table 4: Countries with the export of crude oil above average |
|-------------------|----------------|----------------|----------------|----------------|
|                  | (1)            | (2)            | (3)            | (4)            |
| Year (time trend) | -0.3632***     | -0.1445        | -0.1629        | -0.1266***     |
|                   | (0.1138)       | (0.1346)       | (0.1238)       | (0.0206)       |
| Export (% of GDP) | -0.2831***     |                |                | 0.0271         |
|                   | (0.0840)       |                |                | (0.0173)       |
| Oil rents (% of GDP) | -0.3474***  |                | -0.1073***     |                |
|                   | (0.0915)       |                | (0.0225)       |                |
| GDP growth (%)    | -0.0091        | 0.0050         |                |                |
|                   | (0.0221)       |                | (0.0198)       |                |
| GDP per-capita (Current US $) | -0.0001** |                |                |                |
|                   | (0.0000)       |                |                |                |
| Constant          | 734.4845***    | 309.2987       | 344.3816       | 259.4033***    |
|                   | (228.0136)     | (267.7166)     | (246.7803)     | (41.3660)      |
| Number of Observation | 136            | 131            | 134            | 130            |
| Log lik.          | -503.5814      | -481.4447      | -489.6855      | -253.6736      |
| Adj-R2            | 0.0300         | 0.1071         | 0.1250         | 0.1928         |

Source: Author’s estimation

Note: Standard errors are in parenthesis, and ***, ** and * denotes significance at 1, 5 and 10 percent respectively.

Table 4 presents the result for the countries whose average oil export is higher than the average Middle East export. In model 1, it shows a significant reduction in military spending over time. The estimates show that in the last 30 years military spending is declined by almost 11 percent (almost double reduction in military spending compare to all Middle Eastern countries). This is expected as; in countries where oil is abundant, conflict is less persistent. In model 2 and 3, it also found a negative association between an increase in military
expenditure and export and oil rents. However, the coefficients are much more significant than the Middle East as a whole. It suggests that oil-rich exporting countries in the region are severely affected by the increase in military spending. This is possibly due to almost all major oil export nations all have large income-producing oil export sectors. This hinders economic growth due to the reduction in investment and exports. The study finds insignificant coefficients for GDP growth; however its significant and negative for GDP per capita with an increase in military spending, which shows that military burden negatively and affects economic growth and GDP per capita.

Table 5: Countries with the export of crude oil below average

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year (time trend)</td>
<td>-0.1118***</td>
<td>-0.0654***</td>
<td>-0.1114***</td>
<td>-0.0738***</td>
<td>-0.0472***</td>
</tr>
<tr>
<td></td>
<td>(0.0156)</td>
<td>(0.0125)</td>
<td>(0.0157)</td>
<td>(0.0125)</td>
<td>(0.0150)</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>-0.0165</td>
<td>-0.0165</td>
<td>-0.0169</td>
<td>-0.0169</td>
<td>-0.0169</td>
</tr>
<tr>
<td></td>
<td>(0.0116)</td>
<td>(0.0116)</td>
<td>(0.0160)</td>
<td>(0.0160)</td>
<td>(0.0160)</td>
</tr>
<tr>
<td>Oil rents (% of GDP)</td>
<td>-0.0220</td>
<td>0.0220</td>
<td>0.0051</td>
<td>0.0051</td>
<td>0.0238</td>
</tr>
<tr>
<td></td>
<td>(0.0229)</td>
<td>(0.0229)</td>
<td>(0.0238)</td>
<td>(0.0238)</td>
<td>(0.0238)</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>0.0163</td>
<td>0.0323</td>
<td>0.0244</td>
<td>0.0259</td>
<td>-0.0001**</td>
</tr>
<tr>
<td></td>
<td>(0.0163)</td>
<td>(0.0244)</td>
<td>(0.0259)</td>
<td>(0.0259)</td>
<td>(0.0000)</td>
</tr>
<tr>
<td>GDP per capita (Current US $)</td>
<td>229.1895***</td>
<td>136.6781***</td>
<td>228.6082***</td>
<td>152.8619***</td>
<td>100.5101***</td>
</tr>
<tr>
<td>Number of Observation</td>
<td>212</td>
<td>205</td>
<td>211</td>
<td>203</td>
<td>202</td>
</tr>
<tr>
<td>Log lik.</td>
<td>-430.2393</td>
<td>-352.5362</td>
<td>-428.1949</td>
<td>-351.6767</td>
<td>-344.4241</td>
</tr>
<tr>
<td>Adj-R2</td>
<td>0.1713</td>
<td>0.1180</td>
<td>0.1699</td>
<td>0.1223</td>
<td>0.1361</td>
</tr>
</tbody>
</table>

Source: Author’s estimation

Note: Standard errors are in parenthesis, and ***, ** and * denotes significance at 1, 5 and 10 percent respectively.

Table 5 presents the result for the countries whose average oil export is below than average Middle East export. It shows that Military expenditure is declining over time and it declined by around 3.4 percent in the last 30 years. This shows the heterogeneity in reduction, and it is much lesser than the whole Middle East region and the countries where crude oil export is above than the Middle East average. This is probably because these nations incurred less on defense spending and their reason may be that they have lesser oil exports in the region, therefore have lesser income from producing oil export sectors. It does not find any significant association for exports and oil rents. The study finds negative and significant coefficients for GDP per capita. This indicates that there exists an opposite relationship between development and conflict which expresses that as we are developing our conflict is reducing.

Table 6: Result for the countries with no oil export

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year (time trend)</td>
<td>-0.1310***</td>
<td>-0.1412***</td>
<td>-0.1353***</td>
<td>-0.1380***</td>
<td>-0.0615***</td>
</tr>
<tr>
<td></td>
<td>(0.0112)</td>
<td>(0.0117)</td>
<td>(0.0117)</td>
<td>(0.0108)</td>
<td>(0.0162)</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>0.0117</td>
<td>0.0117</td>
<td>-0.0101</td>
<td>-0.0101</td>
<td>-0.0134</td>
</tr>
<tr>
<td></td>
<td>(0.0148)</td>
<td>(0.0148)</td>
<td>(0.0134)</td>
<td>(0.0134)</td>
<td>(0.0134)</td>
</tr>
<tr>
<td>Oil rents (% of GDP)</td>
<td>-6.6017</td>
<td>-6.6017</td>
<td>-2.2344</td>
<td>-2.2344</td>
<td>-4.3915</td>
</tr>
<tr>
<td></td>
<td>(5.2037)</td>
<td>(5.2037)</td>
<td>(4.3915)</td>
<td>(4.3915)</td>
<td>(4.3915)</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>-0.0661</td>
<td>-0.0661</td>
<td>-0.0177</td>
<td>-0.0177</td>
<td>-0.0192</td>
</tr>
<tr>
<td></td>
<td>(0.0192)</td>
<td>(0.0192)</td>
<td>(0.0168)</td>
<td>(0.0168)</td>
<td>(0.0168)</td>
</tr>
</tbody>
</table>
Table 6 represents the regression model for countries where they do not export oil to any other nation. The results show that military spending is also decreasing over time. It has declined by around 4 percent in the past three decades (1986-2016). The study does not find any significant effect on exports, oil rents and GDP growth. However, it finds an adverse effect of military expenditure on GDP per capita and the effect is much larger than countries with abundant oil resources. This indicates that there is an inverse relationship between development and conflict.

Our conjecture is that the change in oil prices may affect military expenditure. Though the oil prices remain fixed for all the countries it may affect countries differently depending on the country export and import relation as well as other observable and unobservable factors. However, with the given panel data we are using we do find variation in oil prices across all the categories and therefore we explore the association between oil prices and military expenditure. Figure 4 shows the Locally Weighted Scatterplot Smoothing (LOWESS) graph which shows the trends in oil prices for the given time period and in table 7, explores the association between oil prices and military expenditure.

![Figure 4: Oil prices (USD per barrel) from 1986-2016](image-url)
Table 7: Association between oil prices and military expenditure

<table>
<thead>
<tr>
<th></th>
<th>Middle East</th>
<th>Above Average</th>
<th>Below Average</th>
<th>No Export</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Oil price (USD per barrel)</td>
<td>0.0022</td>
<td>0.0093***</td>
<td>0.0102</td>
<td>0.0156*</td>
</tr>
<tr>
<td>Year (time trend)</td>
<td>-0.0135</td>
<td>-0.0038</td>
<td>-0.0478</td>
<td>-0.0088</td>
</tr>
<tr>
<td>GDP growth (%)</td>
<td>-0.1802***</td>
<td>-0.0821***</td>
<td>-0.3920**</td>
<td>-0.0685***</td>
</tr>
<tr>
<td>Oil rents (% of GDP)</td>
<td>-0.0443***</td>
<td>-0.1181***</td>
<td>0.0044</td>
<td>-0.0231</td>
</tr>
<tr>
<td>Export (% of GDP)</td>
<td>-0.0009</td>
<td>0.0205</td>
<td>-0.0176</td>
<td>-0.0216</td>
</tr>
<tr>
<td>GDP per capita (Current US $)</td>
<td>-0.0001***</td>
<td>-0.0001***</td>
<td>-0.0001**</td>
<td>0.0000</td>
</tr>
<tr>
<td>Constant</td>
<td>366.3720***</td>
<td>170.9505***</td>
<td>791.6612**</td>
<td>146.2774***</td>
</tr>
<tr>
<td>Number of Observation</td>
<td>526</td>
<td>500</td>
<td>136</td>
<td>121</td>
</tr>
<tr>
<td>Adj-R2</td>
<td>0.03</td>
<td>0.37</td>
<td>0.02</td>
<td>0.48</td>
</tr>
</tbody>
</table>

Source: Author’s estimation

Note: Standard errors are in parenthesis, and ***, ** and * denotes significance at 1, 5 and 10 percent respectively.

Figure 4 shows the change in oil prices and dotted points on the curve shows the year to year fluctuations while the smooth red line shows the LOWESS graph. Oil prices information obtained from U.S. Energy Information Administration. Oil prices after 2000 increased significantly and the greatest increased observed after 2009 and 2010, however, after 2013, there is a sharp decline in the oil prices that may affect the military expenditure. Therefore, we explore the association between oil prices and military expenditure using panel data fixed effect model. The results show that both oil prices and military expenditure have a positive association controlling for country and year fixed effect across all countries classification based on oil export. In a simple regression with just oil prices, the association is positive with military expenditure but not significant. However, in the final model where we add all the control variables, we see a positive and significant association between oil price and military expenditure. The results show that one dollar (per barrel) increase in oil prices increase military expenditure by roughly 1 percent in middle east region and greatest increase observed in the countries where oil export is greater than the middle east average (1.5 percent) and while for countries with no oil export it is 1.7 percent increase in military expenditure. We do not see any significant effect in the countries with oil export below than middle east average. This result is expected as the revenues generated from oil exports will have a greater influence on government expenditure for different economic and social sectors.
5. Conclusions

Military spending by governments influence the resources it takes up, particularly when it leads to or facilitates conflicts. Whereas countries also need some level of security to deal with internal and external intimidations, these have opportunity costs, as they avoid resources being used for other purposes that strengthen the pace of development. Our primary purpose of this analysis is to see the causal relationship between government expenditure and economic development in Middle East region, where governments play essential characters in economies, and large sizes of spending go to the military. The panel data methods are used for the moderately long time series (1986-2016) which gives a better understanding than simple cross-sections on averages. The study finds evidence of a relationship between conflict and development in the Middle East region, which indicates a negative relationship between GDP per capita and Military Expenditure. Most of the previous studies indicate that the relationship between development and conflict will not be uniform throughout regions and country in this present world. To test this hypothesis, the study categorized oil exporting countries into three groups’ countries with above average oil export, below average oil export and no export. We also found that in previous literature that; change in GDP and military expenditure is affected by a myriad of factors; therefore, this study clearly acknowledges the limitations as there may exist many observable and unobservable factors that may affect development indicators.

In all the three categories and the Middle East, the study finds that a significant reduction in military spending over time. This declining military expenditure in all the categories can be interpreted as the reduction in the conflict in the Middle East from the previous years. A significant decline was observed in the countries where oil export is above average than the Middle East. The study also found that on an average in the past 30 years military expenditure in the Middle East is declined by (5.22 percent) of the total GDP followed by Countries with the export of crude oil above average declined by approx. (11 percent) moreover, countries with the export of crude oil below average are declined by (3.4 percent), and Countries with no export of crude oil declined by (4 percent).

The study suggests that a heterogeneous relation between an increase in military spending and with both exports and oil rents in all the above-specified model based on the export of crude oil. There is a significant inverse relationship between the military spending with exports and oil rents in overall Middle East analysis and for countries whose average oil export is greater than the Middle East. The negative coefficients between the military spending with exports and oil rents are much bigger for countries with whose oil export is above average than the Middle East. This is possibly due to the increase in military expenditure causes a decrease in investments and exports and therefore delays the economic growth. Similarly, it is observed that there is a negative association with oil rents and conclude that the increase in military spending reduces the value of oil rents and hurts the economy. It suggests that oil-rich exporting countries in the region are severely affected by the increase in military spending. This is possibly due to almost all major oil export nations all have large income-producing oil export sectors. However, it does not find any significant relationship between military spending with exports and oil rents in countries whose oil export is below average than the Middle East and countries with no export of crude oil. We also look at the oil prices as any change in oil prices may affect revenues and consequently on government spending. We see that oil prices after 2000 increased significantly and the greatest increased observed after 2009 and 2010, however, after 2013, there is a sharp decline in the oil prices that may affect the military expenditure. Our results show that both oil prices and military expenditure have a positive association controlling for country and year fixed effect across all countries classification based on oil export.

Across all the model specification the study finds the negative association with the increase in military spending and GDP per capita, which shows an inverse relationship between development and conflict. The effect is much stronger in the case of countries no export of crude oil. Our finding is consistent with the earlier studies, (Yakolev Pavel 2007, Davis and Weinstein, 2002, Blomberg, Hess and Orphanides, 2004, and Barro, 2006; Abu-Bader, Sulaiman, et al. 2003) which shows that military burden negatively affects economic development. The study also finds that military spending is declining over time. Therefore, this indicates that as the country is developing, there is a reduction in conflict. It is a crucial finding in the context of peace and development literature.
References


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**ORCID ID:** orcid.org/0000-0001-6323-032X
Abstract. In the epoch when terrorism and other serious crimes are cross-border problem, both the European Union and its Member States are responsible to their citizens for full ensuring of area of their internal security. Criminal offences against property or property crimes endanger the property of individuals and legal entities, as well as jeopardize their property interests. Consequently, the property rights, which are jeopardized by the crimes, are guaranteed by the State and are ensured by the Law Enforcement Authorities. Quantitatively, the largest group of criminal offences is composed by the crimes that can only be done on purpose of greediness, and most of them express themselves as the unlawful expropriation of the unfamiliar property from the lawful possession, in order to deal with that asset as their own. Such crimes are theft, robbery, extortion, fraud, and they together form more than half of all offences committed. For their research, the authors of the article have chosen the crimes with high public hazard degree from the offences against property. These offences are most of all affected by the globalization processes in the world, and they are: crimes related to a transport vehicle as a threat object; thefts from cultural objects where the objects of danger are churches or religious articles; modern frauds, when during their realization modern technical tools and new technologies are used. During the research, the co-author of the article – Prof. Dr. Jānis Ivančiks, has deceased suddenly. However, the years of joint work, discussions and scientific disputes, that accompanied the writing of this article and other written works allow co-authors to maintain the position and scientific views of this outstanding scientist in the field of forensic investigations and operational activities of special divisions. The authors show in this work the creative activity in the field of legal norms which affect personal property of individuals and their feeling, when the lawmakers eliminate the unnecessary rules, create new or improve existing ones in accordance with the country’s political, economic situation and globalization processes.

Keywords: globalization; crimes; security measures; criminal offences; psychological methods; truthful evidence.


JEL Classifications: K42, O10, P00

Additional disciplines: law, criminal law

1. Introduction

Nowadays more and more attention is paid to the problems of the security of the society and ensure of public order, since security and public order is seen as precondition of sustainable development (Čentėš et al. 2018; Dworzecki, Nowicka 2019; Laužikas, Miliūtė 2019). This joint publication will appeal some issues in secure development in the area of particular property crimes. Similar issues were previously examined by such scientists as Tumalavičius, V.; Zahars, V., Stivrinieks, M., Teivans-Treinovskis, J., Šakočius, A., Greičius, S., Trofimovs, I. and etc. (Tumalavičius et al. 2017; Tumalavičius, Veikša et al. 2017; Tumalavičius, Greičius 2017; Tumalavičius, Šakočius 2017; Zahars, Stivrenieks 2016; Ėnestrova, Teivans-Treinovskis, Ivančiks 2015;
Ivančiks, Tumalavičius, Teivans-Treinovskis 2015; Trofimovs, Ivančiks 2017).

On the territory of Latvia, theft was punishable among Ancient Latvian tribes since ancient times, including after the adoption of Christianity (Shteyman 2005, p. 9) in the 13th Century – during Livonia time, then during dependence time in the Polish-Lithuanian Commonwealth according to the Lübeck Law and the Magdeburg Rights (Brežgo 2009, p. 31). It was also punished based on the Statutes of the Grand Duchy of Lithuania (Shteyman 2005, p. 27), as well as during so called Swedish Times. After the Treaty of Nystad of 1721 between the Tsardom of Russia and the Swedish Empire, the northern part of the territory of modern Latvia came into the Russian Empire, and offenders who committed crimes in this territory were punished in accordance with the Sudebnik (Code of Laws) of 1497 (Samokvasov D.YA ., 1908, 408). On 1 May 1846, in the Baltic Provinces of the Russian Empire, the Russian Criminal and Correctional Code (Regulations on Criminal and Correctional Punishments – Ulozhenie o nakazaniyah ugolovnykh i ispravitelnykh 1846) came into force. However, with the rapid development of the economy and social rights, a completely new necessity of criminal law arose, and, on 22 March 1903, Emperor of Russia Nikolas II approved the new Criminal Code (hereinafter – the Russian Criminal Code).

The Russian Criminal Code was effective and existed throughout the territory of Latvia until the Independence of Latvia, even during the German occupational power until the end of 1918. When Latvia was proclaimed independent on 18 November 1918, in accordance with the Law of 6 December 1918, the Criminal Code of 1903 was also introduced in Latvia. It was the first edition of the Criminal Code in the state language – Latvian, the text of the Law was left unchanged, and only in the explanations, under each separate section of the Law, is specified how far this Law could apply in Latvia, omitting unnecessary and non-compliant norms in the situation of that time.

On 1 August 1933, the new Criminal Code came into effect. The Criminal Code of 1903 was the basis of the new Criminal Code. Moreover, the principles of compliance with new elaborated Codes of Switzerland (1918), Czechoslovakia (1926), Germany (1927) and Italy (1930) were taken into account (The Criminal Code of 1933). The new Criminal Code clarified certain concepts and systematized qualifying conditions; instead of the original 687 basic sections of the old Penal Law, the new Penal Code covers 584 sections.

After the occupation and integration of Latvia into the Union of Soviet Socialist Republics (hereinafter – the USSR), the Criminal Code of the Russian Soviet Federative Socialist Republic (adopted in 1926, hereinafter referred to as the Russian Criminal Code) was introduced on the territory of Latvia for temporary use. This Criminal Code entered into force in Latvia on 26 November 1940. During the Second World War, the Nazi Germany occupation administration restored the operation of the Criminal Code of 1933 on the territory of Latvia. However, after the Nazi German withdrawal, the Russian Criminal Code of 1926, which, with some amendments, was in force until 1961, was again in force.


In accordance with the political and economic situation of the state, since 22 August 1991, the Criminal Code of the Latvian SSR, with significant amendments, was regarded as the Criminal Code of Latvia (hereinafter – the CC of Latvia).

On 17 June 1998, the Saeima of the Republic of Latvia adopted the Criminal Law currently in force in Latvia, which came into force on 1 April 1999. The distribution of norms of the Criminal Rights in General and Special Parts within the Criminal Law was not changed; however, changes were made in the layout of the norms. Several norms of the institutions of the Criminal Rights were expanded and elaborated more detailed, as well as the emphasises were placed on the importance of threatened interests. New Chapters were created in the General Part, prescribing the conditions related the criminal liability of minors and the conditions for the
application of coercive medical treatment. In the Special Part, new Chapters also were created, while the norms in the Chapters were regrouped (Krastiņš 2010, pp. 5–24). In accordance with the international obligations of Latvia, new Chapter was created – crimes against humanity, genocide, crimes against peace, as well as war crimes. Two Chapters of the Special Section of the CC of Latvia - crimes against the state and public property, as well as crimes against personal property of citizens - were united into one Chapter – crimes against property. In order to adjust economic activity in the new economic conditions, a new Chapter was formed – crimes in the national economy. In addition, taking into account international obligations, an important Chapter – criminal offences against the natural environment was created.

For their research, the authors of the article identified from the offenses against property crimes with high public hazard having cross-border aspects: offenses related to a motor vehicle as a threat object; theft from cultural objects where the threat objects are churches or religious items; advanced fraud where during execution modern technical means and new technologies are used. In these crimes, the characteristics of realization completely corresponds to the characteristics of organized criminality, which is defined in the working document of the European Parliament related to the organized criminality. Respectively: organized criminality is definitely a structured group that exists for a long time, consists of more than two persons acting in a coordinated manner, in order to gain, directly or indirectly, financial benefits or other material advantages, exercising intermediary functions, having a significant impact on the economic and social cohesion of the European Union and its Member States and, consequently, on the single market (Working Paper on Organized Crime, 2014, p. 3).

The increased public danger is manifested in the following: significant material damages to victims; great resonance in mass media and in society; the object of danger is of mental value; serial features; specific proportion of recidivists; criminal international contacts; use of modern technologies.

The cross-border dimension is topical because the European Union is established so that it has to ensure the space of freedom (Teivāns-Treinovskis 2017, p. 40), security and justice without its internal borders. Europeans have to feel confidently that everywhere they travel in Europe, their freedom and their security is well protected in accordance with the EU values, including property rights. This cross-border dimension manifests as follows: the identified crimes may start in one country, then continue in other countries and end in another country; stolen items are not distributed in the country where the offence was committed; the crime is committed by nationals of several countries.

Combating and prevention of such crimes requires from law enforcement institutions improvement of their forensics methods and the theory of operational activities (Tumalavičius 2015, p. 357), as well as requires effective cooperation at European level in strengthening our protection and building resistance to these threats.

2. Criminological and criminal justice characterization of unlawful expropriation of motor vehicles

All history of the humanity is related to the use of animal assistance in everyday life, whether it is field husbandry or movement of carts, people and goods between different geographic locations, as well as wars. Due to this, since the ancient time, the theft of cattle, horses (Omelchenko 2000, p. 77) together with arson and burglary are among the most serious crimes. The German Law provided stoning or placing onto a pole for horse theft. In the source of rights Russkaya Pravda of Ancient Russia (the Old Russian Law), theft of official/service horses was considered as the high treason and was punishable by death; for simple theft of a horse, various punishments were foreseen: expulsion of the offender, seizure of property, cutting of the hand, slavery. Regarding a repeated theft of a horse – death penalty (Chistyakov 1984, p. 28–38).

On the territory of Latvia, horse theft was punishable before and after the adoption of Christianity among the Latvian tribes, for example, according to the Statutes of the Grand Duchy of Lithuania – from fines and beating with a whip to hanging (Statut velikogo knyazhestva Litovskogo, 1529, Art.1). After 1721, according to the Sudebnik of 1497, and regarding theft of a horse, the following punishments were prescribed – from beating with a whip or a fine up to the death penalty (Sudebnik, 1497, Art. 8–10).
Since 1 May 1846, the Russian Regulations on Criminal and Correctional Penalties (Criminal Code 1846) entered into force on the present territory of Latvia, according to which the following responsibility was provided in Article 2166 regarding theft of horses or livestock: ten beatings with a whip up to the deprivation of all rights and death penalty (Ulozhenie o nakazaniyakh ugolovnykh i ispravitel'nykh, 1845, p. 19). On 22 March 1903, Czar Nicholas II approved the Russian Criminal Code, where Article 585 provided responsibility regarding theft of a horse – a sentence from the imprisonment into a house of correction up to forced labour.

After the Russian February Revolution 1917, the Criminal Code were introduced in Latvia where the text of Article 585 of the Russian Criminal Code was retained without any changes. This Criminal Code existed until 1933. On 1 August 1933, the new Criminal Code came into force, where the base of this Code was formed from the Criminal Code of 1903, taking into account the creative work at Laws of Western Europe countries. As a result, former Section 585 of the Criminal Code regarding theft of horses or cattle was excluded from the new Code as such, formulating Article 546 in a generalized manner (Criminal Code, 1933, p. 171).

After the incorporation of Latvia into the USSR, the Russian Criminal Code of 1926 came in force on the territory of Latvia, which, with some amendments, was in force until 1961. Article 166 of the Russian Criminal Code of 1926 prescribed the responsibility for the covert or overt theft of a horse with a deprivation of liberty of up to five years. However, such subjects of crime as a cart, car, motorcycle, bicycle and other vehicles were included in the Chapter 7 “Crimes against property” as a general concept of the property object (Ugolovnyy Kodeks RSFSR redaktsii, 1926, Glava sed'maya Imushchestvennyye prestupleniya).

The Criminal Code of the Latvian SSR contained the Chapter 5 “Crimes against the Personal Property of Citizens”, however such threat objects of crime as a horse, motorcycle or car were not separated from the general concept of crime object. Only Article 197 – The unauthorized driving away of a motor vehicle or sailing ships” (in Russian: ugon ) in the Chapter 9 “Crimes against administrative order” – prescribed liability for the unauthorized stealing of cars, motorcycles or other motor vehicles without the purpose of appropriation – temporary deprivation of liberty up to one year (Ugolovnyy Kodeks Latviyskoy Sovetskoy Sotsialisticheskaoy Respubliki, 1983, p. 187).

On 6 June 1996, the lawmakers supplemented objects of criminal offence set forth in Article 139, Paragraph 5 with the concepts of car and objects of other motor vehicles, stating Article 139, Paragraph 5 of the Criminal Code of the Republic of Latvia in the following wording: “Theft, when committed in significant amount, as well as theft of cars or other motor vehicles, narcotic, psychotropic, toxic or radioactive substances, explosives, weapons, ammunition, gas pistols (revolvers) or its cartridges - is punishable by deprivation of liberty for a period of six years and up to fifteen years with confiscation of property.” In practice, as a the result of the implementation of the said amendments, the court based on the comprehensive, complete and impartial investigation of all circumstances of the case in its entirety, according to law and legal consciousness, had applied to car thieves fair and proportionate punishment.

On 17 June 1998, the Saeima of the Republic of Latvia adopted the Criminal Law currently being in force in Latvia. At the present moment, in Latvia, liability related to theft of a vehicle is prescribed according to Section 175 of the Criminal Law – Theft. The vehicle, as a threat object of the crime, is not separated from the concept of the general crime object of theft. In the Criminal Law, the lawmakers establish qualifying features for the qualification of theft, listed in Section 175, Paragraph 2 – for a person who commits theft, if it has been committed by a group of persons according to a prior agreement; Paragraph 3 – for a person who commits theft, if it has been committed by entering an apartment or other premises, or if it has been committed from a storage facility, from a system connecting storage facilities, or from a means of transport. Paragraph 4 – for a person who commits theft, if it has been committed in significant amount (currently 21 500 EUR), as well as if it has been committed by an organized group, as well as if specified threat objects of crime are stolen: narcotic, psychotropic, powerfully acting, toxic or radioactive substances, explosives, firearms or ammunition.

As a result of the application of the provision of Section 175 of the Criminal Law, a situation developed
in practice that for an offender who commits theft of a motor vehicle with the value up to 21,500 EUR the applicable punishment in accordance with Section 175, Paragraph 1 – deprivation of liberty for a period of up to two years. According to statistics, the average age of vehicles stolen is – 13 years with the market price of 900–8000 EUR per one motor vehicle. However, when stealing a vehicle, it must be entered at first - the door must be unlocked, ignition key must be switched on and engine must be started, these are the obstacles that will be overcome by an offender, and only after this the offender will able to handle the vehicle at his own discretion.

According to the authors, the penetration into a vehicle and into an apartment do not differ from each other by the method of penetration, because the penetration both into a vehicle and into an apartment is mostly happened through doors and windows, the only difference is that the vehicle is a moving object. However, the disposition of Section 175 Paragraph 3 of the Criminal Law does not include penetration into a vehicle in the concept of penetration.

According to the author’s point of view, the application of the norm of Section 175 of the Criminal Law enables in this situation to criminals, especially members of a group or an organized criminal group, to avoid an adequate and fair punishment.

The crimes where the motor vehicle is the object of threat are an activity of international organized criminal groups that has an impact on the whole world (Vehicle Crime, 2018). Interpol notes in its report that theft of a vehicle happens every ten seconds.

Analyzing the statistical data about theft of motor vehicles from 2014 until 2017 in the world, it is necessary to conclude that the dynamics of theft of motor vehicles makes heavy impression. In 2000, 2,498,543 motor vehicles were stolen, in 2014 – 6,892,161, and in 2017 – already 7,191,940 motor vehicles (Database Statistics, 2018). In Europe, the increase in the number of offences whose threat subject is motor vehicle was largely influenced by changes in the political structure: the removal of the "iron curtain", acquisition of independence by the Baltic States, further enlargement of the European Union (EU), which meant the elimination of controls at the borders between the EU countries, as well as, new organized cybercrime groups arise, whose members have the most comprehensive knowledge in the field of information technology, as well as the opportunity appeared to use the most up-to-date innovative technologies, including for achievement of unlawful goals (Vilks 2011, p. 201). Internationalization and development of innovative technologies create accelerate regional development (Shevyakova et al. 2019; Zeibote et al. 2019), alas side effect is increased insecurity (Tvaronavičienė 2018a; 2018b).

The objects of illegal activities of international organized criminality groups are mainly located in the more prosperous Member States in Western and Northern Europe (Serious and Organized Crime Threat Assessment 2017, p. 47). A small proportion of stolen motor vehicles is sold within the boundaries of the EU, while the majority of it as the whole or as parts was transported by sea – 18.4 proc. and through the border checkpoints 69 proc. were transported to Eastern Europe, Central Asia, North Africa and the Middle East (Analytical Report Motor Vehicle Crime in Global Perspective 24 p.).

When analyzing the above mentioned findings, the authors conclude that the prevention and detection of theft of vehicles, taking into account all aspects, including globalization and cross-border aspects, are crucial both from the standpoint of the property protection, and from the attitude of the protection of the state and public interests.

3. Criminological and criminal justice characteristics of crimes related to cultural objects

Criminal offences committed due to the greediness has been investigated and categorized according to their direct threat object, the method of implementation, the nature of the subject of the crime, as well as the number of subjects. One of such threat objects is cultural objects.

Over the past decade, we observe an increasing trend of the illegal trade of cultural objects from countries of
the Middle East that are affected by armed conflicts. The “black market” of art works becomes as lucrative as drugs, weapons and counterfeit goods. The topicality of the prevention and combating of the illegal circulation of cultural objects in Latvia is confirmed by the statistics of the Information Center of the Ministry of the Interior (hereinafter – the IC of the MI) on stolen and lost cultural objects. For example, in the period from 2008 until the end of 2017, around 891 thefts of cultural objects have been committed in Latvia, more than 1856 cultural objects have been stolen or lost. Of the all range of the stolen cultural object, 65 proc. are items of religious significance or religious items (Prettiesiski atsavinātie kultūras priekšmeti/ Unlawfully Dispossessed Cultural Items, 2018).

When defining the concept of a religious item, the authors take into account the determined threat items when stolen from churches, according to Article 588 of the Criminal Code of 1903 (Criminal Code, 1903, Art. 588), as well as the concept of a cultural object defined in the IC of the MI, namely: the religious item is an item to which some of religions pay homage as the blessed, as well as the item which is consecrated and used in the service of the church. Most religious items are lost in churches, prayer houses. In 2010, 12 thefts from churches and prayer houses were registered in Latvia, 10 in 2011, 30 in 2012, 5 in 2014, 9 in 2016, 9 in 2016 and 11 in 2017. Accordingly, the number of stolen religious items distributes as follows: in 2011 – 109 items, in 2012 – 282, in 2014 - 136, in 2015 – 124, in 2016 – 212, and in 2017 – 194 (Prettiesiski atsavinātie kultūras priekšmeti/ Unlawfully Dispossessed Cultural Items, 2018).

On the territory of Latvia, theft of religious items was punishable after the adoption of Christianity among the Latvian tribes in the 13th Century – during Livonia time, then during dependence time in the Polish-Lithuanian Commonwealth according to the Lübeck Law and the Magdeburg Rights. Theft was also punished based on the Statutes of the Grand Duchy of Lithuania, as well as during so called Swedish Times. After 1721, according to the Sudebnik for a person committing theft from the Church (in Russian: tserkovnaya tat’ba) the applicable punishment was the death penalty (Samokvasov 1908, 4p.). After 1 May 1846, the Russian Regulations on Criminal and Correctional Punishments (the Criminal and Correctional Code) defined the crimes against faith, and the following concepts were given: robbery was committed in the church, open theft was committed in the church, and theft with a qualifying indication – from the church (Ulozhenie o nakazaniyakh ugolovnykh i ispravitel’nykh, 1846, Art. 2130, 2140, 2149, 2166).

The Criminal Code of 1903, Article 588 for a person who committed theft from churches; and Article 589, Paragraph 2, for a person who committed robbery in the church, provided the following liability – forced labour of up to eight years, or imprisonment into a correctional facility for a period of not less than three years (Criminal Code 1903, Art. 588).

The new Criminal Code of 1933 introduced the Chapter 17 “Offences against Religious Feeling of Believers and Peace of Deceased” (Articles 300-305). As a result, the norms of the Law protected the freedom of consciousness and feeling of believers of all legally existing denominations in Latvia. Regarding theft of religious items, the new Criminal Law clarified certain concepts and systematized qualifying features as well as increased the punishment. Section 547, Paragraph 4 provided: “Whoever has stolen (...) a religious venerable item belonging to the church of legally existing faith in Latvia; (...) shall be punished with a correctional facility for a period of up to four years” (Criminal Code, 1933, Sect. 547).

After occupation and annexation of Latvia into the USSR, the inhabitants of Latvia being the great part law-obedient in their mentality, taking into account historically established relations with the neighbouring country, Russia, conformed in the developed situation to the communists sent from Moscow as well as local supporters of the Soviet regime, where the basis of the state administration philosophy was the Marxist-Leninist Theory and Scientific Atheism.

On 26 November 1940, the Russian Criminal Code of 1926 entered into force in Latvia. The norms of this Russian Criminal Code did not protect neither religion itself nor religious venerable items belonging to the church, unless they were recognized as an antiquarian value, art collection or monument. The Chapter 17
“Offences against Religious Feeling of Believers and Peace of Deceased” of the former Criminal Code was excluded as such from the Russian Criminal Code. On the contrary, the legislators, based on the theory of Marxism-Leninism and the theory of the warlike atheism, prescribed in the Chapter 4 liability regarding the violation of provisions of partition of the Church and the State by imposing restrictions on religious studies, collection of donations, registration of births and marriages. All this had a negative effect on the feeling of believers and the attitude towards the State.

The classification feature – theft from churches lost its special meaning in the Russian Criminal Code. As a result, such threat objects of criminal offence as religious items were included in the general concept of “property” (Ugolovnyy Kodeks RSFSR, 1926, Art. 162, 165, 167). In case of theft or robbery of religious items, a spiritual person of a religious organization or a godly person had to claim the amount of the loss. This was the first problem, because the value of a holy cross or a icon can be determined without doubt if the item is available, but if the item was stolen, then only according to the owner’s oral information. From public officials, the loyalty against clergy and godly people, in this case, against victims, was very critical, if not to say that it was not trustworthy at all. It was so, because the theory of Marxism-Leninism denied the existence of God, therefore, the clergy are deceivers and there is no belief in them. The second problem was related to the fact that victims had to take into account and evaluate whether the stolen religious items were not antiquities or objects of art, whether they had to be registered or whether they had been hidden from state officials; because responsibility was prescribed for hiding the antiquities, art collections and monuments. At that time, repressions against several people happened in Latvia, including against clergymen and wealthy, godly people. Many were shot or taken to labour camps. People understood that atheistic legislation of Soviet power does not defend neither the spiritual values of believers, religious sensibilities of believers nor religious items. The struggle against believers ended with the invasion of the Nazi German army to the USSR during the Second World War and the occupation of the territory of Latvia in June–July 1941.

As the calamities of the Second World War were overcome and the country’s economic situation improved, the Ministry of Culture of the USSR and local soviet executive committees began the process of registration and evaluation of the cultural heritage. This process had not only an economic but also a political ground. First of all, to execute the inventory of most valuable religious items with the aim to use them in favour of the state, and secondly, to replace the rich historical past with the history of the formation of socialism, to replace the traditional spiritual values of Latvian people with the communism dogmas. Unfortunately, many issues related to the assessment of religious items were solved by low-competence people. As a result, in the early 1960s, some churches were destroyed in Latvia, others were adapted to the planetarium, concert halls and boxing clubs; and dispossessed religious items “disappeared in the collections of the homeland”.

In the Criminal Code of the Latvian SSR, legislators continued separation of the church from the state, providing in Article 137 of the Special Part, Chapter 4 “Crimes Against Citizens’ Political, Labour and Other Rights” a punishment related to violation of the provisions regarding the separation of the church from the state and the separation of the school from the church. Religious items were not separated from the common concept of “property”. Only the Chapter 10 “Crimes against Public Safety, Public Order and Health of the Citizens”, Article 206 “Destruction or Damage of Monuments”, prescribed responsibility for deliberate damage or destruction of historical, archaeological, art or architectural monuments, as well as objects of nature protected by the state (Ugolovnyy Kodeks Latviyskoy Sovetskoy Sotsialisticheskoy Respubliki, 1983, Art. 206). This meant that if churches or religious items were recognized as a monument of history, archaeology, art or architecture protected by the state, then responsibility for their deliberate damaging or destruction was prescribed.

On 22 August 1991, the CC of Latvia with amendments came into force; however religious items were also not separated from the common concept of “property”.

On 25 May 1993, amendments of the CC of Latvia were made. These amendments expressed Articles 137 and 206 in another wording: Article 137 “Breach of the Equality of Citizens in Their Attitude towards Religion. In regard to the direct or indirect limitation of the rights of citizens, creation of any benefits to citizens depending
on their attitude to religion, as well as infringement of the citizens’ feeling or raising hatred because of their attitude to religion or atheism”. The legislators excluded the norm – separation of the church from the state and separation of the school from the church, by creating a norm of a broader content - the restriction of the rights of citizens; Article 206 “Destruction of Monuments. On deliberate complete or partial destruction of cultural monuments, as well as objects of nature protected by the state”, in comparison with the Criminal Code of the Latvian SSR the following norm was excluded – the monuments of history, archaeology, art or architecture and the following concept was introduced – the cultural monument (the Latvian Criminal Code, 1995, str.78, 130).

On 1 April 1999, the Criminal Law entered into force, where Section 151 “Disturbance of Religious Rituals“ prescribed liability for the deliberate disturbance of religious rituals if they did not violate the law and were not related to violations of the rights of a person, however, on 13 December 2012 this Section was excluded at all. Section 229 “Destruction of and Damage to Cultural Monuments“, Paragraph one provided for liability regarding the destruction of or damage to a cultural monument protected by the state and Paragraph two, if it has been committed by arson, blasting or in any other dangerous way. Currently, after the executed amendments, there is possible to apply the provisions of Section 229 more broadly and to call to justice not only for the destruction of or damage to a cultural monument protected by the state, as it was defined in the basic wording, but also for profanation, illegal coming-out outside the Republic of Latvia, as well as for unlawful expropriation and with qualifying feature, if it causes significant damage to the interests of the state or society.

Relating to the subject of the article, it is important to know whether the church has a status of a cultural monument and is included in the List of cultural monuments protected by the state, or not. If the status has been granted, then it will be a qualifying feature within the conception of Section 229 of the Criminal Law. As of 31 December 2016, 8924 objects were listed in the List of the cultural monuments protected by the state (Valsts kultūras piemineklu aizsardzības inspekcija/State Inspection on Protection of Culture Monuments, Annual Report, 2016). In practice, many administrators of the churches do not address with an application to assign the status of a cultural monument to a church not only because the church does not meet the status of a cultural monument of national or local significance in accordance with the criteria prescribed in the normative acts on cultural monuments, but also because they consider that for believers are not important, whether the church has such status or not, the key factor is the faith. Predominantly, it concerns Orthodox churches and Old Believer prayer houses. As a result, believers or religious organizations that own the church are greatest loser. From March 2012 until 9 October 2012, 23 thefts from the churches in Latgale region were registered, of which only 8 churches were of cultural monument status; and 122 icons, 13 sacred crosses and 6 holy books were stolen. As a result, this has arouse a wide resonance in the society, because the most believers considered and considers that the churches were repeatedly burgled, but no thief was ever caught and nothing of the stolen values had been returned. However, after several months of investigation and international cooperation, police officers managed to detain the perpetrators of the crime – citizens of Lithuania and Latvia, and return, unfortunately, only 10 icons, but one of them was found in Great Britain during the public auction.

Theft of religious items is a very specific kind of larceny. In order to commit theft of religious items from the churches, criminals must agree on the distribution of roles, taking into account the skills of each member of the group, because it is necessary: to enter the room by overcoming various obstacles (inset locks and padlocks, windows and/ or door grids and sometimes also alarms); to choose properly the most valuable religious item in a very short time and in a non-lightened space; to distribute the item on the “black market” or to a customer after theft without disclosing the fact that the religious item has been stolen. It should be also taken into account that the range of buyers of such religious items is narrow and closed.

Summarizing the above expressed, the authors conclude that the trends in decrease of amount of thefts and stolen religious items are not found. There is an urgent need to identify the peculiarities and difficulties of finding, seizing and investigation of religious items, as well as to evaluate the effectiveness of the solutions and tools used, in order to be able to apply a proportionate punishment to the guilty persons taking into account not only the material but also the spiritual value of the religious items.
Conclusions

The globalization processes have an impact on both the country’s social-economic processes, the policy of criminal punishments, the cross-border aspect, and lawmaking applicable in the country.

According to the European Security Strategy (ESS) – combating organized criminality is one of three priorities, together with terrorism and cybercrimes. Exactly, representatives of organized criminality are involved in theft of motor vehicles and religious items. The authors conclude, taking into account all aspects including cross-border aspects, that the prevention and detection of above mentioned crimes is crucial from both – from the standpoint of the protection of property and protection of interests of the state and society.

The trends in decrease of amount of thefts and stolen motor vehicles and religious items are not found. According to the authors’ point of view, the successful investigation of above mentioned crimes is burdened with the gaps in the Criminal Law of Latvia.

Namely, first of all, the motor vehicle and religious item as threat objects of the crime have been not separated from the general concept of the offence object of theft, in opposite to that, how it is done with drugs or explosives and weapons.

Secondly, the disposition of Section 175, Paragraph 3 of the Criminal Law, entering a vehicle does not include into the concept of penetration. As a result, criminals, using these gaps in the Criminal Law, avoid the adequate and fair punishment. Regarding the legal framework, the authors propose to express Section 175, Paragraph 3 (175 (3)) of the Criminal Law in the following wording: “(3) for a person who commits theft or theft of a motor vehicle, if it has been committed by entering an apartment or other premises, or if it has been committed from a storage facility, from a system connecting storage facilities, or from a motor vehicle/means of transport… “.

Thirdly, to have the opportunity to apply proportionate punishment to a guilty person, taking into account not only material but also spiritual value of the religious item, the authors offer to start a discussion among lawyers on necessity to supplement the objects of criminal offense in Section 175, Paragraph 4 (175 (4)) with the concept of a religious item, expressing Section 175, Paragraph 4, in the following wording: “ (4) for a person who commits theft, if it has been committed in significant amount, as well as if it has been committed by an organized group, as well as commits theft of narcotic, psychotropic, powerfully acting, toxic or radioactive substances, explosives, firearms, ammunition or religious item, …”.

References


Ulozhenie o nakazaniyakh prestupnykh i ispravitel’nykh 1845 goda. [Ulozhenie about punishments criminal and correctional in 1845]. Available on Internet: https://vk.com/doc20559902_437521740?hash=4a7bdf15570fc55da2&dl=69e1aa427fe5224329


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FINANCIAL SUSTAINABILITY FACETS: THREATS TO THE TAX SYSTEM EMERGING FROM TAX INCENTIVES

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Abstract. Scientific literature particularly emphasizes the threats to the tax system emerging from tax incentives, as well as the need to control them in order to get the desired effect in society and to ensure the sustainability of public finance. Nevertheless, it can be noticed that relatively weak tax incentives control mechanisms exist in practice, in comparison with control programs of government spending. Only a small number of countries use tax incentives assessment models to justify political decisions. Evaluating Lithuanian practice and comparing it with other countries, it is obvious that Lithuanian government has no legal mechanism for evaluating the necessity and efficiency of tax incentives. Due to this reason, the tax incentives assessment model is necessary in order to evaluate Lithuanian personal income taxation and create competitive and sustainable tax system. The aim of the paper is to form the assessment model for income tax of individuals incentives, based on theory and practice of foreign countries and international organizations, and apply it to evaluate the impact of personal income tax incentives on public finance in Lithuania. As a primary task, the authors conducted an analysis of a number of theoretical and practical tax incentives assessment models. Second, personal income tax incentives are analyzed from different perspectives – as tax benefit, as tax expenditure, and as fiscal measure. Finally, the authors suggest the complex and multifaceted model that can be used to evaluate the impact of income tax of individuals incentives on public finance and their sustainability. It is believed that the results obtained due to the study carried out for the purpose of the present paper will help to shape favorable personal income taxation system for sustainable development process. The study was conducted using the methods of academic literature and statistical data analysis, meta-analysis, qualitative content analysis and correlation-regression analysis.

Keywords: tax incentives; income tax of individuals; fiscal sustainability; impact on public finance


JEL Classifications: H34, H50, K36

1. Introduction

Strong public finances guarantee not only an appropriate distribution of resources and reallocation of income, and a macroeconomic stability, but also affects the economic growth and development of a State (Afonso et al, 2005; Barrios, Schaechter, 2008; Öberg, 2010; Luzgina, 2017; Osipov et al., 2018; Vandina et al., 2018; Tvaronavičienė, 2018; Katina et al., 2018).

In this context, special role is played by the income tax of individuals (ITI) that is to a larger or smaller extent applied to all residents of the country: the rate of the ITI, tax benefits, the efficiency of the tax – have been a high-profile subject of public discussions. Still, one of the most controversial themes in the context of the personal income tax is tax benefits (incentives) – not mandatory in theory, however in practice, a component of the tax used in nearly all States. Nevertheless, their fiscal impacts are not always clear and their effectiveness and efficiency as a policy instrument needs to be carefully evaluated, especially in the present context of constrained
public finances (Barrios et al., 2018). It is stated that tax incentives schemes may appear to be opaque, costly and often ineffective in reaching stated goals (Redonda et al., 2018; Tarasova et al., 2018). However, only a small part of the States employs evaluation models underlying political decisions regarding the ITI: for the purpose of the OECD analysis only seven countries submitted the required data out of the total 34 Member States (Collin, Walsh, 2011). In general, that cannot be considered to be an example of good practice. OECD has noticed that although incentive expenses and the impact analysis may be a rather complicated exercise, a ‘much larger problem may be an inability to attempt to perform such analysis’ (OECD, 2010a). There is a common agreement on the need to design an evaluation model to comprehensively assess the impact of the income tax of individuals upon public finances.

Although the very subject of the ITI has been highly in the focus in the political and public domain, in Lithuania the subject has not been given sufficient attention. An assessment of the practice of the Lithuanian State in a wider context and in comparison with the other States concludes that differently from other States (Thöne, 2011; U.S. GAO, 2012; Jacobsen et al, 2010) Lithuania has not designed any incentives assessment model. In view of the existing issues related to the treatment of tax incentives the purpose of the present study is to design a model for the assessment of the impact of tax incentives upon the public finances, and apply it for the analysis of the Lithuanian ITI incentives.

The first part of the present paper covers an analysis of theoretical and practical possibilities of tax incentives. In the second part of the paper presents a model for the assessment of the ITI incentives upon the public finances. The third, final part of the paper offers an analysis of the tax incentives set forth in Article 21 of the Law on Income Tax of Individuals of the Republic of Lithuania and defines and identifies the impact of such tax incentives upon public finances.

2. Analysis of Theoretical and Practical Possibilities to Assess the ITI Incentives

In practice, the necessity to assess the ITI incentives is not that obvious as in the case of expenses, because in the budget structure such incentives are carried in the revenue side and are treated as revenues foregone rather than as expenses, and are on a regular basis estimated, analysed and substantiated. Furthermore, such tax incentives are given effect in laws, and become their integrated part, as opposed to the public expenditure programmes, and therefore are to a lesser extent questioned. Nevertheless, it has been often maintained (OECD, 2010a; Dean, 2012; Roin 2003) that such tax incentives should be treated as equivalent to Government subsidies or transfers, because eventually they lead to budget expenditure, which, however, in this case are indirect.

Research literature on the subject offers three general approaches towards the costs created by tax incentives: revenue foregone, revenue gain and outlay equivalence methods. The incentive evaluation analysis from the revenue foregone viewpoint (Redonda, 2016) covers only an estimation of the difference between the revenue collected under a benchmark standard and the current tax system. The method, however, has been heavily criticised in research literature (Rabin, 1992; OECD, 2010a) for several reasons: first, the method relies on an assumption of unchanging behaviour, which means that any changes in the behaviour of taxpayers resulting from the introduction of a tax incentive are disregarded; second, the method fails to take into account the interaction between the incentives which may eventually cause inaccuracies in estimating the revenue foregone. On the positive side, the revenue foregone method does not require accumulating of complex statistical data (as the revenue statistics is sufficient) or relaying on subjective assumptions, therefore due to its simplicity the method is a preferred approach in most countries assessing the impacts of tax incentives (e.g. in Germany, France and the Great Britain) (Polackova Brixi et al, 2004).

The revenue gain approach (Tipps, Webb, 1980) is based on an ex-ante approach and measures the anticipated revenue gain that would arise from abolition of a specific tax expenditure. This approach addresses the main shortcomings of the revenue foregone method by including in the analysis the taxpayer responses, as well as the interaction between the different incentives. However, the inclusion of the latter elements at the same time means the appearance of certain level of subjectiveness, because it relies on assumptions on the changes
in behaviour and elasticity (Polackova Brixi et al, 2004). However, the estimations under the revenue gain method require econometric, microsimulation models, evaluations of control groups that in practice requires large volumes of statistical data and intricate studies (Rashkin, 2007; Pitter, 2013). That limits possibilities for applying the method.

Finally, the outlay equivalence approach (Davidon, 2012) involves an estimation of the amount to be allocated as direct financing through Government programmes, in order to achieve the effect in the economy as applying tax incentives; the exercise assesses whether the desired effect is more efficiently attained by way of direct subsidy, or by applying tax incentive. Just like in the case of revenue foregone the calculation relies on an assumption that the behaviour does not change (Hashimzade et al, 2014). However, due to its limited applicability the outlay equivalence method is applied rather infrequently. According to OECD, lately only Sweden (Sveriges Regeringen, 2016) uses the methods as an additional method supplementing the revenue foregone computations (OECD, 2010a).

A comparison of possibilities to practically apply each of the methods and their results demonstrated that the costs of applying of tax incentives under the revenue gain approach are less than computed under the revenue foregone approach. The result can be explained by a changes behaviour of taxpayers (Commonwealth of Australia, 2015). But the computations applying the outlay equivalence approach yield an opposite result – the costs of applying the tax incentives are marginally higher than computed by way of revenue foregone approach, because in the case of direct financing taxation is involved which actually determines that at the same costs the incentives yield much stronger effect than implementing a respective direct financing programme (Brown, 2004). It should be noted that none of the approaches used to quantify the costs created by tax incentives is adequate for a comprehensive evaluation of the incentives of the ITI upon public finances. In view of the above it is necessary to analyse the impact evaluation methods and models currently used in practice.

Both foreign authors (Tyson, 2014; Dean, 2012; Collins, Walsh, 2011) and the relevant international organisations (OECD, 2010a) noted that in general there were very few States quantifying tax incentives, and most of them limit themselves to estimation of revenue forgone. Still, the analysis of the guidelines assessing the effects of tax incentives provided by public authorities allows a conclusion that quite a number of States in the world (for instance, Australia (Commonwealth of Australia, 2017), Canada (Department of Finance Canada, 2017), USA (U.S. Department Of The Treasury, 2017), Ireland (Department of Finance, Ireland, 2016) make efforts not only to quantify the costs incurred due to the tax incentives, but also treat tax incentives as a political measure of economic and social regulation. The practical cost quantification exercise supplements the theoretical models designed in the area.

According to OECD, an ideal evaluation should be based on a counterfactual analysis and consist of an ex ante and ex post evaluation (OECD, 2010b). An ex ante evaluation is designed to provide a rationale of the incentive (why is the government intervention necessary), determine the objectives of applying an incentive (the objectives in this case should be SMART, i.e. specific, measurable, achievable, relevant, and time bound), in addition to the evaluation of alternative decisions which means that an incentive must be demonstrated as an optimal solution with respect to the effects of redistribution, behaviour and revenues. Having selected the most appropriate incentive implementation form, and after the incentive is given effect, an ex post evaluation, to an extent possible, comparing the performance of the incentive with a counterfactual situation from the viewpoint of efficiency, justice, redistribution, compliance and administrative costs (OECD, 2010b).

Germany employs a standard incentive evaluation model consisting of five elements (Thöne, 2012): first, an incentive is discussed as a legal constructus, i.e. its statutory objective, history, etc.; the second step involves the determination of the incentive’s fiscal value using the revenue forgone method; third, references are made to previous evaluations, and an overview of the academic papers relevant in relation to the incentive; the fourth step is a step of the principal evaluation which includes an evaluation in the context of the overall policy (transparency, rationale), an evaluation of the element of the incentive and the very incentive as a constructus (whether or not the specific intervention on the part of the State is the most appropriate, is the type of the
incentive most appropriate, whether its construction was the best in order to attain the prescribed objective), in addition to the evaluation of the incentive’s effect (whether the incentive is efficient and cost-effective); the fifth step represents a summary of the above aspects, and includes proposals regarding the further actions. The key methods used for the purpose of assessing the incentives on the basis of the model discussed are econometric models and a meta-analysis (Thöne, 2012). Thus, the model used in Germany is rather extensive, as it addresses not only the most important aspects of efficiency, effectiveness and reasonableness of an incentive as a political measure; it also contains a number of elements of descriptive nature. It should be noted that a comparison of the model with the other possible approaches shows that the model does not include an ex ante evaluation which is important even before the approval of the incentive.

Contrary to the German model, the incentive evaluation model used in Ireland is based on distinguishing the ex ante and the ex-post evaluation (as proposed by the OECD). The ex-ante evaluation of incentives is necessarily performed before the introduction of the incentive element to the tax structure. An ex-ante model includes five key aspects (Department of Finance, Ireland, 2014): the objective (clearly defined); substantiation of the intervention (related to market failure); best alternative (the incentive is more efficient than direct expenditure); economic effect (analysis of the causal links between the economic objectives and the application of the incentives); the costs (cost-benefit analysis, construction of the scenario). An ex-post evaluation in the priority manner focuses on the relevance of the incentive. This is followed by a quantification of the costs of applying this tax element (most often applying the revenue foregone method). And finally, the analysis focuses on the efficiency of the incentive as a policy tool, i.e. whether the costs resulting from the application of the tax incentive are adequate with respect to the attaining the objectives. This analysis provides an answer whether the tax incentive is the most appropriate means of public intervention, however, it fully discloses the impact of the tax incentive upon public finances.

The application of the models makes it possible to consider whether the application of the tax incentives is an efficient means, or whether its should be replaced by a different regulation. With a view to analysing the impact of the ITI incentives upon public finances, the models as discussed above cannot be fully applied. On the one hand, they are excessive, because they include an analysis of the historic perspective of the tax incentive as a legal construct. On the other hand, the models can be treated as insufficient, because, irrespective of the fact that they include elements (such as analysis of economic effect, efficiency and relevance), that partly allows assumptions on the impact upon public finances, none of the approaches as referred to earlier provides an answer whether the impact of the ITI incentive upon public finances is positive, or, on the contrary, negative. In view of the above it is necessary to have such model designed.

3. A Model for the Evaluation of Impact of ITI Incentives Upon Public Finance

In order to identify the most appropriate method for the evaluation of the impact of ITI incentives upon public finance, a primary task is to define the concept of ‘impact’. A number of authors analysing the impact (OECD, 2006; Stern et. al. 2012; Gertler et al., 2016) have emphasised that the impact must be related to the direct and indirect result with respect to the entire area being studied. It follows that an evaluation of the impact of tax incentive upon public finances may not be limited to the share of the budget revenue loss; the exercise should include an assessment of the outcome of an introduced incentive element upon the entire area of public finance. In theory, researchers distinguish three functions of public finance that include collection of revenues, the use of revenues, and the control of the generation and the use of revenues (Meidūnas, Puzinauskas, 2003). The model proposed by the authors of the present paper is based on the three functions as referred to above, each of which is assessed according to the criteria as defined below; the overall conclusions of the study covered by the present paper leads to conclusions on a positive or negative impact of tax incentives upon public finance.

1. Revenue collection. The analysis of theoretical and practical possibilities to evaluate the impact of ITI incentives has shown that most of the States calculate the budget revenue loss under the revenue foregone method. Furthermore, no evidence has been obtained that an estimation of the budget revenue loss according to the revenue foregone is to a large extent different from the results obtained when computed by other methods
Thus, in the proposed model the impact upon the budget revenue collection is evaluated by quantifying the budget loss according to the revenue foregone method. The statistical analysis of the indicators covers a period of at least five years. A broader approach towards the estimation of the ITI incentive indicators and their averages in order to identify the level of materiality of the budget loss due to the introduction of a specific incentive. An estimate of the ITI incentives indicator exceeding the average shall be considered to be material, and relatively immaterial in case it is below the average.

2. Use of revenues. The second part of the model presents an analysis of the legal acts establishing and regulating the ITI incentives in the taxation structure, and whether the construct of the tax incentive contains a reasonable objective. The evaluation is then carried out using the SMART criteria (Department of Finance, Ireland, 2014). That means that every objective is evaluated in terms of five criteria (Doran, 1981): whether or not the objective is specific, measurable, achievable, relevant, time bound. An evaluation according to the SMART criteria makes it possible to assess whether the objective pursued by introducing an incentive in the tax structure is appropriate and reasonable. Taking into account the fact that policy of tax incentives (or tax expenditure) has been called “hidden” or “submerged” form of government policy (because its design makes government’s role as the provider of benefits less visible) (Shanks-Booth, Mettler, 2019), proper definition of their objective is crucial. Such a conclusion may be drawn up only if the objective pursued meets at least three out of five above criteria. On the other hand, despite a reasonably defined objective fully compliant with the criteria in question, another important requirement is to select a proper means to attain the objective. In this specific case the task is to prove the existence of interdependence between the indicator defined in the objective of the incentive, and the rate of the incentive allowed to the resident. The existence of such interdependence is identified and defined using the correlation and regression analysis methods. The regression analysis method does not only determine the existence of the interdependence between the dependent variable, i.e. the objective pursued by granting tax incentives, and the independent variable (application of the incentive to the income tax of individuals), as well as the strength of such relation. The analysis of the second part of the evaluation model has led to a conclusion regarding whether or not waiving part of the tax income is meaningful, and whether that would lead to any economic or social changes in the State.
Fig. 1. A model for the evaluation of impact of ITI incentives upon public finance

Source: composed by the authors.

3. Revenue collection and usage control. Since tax incentives are not considered to be a category of budgetary expenditures, they are also exempted from the control ordinarily applied to expenditures. With a view to assessing whether or not the application of the incentives produces a positive or a negative effect upon the enforcement of control, and the transparency of public finance, the model must include an assessment of the legal regulation effective in the State in relation to incentives and identify whether the State has put in place any regulations on the control of tax incentives. The elements above were evaluated using a qualitative study method. An analysis of the content of legal acts governing the ITI incentives was carried out in order to determine the presence of any regulations on the control of the ITI incentives. Furthermore, in order to assess the practical functioning of the control mechanism the content analysis method was employed to analyse the
functions carried out by the relevant responsible authorities or the relevant regulations. Having considered the relevant regulations, the aspects of their practical enforcement and operation the authors of the present study concluded on the impact of the ITI incentives upon the transparency of the taxation system and public finances. A summary evaluation model is graphically shown in the Figure 1 that distinguishes the key functions of public finances. The ITI incentives impact assessment model allows conclusions regarding the overall impact of the ITI incentive upon public finance, integrating the entire process ranging from the collection of revenues and their expedient use to the control over the revenue collection and the use creating preconditions for the legitimacy of the taxation system. The model goes beyond creating the preconditions for the conclusions on the overall impact on public finance, as it identifies the areas to be improved.

4. Evaluation of Impact of ITI Incentives in Lithuania Upon Public Finance

The Law on Income Tax of Individuals of the Republic of Lithuania (hereinafter – LITI) is an object of regular changes planned by each new Governments of the country. Despite the numerous and ongoing improvements in the area of tax incentives, the Lithuanian LITI still provides for quite a number of different incentives in the form of zero taxation rate. In summary, the incentives may be divided in three groups (Table 1).

<table>
<thead>
<tr>
<th>Tax-exempt income</th>
<th>Subject to the terms and conditions defined in the Law:</th>
</tr>
</thead>
<tbody>
<tr>
<td>allowances and compensations, insurance benefits, pension benefits and pension annuities, interest, income from agricultural activities; charity, gifts, inherited income, income from the sale or other transfer of assets not assigned to individual activities, income from the sale of financial instruments, amounts awarded by courts, scholarships and benefits, premiums, bonuses, lottery wins, donations and gifts received in the course of a political campaign, funds for the maintenance of the clergy, attendants at religious ceremonies and support staff, income received by mariners’ on a sea trip, income received from the European Communities related to employment relations, late interest, income received as a compensation for provided services according to a service receipt.</td>
<td></td>
</tr>
<tr>
<td>Amount of tax-free income</td>
<td>Subject to the terms and conditions defined in the Law:</td>
</tr>
<tr>
<td>additional amount of tax-free income</td>
<td>contributions to pension funds, life insurance premiums; amounts paid for vocational training and/or studies</td>
</tr>
<tr>
<td>Source: composed by the authors on the basis of the Law on Income Tax of Individuals of the Republic of Lithuania, 2002</td>
<td></td>
</tr>
</tbody>
</table>

The ITI incentives existing in Lithuania are particularly numerous, statistical data are readily available, therefore the model for assessing the impact of the ITI incentives upon public finance is applied to one of the incentive groups indicated above, i.e. the expenses incurred by an individual deducted from the income treated for tax purposes. This group of incentives was selected for the purpose of the study also having considered that losses in the budget incurred due to the compensation of the deducted expenses are one of the largest, which requires this type of incentives to be specifically prioritised as a study object. A model for the evaluation of impact of ITI incentives upon public finance is applied to three incentives effective at the time of the study while analysing the incentives in parallel – the incentives in respect of the contributions to pension funds, life insurance premiums, fees for vocational training and/or studies. The data used for the purpose of the study refer to the period from 2005 to 2016.

1. Revenue collection. The estimations of the loss in the Lithuanian state budget due to the applied incentives are presented in Table 2.
The loss in the revenue resulting from the application of the ITI incentive for life insurance contributions should be considered material, because the percentage of the ITI revenue loss in the period concerned increased from 4.43 per cent to 17.74 per cent, which accounts for more than 1 per cent of the tax revenues of the State. In the period from 2005–2016 the rate of tax revenue loss due to the incentive to the total revenue of the budget was decreasing, and its fluctuation ranged from 6.03 per cent to 18.5 per cent. The considerable significance of the incentive is further evidenced by the fact that the amount of revenue loss is nearly twice as large as the average ITI incentives (having adjusted for a significant incentive related to the tax-exempt income, the average is exceeded by four times) (see Table 2).

The revenue loss due to the ITI incentives related to studies and/or vocational training fee should be considered insignificant. The period being analysed also recorded an increase in the rate of benefiting from the incentive, and lately the budget revenue foregone for this specific reason accounts for about 3 per cent of the total income tax of individuals. The share of the budget revenue loss due to this particular incentive accounted for 1.03 per cent (2016) and 9.85 per cent (2010) of the total revenue foregone. The tax revenue loss due to ITI incentives applied to the fees for studies and/or vocational training is below the relevant average even having eliminated the impact of the tax-exempt income. The loss caused by this incentive is lower than the median of the sample being analysed (both in overall terms and having eliminated the impact of the tax-exempt income, Table 2).

The budget revenue loss caused by the ITI incentive for contributions to pension accumulation funds should be considered insignificant; in 2016 the loss concerned accounted for as little as 1.36 per cent, and on average for 0.5 per cent of the total ITI revenue. In relation to the total tax revenues of the State the ratio ranged from 0.02 per cent to 0.1 per cent, while the share of the total income foregone accounted for 0.5 per cent. Besides, a comparison of the revenue loss due to the incentive on pension contributions to pension accumulation funds with other incentives of the ITI even having adjusted the impact of the tax-exempt income, showed that the loss was below 1/3 of the average (see Table 2).

2a. Use of the tax expenditure: formulation of targets. The explanatory note to the draft LITI defines the following objectives related to the establishment of the incentives analysed for the purpose of the present paper (Ministry of Finance of the Republic of Lithuania, 2002): ‘The provisions of the law being submitted shall create the following preconditions: <...> to establish pension funds <...> <...> deduct limited amount expenses for education thus creating more advantageous conditions for pursuing higher education’. The explanatory note remains silent on the incentives for life insurance premiums, however the overall goal is reflected in the supporting documents of the draft law, and is defined as encouragement of residents to accumulate funds in pension funds and acquire life insurance coverage (Committee on Budget and Finance of the Seimas of the Republic of Lithuania, 2002). The results of the analysis of the objective carried out with reference to SMART criteria are summarised in Table 3.

Table 2. Statistical characteristics of the ITI loss (EUR, 2004–2016)

<table>
<thead>
<tr>
<th>Statistical characteristics of the ITI loss</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>29,750,079</td>
<td>23,993,514</td>
<td>26,362,499</td>
</tr>
<tr>
<td>Average adjusted for the loss due to tax-exempt amount of income</td>
<td>14,187,576</td>
<td>15,069,603</td>
<td>16,030,881</td>
</tr>
<tr>
<td>Median</td>
<td>14,481,001</td>
<td>5,410,780</td>
<td>5,112,712</td>
</tr>
<tr>
<td>The average adjusted for the loss due to tax-exempt amount of income</td>
<td>13,964,487</td>
<td>2,800,000</td>
<td>4,100,000</td>
</tr>
</tbody>
</table>

Source: composed by the authors on the basis of the data provided by the Ministry of Finance and the STI

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Table 3. The consistency of the ITI incentives with the requirements of reasonable objective

<table>
<thead>
<tr>
<th>Incentive Objective</th>
<th>ITI incentive for life insurance premiums</th>
<th>ITI incentive for studies and vocational training</th>
<th>ITI incentive for pension contributions to pension accumulation funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>specific</td>
<td>not compliant</td>
<td>not compliant</td>
<td>not compliant</td>
</tr>
<tr>
<td>measurable</td>
<td>not compliant</td>
<td>not compliant</td>
<td>not compliant</td>
</tr>
<tr>
<td>achievable</td>
<td>compliant</td>
<td>compliant</td>
<td>compliant</td>
</tr>
<tr>
<td>realistic</td>
<td>compliant</td>
<td>not compliant</td>
<td>compliant</td>
</tr>
<tr>
<td>timebound</td>
<td>not compliant</td>
<td>not compliant</td>
<td>not compliant</td>
</tr>
<tr>
<td>Conclusions:</td>
<td>Objective defined inadequately</td>
<td>Objective defined inadequately</td>
<td>Objective defined inadequately</td>
</tr>
</tbody>
</table>

Source: composed by the authors

For the purpose of assessing the specificity of the objectives pursued by the incentives being examined, it should be noted that the objectives are defined in rather abstract terms; despite targeting certain issues relevant for the society (low living standards of pensioners, ageing of the society, inadequate functioning of the social insurance system), the regulations supporting the LITI the incentives are not clearly linked to the problems. In the absence a clear link between the incentives and the issues in the society, the laws and other legal acts do not provide any clear-cut criteria facilitating an assessment whether or not the incentives attaining their objective (on the basis of legal acts measurement criteria may be only presumed). On the other hand it may be concluded that all the three incentives should be assessed positively from the view point of the possibility to achieve the objective – an incentive to save for pension in the form of life insurance, or ensure some security in case of an accident, an encouragement to seek higher education, creation of advantageous conditions for that, and addressing the problems in the pension system – are the tasks assigned to the competence of the State, and as such should be assessed as realistic. The enforcement of all the incentives is not defined in terms of the times of their application.

From the viewpoint of their meaning the objectives should be assessed in terms of the take-up of the incentive. The obtained evaluation results are presented in Table 4. The data presented in the Table clearly demonstrate that the take-up rate of the incentive for life insurance contributions exceeded 70 per cent throughout the entire period being considered, therefore it may be concluded that the incentive is very important for residents and is being extensively used. During the recent years the rates of use of the ITI incentive with respect to studies and vocational training decreased and was recorded at 52.26 per cent (2016). Only about half of those entitled to this incentive actually use it, therefore it may be concluded that the incentive is not particularly important for the society. Although the rate of take-up of the incentive related to pension contributions was decreasing (e.g. from 91.46 per cent in 2007 to 77.79 per cent in 2016), the usage frequency is still exceeding the threshold of 70 per cent (see Table 4). This allows a conclusion that this type of tax incentive is highly relevant for the population.

Table 4. Take up of incentives of the income tax of individuals in 2004–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Re: ITI refunds for pension contributions</th>
<th>Re: ITI refunds for life insurance premiums</th>
<th>Re: ITI refunds for studies and vocational training</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>76.88</td>
<td>74.43</td>
<td>74.91</td>
</tr>
<tr>
<td>2006</td>
<td>83.73</td>
<td>75.66</td>
<td>78.45</td>
</tr>
<tr>
<td>2007</td>
<td>91.46</td>
<td>76.28</td>
<td>82.34</td>
</tr>
<tr>
<td>2008</td>
<td>78.44</td>
<td>76.77</td>
<td>84.86</td>
</tr>
<tr>
<td>2009</td>
<td>85.88</td>
<td>75.23</td>
<td>75.68</td>
</tr>
<tr>
<td>2010</td>
<td>82.53</td>
<td>75.28</td>
<td>72.70</td>
</tr>
<tr>
<td>2011</td>
<td>82.15</td>
<td>77.15</td>
<td>73.42</td>
</tr>
<tr>
<td>2012</td>
<td>83.41</td>
<td>78.60</td>
<td>73.18</td>
</tr>
<tr>
<td>2013</td>
<td>81.44</td>
<td>77.27</td>
<td>69.34</td>
</tr>
</tbody>
</table>
The analysis of the objective based on the SMART criteria showed that the procedure for the implementation of the ITI incentive insufficient attention was dedicated to the definition of the objectives pursued by introducing the incentives in the ITI structure. The objectives of the incentives fail to comply with the requirements set forth for a reasonable objective, thus it may be concluded that in respect of all the three ITI incentives the objective is not properly defined (Table 3).

### 2b. Use of the tax expenditure: efficiency of the measure

The evaluation of the efficiency of an incentive is conducted on the basis of the variables presented in Table 5. For the purpose of the study the incentives applied with respect to life insurance premiums are related to the change in the poverty level, the incentives for studies are linked to the number of students trained at universities, and the incentive applied to the voluntary pension accumulation is linked to the number of persons saving in pension funds and employed residents.

**Table 5. Variables used for the regression**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life insurance incentives as part of revenue foregone</td>
<td>Risk of poverty threshold</td>
</tr>
<tr>
<td>Studies incentives as part of the loss in the ITI</td>
<td>Number of specialists trained at universities</td>
</tr>
<tr>
<td>Incentives with respect to voluntary pension accumulation as revenue foregone</td>
<td>Ratio of residents saving in pension funds to the total employed persons</td>
</tr>
</tbody>
</table>

*Source: composed by the authors*

The results of correlation-regression analysis (Table 6) showed the existence of a strong statistically significant direct relation between the part of the loss in the State budget due to the incentive on life insurance and the risk of poverty threshold. The results of the study carried out led to a conclusion on the existence of a strong, direct and statistically significant link between the loss in the ITI revenue due to the incentives for studies and the dependent variable – the number of specialists trained at universities.

**Table 6. Efficiency of the ITI incentives application – results of a regression analysis**

<table>
<thead>
<tr>
<th>Incentive for life insurance contributions and the risk of poverty threshold</th>
<th>Incentive for studies and the number of trained specialists</th>
<th>Incentive for pension accumulation contributions and the relative number of participants in pension funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R$</td>
<td>0.86</td>
<td>$R$</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.75</td>
<td>$R^2$</td>
</tr>
<tr>
<td>$F$</td>
<td>0.000244</td>
<td>$F$</td>
</tr>
<tr>
<td>Const</td>
<td>74.27</td>
<td>1.1186</td>
</tr>
<tr>
<td>$X_1$</td>
<td>0.000008</td>
<td>5.5493</td>
</tr>
</tbody>
</table>

*Source: composed by the authors*

The results of the analysis have shown that the relation between the budget loss because of the ITI incentives for pension contributions and the relative number of persons saving in pension funds and the total number of employees is statistically significant, positive and strong (Table 6).

The summarised results of the analysis of the impact of the first and second ITI incentives upon public finance
obtained on the basis of the estimations (Table 6) and the logical scheme of the proposed evaluation model shown in Figure 1 are shown in Table 7.

**Table 7** The impact of the ITI incentives upon the implementation of the public finance formation and usage functions

<table>
<thead>
<tr>
<th>ITI incentive for life insurance premiums</th>
<th>Reasonable objective</th>
<th>Link between implementation of the incentive and problem solution</th>
<th>Conclusions</th>
<th>Budget loss</th>
<th>Summarized conclusion of the first two parts Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>adequately defined</td>
<td>strong</td>
<td>positive / negative</td>
<td>significant</td>
<td>negative</td>
</tr>
<tr>
<td>ITI incentive for studies and vocational training</td>
<td>inadequately defined</td>
<td>strong</td>
<td>positive / negative</td>
<td>insignificant</td>
<td>positive</td>
</tr>
<tr>
<td>ITI incentive for pension contributions to pension accumulation funds</td>
<td>inadequately defined</td>
<td>strong</td>
<td>positive / negative</td>
<td>insignificant</td>
<td>positive</td>
</tr>
</tbody>
</table>

*Source*: composed by the authors

In the case of the ITI incentive with respect of the life insurance premiums, where the objective of the incentive has not been defined properly, there is a strong relation between the application of the incentive and solution of the problem, and the budget revenue loss is significant, the impact upon public finance should be assessed negatively. The incentives with respect to studies and whose objective was defined inadequately, the link between the variables demonstrating the efficiency of the incentive is strong, and the budget loss should be assessed as insignificant, a generalisation of the first two functions of public finance the impact upon public finance should be assessed as positive. In the case of the ITI incentive for pension contributions, where the objective was not adequately defined, the link between the application of the incentive and the problem solution is strong and the budget loss is insignificant, the impact upon the formation and the use function of public finance is positive.

3a. Collection and use control: existence of legal regulation. Neither the LITI, nor any supporting clearly defines the control of the ITI incentives. The only control means is the annual income tax returns – a mandatory precondition for taking advantage of the incentives referred to in Article 21 of the LITI (Ministry of Finance, 2002). Still, tax returns are not sufficient to control the volumes of revenues foregone, and especially to ensure the control of the use of tax expenditure. Any State should have a regulation framework for reviewing the functioning of the incentives; such regulation would facilitate a conclusion whether the ITI incentive is producing the designed impact for resolving certain problem existing in the society.

3b. Collection and use control: practical implementation. It should be noted that Lithuania has not designed or put in place any legal regulation for collecting and use of incentives, therefore the practical implementation of such regulation is not possible either. In Lithuania, reviewing of the ITI incentives is to a larger extent triggered by political initiatives (e.g. Ministry of Finance of the RL (2008)) and is particularly related to the advent of new governing parties. Therefore, it would not be absolutely correct to say that the control over the collection of revenue or use of tax expenditure does not exist. However, such evaluations are very rare, most often related to deliberation of some draft laws, for instance the conclusions of the Committee of Budget and Finance (2016) of the Seimas of the Republic of Lithuania refer a quantification of the ITI incentive with respect to life insurance premiums, however, limited to simply referring to fiscal impact.

A conclusion may be drawn up that Lithuania has not put in place a legal regulation establishing control over the use of tax loss and tax expenditure, and in practice such control attempts are very rare and is related to political initiatives. For that reason, and on the basis of the results of the study covered by the present paper and the evaluation model logics as defined in Fig. 1, a conclusion may be drawn up that the impact of the incentives upon public finance is negative.
Conclusions

The analysis of the theoretical methods for the evaluation of incentives showed that in terms of demonstrating the impact upon public finance the optimal methodology is the one based on revenue gain estimation; still, because of the inadequacies of its practical adaptability the method does not produce a comprehensive evaluation of the impact of the ITI incentives upon public finance.

Having comprehensively analysed the qualities of practical or theoretical models for assessing incentives, the authors of the present study proposed an evaluation of the impact upon public finance through an analysis of the effect of ITI incentives upon the implementation of functions of public finance. First, the impact upon collection of revenue is assessed by analysing the materiality of the revenue loss due to the application of the incentive; Second, the tax expenditure use is evaluated through the aspects of the existence of reasonable objectives which is demonstrated by means of SMART criteria, and the effectiveness disclosed by regressive analysis. Third, the impact upon the collection and use control is assessed on the basis of the quality content analysis with a view to identifying whether the relevant legal acts provide for mechanisms of for estimation of revenue loss and control over the use of tax expenditure, and whether such mechanisms function in practice.

By applying the proposed model to the tax incentives referred to in Article 21 of the LITI of the RL the study concluded that the ITI incentives for life insurance premiums, fees for studies or vocational training, or pension contributions to pension accumulation funds in general produce negative effect upon public finance. The use of the model not only allows to arrive to the conclusion, but also shows the areas to be improved with respect to each incentive.

The ITI incentive for life insurance contributions lead to significant budget revenue loss which has been lately increasing; despite a strong correlation between the loss in the budget revenue and the level of poverty, and important conclusion is that in the context of the incentive the objective of its application was not clearly defined, and it remains unclear what and to what extent it is sought to be achieved. As no mechanism for collection of revenue foregone or monitoring of the use of tax expenditure, the functioning of the incentive is not controlled in any way.

The ITI incentive for the fees for studies does not have any significant fiscal impact upon the budget, the study showed a link and dependence between the number of specialists trained by universities and the revenue loss due to the application of the incentive. However, the objective pursued by introducing the incentive in the tax structure is overly excessive, its relevance for the society is questionable (which is also demonstrated by a relatively low take-up level); furthermore, the transparency of the tax structure is compromised because of the absence of a procedure for monitoring the revenue lost because of the incentive and its effectiveness.

The ITI incentive for contributions to pension funds are insignificant, and the high take-up level provides an evidence that the incentive is highly relevant. The relation between the budget loss because of the ITI incentives for pension contributions and the relative number of persons saving in pension funds is an evidence of the theoretical suitability of the incentive as a means to promote saving in private funds. To achieve a positive impact upon public finance the tax structure must provide for a definition of the incentive’s objective and design a mechanism for control of lost income and tax expenditure.

Having regard to the results of evaluation of the impact of the incentives upon public finance, the authors of the present paper suggest that the ITI incentives for life insurance premiums, fees for studies and/or vocational training, and contributions to pension funds be reviewed, while particularly highlighting on the expediency of such incentives, also providing for a mechanism for collecting revenues and monitoring of the use of tax expenditures; such mechanism must ensure a possibility of a periodic assessment an review of the efficiency and necessity of such incentives.
References


Ministry of Finance of the Republic of Lithuania. 2008. Gyventojų pajamų mokesčio įstatymo 2, 3, 5, 6, 7, 8, 9, 10, 12, 131, 16, 17, 18, 19, 20, 21, 22, 23, 27, 29, 30 straipsnių pakeitimo ir papildymo įrastymo 18(1) straipsniu įstatymo projektu aiškinamasis raštas [The explanatory note on the Law amending Articles 2, 3, 5, 6, 7, 8, 9, 10, 12, 131, 16, 17, 18, 19, 20, 21, 22, 23, 27, 29, 30 and supplementing Article 18(1) of the Law on Income Tax of Individuals of the Republic of Lithuania]. Available: https://e-seimas.lrs.lt/portal/legalAct/lt/TAK/TAIS.333070?jfwid=89x1tjo7u


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ECONOMIC POLICY FOR SUSTAINABLE REGIONAL DEVELOPMENT: A CASE STUDY OF SLOVAK REPUBLIC

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Abstract. Authors of the article focus on the current issues regarding foreign direct investments and their impact on the economic development of Slovak regions. The aim of this article is to draft overview of stage of current development within the economic and investment policy of the Government of the Slovak Republic to meet the needs of regional development. The introduction part presents the theoretical basis described by local and foreign authors reflecting the level of foreign direct investments use including their influence on the economic progress in particular regions emphasised on the development and promotion of small and medium-sized enterprises. Analysis of the government investment policy is carried out in the specification part underlining the significant role of the Slovak Investment and Trade Development Agency. Stated knowledge provide the theoretical framework for the experimental part of the article. Experimental part of the article by the means of numerical statistics and comparison method analyses and evaluates the level of investment support provided to small and medium-sized regional enterprises through projects sustained by the Slovak Investment and Trade Development Agency within the years 2012 and 2017. Successfully concluded projects concerning the foreign investment aid for the particular Slovak regions are analysed in experimental part, which also quantifies investments based on their contribution to the growth in jobs and provides an overview of the cooperating activities among regions of Slovakia from 2007 to 2017. Contributional outcome of the experimental part of the article is presentation of governmental standards, which are required from regions in order to obtain investment aid while job creation is taken into account. Issued conclusions may inspire further economic operators and authorities responsible in area of social and economic regional development in Slovak republic, regions of other Member States and third countries of Europe as well.

Keywords: economic policy; small and medium-sized enterprises; state; science and technology; investment, project


JEL Classifications: M31

1. Introduction

Sustainable development of a country is driven by many factors (e.g. Eddelani, O.; El Idrissi, N. E.; Monni, S. (2019); Zeibote, Z.; Volkova, T.; Todorov, K. (2019); Batkovskiy, A.M., Leonov, A.V., Pronin, A.Yu., Semenova, E.G., Fomina, A.V., Balashov, V.M. (2019); Petrenko, Y., Vechkinzova, E., Antonov, V. (2019)), among which investments play one of the most important roles. Several definitions of investment can be found in professional and scientific literature. Among the most commonly used are the definitions provided by the United Nations Organization or, for example, by the U.S. Department of Commerce. Most authors agree on the definition, that investment regards as a form of long-term international capital movement. For example, Lipková (2002) describes this definition. If we were to deal with when foreign investment became more important, we could say it was only in the last decades of the 20th century. The authors’ particular theories focus on the reasons for companies investing abroad. These reasons can be labeled as 5 W. Who is an investor? What kind of investment
is it? Why does an enterprise invest abroad? Where will the investment be realized? When does the company decide to invest abroad? How does the company enter the foreign market? This view can be found in the publications by Lipková (2002) and Vaysilova (2016). The issue of foreign investment is also related to the concept of foreign trade or foreign trade policy. Baláž (2001) argues that the philosophy lies in the fact that the modern economic policy in the whole of its complex is focused mainly on the support of structural changes in favor of the most prosperous professions and types of production, high technologies and services. From the available knowledge, we can assume that foreign trade has recently dominated the factors affecting economic growth. Tourism as a specific impact affecting economic growth of the Slovak Republic and other countries (Panfiluk, E.; Szymańska, E. (2017); Filip, S. Filipová, L Stehlíková, B. (2019)). Associated problem with solved issue economic effects of dynamics in migration processes solve Melnyk, T. and Losheniuk, O. (2018), Lialina, A. (2019).

2. The current state

2.1 Effects and conditions of foreign investment

In connection with the effects of foreign direct investment, it is possible to meet the views of many authors. What benefits do proponents expect a country to reap from foreign direct investment inflows? Because it embodies technology and know-how as well as foreign capital, foreign direct investment can benefit host economies through knowledge spillovers as well as linkages between foreign and domestic firms. Potential positive effects include productivity gains, technology transfer, exposure of domestic firms to new processes, managerial skills and know-how, enhancements to employee training, development of international production networks, and broader access to markets (Tvaronavičienė, M., Černevičiūtė, J. 2015). Alfaro, L. and Johnson, M.S. (2013) present that when new products or processes are introduced to the domestic market by foreign firms, domestic firms may benefit from the accelerated diffusion of new technology. In some cases, this might occur simply by domestic firms observing foreign firms, and in other cases through labor turnover as domestic employees hired by foreign firms move to domestic firms. These benefits, together with direct capital financing, suggest an important role for foreign direct investment in modernizing national economies and promoting economic development. Fabus, M. (2014) argue that acquisition of new foreign direct investment and maintaining existing foreign investors is becoming an important part of a policy aimed at the competitiveness of national economy increasing. When it comes to getting key foreign investors, a country able to attract more investors will win a particularly strong inter-state competition and achieve intense multiplier effect of foreign direct investment for the whole economy. Dilek T., Aytaç G. and Mukhtar S. Abubakar (2015) emphasize that Foreign Direct Investment has been affecting global business affairs for decades. A country, whether developed or developing, necessitates more foreign direct investment entry than other countries because the foreign direct investment inflow may bring certain advantages such as capital accumulation, knowledge, know-how transfer, and obtainment of updated technology. Thus, the entry of foreign direct investment into a host country is expected to reveal positive aftermaths. This also confirmed Kais, S. (2018). His error correction model confirms the existence of a double causal relationship between foreign direct investment and GDP growth, and between financial development and foreign direct investment and between GDP growth and financial development. The effects of foreign direct investment in Slovakia were evaluated by Fabus, M. (2015). The author writes, that foreign direct investment was an important factor which ensured to Slovakia greater competitiveness, as it has introduced new technologies, created jobs, brought know-how as well as managerial and entrepreneurial culture.

In order for foreign direct investment to bring the expected effect to the beneficiary’s country, certain conditions must be met (Shuyan, L., Fabuš, M. (2019)). The results of the authors Borensztein, E., De Gregorio, J. and Lee, J.-W. (1998) suggest that foreign direct investment is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment. However, the higher productivity of foreign direct investment holds only when the host country has a minimum threshold stock of human capital. Thus, foreign direct investment contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host economy. The importance of economic freedom for the effects of foreign direct investment is emphasized by many authors. For example, W.N.W.Azman-Saini, Ahmad
Zubaidi Baharumshah and Siong Hook Law (2010) reveal that foreign direct investment by itself has no direct (positive) effect on output growth. Instead, the effect of foreign direct investment is contingent on the level of economic freedom in the host countries. This means the countries promote greater freedom of economic activities gain significantly from the presence of multinational corporations. Their results are supported by Ghazalian, P.L (2019), which emphasizes positive effects of economic freedom on foreign direct investment inflows. Author reveals that economic freedom sub-components have varying impacts on foreign direct investment inflows, where rule of law, market openness, and less-restrictive regulatory environment stand out as the major FDI-promoting institutional factors. Sajid Anwar and Lan Phi Nguyen (2010) on the example of Vietnam’s economy suggest that the impact of foreign direct investment on economic growth in Vietnam will be larger if more resources are invested in education and training, financial market development and in reducing the technology gap between the foreign and local firms. Bénassy-Quéré, A., Coupet, M., Mayer, T. (2007) evaluate whether the similarity of institutions between the host and the origin country raises bilateral foreign direct investment. Authors find that a wide range of institutions, including bureaucracy, corruption, but also information, banking sector and legal institutions, do matter for inward foreign direct investment independently of GDP per capita. Interestingly, weak capital concentration and strong employment protection tend to reduce inward foreign direct investment. Institutional proximity between the origin and the host country also matters, but we find little impact of institutions in the origin country. These results are encouraging in the sense that efforts towards raising the quality of institutions and making them converge towards those of source countries may help developing countries to receive more foreign direct investment, independently of the indirect impact of higher GDP per capita. Corruption as a specific problem and its importance within macroeconomy in realtion with foreign direct investment analyse Siller, H. and Cibák, L (2016).

2.2 Slovakia’s government policy on investment

If any government wants the regions to grow economically equally, they need to create adequate conditions for them (Mayorova, A.N.; Panasenko, S.V.; Nikishin, A.F.; Ivanov, G.G.; Mayorova, E.A. (2018); Pavolová, H.; Bakalár, T.; Emhemed, E.M.A, Hajduová, Z.; Paťo, M. (2019). First of all, it is about legislative action and the implementation of practical arrangement. Slovak government in the document The government program for 2016 - 2020 approved the economic policy priorities that followed The government program for yeras 2012 - 2016. The government has set itself the goal of pursuing an economic policy consisting of sectoral and cross-cutting policies as the main instrument to support the development of the real economy. The priority is to ensure coherence mechanisms so that the various components of economic policy correspond, interconnect and create the greatest possible synergy. The basic roles of the various components of economic policy are to shape the growth potential of the national economy. (Government Program Statement for 2012 - 2016 and 2016 - 2020)

If we focus on the area of investment, we must mention the government’s priority in this area. In the field of activation of investment activity it is stated, that the government will create conditions for a favorable investment climate for domestic and foreign investors. The Law on Investment Aid propose reducing the minimum investment amount and at the same time assess the risk of harming domestic producers. In an inflow of foreign investments, economic policy will focus primarily on supporting established investors in expanding their activities in the Slovak Republic through post-investment care and their stronger entry into industrial research and development in Slovakia. (Government Program Statement for 2012 - 2016 and 2016 - 2020)

If we compare these government priorities with the priorities set by it in the current programming period, it can be said that they are continuously linked to the previous period and shifted to the future. In particular, we can state that the government determines the basic contours of the prospective direction of the economy in the medium and long term by adopting the strategy economic policy. (Government Program Statement for 2016 - 2020, The law on regional investment aid)

If we look at this program in more detail, we see that the government is also reacting to the economic developments in the world. It is necessary in the SR to fully develop the principles and culture of the new level of production relations called INDUSTRY 4.0. The already agreed Strategy for Research and Innovation for
Smart Specialization is already the starting point. (Government Program Statement for 2016 - 2020, Government regulation of investment aid)

At the same time, the government’s program lists specific practical implementers of this part of the program. SARIO (Slovak Investment and Trade Development Agency), as an organization of the Ministry of Economy of the Slovak Republic, according to the economic policy strategy, flexibly seeks investment opportunities for domestic and foreign entrepreneurs, carries out appropriate investment care in order to dynamize the export possibilities of the Slovak economy, creating conditions for employment growth.

3. Experimental part

3.1 Investment support in regions through investment projects

One of the leading organizations involved in the acquisition of foreign investments and the support of export activities of Slovak companies is the state agency SARIO under the authority of the Ministry of Economy of the Slovak Republic.

The agency provides a broad portfolio of services to home and foreign investors. The Agency’s activities to support the inflow of investment and expansion projects of established companies stimulate not only the quantitative but also the qualitative growth of the economy. The surge in value-added investments using the latest technology is currently one of the positive trends reflecting the Agency’s performance. (Government Program Statement for 2012 – 2016, Annual report SARIO 2017)

On the other side, increasing the competitiveness of Slovak entities and supporting their transformation into efficient and successful entities in a globalized world market is supported by SARIO’s pro-export activities and platforms that shift the focus of export from goods towards exports of services or investments. The Slovak Investment and Trade Development Agency can judge the year 2017 as extremely successful. In terms of number of projects and creation of new jobs, it is the best results for the last 5 years. An overview of the number of completed projects, including the amount of investment and the impact on jobs, is shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Development of the numbers of completed investment projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of completed projects</td>
</tr>
<tr>
<td>impact of completed projects</td>
</tr>
<tr>
<td>the amount of the investment</td>
</tr>
<tr>
<td>number of new jobs</td>
</tr>
</tbody>
</table>

Source: Annual report SARIO 2017

It is clear from Table 1 that during the year 2017 were 33 investment projects closed, the realization of which has the potential to create almost 9,000 new direct jobs and the total investment should reach 492 million €. In 17 cases it was the establishment of new plants, in 16 cases the expansion projects of established companies. The arrival of higher value-added investments such as R&D centers (1 completed project), service centers (6 completed projects) and 3 industrial production projects whose implementation also includes research and development activities can be positively evaluated. Compared to previous years, the number of such projects is increasing both in absolute terms and in relative terms.

Based on the data in Table 2 we can state that the most attractive for investors is west of Slovakia. The reasons are clear. High-skilled workforce, highway availability and high-quality infrastructure. If we want to make the other areas for investors more attractive, we have to create conditions similar to those in Western Slovakia and in other regions.
Table 2. Distribution of implemented projects by regions in year 2017

<table>
<thead>
<tr>
<th>Region</th>
<th>Bratislava region</th>
<th>Trnava region</th>
<th>Trencin region</th>
<th>Nitra region</th>
<th>Banska Bystrica region</th>
<th>Zilina region</th>
<th>Presov region</th>
<th>Kosice region</th>
</tr>
</thead>
</table>
| number of completed projects  
(of which the share of the total number) | 2 (6%) | 4 (12%) | 6 (18%) | 8 (24%) | 6 (18%) | 2 (6%) | 3 (9%) | 2 (6%) |
| west of the SR | middle of the SR | east of the SR |
| value of investments in €  
(million (of which share in total)) | 0.8 (0.1%) | 117.5 (24%) | 125.2 (25%) | 67.3 (14%) | 37.9 (8%) | 37.5 (8%) | 85.3 (17%) | 20.5 (4%) |
| west of the SR | middle of the SR | east of the SR |
| number of new jobs  
(of which share of the total number) | 140 (2%) | 4,039 (45%) | 1,217 (14%) | 1,460 (16%) | 750 (8%) | 550 (6%) | 680 (8%) | 120 (1%) |
| west of the SR | middle of the SR | east of the SR |

Source: Annual report SARIO 2017

Looking at the table of closed investment projects (Table 3), it is clear that cooperation with a wide range of investment countries is evident. Significant business cooperation with Germany confirms 8 closed projects. The five projects are followed by the USA and four Japan. The most significant projects for the period include the Amazon project. The American company Amazon has opened its largest center of reverse logistics in Slovakia. The world’s largest e-shop was created in July 1994, founded by Jeff Bezos. His logistics network has expanded to another point in Europe - Slovakia. The new logistics center is located in the Mountpark Sered area on an area of over 60,000 square meters. Amazon has employed around a thousand people at Sered new logistics center. Amazon’s investment is not directed either to industrial production or to the automotive industry, contributing to a better distribution of investment in Slovakia. Important is its value added Amazon plans to deploy the latest technology to the reversing center. The company could be one of the first to benefit from a statewide work-life support program over a certain distance. Amazon has not made any investment aid from the state budget. Support for the establishment of the industrial park was given only by city Sered.

The real attractiveness of the Slovak business environment can also be assessed by monitoring the number of projects under development. As of 31 December 2017, SARIO had registered and developed 76 investment projects, with a total volume of almost € 4.2 billion and with the potential to create more than 31 000 new jobs. Compared to the same period last year, this is an increase in all indicators. The 76 projects completed by SARIO are 10 large-scale projects (over € 100 million), which have a much larger potential for regional development. SARIO seeks to direct such investors primarily to the regions of Central and Eastern Slovakia. There are also 9 high added value projects - R&D centers, service centers and industrial production with research and development activities. 37 investment projects, for which investors are also considering the districts of eastern Slovakia, the sum of investments can reach up to € 2.56 billion. with the potential to create 16 580 new jobs. Finally, 37 investment projects, which, among other things, are considering localization in one of the least developed districts, these investments at a flat rate of € 1 billion. The euro has the potential to create some 11 813 new jobs.

Table 3. Successfully closed investment projects in 2017

<table>
<thead>
<tr>
<th>Company name</th>
<th>Country</th>
<th>Description of economic activity</th>
<th>Region of the Slovak Republic</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Slovensko</td>
<td>USA</td>
<td>Software Development Center</td>
<td>Banska Bystrica</td>
</tr>
<tr>
<td>Rochling</td>
<td>Germany</td>
<td>Production of autocomponents</td>
<td>Kocovce</td>
</tr>
<tr>
<td>Versaco</td>
<td>Poland</td>
<td>Production of covers for wheels</td>
<td>Hnusta</td>
</tr>
<tr>
<td>Hyca</td>
<td>SR</td>
<td>Production of trailers</td>
<td>Hnusta</td>
</tr>
</tbody>
</table>
Table 4 shows the development of the number of semifinished investment projects. How the breakdown of projects by sectors is indicated by the priority and direction of the development of our industry. He clearly leads the production of components for the automotive industry. There are 27 projects under development, which is 36% of the total project volume. Following is the engineering production with 14 projects. Interesting centers of service, including R&D and IT centers with 6 projects. The electrical industry is also represented by 6 projects. It follows food with 5 and healthcare with 4 projects. The woodworking has 3. The other 11 projects are included in the area other. They include building materials, the glass industry, rubber and plastics. Investors from Germany, the USA, Slovakia, Italy, Switzerland, Belgium, South Korea, Austria, the United Kingdom and Japan show the greatest interest.

What is it difficult and strenuous to convince an investor to invest in our country, we see the proportion of projects under way and realized projects. We can compare 76 completed projects by the end of 2017 and 33 closed projects. We can also evaluate the result achieved by the end of September 2018, when 18 investment projects were closed. The largest investment projects included SAM Automotive with an investment value of €50 million and 800 new jobs in the town of Velký Krtis, one of the least developed regions. Meanwhile, the second largest Mubea with an investment height of €51 million and 500 jobs will be realized in Kezmarok, which is also among the least developed districts. Both are implemented by German investors. (Report on SARIO’s activities and the fulfillment of the strategic objectives for I., II., III. Q 2018)
Table 4. Development of the numbers of semifinished investment projects

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of semifinished</td>
<td>50</td>
<td>44</td>
<td>60</td>
<td>66</td>
<td>76</td>
</tr>
<tr>
<td>projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>impact of semifinished</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>projects</td>
<td>the amount of the investment</td>
<td>€ 1,300 million</td>
<td>€ 1,740 million</td>
<td>€ 2,200 million</td>
<td>€ 1,800 million</td>
</tr>
<tr>
<td>number of new jobs</td>
<td>11,500</td>
<td>16,000</td>
<td>16,000</td>
<td>23,800</td>
<td>31,000</td>
</tr>
</tbody>
</table>

Source: Annual report SARIO 2017

Another means of encouraging investors to invest in Slovakia is foreign travel. During 2017, SARIO Investment Projects employees participated in 23 investment-focused foreign business trips. The primary purpose of investment foreign business routes was to highlight Slovakia as an attractive investment destination in the region of Central and Eastern Europe and to disseminate Good Idea Slovakia messages. This goal has been successful in fulfilling the Agency in 2017, indicating both an increase in public interest in content published on SARIO social networks and an increase in new registered projects and opportunities.

In 2017 the Agency SARIO participated in a relatively high number of investment events in the United Kingdom (5 events). Besides the possibility of presenting Slovakia and the possibility to capture the investment signals of companies considering relocations, this also represented an opportunity to understand and gain know-how as companies and their management in the UK are thinking about Brexit and their business. Several hundred high-profile representatives of the private as well as the public sphere participated cumulatively in the events, creating the basis for acquiring new contacts and identifying investment signals from foreign companies and further targeting potential investors or partners.

3.2 Foreign trade and internationalization of small and medium-sized enterprises

SARIO provides its free services to internationalize Slovak companies ready to export their products and services regardless of their location. Supporting activities towards fast-growing markets concentrated mainly in Southeast Asia (China, Vietnam), Near East (Iran, Oman) and Latin America (Cuba, Mexico) and in Belarus, Russian Federation and Kazakhstan. Emphasis was placed on these sectors - power engineering, mechanical engineering, production automation, agricultural technology, water technology.

Several events, including business missions to more developed countries, accompanying visits to Peter Pellegrini, Vice-President of the Government for Investments and Informatisation of the Slovak Republic, were prepared to support the export of services. Mission participants represented the IT and communication technology sectors (namely cybernetic and information security, data mining, big data, e-gov solutions). But also the health and pharmaceutical sectors and high-tech companies. With the Office of the Vice-President of the Government for Investment and Informatisation, the Agency has been involved in the organization of missions to Israel, Iran, Finland and Estonia, Oman, Vietnam, Mongolia and China.

In the year 2017, the employees of the Foreign Trade Department participated in 64 events - missions of Slovak businessmen abroad, missions and co-operation events of foreign entrepreneurs in Slovakia, organization of Slovak stalls at major international trade fairs. Organization of business missions enjoys high popularity between businessmen as well as state representatives. In 2017 they organized 15 missions abroad and accepted 10 foreign delegations in the Slovak Republic. Due to the high interest of entrepreneurs, there was a sophisticated system of judging and selecting entrepreneurs for individual missions.

SARIO ensures participation in the most important world events. On 19-23 June 2017 a business mission was held at EXPO 2017 in Astany under the auspices of the Ministry of Agriculture and Rural Development of the SR and the Ministry of Education, Science, Research and Sport of the Slovak Republic, organized by SARIO in cooperation with the Ministry of Economy of the Slovak Republic. On the grounds of the Slovak Pavilion, 29 participating companies offered space for their presentation and bilateral negotiations with the agreed partners. A total of 287 registered meetings (B2B) were held with 117 foreign companies.
At the same time, on a professional level, it provides business trips for top government officials. As an example, we can mention the following event. On 20-24 November 2017 accompanied by Andrey Kiska, President of the SR, also attended a 12-member Business and Academic Delegation on his official visit to Mexico. On Wednesday, November 22, 2017, the business forum ‘Innovative Economies of the 21st Century’ took place in Mexico City, during which SARIO signed a Memorandum of Understanding with ProMéxico. The Forum was attended by the President of the Slovak Republic, Minister of Economy MX, Chairman of COMCE, as well as representatives ProMexico, AMEXCID.

For more than 11 years, the flagship of B2B events to support the export performance of Slovak companies has been the Slovak Cooperative Exchange. It is the largest international event in Slovakia organized by SARIO since 2007. Throughout its history, the Slovak Cooperative Exchange has been able to combine business and production potential with 2,101 firms from 38 countries, 4,993 participants, 1,226 Slovak and 884 foreign companies. Since its inception have taken place 5,080 official pre-planned B2B negotiations.

The objective of the event is to provide participants with the unique opportunity to negotiate with relevant business partners on a single day and place, space and platform to present subcontracting offerings, tenders, free production capacities, joint venture requirements with foreign partners, and investment opportunities in selected sectors. The business program represents B2B negotiations according to predefined schedules. The accompanying program consists of a moderated professional conference, workshops, signature of memorands and international cooperation agreements. The overview of Slovak Cooperative Exchange activities since 2007 is shown in Table 5.

### Table 5. An overview of the events of the Slovak Contracts Exchange in the years 2007 to 2017

<table>
<thead>
<tr>
<th>Volume</th>
<th>Year</th>
<th>Place</th>
<th>Number of enterprises</th>
<th>Partner country / focus</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2007</td>
<td>Trencin (SK)</td>
<td>113</td>
<td>-</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>2</td>
<td>2008</td>
<td>Banska Bystrica (SK)</td>
<td>240</td>
<td>Czech Republic</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>3</td>
<td>2009</td>
<td>Presov (SK)</td>
<td>249</td>
<td>Russia</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>4</td>
<td>2010</td>
<td>Nitra (SK)</td>
<td>120</td>
<td>France</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>5</td>
<td>2011</td>
<td>Zilina (SK)</td>
<td>139</td>
<td>Serbia</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>6</td>
<td>2012</td>
<td>Nitra (SK)</td>
<td>86</td>
<td>Bulgaria</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>7</td>
<td>2013</td>
<td>Bratislava (SK)</td>
<td>261</td>
<td>Russia</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>8</td>
<td>2014</td>
<td>Bratislava (SK)</td>
<td>149</td>
<td>V4 countries, Austria</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>9</td>
<td>2015</td>
<td>Bratislava (SK)</td>
<td>205</td>
<td>China</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>10</td>
<td>2016</td>
<td>Bratislava (SK)</td>
<td>263</td>
<td>Automotive</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>11</td>
<td>2017</td>
<td>Nitra</td>
<td>84</td>
<td>Engineering industry</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>12</td>
<td>2017</td>
<td>Bratislava (SK)</td>
<td>123</td>
<td>Smart industry</td>
<td>Ministry of economy of the SR</td>
</tr>
<tr>
<td>13</td>
<td>2017</td>
<td>Kosice (SK)</td>
<td>281</td>
<td>Medley sectors</td>
<td>Ministry of economy of the SR</td>
</tr>
</tbody>
</table>

*Source: Annual report SARIO 2017*

### 3.3 Increasing the expertise of entrepreneurs and exporters in the field of investment and foreign trade

The SARIO Agency also contributes to the building of entrepreneurship expertise, primarily by organizing educational, professional and educational seminars on various topics. These cover either specific territories or foreign trade techniques, support the building of an entrepreneurial environment or otherwise reflect the interests of entrepreneurs. Seminars had several formats in 2017, in the first half of the year, the SARIO Proexport Academy cycle and the SARIO Business Breakfast cycle. In addition, the Agency organizes further ad hoc conferences and seminars, together with 23 participants with nearly 400 participants in 2017. It has continued to work actively with the Business Services Forum, which has been established and operates on the
American Chamber of Commerce platform and brings together 28 members with a strategic services division or an outsourcing service segment in the Slovak Republic. The essence of outsourcing is the displacement or separation of certain corporate activities from the enterprise and their securing to another firm - an external provider. The Investment Projects Department is engaged in a long-term presentation of legislative standards in the area of investment aid. In the first place, it is Law no. 57 of 2018 on regional investment aid. This Act regulates the provision of regional investment aid. What are the rights and obligations of the recipient of investment aid and the competence of the state administration bodies in providing investment aid and controlling its use. An important part of this law is which investment aid it provides and who is the recipient of this assistance. Furthermore, it is Government Regulation no. 195 of 2018 for the provision of investment aid, which entered into force on 1 July 2018. This Regulation provides information on the form of investment aid. It is very important to know the conditions for providing investment aid. What must be the minimum investment amount and the number of newly created jobs. SARIO spatially developed the categorization of the Slovakian districts based on the unemployment rate from which the investment aid is based. The categorization of the regions of Slovakia and the conditions for the provision of investment aid are shown in Figure 1 and Table 6.

![Figure 1. Categorization of Slovakian regions based on the unemployment rate](source)

*Source: Investment aid in Slovakia - information brochure SARIO 2018*

*Note: * in the region of Bratislava it is not possible to provide investment aid

<table>
<thead>
<tr>
<th>Category</th>
<th>A minimum share of new technology for investment</th>
<th>Minimum subvention amount</th>
<th>Minimum subvention amount</th>
<th>Minimum amount of subvention / the number of new jobs</th>
<th>Minimum subvention amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60 %</td>
<td>is not provided</td>
<td>is not provided</td>
<td>€ 6 million</td>
<td>€ 6 million</td>
</tr>
<tr>
<td>B</td>
<td>50 %</td>
<td>€ 30 million</td>
<td>€ 3 million</td>
<td>€ 3 million / 200</td>
<td>€ 3 million</td>
</tr>
<tr>
<td>C</td>
<td>40 %</td>
<td>€ 20 million</td>
<td>€ 1,5 million</td>
<td>€ 1,5 million / 100</td>
<td>€ 1,5 million</td>
</tr>
<tr>
<td>D</td>
<td>30 %</td>
<td>€ 1 million</td>
<td>€ 0,2 million</td>
<td>€ 0,2 million / 20</td>
<td>€ 0,2 million</td>
</tr>
</tbody>
</table>

*Source: Investment aid in Slovakia - information brochure SARIO 2018*
If the aid recipient is a small and medium-sized enterprise, the minimum investment amount and the number of newly created jobs are reduced to at least 1/2. The minimum amount of investment in the case of grant applications varies from one district to another by virtue of its membership of the priority area of the sectoral specialization. (Investment aid in Slovakia - information brochure SARIO 2018)

Conclusion

If we looked well at the categorization of the districts and the overview of the investment aid, we could draw a conclusion as to the development in Slovakia. At the beginning of its inception, foreign investments created the conditions for the establishment of a European assembly plant. If we move to the present, there is a significant shift. Investments from foreign and domestic investors with high added value are the basis. This trend has to be very reactive to the state by accelerating the completion of an adequate infrastructure, which will increase the interest in investing in Slovakia.

References

Act no. 57/2018 on regional investment aid


Annual report SARIO 2017


Government Program Statement for 2016 - 2020

Government Regulation no. 195/2018 on investment aid

Investment aid in Slovakia - information brochure SARIO 2018


Melnyk, T.; Oksana, L. 2018. Economic effects of dynamics in migration processes, MEST Journal (MESTE), 6(1): 68-78. https://doi.org/10.12709/mest.06.06.01.0


Report on SARIO’s activities and the fulfillment of the strategic objectives for I., II., III. Q 2018


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RESEARCH ON THE RELATION BETWEEN CONCEPTIONS OF THE STATE’S ECONOMIC AND FINANCIAL SECURITY: THEORETICAL ASPECT

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Abstract. The article analyses conceptions of both, the economic security and financial security of the state, in respect to a recent increase of attention given to assuring the state’s economic security while emphasizing mostly the financial factor. Therefore, a thorough analysis on the two conceptions, as well as, on their interrelation, based on scientific literature, revealed that state’s financial security and stability can reflect the economic security of the state only to some extent. The performed scientific practical research verified the hypothesis, which emerged during theoretical research, that financial security and stability cannot fully ensure the economic stability of the state.

Keywords: economic security, financial security, financial stability


JEL Classification: E60, F50, F52

1. Introduction

Given today’s market circumstances when geopolitical environment of some countries is radically changing, the subjective attitude of citizens towards the state’s economic security and its assurance is changing. A number of scientific researches performed on this matter highlight one of the most important aspects – the economic security, whereas other aspects, such as social, political, public security or ecologic security, are also researched while analyzing the state’s security from the financial perspective. It is noteworthy to mention that the component of the state’s financial security, identified by Hacker, J. S., Huber, G. A. et al. (2014), when placed into the calculation of economic security index (ESI), according to Bloom, D. E., Mahal, A. et al. (2010), confuses other evaluative aspects given the financial perspective. Therefore, when analyzing security aspects in scientific literature, the conclusion, referring to Lankauskiene, T., Tvaronaviciene, M. (2012), emerges that the state’s security is affected and determined by financial reasons. As a result, Goryachev, K. S. (2003) claims that it is extremely complicated to separate financial security from economic and other security aspects of the state because it is assumed to be a unifying factor when conducting research on all of the state’s security aspects. On the other hand, Karppinen H. (1998) claims that investors are forest owners who regarded their forest property as an asset and a source of economic security, providing financial security for old age. It is noted that in the scientific literature, plenty of opinions about state’s economic and financial security and their interrelation has settled during these years. Therefore, contrapositions and generalities, existent in the linkage between financial and economic security conceptions in the scientific literature, determined the choice for this research area.
Object for scientific research – conceptions of national economic security and financial security in the context of various aspects while assessing the state’s security.

Objective of research – having performed the research on conceptions of the state’s economic and financial security, to define financial security in the context of other security aspects.

In order to perform a successful and reliable research, the following tasks are set:
• To perform a thorough analysis of the scientific literature on the conceptions of the state’s economic security and its financial security;
• To conduct a research on the interrelation between conceptions of the state’s economic security and its financial security;
• To assess the generalized connections of the state’s security aspects from the quantitative approach.

The study covers analysis of scientific research works, empirical researches and economic literature, as well as, the practical study on the conceptions of the economic and financial security of the state and the issues of their interrelatedness.

2. The critical literature review and analysis

Only recently, when financial crises are becoming more frequent and geopolitical environment is undergoing changes, countries undertook to pay more attention to issues related to economic and financial security. As a result, scientific discussions under these topics are surging and so are the differing conceptions and variations of a state’s economic and financial stability. The essential limitedness of this research emerges due to economic security as a phenomenon being researched only on a micro level, whereas, economic security on a macro level remains under-researched, even though several authors, such as Kahler, M. (2004), Munteanu, C., Tamosiuniene, R. (2015), Shevchenko, O. M. et al. (2016), have analyzed it, but only through the identification of national security threats. There is almost unanimous agreement that the context of economic security conception can gain new aspects in terms of a rapid world globalization, and referring to, one of the main functions of state’s regulation is supposed to be the assurance of the state’s economic security (Tang, S. M. 2015; Strielkowski, W. et al. 2016; Strielkowski W. et al. 2017; Tvaronavičienė, M. 2018; Dudin et al. 2019; Cherchyk et al. 2019; Sasongko et al. 2019).

Especially relevant issue emerges in how to newly define the economic security conception and to what extent are currently applied quantitative assessment methods suitable. It is also worth considering that the state’s economic security cannot be disembodied from other aspects of state’s security. There is no basis for stating that a state, which territorial integrity and, at the same time, security is facing actual external threats, with which a state cannot cope efficiently, can be considered economically secure, because the conquerors can make use of the state’s economic resources. Therefore, firstly it is essential to emphasize security in a broad sense and only afterwards to proceed analyzing the economic security of a state, its influencing factors, and aspects of quantitative security’s assessment. Usually, security is perceived as “an absence of a threat to the object in question, especially when ensured by protection from harmful effects of another object or objects” (Kornilov, M., 2015). Whereas Glaser, C. L. (1997) states that the emergence of any risk is perceived as a negative thing that decreases the level of security. Other scientists define security as a state of object, in which the probability of its vulnerability is insignificant. Having applied all of the security principles, highlighted in scientific literature, to the formation of economic security conception, it can be stated that state’s economic security relates to economic sustainability, i. e. when a state’s economy has potential to grow, is resistant to external and internal shocks, and is able to foresee and react to the occurrence of various threats. The conducted research proves that with the lack of explicitness on the study field, the conception of economic security in scientific literature is portrayed through the prism of differing views (see Table 1).
The results obtained from the comparative analysis of the economic security conceptions presented in scientific literature enable stating that the conception depends not only on the applied context, but also on the attempt to emphasize one or the other security element. A group of scientists presents the economic security conception through the prism of the absence of threats. For example, Hacker, J., et al. (2010) assume that the economic security is as a preparation state of the economy for ensuring decent conditions for living and developing the personality, the social-economic stability and the political military capability of the society and the country in order to eliminate internal and external threats. Whereas, Hipp, L. (2016), Angulo-Guerrero, M. J.-M.-G. (2017), Johnstone, C. P. (2013) define economic security only through the elimination of internal threats, and Franki, V. V. (2015), Popescu, M. F. (2014) present the economic security only through the prism of external threats, such as countries’ dependency on energy resources, poverty, unemployment, migration, or corruption. Another group of scientists understands and portrays economic security as instruments of economic policy, the functioning of which is an inert, continuous and a timely process. However, various conceptions do not seem to relate the economic security to resistance and flexibility in the market, considering that market is facing systematic economic shocks at times that are shifting the demand for goods. For example, when state’s expenses are declining, the business reacts to the decrease of its receivable revenues, as a result, the consumption is also decreasing. The business again reacts to the decline in demand and reduces the demand in goods even more, and this process just keeps repeating until a new balance is reached and the process settles down. Despite the existence of different conceptions of economic security, in order to reflect a versatile conception of economic security all of the identified crucial aspects of conception have to be highlighted. Thereof, the following conception emerges: economic security is an instrument of economic policy, the operation of which is an inert, continuous and a timely process that manifests through national, regional and worldwide aspects of security, and thereby ensures the control and management of internal and external threats (such as poverty, social and economic inequality, corruption, and etc.), which distinguishes in resistance to economic and financial shocks. Namely such a generalized formulation of the economic security conception covers a broader sense of economic security and makes the
insight to its relation with a state’s financial security possible. In the scientific literature, financial security is portrayed rather differently depending on the aspect being stressed. Distinct definitions of financial security are presented and described in the scientific works of Semjonova, N. (2012), Kaur, A. (2013), and other scientists (see Table 2).

<table>
<thead>
<tr>
<th>Table 2. Variations in the conceptions of financial security</th>
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<tr>
<td>Jiang, Y. (2010)</td>
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<td>Kaur, A. (2013)</td>
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<td>Zheng-xiao, W. A. N. (2005)</td>
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<td>Greenfield, C., Williams, P. (2001)</td>
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<td>Wei, L. I. U. (2009)</td>
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As the analysis of financial security conception shows, a variety of opinions regarding the concept of financial security and numerous differing approaches that place emphasis on one or the other aspect have been presented so far. The given conceptions of financial security cover both monetary, economic, social, political, and national defense aspects, which in turn can be divided into two groups – political or practical – depending on the viewpoint they reflect.

3. The course of the study and results

Therefore, two focus points for approaching financial security emerge. One of them usually manifests through the political approach and indicates that financial security is an inclusion into national security, defense and sovereignty where financial interests are the basis of focus. This is proved by Burgess, J. P. (2012), who claims that the assurance of the satisfactory funding for the appointed areas enables achieving an adequate national financial security. At this point, the second focus of attention emerges, which indicates that financial security is the connecting piece of all security elements, including the economic security, which also maintains the entire national security without distinguishing its different elements (see Figure 1).
The scientific literature analysis confirmed that such an approach, which is presented in Figure 1, is not sufficient for a profound understanding of both economic and national security. The financial component is, in fact, integrally intertwined with each of the national security aspects (economic, territorial, cybernetic, etc.) and is a factor influencing each part of the security. At the same time, each of the elements determines the level of financial security, i.e. the system portrays it as a consequence. Hence, a better visualization of the concept of national security would be obtained by applying multidimensional matrix, in which financial security would be one of the dimensions. As a result, such a newly structured viewpoint that depicts the interrelation of economic and financial security would enable stating that the relation between these two components cannot be separated due to the identified conceptual mixture, which shows that financial security is inconceivable without economic security and vice versa. On the other hand, assuming a practical perspective, when financial security is understood only as a certain funding flow, any research on modern financial measures would inevitably raise issues related to risk management of security and economic security. It is important to emphasize that the analysis of financial security and economic security conceptions revealed that two approaches towards both of the conceptions exist – the Eastern and the Western. The Eastern approach, contrary to the Western approach, does not identify the security of banks with financial security. The Eastern school also places significantly more emphasis on the importance of the territorial security while assessing the financial security, whereas the Western school is oriented only to the banking sector. Therefore, such research results also enable stating that the two schools possess two distinct viewpoints for approaching financial and economic security; therefore, distinct elements of national security and their input is placed in shaping a state’s economic and financial security. Nevertheless, financial security and economic security are too closely related and since there is no clear-cut distinction between the two phenomena, researches happen to analyze them in an integral manner.

4. Concluding remarks

The research on the economic security and financial security conceptions in the context of numerous aspects involved in assessing the security of a state revealed that during the years a variety of views regarding the two conceptions and their interrelatedness had settled. It is noted that two distinct approaches towards the interaction of the two conceptions exist – the Eastern and the Western. The Eastern approach pays more attention to the context of social and territorial security, whereas the Western approach assumes only one area for the interaction of the two conceptions and it is the security of banks. Therefore, the obtained relation between the conceptions of economic security and financial security grounded the statement that these two components cannot be clearly detached at the least due to the identified conceptual confusion.
References


COMMUNICATION EFFICIENCY AND EFFECTIVENESS WITHIN STRATEGIC MANAGEMENT OF CHANGE: INSIGHTS INTO CIVIL SERVICE ORGANIZATIONS

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Abstract. In spite of relatively well-established literature on efficiency and effectiveness (Mouzas, 2006; Guisso et al, 2003; Sarulienė and Vilkas, 2011; Ribeiro-Soriano, 2017; and etc.) and on communication efficiency and effectiveness (Hovland, 2005; Macnamara, 2016; Ferguson et al, 2016; and etc.), the scarcity of literature with concrete recommendations related to communication in civil service organizations during the time of change makes this topic relevant and value-adding to economies that undergo major reforms and transformation. Civil service systems (including communication models) differ from one category of countries to another. While innovation-driven economies, such as the UK, the USA, Australia, Canada, are clear leaders in terms of communication efficiency in civil service organizations (actively applying modern technologies and Government to Citizen model), efficiency-driven economies, such as Lithuania, Croatia, Georgia and Malta, are still focusing on development of efficient communication systems (via modern technologies, innovation processes, and stronger co-operation with stakeholders). This topic becomes even more relevant in status and hierarchy-driven organizations.

The research question is how to enhance communication efficiency within civil service organizations of tall hierarchy and create bigger value-added to society during the time of change. The publication is relevant to Lithuania and other CEEC countries, due to fast transformation of their economies. Moreover, the role of emerging new technologies should be acknowledged, as communication becomes more transformational, interactive and co-operation-driven. Efficiency-driven economies are experiencing continuous improvement of management processes; thus, they need to address many communication-related challenges, such as: how to engage society and build community, how to reach synergy effect among stakeholders, or how to apply modern technologies and interactive communication tools when social trust is insufficient. The present research is based on combination of scientific literature analysis and semi-structured expert interviews with 20 specialists of Lithuanian civil service organizations. The communication efficiency matrix in civil service organizations is developed, while summarizing research and scientific literature analysis results. The case of Lithuanian civil service organizations and the provided recommendations will serve as a useful tool among experts of policy-making, governmental programs or within strategy development and execution area in public administration organizations.

Keywords: communication efficiency and effectiveness; time of change; hierarchy; civil service organizations


JEL Classification: M130

1. Introduction

The communication efficiency throughout various literature sources is analysed from very diverse angles and within different contexts. Husain (2013) emphasized the role of employees as a key trigger to the change in organizations; job security should be established in order to create a sense of community. Shanga et al. (2017) focused on strategies to improve communication efficiency between nurses and physicians, while addressing
different communication tools, team training, multidisciplinary structured work shift evaluation or electronic
documentation templates. Luthra and Dahiya (2015) emphasized the role of leadership (more precisely,
how leadership is affected by communication); while McEwan et al (2017) examined attempts of improving
teamwork and the team performance via team interventions. Moreover, very useful insights might be found in
Abroms’s and Maibach’s (2008) works, while accentuating the effectiveness of mass communication to change
public behaviour.

The literature on communication efficiency and effectiveness is often of more generic nature, while abundance
of scientific sources related to efficiency and effectiveness (see the chapter on effectiveness and efficiency)
does not reveal a full spectrum of communication aspects referred to civil service organizations during the
time of change: concrete cases of improvement in communication efficiency and effectiveness within various
economies are necessary. For instance, according to Shegenovna (2014), professionalism of public service
employee plaid important role in modernization processes in Kazakhstan, while Olufemi (2012) drew attention
to the role of computer use on efficiency of civil servants’ performance, which corresponded more to the
context of factors-driven economies.

While focusing on the case of Ethiopia, Kassa (2011) concludes that efficient governance and civil service reform
should have competency communication strategy along with strong monitoring and efficiency/ effectiveness
evaluation system among other conditions, such as clear roadmaps, political leadership commitment,
capacity development programmes, and contextualisation. Bhatnagar (2014) discussed the use of information
and communication technology for improving governance in the delivery of services to the poor. All these
publications illustrate the attempts to transform factors or efficiency-driven economies to higher category;
therefore, the positive experience of innovation-driven countries, such as the UK Government Communication
Plan 2017/2018, is critical to develop a sustainable policy and strategy among civil service organizations in
catching-up economies.

Communication efficiency and effectiveness are multi-facet terms covering a set of dimensions, such as
internal and external communication, communication impacts, as well as horizontal/ vertical and networks-
driven communication. Communication affects success of various organizations via innovative communication
technologies, communication optimization techniques, and many other instruments.

According to Vozab (2012), who focused on Croatian civil service organizations, it is difficult to communicate the
information efficiently in order to not lose strategic content, to strengthen social trust and organizational image
within society as well as to cut information asymmetry while satisfying all stakeholders. Communication models
vary from one organization to another, depending on juridical status, lifetime, management style, experience,
hierarchy, strategy, and many others aspects. According to Paynton et al (2016), linear and transactional
communication types are combined in many organizations, but modern technologies make communication
more intuitive, interactive and improvisation-based. Thus, communication in modern organizations is more
transformational, influencing attitude and perception of society, employees and other stakeholders.

The added value is related not only to economic impacts and financial results; non-financial motivation via
engagement of employees and society could also play a critical role, while too rigid performance optimization-
oriented communication could endanger creativity system and creative leadership (French, 2017; Borisov et al.,
2018; Lorincová et al., 2019; Laužikas, Miliūtė, 2019).

Given the specificity of internal communication, efficiency incorporates many different aspects, such as
employee motivation and productivity, creativity, flexibility, quality and leadership. Moreover, on the side of
external communication, a set of factors should be emphasized, such as: social image, society engagement
and trust, community building, feasibility of strategic tasks, partnership, sustainability, economic and social
impacts, and many others. Hierarchy type (tall or flat), which is dominant in an organization because of a set
of factors (such as power distance, management style, juridical status, level of creativity and bureaucracy)
affects the communication style and communication techniques, but efficiency can be present in all types of
organizations, if necessary, actions are taken.
2. Effectiveness versus Efficiency

The terms effectiveness and efficiency are in general compared in the context of business dynamics; it can be tackled from a more generic perspective of organization performance or investigated in a particular area, such as Human Resource Strategy, innovation performance or communication models. In spite of being tightly related, based on Mouzas (2006), the concept of efficiency differs from the concept of effectiveness. Both terms measure the performance of organisations; they are applied to business arrangements (such as strategic alliances, joint ventures, sourcing and outsourcing agreements); however, efficiency refers to a necessary condition (Clark, 1921; Moran and Ghoshal, 1996) the company’s operating margins reflect, while effectiveness corresponds to the company’s ability to generate a sustainable growth in gains in the market (Gaertner and Ramnarayan, 1983). Ambler (2003) adds that companies rarely assess the full impact of their business action on key performance indicators (Barwise et al., 1989; Myers, 1999). Managers are often driven by efficiency indicators achieved by cost cutting, outsourcing activities, under-funding marketing or research and development, though these indicators aren’t measures of effectiveness.

According to Mouzas (2006) the propensity to efficiency versus effectiveness reveals wasting new growth and value creation possibilities in the market. Profitability is important, but not the only driver of businesses; thus, investments in innovation, innovative marketing methods, HR and R&D should be ingeniously scrutinized. On the other hand, the efficiency is a very relative indicator, which should be always compared to similar organizations. To continue, the difference between organic growth and structural growth should be always acknowledged in the corporate world. Profit is not always related to growth of companies, compared to competitors. Based on Mouzas (2006), efficiency calls for more financial expertise, control over operating margins and working capital requirements, whereas effectiveness calls for sound strategies of sustainable growth: it is related to the competitive environment, market dynamics, investments in innovation and differentiation.

Notwithstanding all the arguments in favour of effectiveness versus efficiency, companies can sustain a business growth if this is profitable. Thus, efficiency is a necessary, but not sufficient condition within a continuous process of development. The concept of economic efficiency is important for both theories and real practices, as it is impossible to get profit without financial resources, time and efforts accorded to an activity.

Economic efficiency could be tackled at a macro level, where it is often agreed that prices adjust in parallel to new information, as the stock market is highly or reasonably efficient. Osaze (2007), Grimblatt and Titman (2002) add the role of capital transactions and investment-associated costs. Guisso et al (2003), and Smitters and Wright (2000) emphasize that the willingness of organizations to invest, to take risk, to raise more funds will increase in line with the decreasing cost base; this also contributes to higher volumes in the market. To quickly react to the market changes and to be sustainable, organizations should be continuously involved in the market research along with lifelong improvement of their analysis expertise (Mackevičius et al, 2008).

The magnitude of profit and corporate profitability indexes were important figures to measure success of investments for many years. However, these figures do not show the efficiency of using available resources. Thus, the efficiency could be perceived as the ratio between results (income from products and/ or services) and the expended resources.

The concept of efficiency refers to circulation of a rational business process, driven by such motives as profit, cash flows and the speed of operations. In line with this reference, the term of efficiency might be associated with the value-added from activities. According to such argumentation, the value of any activity should be divided by its cost. It is added, that economic costs should be clearly distinguished from the whole cost base. Another element which should be added is the risk level obtained to get the desired result. As Sarulienė and Vilkas (2011) state, that the efficiency should help organization to operate, while efficiently using resources, cutting costs and increasing the value to its consumers or citizens.

The recent researches on organizational efficiency/ effectiveness, in particular related to the corporate world,
are centered on both economic impacts (profit margins, shareholders’ value, revenue growth, and etc.) and social contributions (Corporate Social Responsibility, social innovation and etc.). Therefore, from the positive externalities and social image perspective, economic impacts are not sufficient to be sustainable and successful: without paying attention to social value-added, organizations (both private and public) might ruin reputation and competitive position in the market. For instance, Ribeiro-Soriano (2017) examined the role small business and entrepreneurship play in both economic and social development.

While referring to Carrasco-Monteagudo and Buendía-Martínez (2013), the author pointed out, that small businesses transform and develop communities, while entrepreneurs create ways to connect resources and growth across cultures, policy contexts, economic conditions and political situations that differ from a region to another. Thus, resolution of main economic and social challenges and the improved quality of life is considered as success and efficiency. Such development trends in business make it more compatible with civil service organizations, which also seek higher social value-added and sustainable performance in the longer run (see the Table 1).

### Table 1. Communications Efficiency and Effectiveness in Lithuanian Civil Service Organizations, Compared to Private Sector*

<table>
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<tr>
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<th>Communication Efficiency/Effectiveness Dimensions</th>
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<td>Technologies, Social Medias, Digital Marketing</td>
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*Where B = Business and CS = Civil Service; the effects of factors are evaluated on the scale from 1 to 5; where 1 means negative effect on communication, and 5 stands for positive contribution, while 3 represents a neutral value.


While examining civil service organizations, the majority of economical and finance-related effectiveness and efficiency indicators could be applied with some limitations, as combination of strategic targets and political priorities requires focusing more on social impacts as well as feasibility of political priorities, policies and strategies. While examining efficiency and social impact of public policies and third sector practices in Bulgaria, Zaimova et al (2012), deliver a conclusion that in order to strengthen the local capacity to implement and coordinate social policy, a strong public control and evaluation of the service quality should be established.
Socials impacts refer to activities, such as supporting people in unequal position, promoting entrepreneurial solutions to social, cultural, health or environmental challenges, and many others.

Efficient and flexible communication (both vertically and horizontally) is part of organizational efficiency and effectiveness, and it should be achieved at different levels both inside and outside an organization; while external communication with society leads to higher transparency and sustainability as well as stronger social image of public administration organizations. Planning and execution of policies and strategies among public administration organizations should be very precise due to the lack of financial autonomy and limited resources.

To conclude, notwithstanding that the efficiency and effectiveness in public administration and business has been analysed separately for many decades, new emerging trends, such as networking, social innovation or the use of modern technologies require a holistic approach to effectiveness and efficiency from both public and private organizations: social image and strong strategic relationships with various stakeholders are necessary to create higher social value-added, while community building and society or consumer engagement are the main drivers of sustainable performance.

3. Communication Efficiency in Civil Service Organizations

Based on the study ‘Comparing Leadership Challenges: Civil Service vs. Private Sector’ in the USA (Ferguson et al, 2016), notwithstanding the specificity of public administration organizations (due to status, nature, orientation to political priorities, development trends and strategic targets, as well as limited financial autonomy), communication challenges in civil service organizations do not differ that much from private companies. Civil service organizations should improve their communication technologies because of the growing pressure from other stakeholders (private companies, universities, research centres, technology parks, and etc.). However, taking into account that civil service organizations often lack creativity and reword systems (as they need to generate bigger result in shorter time with limited financial resources), communication efficiency enhancement is particularly relevant and challenging.

Although scholars acknowledge that internal communication should be oriented to efficiency, creativity, motivation, flexibility, human relations, listening, quality, and many other aspects (Macnamara, 2016), modern communication technologies are not efficiently applied in both internal and external communication of civil service organizations.

External communication is centred on image, society engagement, social trust, sustainability, strategic targets and priorities, economic and social impacts as well as on key strategic partnerships (Hovland, 2005). However, if social trust between civil service organizations and citizens is damaged, it is difficult to regain reputation and build strong community; therefore, civil service organizations should build strong communication pillars, such as ethical codes, communication and behaviour guidelines, organization philosophy, creativity systems to survive and demonstrate sustainable performance. Moreover, civil service organizations in many efficiency-driven economies do not have communication plans during the time of change, which aggravates effects of uncertainty avoidance and fear of failure.

Transparency and social trust emerge as key factors in knowledge sharing and communication among politicians, civil servants and society; however, a relatively tall hierarchy and big power distance call for vertical communication models which diminish natural knowledge diffusion and community spirit. Therefore, diverse cross-departmental groups, informal and more horizontal communication processes inside and outside organizations (via modern technologies) are critical to countries which transform from efficiency to innovation category (GEM, 2018).

Simple online life-long learning tools, such as webinars or open-source learning platforms, social hubs for sharing good practices as well as projects connecting different-level civil servants and stakeholders could be useful to cut information asymmetry, raise motivation, speed-up communication, and optimize organisational
performance (via synergy effects and cross-departmental co-operation). Such means help: improve social trust via community spirit and society engagement; diversify risks and enhance team-building competences inside civil service organizations. Moreover, it is necessary to improve communication at each level and each channel: if at one level civil servants are apathetic it will be immediately acknowledged by society and it could endanger the whole communication system later on. A constructive dialogue with less motivated employees should be established and the challenges presented within a communication plan or report (for instance, to identify and improve a stagnant organizational level via modern technologies; having no actions taken might paralyze the overall communication within an organization).

4. Methodology

The present research is based on semi-structured qualitative expert interviews with civil service specialists from Lithuanian public administration organizations with the majority of participants from various ministry departments. The first step of the research took place in Vilnius on the 1st and on the 5th December 2017 and was organized as part of interactive learning program “Communication Efficiency Factors within Strategic Change of Civil Service Organizations” among 40 specialists from various ministry departments of Lithuania. During the first day of the learning program, the main communication challenges were identified and the questionnaire for semi-structured expert interviews was developed: 20 experts, led by Prof. Laužikas, contributed to development of semi structured questionnaire.

The first two questions were related to communication specificity during the time of change (key responsible communicators, communication means and channels, communication type and techniques). Three additional questions referred to the possibility of improving communication efficiency and effectiveness via engaging society, building community and strengthening social image of civil service organizations, while paying a strong attention to modern technologies and social media (including the context of strategy development). Three questions were related to the role of Human Resource Management within communication processes (non-financial motivation, career choice, reasons for leaving an organization, or team-building capabilities). One question cared for the significance of innovation and creativity in communication; and one question was related to ethical and moral norms.

During the next stage, the second group of 20 civil servants completed the questionnaire, while drawing attention to the main organizational challenges and future opportunities to improve internal and external communication efficiency and effectiveness. Experts were coded, based on 3 criteria: the experience in civil service (less or more than 7 years), education background (business-related studies versus public administration), and their relation to internal and external communication (how much their work positions are communication-intensive).

Moreover, the experts’ answers were coded, based on the communication improvement assumptions, which incorporated 7 aspects: the role of social media, modern technologies, partnerships, strategic targets, innovation culture, ethical and moral norms, hierarchy and power distance.

The third step of the research was held during the period 12th December 2017 – 12th January 2018, and was oriented to analysis of research results, comparison of primary and secondary data, as well as preparation of recommendations, which should be applied in Lithuanian Civil Service Organizations during the time of change.

5. Research Results: The Role of Communication on Strategy Development among Lithuanian Civil Service Organization

Communication efficiency and effectiveness within development and implementation of strategies and policies in Lithuanian civil service organizations (for instance, Innovation Strategy, long-term vision, mission, strategic targets and objectives, Social Responsibility, Human Resource Strategy, and many others) is centred on a set of functions and actions the experts try to apply in order to enhance their communication during the time
of change: research (which is conducted while preparing strategic documents), monitoring, quality and risk management models, as well as communication plans during the time of change. Research results confirm that these documents along with efficiency criteria should be introduced to both employees and citizens and later on accompanied by progress and intermediary reports, reform plans and reshaped targets. Only G2C (Government to Citizens) model, based on the transparency and continuous interaction with society and other stakeholders, might lead to a better social image and sustainability.

Experts admit that engaging society and community building might require ingenious monitoring (strategic management competences) with more open communication approach and social trust, tolerance towards the fear of failure and constructive criticism, as well as knowledge sharing via modern technologies and innovative activities. Therefore, communication is shifting from a linear to transformational model, where it becomes more important to realign attitudes and perception in order to build the future electorate and engage society in decision-making.

Via simple communication methods, such as introducing the best citizens’ ideas on a webpage, interactive hubs or mobile applications, it gets easier to engage bigger and more diverse audience; however, engagement is not enough: it is necessary to demonstrate capabilities to execute strategies via progress reports and cooperation with a vast spectrum of key strategic partners (which might be interesting to citizens thanks to innovative projects, reputation, and expertise). In the context of dissemination of strategic targets, it is also recommended to prepare and present social innovation and social responsibility reports, scientific publications along with performance improvement and sustainability recommendations as well as informal enhancement of competences in areas, such as econometrics, business models, brand innovation, digital marketing, talent development, creativity, and etc. Experts’ interviews reveal that civil service specialists with business-related education background are more successful in adapting strategy dissemination techniques which are compulsory in the corporate world. Having a big percentage of intrapreneurs and citizens with the fear of failure in Lithuania (Singer et al, 2015), effective, efficient and explicit risk management models could free up creativity, innovation and leadership.

Answers to the first question illustrated, that during the time of change, the society and lower-level employees are not engaged in management of change: only two experts clearly describe the process of communication during the time of change as well as indicate the individuals or groups of individuals who should lead in communication among various stakeholders (politicians, ministers, heads of ministry departments, employees, and citizens). The experts’ approach is more formal and conservative: they identify a specifically built initiative group, chancellor, head of HR department as the key communicators and intermediaries during the time of change; however, they do not emphasize neither horizontal communication inside their organization no employees or society engagement in decision-making process.

The “Top-Down” management model with a big power distance is emphasized by experts’ along with their apathetic approach towards presentation of strategic goals, as only one expert emphasized the role of communication of strategy during the time of change, although his/ her suggested method was too conservative (via compulsory formal meetings for employees, emails or meetings in each department).

Communication in Lithuanian civil organizations is hierarchy-driven not only during the time of change; only two interrogated experts (with more solid experience in Civil Service) agreed that social media should be used to disseminate not only decisions but also motives and arguments why those decisions were made, to communicate to society the news regarding various projects, collect citizens’ feedback and engage society while creating community spirit. Only one expert (having nearly 25 years of experience in civil service; with strong Business education background) emphasized the importance to engage employees in strategic decision-making from the perspective of non-financial motivation. Moreover, this expert emphasized the importance of attending strategy-related trainings in order to improve managerial competences, to provide the opportunity to go on business trips or participate in strategy development sessions.
From branding and social image point of you, only one expert emphasized integration of the change of organizational name into strategies as well as communication of a strategy inside and outside organizations through various process innovations (for instance, faster transfer of paper-format information to digital space; open-source innovation approaches, interactive social hubs, mobile technologies, and etc.).

Perception of innovation in a narrow way (not tackling process improvement or social innovation) emerges as a barrier to combination of innovation strategy with other strategies (HR, Marketing, Communication, and etc.). None among experts emphasized the potential to apply innovative management techniques, modern technologies and artificial intelligence in strategy-making, which could be explained by their limited knowledge in business, from education point of you, and uncertainty avoidance, from cultural and social norms point of you: conservative ways of strategic management are considered efficient and effective, because they are perceived as less risky, while risk management competences are rather modest.

Having no clear long-term strategy (one reform follows another reform without learning from mistakes), decision-makers do not link Human Resource dynamics and employee turnover to strategic targets, as only one expert tries to examine how exits of some employees affect the whole strategy of an organization. As it could be expected, this expert was motivated by clear strategic directions of the organization, its sustainability and feasibility of strategic targets. Moreover, two experts emphasized the role of teams’ performance within a strategy along with the role of flexibility during the time of change: strategy becomes more dynamic and volatile; however, it should be oriented to long-term targets. Therefore, communication strategy and risk management techniques are critical.

Give a rather specific dynamics of strategy implementation, three experts are convinced that the potential of creative leaders is not fully explored: leaders should facilitate communication of strategic targets and efficiency criteria via “Bottom-Up” management approach, through horizontal communication and continuous ideas generation. One human resource strategies-related expert added that the main values, ethical and moral norms should be integrated into strategies via “Bottom-Up” approach, while strategic directions with clear values and philosophy should be communicated to the whole community via modern technologies.

Driven by G2C model, modern civil service organizations focus on engaging society and building stronger community; however, in parallel, they need to execute political priorities which are not always effective and sustainable. Taking into account, that they are in strategy implementation departments, they are more visible to society and, therefore, ought to be more accountable for their actions, oriented to political priorities. Although often civil servants do not fully support the political priorities, they need to be efficient and value-adding to society and other stakeholders. Ministries become as a communication channel between politicians and citizens: once the priorities are set, it is difficult to reshape them in order to react to global trends or sudden changes in the economy due to heavy bureaucratic mechanisms and lack of ministries’ dynamism while revising the priorities.

Jeopardized by big power distance between politicians and civil service organizations, civil servants often work, based on priorities which are not encouraging and innovative, which often leads to the lack of commitment or negative social image of civil service organizations: it is very difficult to interact with society and engage or transform citizens’ attitude having no motivation and knowledge regarding political priorities and expected impacts.

Within a rather tall hierarchy in Lithuanian civil service organizations, the majority of decisions and actions are made relying on bureaucratic procedures: communication is rather linear, vertical and more “Top-Down”. For instance, within ministries, during the time of change, a team of heads of departments communicate to a new Minister their teams’ expectations and actualities of each department and later on present the changes to employees: 6 experts, with no regards to their experience and education background, emphasized the role of heads of departments on communication during the time of change; 4 experts suppose that ministry chancellors, external communication specialists (PR) and Human Resource or Strategic Planning Departments should be
involved in communication during the time of change, as these civil servants know better both political priorities and the context of their departments (including employees’ expectations).

Involving different level representatives should contribute to effective and efficient use of financial, intellectual, information, and human resources. Given a diverse experience and rich education background, all these representatives might help learn from past mistakes and make sustainable decisions, if society and all stakeholders are engaged in decision-making via modern technologies.

Scientific literature analysis draws attention to communication plans during the time of change at different governance levels, while having communication leaders appointed and right communication channels (with techniques and content of a message selected). Apart from asking ‘Who’, a question ‘How’ to communicate among politicians, civil servants and citizens should be examined. However, 9 experts recommend the use more vertical and traditional ways of “Top-Down” communication: via emails, meetings between ministers and departments’ employees, Intranet and face-to-face communication. In spite of the importance of modern technologies, such as hubs, applications, software programs, experts suggest more linear communication style, while avoiding of interaction with society and neglecting community gathering. In addition to the focus on more traditional communication ways, there is vacant information ‘Why’ these priorities and changes are initiated and ‘What’ research they are based on; society and other stakeholders are not engaged in decision-making (which is not in line with the G2C model), and communication is not transactional or transformational.

A more innovative approach is used in the context of social image strategy, as only three experts emphasized more traditional solutions, such as changing the name of organization, trainings in Lithuania and abroad (in order to enhance competences and improve motivation) or more flexible work schedules and distance work. As it was expected, such suggestions derived from older civil servants; other experts tried to find more innovative ways to improve the social image of their organizations. In light of limited financial motivation possibilities, two experts emphasized that scarce financial rewarding might also affect the social image of organizations due to employees’ apathetic behaviour and out-dated technologies. Only one expert had a more conservative insight regarding shifting from information paper format to digital storage, as it should be step by step and not too radical. Conservative attitude and uncertainty avoidance are still felt in Lithuanian civil service organizations: 4 experts admitted that ‘Innovative Ideas Banks’ would be a great idea; however, it will trigger employees’ opposition, while bureaucratic mechanism might be too heavy to make this tool smooth and efficient.

Tall hierarchy and strong power distance have direct and indirect impacts on intellectual capacity of organizations and Human Resource Management (including employees’ satisfaction, their behaviour and turnover): 6 experts acknowledged that employees’ resigning reasons are not formally identified and analysed; while based on their individual informal investigation, they acknowledge that the main reasons are related to bureaucracy, rules, rigidity, lack of autonomy and innovation, insufficient support from line managers, limited financial reward possibilities, and inefficient communication. On the other hand, many civil service organizations, particularly ministries, are attractive to younger specialists for diverse experience opportunities (for instance, project management), and the opportunity to use Public Administration education knowledge.

The more experienced experts emphasize social guarantees, status, stability, intellectual and friendly staff, as well as the future career opportunities. One experienced expert admitted that Human Resource Strategy was not present in ministry departments, which made human resource monitoring nearly impossible due to the lack of clear objectives and efficiency criteria. Such insight is supported by experts’ position regarding team-building and team management: 6 experts had either negative or no opinion (due to insufficient information or lacking competences in this area) regarding team-building and teams’ performance. No one emphasized how talented, innovative and/ or creative their teams are, while others had not enough information (which revealed fragmented and vertical communication in the context of Human Resource Management). Only one expert, related to Human Resource discipline, accentuated the role of creativity, enhancement of competences and application of non-financial motivation tools at teams’ level.
Taking into consideration traditional bureaucratic models of communication in Lithuanian civil service organizations, it is not surprising, that only 3 experts emphasized the role of creative leaders, particularly in communication of strategic information (while making communication among various levels smoother and more informal, empowering creative leaders and encouraging interaction between leaders and specialists). One expert underlined the formula of efficient communication (60% of leaders + 40% of specialists), which is in line with transformational communication style; however, no one emphasized the role of society engagement and community gathering in strategic management, which shows that Lithuanian civil servants are still not ready for the G2C model. Two experts relied on rules and more traditional communication tools in strategic communication (emails and social media), while emphasizing the role of political priorities, which is more in line with linear “Top-Down” communication model.

The vertical communication model and formalism were also felt in the context of moral norms and ethical codes. Although the vast majority agreed that an ethical code is necessary, five experts had a very formal and legal approach to implementation of ethical codes, while emphasizing more rules rather than a holistic approach to innovation, creativity, transparency, sustainability, talent development, motivation, philosophy, values, social trust, value-added, interaction with society and etc. The rest of experts imagined efficient ethical codes as a guideline, even though internal and external communication was not strongly emphasized as an important aspect of ethical and moral norms. Tall hierarchy, rather big power distance, conservatively used modern technologies and still jeopardized social trust hold civil organizations back from introducing ethical codes and organizational philosophy, while forgetting the essence of ethical codes (it is more about ethics and inspiring organization than about rules and discipline).

All in all, the research results and scientific literature analysis drew attention to a set of factors that are necessary for communication effectiveness and efficiency among civil service organizations in order to be sustainable and reliable strategic partner among stakeholders and citizens (see Figure 1). On-going constant reforms in various policies create the feeling of functioning under the continuous time of change. Nevertheless, Lithuanian civil servants acknowledged the significance of society engagement and community gathering via a set of drivers, such as innovative approaches and new technologies, interactive continuous communication with citizens and bigger accountability and visibility in the society; but in order to be sustainable, public administration organizations should encourage creative leaders and experts with competences necessary for transformational communication in networks and big data-driven economies.

As it was stated by a couple of experts, G2C model is like “being a fish in an aquarium, visible to everyone” – to all stakeholders; thus, civil servants face the necessity to communicate to stakeholders (including citizens) a vast spectrum of information related to political priorities, actions plans, expected outputs and even monitoring criteria: while engaging society and integrating citizens in decision-making and value-creation the undesirable effects of limited social trust could be mitigated and social image improved.

In light of modern technologies (including artificial intelligence, mobile technologies, digital hubs, and social medias), social trust is critical inside and outside an organization of tall-hierarchy; therefore, various ethical codes, behaviour guidelines or informal education could be of significant value during the time of change. Moreover, within the communication matrix (see Figure 1), all the impacts of communication efficiency and effectiveness (implementation of policy and strategy, social image, society engagement, and strong collaboration with stakeholders) were affected by transformational leadership with right competences and attitude.
Conclusions

In light of intelligence-driven management approaches and emerging new technologies, civil service organizations become closer to society; their philosophy should be in line with community values and principles, while transparency, accountability and sustainability should be improved via technologies, such as hubs, applications, software innovations, social media or video advertising. Civil service organizations become like huge “aquariums” where “fish” are visible to all stakeholders and, therefore, these public organizations should integrate society in strategy development and continuous innovation process.

However, rather conservative communication style, big power distance, tall hierarchies and heavy bureaucratic mechanisms jeopardize transformational communication, which should help engage employees, gather community, encourage creativity and create strong networks among stakeholders. Moreover, it is very difficult to reshape citizens’ attitude and create community values when civil servants’ performance is offset by the fear of failure, lack of competences, broken social trust, neglected modern technologies, and insufficient reward systems. All these factors form the environment, where ‘Bottom-Top’ approach and horizontal communication are not efficiently used.

Taking into account the lack of sustainability in performance of Lithuanian civil service organizations (due to a fragmental dialogue between politicians, different ministry departments and society or incapability to apply modern communication technologies in order to mitigate risk and information asymmetry) as well as insufficient engagement of society and employees in decision-making, diminishing communication enhancement might
lead to the aggravated social trust issues, ruined reputation and a weak social image. Civil servants should learn to communicate during the time of continuous change and volatility. It is recommended to continuously monitor internal and external communication efficiency, prepare communication plans during the time of change, as well as apply non-financial motivation means within human resource strategies in order to become more open and technologically sophisticated.

Relying on the UK Government Communication Plan 2017/2018, it is possible to improve team-building capabilities and creativity enhancement system within tall hierarchies: horizontal communication technologies and project management techniques might be a good solution. Application of matrix management model and horizontal communication could help reach bigger synergy effect, cut power distance and build social trust. It is recommended to communicate with society every day and update citizens regarding all on-going activities (including challenges and risks).

Given rather limited cultural diversity, Lithuanian civil service organizations should apply informal learning methodologies (mentorship in the areas of digital marketing, mobile application, video advertising, econometrics, and etc.), employ foreign students, identify and support creative leaders, as well as engage society in innovation processes. It is time to start anticipating and planning communication during the time of change.

References


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THE INFLUENCE OF THE GLOBAL TECHNOLOGICAL CHANGES ON PRINCIPLES AND FUNCTIONS OF ACCOUNTING AND FORMATION OF THE ORGANIZATION STRATEGY

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Abstract. The article reveals the role of modern information technologies in the accounting system. Features of transformation of accounting principles and functions in conditions of their application are considered. The special feature technical-technological development is cyclicity. Every technological cycle is characterized by the revolution and the existence of the leading sectors of economy. The types of computer information technology and economic problems in the context of technological cycles are investigated. Change in technological cycles leads to the transformation of the theory of accounting and its practical application. The development of the accounting system is increasingly directed at the creative professional judgment of experts under condition of the existence of and assumption on the polivariative approach to the choice of one or another method of presentation of information in the system. Such an approach to the selection of accounting estimates is possible in case the highly intelligent tools are present, such as the modern information systems. On the basis of statistical data, the authors prove that the use of information and communication technologies in enterprises of Ukraine is increasing year by year, in particular of cloud computing. The article investigates the place of Ukraine in the ranking according to the index of development of information and communication technologies among other countries of the world. Information systems and accounting technologies serve as a link between business activities and managers at all levels of decision-making. The authors suggest an intellectual cycle for the formation and implementation of enterprise strategy using modern global information resources, which are obtained from the use of modern information technologies with a strong intellectual potential. The prospects for the introduction of technologies of artificial intelligence, as one of the features of the sixth technological way, in accounting are revealed.

Keywords: accounting, technological changes, information technologies, enterprise strategy, creativity


JEL Classifications: M41

1. Introduction

In the conditions of rapid development of modern information technologies and their use in all spheres of human activity, including in the accounting system, the approaches to solving problems of any socioeconomic processes are changing radically. Their intellectualization is on the foreground. These and other processes lead to the transformation of the accounting principles and functions and directly of the role and professional skills of the accountant. There is cyclicity in technical and technological development. Each technology cycle is characterized by the existence of technological revolution and leading sectors of the economy (Limba et al., 2018; Vegera et al. 2018). Change of technological cycles leads to the transformation of the theory of
accounting and its practical application. Particularly, approaches to accounting changed due to the application of information technologies of VIth technological structure.


2. An overview of the influence of technological changes on principles and functions of accounting and formation of the strategy of the enterprise

According to Daniel Šmihula theory of cycles of technological revolutions, the main technological innovations appear not constantly, but with the help of special cycles whose time intervals are reduced due to technical progress (Šmihula, 2010). The period of time, which is characterized by the highest concentration of technological innovations, is considered as a “technological revolution” (the stage of innovation) and correlates with the phase of the beginning of economic growth. The temporary reduction of the number of new technological developments takes place, provided that new technologies are applied in practice. During this period the emphasis is made on the maximum practical implementation of existing technologies, including those in the accounting.

The application phase is associated with the period of economic growth. The next feature is markets’ saturation with technological products, lowering of the profitability of new technologies to the level of that of previous generation, getting profit not higher than the average profit obtained from new capital investments. This is the beginning of the crisis, which serves as a vector of new technological research. Thus, the stages of stagnation and crisis are overcome by new technological revolution (the beginning of a new wave), which is characterized by new technologies that will revitalize the economy and will transform the accounting as a system and process (Fig. 1).
M.M. Benko (Benko, 2010) identified the economic tasks of computer information technologies in accounting, which can be structured in the context of technological cycles (Table 1).

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Period</th>
<th>Technological revolution</th>
<th>Leading sectors of the economy</th>
<th>Type of computer information technologies and economic tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1600-1740</td>
<td>Financial-agro-cultural revolution</td>
<td>Finance, agriculture, trade</td>
<td>Mechanized (Mechanization of individual elements of the processes of accounting and management work)</td>
</tr>
<tr>
<td>2.</td>
<td>1780-1840</td>
<td>Industrial revolution</td>
<td>Textiles, iron, coal, railways, canals</td>
<td>1934-40’s - 1950’s - Mechanized (Mechanization of separate areas of accounting, work in the management system)</td>
</tr>
<tr>
<td>5.</td>
<td>1985-2000</td>
<td>Information and telecommunication revolution</td>
<td>Telecommunications, cybernetics, computer science, Internet</td>
<td>1970’s Centralized automated processing of accounting information in the conditions of computing centers of collective use. Elemental base - Integrated Circuits (Integrated processing of accounting information at all stages of accounting. Comprehensive processing of current management information at all stages of the management process of the enterprise, the organization. The transition to the development of subsystems, automated control systems)</td>
</tr>
<tr>
<td>6.</td>
<td>2015-2025 (?)</td>
<td>Hypothetical post-technological technological revolution</td>
<td>Biomedicine, nanotechnologies, alternative fuels</td>
<td>End of 1970 – 1980’s. Specialization of technological decisions in accounting on the basis of mini-computers, personal computers and remote access to the arrays of credentials while simultaneously universalizing the methods of processing accounting information on the basis of powerful computers. Elemental base - chips. The emergence of programming languages, close to the professional languages subject areas of work (accounting). The emergence of PCs (Development of the control system (ACS technological processes), automation systems, ACS enterprises, industry ACS; national systems: scheduled calculations, statistics, equipment, science and technology, financial calculations, etc. Trend to centralize the processing of accounting data, the solution tasks in multiplayer mode, transition to paperless operation of computer equipment)</td>
</tr>
</tbody>
</table>

*Source: Developed by the authors on the basis of (Šmihula, 2010; Benko, 2010).*
The use of information and communication technologies at enterprises is increasing from year to year, as evidenced by data of the State Statistics Service of Ukraine (State Statistics Service of Ukraine, 2018). Cloud computing services were purchased by 10.5% of enterprises in 2017, which is 1.1 p.p. higher than in 2016. Among the services of cloud computing, the financial or accounting applications that were bought by 6.1% of companies were the most in demand; followed by e-mail service - 5.5% and office software rental - 4.9%. In 2016 the respective shares constituted 5.6%, 4.9% and 4.3% (State Statistics Service of Ukraine, 2018).

Taking into account the data of the International Telecommunication Union (ITU) regarding the development of information and communication technologies, it is advisable to make a worldwide cross-country comparison of the abovementioned indicators, including that of Ukraine (Table 2). Development could be assessed with the use of integral indicator, which includes indicators of three groups: access to information and communication technologies, use of information and communication technologies, skills of work with information and communication technologies (Measuring the Information Society, 2015).

Table 2. The ranking of individual countries according to the Index of Development of Information and Communication Technologies (IDI)

<table>
<thead>
<tr>
<th>Economy</th>
<th>Rank 2015</th>
<th>IDI 2015</th>
<th>Rank 2010</th>
<th>IDI 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>1</td>
<td>8.93</td>
<td>1</td>
<td>8.64</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>8.88</td>
<td>4</td>
<td>8.18</td>
</tr>
<tr>
<td>Iceland</td>
<td>3</td>
<td>8.86</td>
<td>3</td>
<td>8.19</td>
</tr>
<tr>
<td>The United Kingdom</td>
<td>4</td>
<td>8.75</td>
<td>10</td>
<td>7.62</td>
</tr>
<tr>
<td>Sweden</td>
<td>5</td>
<td>8.67</td>
<td>2</td>
<td>8.43</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>6</td>
<td>8.59</td>
<td>8</td>
<td>7.82</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7</td>
<td>8.56</td>
<td>12</td>
<td>7.60</td>
</tr>
<tr>
<td>Netherlands</td>
<td>8</td>
<td>8.53</td>
<td>7</td>
<td>7.82</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>9</td>
<td>8.52</td>
<td>13</td>
<td>7.41</td>
</tr>
<tr>
<td>Norway</td>
<td>10</td>
<td>8.49</td>
<td>5</td>
<td>8.16</td>
</tr>
<tr>
<td>Japan</td>
<td>11</td>
<td>8.47</td>
<td>9</td>
<td>7.73</td>
</tr>
<tr>
<td>The USA</td>
<td>15</td>
<td>8.19</td>
<td>16</td>
<td>7.30</td>
</tr>
<tr>
<td>Belarus</td>
<td>36</td>
<td>7.18</td>
<td>50</td>
<td>5.30</td>
</tr>
<tr>
<td>Poland</td>
<td>44</td>
<td>6.91</td>
<td>32</td>
<td>6.38</td>
</tr>
<tr>
<td>The Russian Federation</td>
<td>45</td>
<td>6.91</td>
<td>46</td>
<td>5.57</td>
</tr>
<tr>
<td>Moldova</td>
<td>66</td>
<td>5.81</td>
<td>74</td>
<td>4.28</td>
</tr>
<tr>
<td>Georgia</td>
<td>78</td>
<td>5.25</td>
<td>85</td>
<td>3.76</td>
</tr>
<tr>
<td>Ukraine</td>
<td>79</td>
<td>5.23</td>
<td>69</td>
<td>4.41</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>156</td>
<td>1.83</td>
<td>156</td>
<td>1.37</td>
</tr>
<tr>
<td>Chad</td>
<td>167</td>
<td>1.17</td>
<td>166</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Source: International Telecommunication Union, 2015

Regarding the Ukraine, although the ICT development index increased in 2015 compared to 2010, its ranking among 167 other countries of the world declined by 10 units to the level of 79, indicating a backlog of achievements in the area.

Taking into account the features of the sixth technological cycle, it is appropriate to provide the justification for the introduction of new accounting principles and functions, which are based on the current trends in the development of the new generation of accounting information systems. The latter imply significant changes in the methodology and organization of accounting of the economic entity. An important part of the theoretical grounds of the accounting system are the principles it is build upon. It should be noted that the principle, from a scientific point of view, is a rule that is not violated under any circumstances, it also forms qualitative characteristics of information during its formation to achieve the goal (Mazina, 2013). At the same time, according to the...
definition of NP(C)BO 1, the principle is a rule that should be used while measuring, evaluating and registering business transactions and reflecting their results in financial statements (National Accounting Standard 1, 2013).

According to the practice of developing an accounting and reporting system, which is based on international standards and on the national system of accounting and reporting, due to changing business conditions as a result of deepening globalization processes and the development of information technologies, the list of fundamental assumptions (principles) also changes (Conceptual basis of financial reporting, 2010).

The development of the accounting system is increasingly directed at the creative professional judgment of experts, while the system of a polyvariative approach to the choice of one or another method of information representation exists and is assumed there. Such an approach to the choice of accounting estimates is possible thanks to the presence of highly intelligent tools, more precisely of modern information systems. Thus, the system itself assumes the existence of such principles as multi-versatility and creativity needed for its operation in order to provide interested users with information for their economic decisions, in addition to legislatively determined accounting and reporting principles (Table 3). The impact of new generation of information systems and accounting technologies on the existing accounting principles is described in Table 3.

<table>
<thead>
<tr>
<th>№</th>
<th>Principle</th>
<th>Influence of new generation of information systems and accounting technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Full coverage</td>
<td>Allow conducting accounting, control and analysis in the real time of operations' reflection, which makes it possible to create timely and relevant information about business processes necessary for making management decisions.</td>
</tr>
<tr>
<td>2.</td>
<td>Autonomy</td>
<td>Foresee the use of directories and templates of typical business operations, which allows monitoring the functioning of a legal entity separately from that of its owners</td>
</tr>
<tr>
<td>3.</td>
<td>Sequences</td>
<td>Enable modeling the basic approaches to formulating the main principles of the accounting policy for their constant application and allow changing it in specific cases</td>
</tr>
<tr>
<td>4.</td>
<td>Continuity</td>
<td>Allow creating databases on previous reporting periods, which makes it possible to simplify access to archive information related to the financial and economic activity of the enterprise at any moment, as well as to determine the current financial and economic state of the enterprise and to predict the future one</td>
</tr>
<tr>
<td>5.</td>
<td>Exaggeration of the essence</td>
<td>Enable presentation and interpretation of information in any form, taking into account professional accounting judgments, which goes beyond the legislation in force, to meet the management’s requirements for the goal of managerial decision-making</td>
</tr>
<tr>
<td>6.</td>
<td>Uniform monetary meter</td>
<td>Enable accounting both within the national currency and simultaneously conducting business operations of the enterprise in the currency of other States (taking into account the exchange rate differences in real time)</td>
</tr>
<tr>
<td>7.</td>
<td>Charges</td>
<td>Allows reflecting income and expenditures in accounting and financial reporting at the moment they arise, regardless the date of receipt or cash payment (in real time)</td>
</tr>
<tr>
<td>8.</td>
<td>Other Principles</td>
<td>Allow accounting based on the principles prescribed by international or national accounting standards (accounting standards) or by national accounting standards (public accounting standards) in the public sector, depending on which of the them are applied by the enterprise</td>
</tr>
</tbody>
</table>

Source: Developed by the authors on the basis of (Law of Ukraine “On Accounting and Financial Reporting in Ukraine”, 1999)

Accounting as a system generates and translates information about a particular economic entity for the purpose of decision-making in the conditions of the choice of alternative uses of limited resources. Here one more problem arises- the functioning of the accounting system, which would ensure the achievement of the goals of sustainable development both of the enterprise and of the economy as a whole. The activity of the economic entity in the conditions of technological changes implies the need for management system optimization and accounting improvement. A solid, continuous, documentary display of interconnected economic transactions in monetary terms, their registration and generalization, allow us formulating complete and reliable information about the enterprise (organization) necessary for the decision-making at all levels of management, for assessing the behavior of the enterprise on the market, for revealing the financial state of competitors, attracting investments, assessing expediency of introduction of new technologies and software products to expand the functionality of accounting, for the solution of other tasks. Reliable, timely, substantiated information is a prerequisite for a qualitative analysis of the economic entity and for identifying ways to increase its market value.
In the conditions of technological change, the accounting methodology itself is an important direction of influence on accounting. Nowadays, the Law of Ukraine “On Accounting and Financial Reporting in Ukraine” (1999) revises the attitude towards documenting. Thus, it is allowed to use electronic document flow, which needs the computer networks use.

The impact of technologies’ development on such an element of the method as assessment is also important. In most cases, it is necessary to deeply ground the assessment of accounting objects for their reflection in the accounting and reporting. This substantiation should include the use of statistics and mathematical apparatus. This task is adequately performed by intelligent information technology. Information technology is currently widely used to assess the yield of agricultural products, forest plantations. In particular, the GIS is a relevant and up-to-date software that provides automated collection, processing, storage, display and distribution of spatially-coordinated information, database integration and its operation, foreseeing powerful means of data representing, query results, samples and analytical calculations in a visual cartographic form (Zatscherkovny et al. 2014). The new generation of accounting information systems implies systems of decision-making support and information systems built upon artificial intelligence (Figure 2). At the moment, the signs of the sixth technological way are formed. In accounting, its perspective direction is the introduction of artificial intelligence, which, on the one hand, carries the risks to society, and on the other - it has a number of advantages in case of rational management and planning. Artificial intelligence systems are already used by the largest audit and financial companies with the help of programs and mobile applications for specific calculations and data analysis. Such technologies are used to solve a narrow range of tasks, but the spectrum of their capabilities expands year by year (Oliynyk & Osmyatchenko, 2018). Artificial intelligence will change the accounting system and automate the accounting of the business processes that are currently engaged in accounting. The work of accounting personnel will shift from performing routine accounting tasks to more creative managerial functions.

Taking into account the abovementioned, the new accounting principle -creativity- is formed, the essence of which: the adaptation of the accounting system of the enterprise and the personnel to the new operating conditions (dynamic changes in information technology) and globalization processes. This approach is also due to the fact that it takes into account the requirements of IFRS to the reasoned professional judgment of the accountant, which, in international practice, prevails over the instructions and recommendations of accounting regulators (IFRS).

![Fig. 2. Information systems of accounting of a new generation](source: Developed by the authors on the basis of (Benko, 2010))
Thus, on the one hand, in domestic practice, the accounting rules are rigidly regulated, and on the other - the implementation of international accounting experience, globalization trends, dynamic changes in technologies of various sectors of the economy and in all spheres of human activity, as well as the emergence of new spheres of knowledge, require the flexibility of accounting process and continuous improvement of the professional skills of accountants. All these factors and the use of a professional accountant judgments, which rely on experience and take into account the theoretical grounds and accounting regulations, represent the basis for the formation of the creativity principle in the accounting system, taking into consideration the globalization processes and technological changes, and which will be in line with international practice.

Next, we consider it expedient to highlight the principle of polyvariation, the essence of which is disclosed through the adaptation of accounting information according to the requests of different groups of users which have different goals and tasks. The use of information systems and technologies of the new generation enables the maximum realization of this principle. This principle is based on the concept of multi-variation accounting (Bochulu, 2015).

In the conditions of dynamic changes, the leading position in the accounting belongs to the speed of data processing and the provision of complete, objective, reliable, relevant, necessary information to its users. Thus, the speed of response to technological changes and the introduction of advanced information technologies into accounting practices of domestic enterprises and organizations is the greatest competitive advantage. There is a close relationship between the principles and functions of accounting, which form the prerequisites for the widespread use of information systems and technologies of the new generation. The main goal of these accounting technologies, including cloud and artificial intelligence, is the formation of actual information with the least labor costs, necessary level of detail, which is objective, reliable and timely.

Under the conditions of application of information technologies of a new generation, the strengthening of basic functions is taking place (Fig. 3). In addition, due to the changes in the operation of the information algorithm, there is a need to reinforce the information function by another one – direct connection and the feedback, the essence of which is that the automated accounting system gets information about business operations from the places of their occurrence, checks, processes and transfers it to the automated enterprise management system, then management information is transmitted to the accounting service, which directs this information to the production units and uses it in their work. Thanking to this function, an automated information system is created at the enterprise that provides all levels of management with the necessary data (Osmjchenko, 2014).

Taking into account the influence of globalization processes, regarding the prospects for implementing artificial intelligence in the accounting process, it is appropriate to introduce a new creative function into the list of accounting functions. The essence of the creative function is revealed in the application of the creative approach
in the introduction and use of technologies of artificial intelligence in accounting and solving individual tasks in making managerial decisions via the flexible use of the information received.

Information systems and accounting technologies serve as a link between economic activities and managers of all levels of management, who take the decisions.

The data on economic activity is the entry element in the automated system of accounting, while the useful information for managers who make managerial decisions using the creative approach is its output. The process of the accounting functions of direct connection and feedback and the creative function is illustrated on the Fig. 4.

Thus, the function of creativity is implemented at all stages of the accounting process: from the stage of gathering information to the formation of reporting, through the manifestation of its properties. The input data of the accounting process serve as the basis for the formation of the enterprise strategy. The principle of creativity works at the level of management systems and is considered as one of the fundamental today. The definition of the role of the creative accounting as a necessary condition to overcome the entropy of business given by M.S. Pushkar could serve as a confirmation of this, since it generates an original set of economic indicators describing business activities, provides an opportunity to find solutions aimed at achieving competitive advantages by diagnosing their strengths and weaknesses, by in-depth study of those objects that are not are considered in financial and managerial accounting.

The role of creative accounting for a society is equally important. It is aimed at expanding the arsenal of methods for generating information resources about objects whose existence was acknowledged, but the analysis was not conducted within the enterprise, industry or State as a whole (Pushkar, 2014). Therefore, creativity is the intellectualization of information systems of accounting. In the conditions of globalization, to form the strategy of any enterprise and to implement it effectively, it is undeniable to use modern global information resources, which are obtained with the use of modern information technologies with a strong intellectual potential. The intellectual cycle of the formation and implementation of the enterprise strategy is illustrated on the Fig. 5.

The technological resources of the global level include the latest scientific and technological achievements, in particular, a set of knowledge about the introduction or improvement of equipment needed for the production, patents, licenses, trademarks, technical services in the field of management techniques and marketing know-how.

The local technological resources are the capacities of modern technologies of the enterprise, which can facilitate the exchange of information during the work on projects, ensure the implementation of the overall business strategy, improve planning efficiency, establish interaction with the target audience and strengthen control over financial costs.
Global information resources include mass media, libraries, and the Internet. At the local level, there are restrictive information resources, among which there are the principles predetermined by law and accounting principles of the level of management systems. At each of the stages of this cycle, the function of creativity is traced.

![Diagram of Intellectual Cycle](image)

**Fig. 5. Intellectual cycle of formation and realization of the strategy of the enterprise**

*Source: Developed by the authors*

Intellectual cycle of strategy formation involves global and internal resources of the enterprise. After the choice of the best virtually implemented strategy, the next step is its realization. There is a possible option when the real implementation of the strategy occurs immediately. Thus, modern technological changes extend the principles and functions of accounting, according to which the formation and implementation of the best version of the strategy of the company takes place.

### 3. Conclusions

1. Globalization processes constant dynamic changes, the emergence of new spheres of knowledge, the development of information systems and accounting technologies require the transformation of its theoretical grounds.

2. According to the results of the critical assessment of existing accounting principles under the influence of information technologies of the new generation, the two groups of them can be distinguished: traditional principles and principles of new generation, the peculiarity of which is the consideration of globalization processes and the adaptation of the accounting system to new dynamic conditions of operation and to the requests of different groups of users.

3. Taking into account the features of the sixth technological way, in the sphere of accounting, the formation of a new accounting principle – creativity- would be correct. Its essence is the adaptation of the accounting system of the enterprise and its personnel to the new conditions of functioning and to globalization processes. In other words, this principle represents the intellectualization of information systems of accounting.

4. In the conditions of technological changes, accounting requires a creative approach and flexibility of accounting staff while introducing and using the information systems and technologies of new generation in order to form timely and reliable information necessary for managerial decision- making and increasing the cost of the economic entity.

5. In practice of the enterprise, the input data of the accounting process serve as the basis for its strategy. In the course of the intellectual cycle of the formation and implementation of the strategy, the global and
internal resources of the enterprise are involved; they are combined with the means of the creative approach of personnel and modern information technologies in order to implement the best option.

In conditions of technological changes and the use of cloud technologies and artificial intelligence future scientific researches should focus on the critical revision of the elements of the accounting method.

References


Abstract. The green economy is one of the important tools to ensure the sustainable development of any country. Green economy is defined as an economy with a high level of quality of life of the population, careful and rational use of natural resources in the interests of present and future generations and in accordance with the country’s international environmental obligations. The paper tackles a case of Kazakhstan. New policy towards green economy, as it is claimed, provides the basis for deep systemic reforms to improve the welfare, quality of life of the population of Kazakhstan and the country’s entry into a list of the 50 most developed countries in the world. In modern conditions, the relationship of economic development with changes in the environment, the impact on many forms of international economic relations is an important feature of the globalization of the economy. One of the most pressing issues among the international community is the issue of introducing a green economy, which is a reliable driving force of economic growth in emerging markets, providing new opportunities of overcoming the economic crisis. The paper analyzes efforts of Kazakhstan through its active economic policy to transform its economy into green one.

Keywords: green economy; quality of life; population; countries; resources; methods; tools; mechanization; growth; Kazakhstan

Reference to this paper should be made as follows: Dabyltayeva, N.; Rakhymzhan, G. 2019. The green economy development path: overview of economic policy priorities, Journal of Security and Sustainability Issues, 8(4): 643–651.

JEL Classifications: Q58

1. Introduction

The increasingly closely interrelated development of the economy with changes in the environment, the influence on many forms of international economic relations is now an important feature of the globalization of the economy. In recent years, one of the pressing issues among the international community is the issue of introducing a “green economy” in countries across all continents (Xie et al. 2016; Dechezlepretre, Misato 2017; Monni et al. 2018; Tvaronavičienė 2018; Tvaronavičienė et al. 2018; Androniceanu et al. 2018; Atari et al. 2019; Lavrinenko et al. 2019; Eddelani et al. 2019; Smaliukiene, Monni 2019; Faridi, Sulphey 2019).

At the present stage of development, Kazakhstan is actively involved in the implementation of the “green economy” too (The Astana Time 2018; UNECE Press Releases 2017; Newell, M. 2018; European Commission, Supporting Kazakhstan’s transition to a Green Economy model). One of the reliable methods of maintaining growth in emerging markets is the introduction of a “green economy” by the world’s civilization, which also provides opportunities for emerging countries to overcome the economic crisis. “Green economy” is one of the important tools to ensure the sustainable development of the country. It lays the foundations for deep systemic transformations with a view to transition to a “green economy” by increasing the welfare, quality of life of the population of Kazakhstan and joining the country among the 50 most developed countries of the world while minimizing the burden on the environment and the degradation of natural resources.
2. Methods of research

Over the past decades, most developed and developing countries have prioritized the sustainability of economic growth, the expansion of opportunities for the use of resources and the reduction of the harmful effects on the environment (Sevost’yanova 2011; Pavolová et al. 2019; Cherchyk et al. 2019; Proshchalykina et al. 2019).

The concept of “green growth”, which aims to achieve sustainable growth through the efficient and responsible use of natural resources, has become integral part of economic policy for numerous governments since its introduction in the late 2000s (OECD 2009). Despite the fact that rapid economic growth can be achieved through aggressive consumption of limited resources, through ignoring pollution indicators environmental and environmental costs, or because of the implementation of other non-rational methods, ultimately such expansion is doomed to failure, eliminating any positive progress or achievements, as evidenced by numerous examples from around the world (IMF 2011). The concept of inclusive green growth goes beyond effective use of natural resources and environmental protection; this concept emphasizes the importance of balanced and large-scale growth as the only solution on the path to sustainable long-term development. Methods of research: critical review of literature including local sources; induction, generalization, interpretation of obtained results.

3. The discussion of the results

The economy of Kazakhstan has low diversification indicators, where oil and gas, mining and agriculture play a key role in economic growth (Shevyakova et al. 2019). At the same time, consumer goods and commodities comprise a significant share of Kazakhstan’s exports.

In line with the global desire for inclusive and sustainable growth, Kazakhstan has adopted national and regulated development programs and strategies to create the prerequisites for sustainable development. Kazakhstan became the first state in Central Asia to create an institutional and legal framework for transition to “green growth” through the adoption of a number of legislative documents, including the Environmental Code of the Republic of Kazakhstan (2007), Law of The Republic Of Kazakhstan “About support of use of renewable energy resources” (2009), Concept for transition of the Republic of Kazakhstan to Green Economy (2013).

Since then effective relationships have been established with numerous international financial institutions and strategic partners in the promotion and development of renewable energy, clean technologies and infrastructure. Kazakhstan promotes international cooperation in the interests of sustainable development under the Green Bridge Partnership Program (GBPP) (Bayzakov, Mukhanov 2013). Kazakhstan faces structural imbalances, socio-economic and environmental problems, such as over-reliance on commodity exports, uneven distribution of wealth, low living standards and limited access of the basic services, inefficient use of natural resources, high energy consumption (Gaifutdinova 2013).

The concept of sustainable development was adopted at the UN conference in Rio de Janeiro in 1992. Its continuation under the new conditions was the concept of sustainable development of the green economy. The main provisions of this concept are contained in the UNEP report “Green economy on the way to transition to sustainable development and poverty eradication”, 2011, prepared for Rio + 20 (Barbier 2012). Innovative approaches and principles laid down in the concept of a green economy are aimed at solving the problems of modern multilateral crises. The United Nations Environment Program (UNEP) defines the term “green” economy in a broad economic, social, and environmental context: a “green” economy is an economy that improves human well-being and ensures social justice while significantly reducing environmental risks and its depletion. Other organizations, such as the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), define “green” growth as a political focus that relies on environmentally sustainable economic progress to stimulate low carbon and open to all social groups’ development.
The green economy model is proposed to the world community as a way out of a multilateral global crisis. Consistent with the principles and main provisions of the concept of sustainable development, the concept of a green economy is characterized by focusing on the problems of structural transformation of the economy as a leading factor in the transition to sustainable development (Nagorniy 2013).

According to calculations, by 2050, transformations within the framework of the green economy will further increase GDP by 3%, create more than 500,000 new jobs, create new industries and services, and ensure high standards of quality of life for the population throughout the world. In general, the volume of investment required for the transition to a “green economy” will be about 1% of GDP annually, which is equivalent to $3-4 billion a year (Fava, Gavrilescu 2012).

“Green economy” is defined as an economy with a high level of quality of life of the population, careful and rational use of natural resources in the interests of present and future generations and in accordance with the country’s international environmental obligations (Volobuyeva, 2012).

The concept of Kazakhstan’s transition to a green economy will be implemented in three stages (Bayzakov, Mukhanov 2013): from 2013 to 2020 the main priority of the state will be to optimize the use of resources and increase the efficiency of environmental activities, as well as the creation of infrastructure for the functioning of the green economy; from 2020 to 2030 the transformation of the national economy, focused on the sustainable use of water, the promotion and stimulation of the development and widespread introduction of renewable energy technologies, as well as the construction of facilities based on high standards of environmental efficiency, will begin on the basis of the formed infrastructure; from 2030 to 2050, the transition of the national economy to environmental technologies will be implemented, requiring the use of natural resources, provided they are renewable and sustainable. The transition to a “green economy” will be based on the following basic principles (Bayzakov, Mukhanov 2013):

1. Improving resource productivity: resource productivity should be a central economic indicator, since this parameter measures the ability of our country to create value while minimizing the environmental load;

2. Responsibility for the use of resources: it is necessary to increase the responsibility at all levels of government, business and the population for monitoring and controlling sustainable resource consumption and the state of the environment;

3. Modernization of the economy using the most efficient technologies: Kazakhstan will increase the GDP, industrial production and the number of infrastructure in the next 20 years or so. These transformations open up the possibility of applying completely new solutions in the economy (new technologies).

It is the promotion of a “green” economy in Kazakhstan - this is the main way and the only way to preserve sustainable development. This is due to the fact that in Kazakhstan there are major environmental problems that other countries have not encountered. In particular, we are talking about the Semipalatinsk nuclear test site, which was closed as a result of the popular movement Nevada-Semipalatinsk, but the consequences of nuclear testing are still evident. In addition, there is a huge amount of industrial waste - over 23 billion tons, of which about 9 billion tons are man-made mineral formations. This also includes the problem of water, since Kazakhstan is dependent on border water sources. Experts and environmentalists argue that in the next 20-30 years, Kazakhstan may face the consequences of global climate change, such as water scarcity, aridity, desertification, and so on. The development of a “green” economy will allow reducing these risks and threats.

Kazakhstan has created all the prerequisites for an effective transition to a “green economy”. The transition to a “green economy” is closely related to the development of innovation activities in Kazakhstan, since it is based on the introduction and use of new technologies in order to improve the efficiency of energy use.

An important role in the “green economy” is assigned to the process of waste management. We give an example
of the recycling of paper and cardboard waste. Residents of the Almaty region (v. Chundzha) are engaged in
the manufacture of cardboard firewood using paper (cardboard) and water. The resulting material is used to
replace firewood. This method brings a double positive economic effect: the preservation of the forest estate
and the growth of savings of the population, which leads to an increase in the welfare of citizens. If this method
is implemented and applied in all regions of Kazakhstan, then forest losses can be minimized.

Formation of the National Strategy for Sustainable Development will allow to move towards the creation of such
a model, which is aimed at reducing poverty, improving people’s lives, ensuring environmental safety, creating
conditions for further transformation of the country’s economy in the long term, that is, the model is closely
linked “green” economy and sustainable development, defining a new development path for Kazakhstan. At the
same time, ensuring close coordination of the economic, social, institutional and environmental components of
sustainable development is one of the fundamental conditions for ensuring national security, as well as the most
important aspect of protecting the vital interests of the state and society of the country.

Kazakhstan’s initiatives as a transition to a green economy, the formation of a National Sustainable Development
Strategy, the Green Bridge program and the international specialized exhibition EXPO-2017, the State Program
on Water Resources Management for 2014–2040, undoubtedly, should be the most important steps towards
implementation of a new way of development of Kazakhstan. “Green economy” is the economy of the future,
which is aimed at preserving the ecosystem, increasing the well-being of the population and ensuring the
efficient use of resources.

Green Growth has become the goal of many countries in the 21st century. The main leitmotif of this doctrine is - to achieve economic development and increase state capacity without harming the environment and natural
resources.

The Kazakhstan initiative “Green Bridge” is a bridge between the Asia-Pacific and European regions, and is
aimed at a transition to a green economy in a large space. The ideology of supporting Eurasian multilateral
cooperation is at the center of Kazakhstan’s initiative activities. The Green Bridge Initiative calls for the
integration of environmental and economic policies for sustainable development.

The result of the expected Third Industrial Revolution in the world could be the development of a green
economy in Kazakhstan. In 2013, the state Concept on the implementation of the principles of green economy
was approved. A green economy is necessary to preserve natural capital, ecosystems and biodiversity, while at
the same time ensuring income and employment growth.

Economic growth inevitably leads to large environmental losses, the largest economies in the world are trying to
implement the concept of sustainable development and make the green economy a truly effective development
model (Gouvea et al. 2013). In addition, Kazakhstan should strive if it wants to stand on a par with the best
economies in the world.

The first state to adopt the idea of a green economy as a national strategy was South Korea. In less than 50
years, from a poor country in post-war devastation, Korea has risen to be one of the largest economies in the
world. But the high rates of industrial development and urbanization led to an intensive increase in greenhouse
gas emissions and pollution of the biosphere. At the beginning of the XXI century, it became obvious that the
old strategies that led the country to success no longer work. In 2008, President Lee Myung-bak introduced
the strategy of Low Carbon Green Growth (low-carbon green growth). Since then, about 2% of the country’s
GDP has been accounted for by green technology projects. The focus is on energy, “green” modes of transport,
technologies for recycling and environmental research.

In June 2010, the Global Green Growth Institute (GGGI), a research and development center for developing
countries, appeared in Seoul. Today GGGI is a partner of many international organizations and institutions.
The institute’s members are 27 countries. Thanks to GGGI, investments in the development of a green economy in these countries in 2017 amounted to $524.6 million. In accordance with the decisions of the Rio + 20 UN Conference, food security, nutrition and sustainable agriculture are priority areas for the development of a green economy. Ensuring food security in terms of the physical and economic accessibility of high-quality food is in turn impossible without the sustainable development of the primary production base of agriculture (Patel 2013; Akhmetova et al. 2019).

In agriculture, Kazakhstan must adhere to the six principles of “green” agriculture, which will ensure the development of the sector and at the same time will allow preserving and improving the environment (table 1). The practical implementation of the above principles of agricultural development to be implemented as follows.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventing land degradation and restoring degraded land</td>
<td>Introduce more efficient farming methods that minimize tillage, preserve organic matter and moisture in the soil, prevent soil erosion by wind and water, for example, by using equipment that provides zero tillage, and alternating crops</td>
</tr>
<tr>
<td>Preventing further overgrazing</td>
<td>Preservation of pasture land by increasing the availability of remote pastures and restoration of pasture land, strengthening of controlled pasture turnover and ensuring the conservation of moisture in the soil</td>
</tr>
<tr>
<td>Efficient use of water</td>
<td>Introduction of efficient use of water resources in agriculture, for example, drip irrigation, spray irrigation, discrete irrigation, use of greenhouses</td>
</tr>
<tr>
<td>Rational use of resources</td>
<td>Transition to the use of agrochemicals and fuels that protect users, minimize harm to the environment, reduce / prevent contamination of soil, air and water, for example, through the use of integrated plant protection from pests, the use of fertilizers based on the results of soil research and improved fuel efficiency of agricultural equipment</td>
</tr>
<tr>
<td>Waste minimization and reuse</td>
<td>Introduction of agricultural products processing methods that ensure maximum value added and waste minimization, including through the reuse of residual waste in production, for example, compost, biogas, etc.</td>
</tr>
<tr>
<td>Carbon dioxide capture</td>
<td>Planting permanent crops, such as agro-amelioration plants, tree crops, perennial crops, permanent crops that trap carbon dioxide and are resistant to soil salinization, as well as contributing to adaptation to climate change</td>
</tr>
</tbody>
</table>

The most important tasks facing the industry today are the production of high-quality and healthy food products, the maintenance and improvement of the viability of ecosystems, and the sustainable development of rural areas. These tasks are implemented within the framework of the already existing concept of organic agriculture.

In Kazakhstan, there are extremely favorable conditions for the development of organic agriculture: the area of agricultural land on which mineral fertilizers are used makes up 1.5-2% of the total area, herbicides are used on 3-4% of the total area, the cultivation of GMOs is prohibited.

The UK Food Standards Agency refers to organic products (organic products) as agricultural and food products manufactured without using (or with less use) synthetic pesticides, synthetic mineral fertilizers, growth regulators, artificial food additives, and without using genetically modified food products (Barbier 2012).

According to the International Federation of Organic Agriculture, organic agriculture is aimed at working with ecosystems, biogeochemical cycles of substances and elements, supports them and receives the effect of their optimization. Organic agriculture is obliged in the long term to support the health of both specific objects with which it deals (plants, animals, soil, man), and the entire planet (Barbier, 2012). The beginning of the twentieth century is considered the period of origin of organic agriculture In 1924, Rudolf Steiner gave a series of lectures on the “Agricultural Course”, which became the concept of biodynamic farming.

The concept of organic agriculture was first introduced by an agricultural specialist at Oxford University by Lord Northbourne in the book Take Care of the Land, published by him in 1940. In the same period, a series of studies by Albert Howard on the negative effects of chemical fertilizers on the health of animals and plants and the experiments of Eva Balfour on comparison of conventional and organic agriculture appear. In the US, the most influential carrier of new ideas was Jerome Irving Rodale, who popularized the term “organic farming”
and in 1942 founded the magazine Organic Farming and Horticulture. In 1972, the International Federation of the Organic Agricultural Movement was founded in Versailles, whose mission is to spread information and introduce organic agriculture in all countries of the world (Cohen, Vandenbergh 2012).

In Kazakhstan, since 2015, the FAO - Food and Agriculture Organization of the United Nations has been developing the Project “Support for the Development of Organic Agriculture and Institutional Capacity Building in Kazakhstan”; a budget of $ 338,000 is provided.

Kazakhstan uses extensive farming methods for growing grain, leguminous crops, and in animal husbandry. The areas of agricultural land are extensive and quite fertile for farming and grazing, low temperatures in winter naturally disinfect the soil, distances and isolation do not contribute to the development of production systems dependent on synthetic components (nitrogen fertilizers, pesticides, herbicides, GMOs and funds obtained using nanotechnology). As a result, Kazakhstan is practicing organic agriculture, and the further transition to organic production is relatively uncomplicated.

Given the growing demand for organic products in European countries and the United States, organic agriculture can become one of the attractive sectors for Kazakhstan (OECD, 2015). Organic farming is regulated by the law “On production of organic products”. Kazakhstan has great potential in the development of organic agricultural production due to (1) the availability of significant land and natural resources, (2) traditional farming without the use of synthetic fertilizers and pesticides.

Currently there are no official data on the production of organic products and farms engaged in organic farming. However, according to the Food and Agriculture Organization of the United Nations (FAO). There are 29 manufacturers and 19 processing enterprises, mainly in Akmola, Almaty and Kostanay regions. In Kazakhstan, the lack of standardization, certification, management systems and labeling requirementscurrently limits the development of domestic and export markets for organic products. However, there are several operating international certification bodies on the market, and some private companies are also developing such systems.

The main advantages of the transition to organic farming in the country are the possibility of selling organic products at a higher price; increase competitiveness by improving quality; increase in export potential due to increasing demand for organic products from foreign markets; in the use of a wide range of legumes in crop rotations, which allows to solve the problem of feed and maintain the level of nitrogen in the soil; in increasing competition in the domestic market after joining the World Trade Organization. However, there are also difficulties in low access to financing; low sustainability of the agricultural sector due to the high level of debt burden on farms; lack of technology and lack of experience in the production and processing of organic products; psychological difficulties of transition to new farming methods.

Prospects for Kazakhstan are also in more rational use of labor and increase in profits of enterprises; in the care of the environment and health; high cost of mineral fertilizers and pesticides after years of practice in traditional agriculture. Due to the fact that organic farming is more complex than traditional agriculture, there is a high probability that the producer can make a mistake by significantly reducing the yield of agricultural crops, increasing morbidity, leading to infection by weeds and pests. In addition, the main food export groups of Kazakhstan - meat of animals grown in natural grazing, high-quality wheat - are in great demand in the global market for organic products, which opens up tremendous opportunities for further increase in exports.

It should be clarified that organic farming does not mean simply “the absence of synthetic components”. Organic production involves the use of such an approach as crop rotation, which prevents the degradation of natural resources, and also contributes to the restoration of naturally depleted soils. Ecological benefits from organic farming systems, with reduced production costs and higher prices in the market for such products, are real benefits for Kazakhstani farmers who are switching to organic management.

The global demand for organic grains (both food and feed) exceeds the available supply. Last year, prices for
organic wheat increased by 17% on the world market. This positive trend is expected to continue over the next few years. Historically, the countries of Eastern Europe (first of all, Ukraine, Romania and Russia) met the global demand for organic grains. At the moment, organic food grains have doubled in price, and the rise in prices for feed grain crops was about 75% or more compared to grains grown by traditional methods, which is encouraging more and more farmers, for example in Australia, to switch to organic production (Mazurova 2008).

Kazakhstan can find a niche and position itself in the organic cereal market, provided that a credible organic production system is created, while Europe will be open for export to the market. “Green” technologies are used in agriculture, in the business environment. Kazakhstan has already implemented two projects that fully meet environmental criteria. In 2015, the Center for Green Technologies appeared near Astana. It develops 35 innovative projects in the field of organic farming, resource conservation. 168 houses in the village use drip irrigation, pyrolysis ovens are installed in 5 houses, a year-round greenhouse, where different sources of heating are combined. The first in Kazakhstan “green” business center Talan Towers, built in Astana, received an international certificate of LEED. Most of the “green” technologies used in its construction were introduced in Kazakhstan for the first time. Talan Towers uses energy-efficient elevators, special energy-efficient glazing, and solar panels.

An important role in the “green economy” is assigned to the process of waste management. An example of recycled paper and cardboard waste is the population engaged in the manufacture of cardboard firewood using paper (cardboard) and water in the village of Chundzha (Almaty region). The resulting material is used to replace firewood. This method brings a double positive economic effect: the preservation of the forest estate and the growth of savings of the population, which leads to an increase in the welfare of citizens. If this method is implemented and applied in all regions of Kazakhstan, then forest losses can be minimized.

Conclusion

The strategy “Kazakhstan-2050” and the new political course of the country are building clear guidelines for the formation of a sustainable and efficient economic model. Green economy is defined as an economy with a high level of quality of life of the population, careful and rational use of natural resources in the interests of present and future generations, in accordance with the country’s international obligations. Today, the transition to a green economy is inevitable. Kazakhstan cannot remain aloof from the trends that are occurring in the world and the green economy is an urgent need for humanity in the 21st century. The rational use of natural resources, the development of a new paradigm based on the transition and the introduction of organic agriculture can be defined as targets in ensuring the sustainable economic growth of a country for functioning in the global economy.

Sources:


International Monetary Fund (IMF). 2011


On production of organic products http://adilet.zan.kz/eng/docs/Z1500000423


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ECONOMIC GROWTH AND SECURITY OF TRAFFIC PARTICIPANTS

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Abstract. The purpose of the research paper is to observe and analyze how the economic growth of EU countries is accompanied by growth of motorization rate and fatalities during the last decades in terms of inventory on increase of motor vehicles and accidents in road traffic in order to identify regulation of the motor insurance legislation. Research methodology is statistical analysis of economic growth and motorization rate and the accidents in the EU countries during the period of 2000 - 2017. In the research paper the quantitative analysis and comparison method are applied. Findings: research paper shows that in the EU countries with higher income level, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries with low income level the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. Practical implications: research paper demonstrates road traffic authorities need to know these specificities and take this into account in preparation of legislation to strengthen EU rules on motor insurance to better protect victims of motor vehicle accidents. Originality - paper analyses the relationship between motorization levels and fatalities of different EU countries during last decades.

Keywords: Economic growth, motorization rate, traffic fatalities, road traffic safety, Motor Third Party Liability Insurance.


JEL Classifications: F41, F42, L51, L91, N74.

1. Introduction

The aim of this paper is to overview the conditions of road traffic safety in EU countries and identify problems of Motor Insurance Directive (MID) practice. To obtain the aforementioned aim, the following objectives are set: to analyze the motorization level of EU countries, to identify relationship between economic growth and road traffic accidents victims, to overiew the impact of amendments of MID for increasing security of EU road traffic. Economic growth of countries is accompanied by growth of motorization rate. The growing number of motor vehicles in road traffic presents new challenges to security for road users. According the World Bank researches the traffic injuries now rank as the world’s eighth-leading cause of death and the number-one killer of young people ages 15 to 24 (World Bank, 2014). These findings impose the need to spread improvements in transport safety.

The compulsory insurance of motor vehicles is an important instrument in providing financial protection against claims for physical damage and injuries resulting from traffic accidents. Motor Insurance Directive enables to travel within the EU for EU residents with their vehicles on the basis of a single premium. EU resi-
dents can travel anywhere without the need to buy additional insurance. The current Motor Insurance Directive is a consolidation of five earlier Directives. To assess the effectiveness, efficiency and coherence of the motor insurance legislation, the European Commission announced an evaluation of the MID in 2016. The conclusion of the evaluation was that most elements of the Motor Insurance Directive remain fit for purpose, while certain amendments in specific areas would be appropriate. The Commission announced on possible amendments to enhance the protection of traffic accident victims in cases when insurer is insolvent, in improvement the recognition of claims history statements, risks due to uninsured driving, harmonization of minimum amounts of cover and the scope of the Directive. The methodology of article research for development of key drivers of Motor Third Party Liability insurance will be based on a thorough analysis of the transport sector.

2. Theoretical framework and Methodology

As the economy of EU member States grows, the level of motorization of the population increases; it causes a growing number of road accidents and the number of killed and injured people. The relationship between economic growth, motorization level and their negative consequences was analyzed by many authors (Law Teik Hua, Markus Brueckner, Daniel Lederman, Kopits and Cropper, David W. Jones, Bener et al). Kopits and Cropper examined the impact of income growth on the death rate due to traffic fatalities, as well as on fatalities per motor vehicle and on the motorization rate (vehicles/population) using panel data from 1963-1999 for 88 countries. Specifically, they estimated fixed effects models for fatalities/population, vehicles/population, and fatalities/vehicles and used these models to project traffic fatalities and the stock of motor vehicles to 2020. The relationship between motor vehicle fatality rate and per capita income at first increases with per capita income, reaches a peak, and then declines. This is because at low income levels the rate of increase in motor vehicles outpaces the decline in fatalities per motor vehicle. At higher income levels, the reverse occurs. The income level at which per capita traffic fatalities peaks was approximately $8,600 in 1985 international dollars. Projections of future traffic fatalities suggest that the global road death toll will grow by approximately 66 percent between 2000 and 2020 (Kopits and Cropper, 2003). Some studies have shown that there is a U-shaped relationship between road deaths and economic growth. In new research (Law Teik Hua, 2018; Ma et al., 2018; Aney et al., 2019; Blanchet et al., 2013) finds that this relationship also holds for non-fatal road injuries in developed countries, but not in countries which are developing. He writes that an increasingly urban population, more road vehicles, and a greater number of elderly people were all likely to decrease the number of road injuries in developed countries, but do the opposite in developing countries. Studies of developed countries showed an inverted U shape relationship between economic growth and road traffic accidents (van Beeck et al. 2000). Various studies have shown that there is an inverted U-shaped relationship, which is known as the Kuznets curve, between road deaths and economic growth: that is, road deaths increase at lower income levels, but decrease once the number has exceeded a certain threshold (Law Teik Hua, 2018; Owadally et al., 2019; Hsu et al., 2015; Ma et al., 2018; Aney et al., 2019; Blanchet et al., 2013; Rumson et al., 2019; Lucas et al., 2017; Tselentis et al., 2016; Tselentis et al., 2018; Factor et al., 2018).

Data were analyzed on economic growth, motorization rate and the accidents in the EU countries during period of 2000 - 2017 year. In the research paper the quantitative analysis and comparison method are applied. Main hypothesis of the research paper is following “In the EU countries of low income levels the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle, in the EU countries of higher income levels, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle“.

In case if hypothesis will be confirmed by performing statistical analysis of EU countries aggregated by their development levels authors provide an answer to the stated hypothesis as well as provide future research recommendations. In case if hypothesis will not be confirmed by data or the analysis it either will be dismissed or stay on the level of hypothesis for further investigations.
3. Results of the research

Tables and figures should be incorporated and mentioned in the text. They must be as close to the reference as possible and should be in a form suitable for publication when printed with a good quality laser printer. Figures will be printed in black and white and should be readily interpreted without the use of colour (e.g. see Figure 1). Tables and figures should be sequentially numbered in separate series and should meet the requirements that are provided in Table 1.

The level of economic development has been characterized by real GDP per capita ratio. The indicator is calculated as the ratio of real GDP to the average population of a specific year. GDP measures the value of total final output of goods and services produced by an economy within a certain period of time. It is a measure of economic activity and is also used as a proxy for the development in a country’s material living standards.

![Graph showing real GDP, euro per capita](image)

**Figure 1.** Real GDP, euro per capita

*Source: Eurostat data 2000-2017*

As Figure 1 shows real GDP per capita varies in Bulgaria from EUR 3.0 thou in 2000 year to EUR 6.3 thou in 2017. In Luxembourg during this period economic growth was from EUR 70.5 thou to EUR 80.3 thou. The nine EU member states belong to the group of low economic development. This countries’ group distinguishes by lower pace of economic development comparing with other EU countries. On average, real GDP per capita is from EUR 5.9 thou in 2000 to EUR11.5 thou in 2017 in this group. Six countries are involved into lower middle group of economic development, where real GDP per capita makes from EUR 14.5 thou to EUR 19.1 during 2000-2017 period; six countries belong to the group of the upper middle economic level with average GDP per capita from EUR 27.7 thou to EUR 31.7 thou; seven countries represent the group of high economic level with average GDP per capita EUR 35.22 thou to EUR44.72 thou. Finally, Luxembourg is the EU member state with very high level of economic development which makes approximately EUR 70.5 thou in 2000 to EUR 80.3 thou in 2017. According to the level of economic development, the authors have grouped the EU countries into five categories (Table 1).
Table 1. The groups of the EU countries by the level of economic development.


<table>
<thead>
<tr>
<th>Groups of the countries</th>
<th>Real GDP per capita, Euro average, 2010</th>
<th>Real GDP per capita, Euro average, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Low economic level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5910</td>
<td>11500</td>
</tr>
<tr>
<td>Romania</td>
<td>3000</td>
<td>6300</td>
</tr>
<tr>
<td>Latvia</td>
<td>4200</td>
<td>8300</td>
</tr>
<tr>
<td>Lithuania</td>
<td>5200</td>
<td>11700</td>
</tr>
<tr>
<td>Poland</td>
<td>6400</td>
<td>11800</td>
</tr>
<tr>
<td>Slovakia</td>
<td>7800</td>
<td>12700</td>
</tr>
<tr>
<td>Croatia</td>
<td>-</td>
<td>11500</td>
</tr>
<tr>
<td>Estonia</td>
<td>7600</td>
<td>14600</td>
</tr>
<tr>
<td>Hungary</td>
<td>7900</td>
<td>11800</td>
</tr>
<tr>
<td>II. Lower middle economic level</td>
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<td></td>
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<tr>
<td>Malta</td>
<td>14500</td>
<td>19100</td>
</tr>
<tr>
<td>Cyprus</td>
<td>13800</td>
<td>20400</td>
</tr>
<tr>
<td>Slovenia</td>
<td>20200</td>
<td>22700</td>
</tr>
<tr>
<td>Portugal</td>
<td>7800</td>
<td>19400</td>
</tr>
<tr>
<td>Greece</td>
<td>16200</td>
<td>17500</td>
</tr>
<tr>
<td>Czech</td>
<td>17600</td>
<td>17400</td>
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<tr>
<td>Czech</td>
<td>11200</td>
<td>17200</td>
</tr>
<tr>
<td>III. Upper middle economic level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>27700</td>
<td>31700</td>
</tr>
<tr>
<td>Italy</td>
<td>21400</td>
<td>24500</td>
</tr>
<tr>
<td>France</td>
<td>27300</td>
<td>26400</td>
</tr>
<tr>
<td>Germany</td>
<td>28900</td>
<td>32300</td>
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<tr>
<td>Belgium</td>
<td>29000</td>
<td>35500</td>
</tr>
<tr>
<td>Finland</td>
<td>30300</td>
<td>35000</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>30500</td>
<td>35700</td>
</tr>
<tr>
<td>IV. High economic level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>35220</td>
<td>44720</td>
</tr>
<tr>
<td>Sweden</td>
<td>35100</td>
<td>40700</td>
</tr>
<tr>
<td>Ireland</td>
<td>33800</td>
<td>42800</td>
</tr>
<tr>
<td>Denmark</td>
<td>33300</td>
<td>56400</td>
</tr>
<tr>
<td>Austria</td>
<td>42200</td>
<td>46500</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>31700</td>
<td>37200</td>
</tr>
<tr>
<td>V. Very high economic level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>70500</td>
<td>80300</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>70500</td>
<td>80300</td>
</tr>
</tbody>
</table>

According to the European Commission, the average decrease in the annual number of fatalities in Europe between 2000 and 2010 was 6% (European Commission 2013). According to the OECD, the total number of people injured in traffic accidents in EU, USA and OECD Member States between 1998 and 2010 decreased by 50%, 31% and 41%, (OECD 2011).

To ensure equal conditions for road users in the EU the precondition for joining the EU was the mandatory introduction of the Motor Third Party Liability (MTPL) insurance in 2004. Now after 14 years by comparing number of passenger cars in the newly joined EU Member States with the old EU countries can be evaluated traffic safety conditions according to the number of road traffic accidents. Firstly, there will be made the comparative analysis of motorization level in the new and old EU Member States.

According to ACEA in June 2018, passenger car registrations posted a robust increase (+5.2%) across the EU, totalling almost 1.6 million new cars. Results were diverse among the five major EU markets. The United Kingdom (-3.5%) and Italy (-7.3%) both posted declines, while demand for cars increased in France (+9.2%), Spain (+8.0%) and Germany (+4.2%). Over the first half of 2018, the European passenger car market grew by 2.9% to reach 8,449,247 units. The strong performance of the new EU Member States is worth highlighting, as registrations increased by 11.4% so far in 2018 year. Looking at the major markets, demand went up in Spain (+10.1%), France (+4.7%) and Germany (+2.9%), although sales contracted in the United Kingdom (-6.3%) and in Italy (-1.4%) during the first six months of 2018 year. Overall, the passenger car fleet in almost all of the
EU Member States has grown over the last five years. Comparing the increase of motorization level in the new and old EU member states, we can see different levels of cars per 1000 inhabitants (see Figure 2).

**Figure 2.** Motorization rate of the new EU Member States in 2000 - 2016 (passenger cars per 1000 inhabitants)

Source: Eurostat

According to Figure 2 the number of passenger cars in almost all new EU Member States has grown over the last years: the average number of cars per 1000 inhabitants was 505 in 2016. Amongst the new EU Member States with the highest “motorization rates” i.e. passenger cars per 1000 inhabitants, in 2016 was recorded in Malta (615), Cyprus (593), Poland (571) and Estonia (531). The highest growth rate was in Poland (118%), Romania (87%), Belgium (82%), Slovakia (65%), Estonia (60%). The lowest growth rate was in Slovenia (21%), Malta (24%), Lithuania (37%), Latvia (45%), Hungary (46%).

In Figure 3 are presented statistics on motorization growth of old Member States. The highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars. Thereafter followed Italy (625) and Finland (604). The lowest amount of cars per 1000 inhabitants was in 2016 among Ireland (439), Denmark (429) and Portugal (470).

In Figure 3 is presented statistics on motorization growth of the old Member States. The highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars. Thereafter followed Italy (625) and Finland (604). The lowest amount of cars per 1000 inhabitants was in 2016 among Ireland (439), Denmark (429) and Portugal (470). The highest growth rate over the 16 year period from 2000 to 2016 was recorded in Greece (61%), and Finland (46%). Other Member States recorded less growth of motorization in France (3,5%), Germany (4,1%) while one Member State (Portugal) recorded a decline in the number of registered passenger cars over the period observed: experienced a fall of 8,4% from 513 to 470 cars per 1000 inhabitants.
4. Discussion and interpretation of results obtained

In 2017, based on Community Road Accident Database (CARE) the European Union sees more than 40,000 fatalities and 1.7 million injuries from road accidents each year, i.e. the average number of people killed per 1 million inhabitants consisted 49. In Lithuania, according to CARE data, 67 people were killed per 1 million inhabitants in 2017. A higher number of people killed on roads per 1 million inhabitants in 2017 were represented in 6 European countries: in Greece (69 killed/million inhabitants), in Latvia (70 killed/million inhabitants), in Poland (75 killed/million inhabitants), in Croatia (90 killed/million inhabitants), in Bulgaria (96 killed/million inhabitants) and in Romania (98 killed/million inhabitants). The leading country between the EU Member States in 2017 was Sweden, where 25 people were killed per 1 million inhabitants. Since 2011 Lithuania was seeking to achieve an ambitious target of the National Road Safety Development Program for 2011–2017 to get between 10 European Union states showing the best results or to reduce the number of the killed per 1 million inhabitants to 60. But it didn’t managed to achieve this target: the number of people killed per 1 million inhabitants in Lithuania reached 67 in 2017 year and according to this indicator Lithuania took only 20 position among European Union countries. Since the start of the National Road Safety Development Program for 2011–2017 the number of fatalities per 1 million of population in Lithuania decreased by 27 %. In 2017, on the roads and streets of Lithuania 3192 injury accidents took place where 192 people were killed and 3752 were injured. Compared to 2016 the number of road accidents and people injured were almost the same – number of accidents decreased by 0,3 % and number of injured people increased by 0,1 %, the number of road fatalities remained unchanged (Statistics of fatal and injury road accidents in Lithuania, 2011–2017, Vilnius 2018).
Over a long time period, a clear downward trend can be observed in all Member States except Malta. In particular, the number of road traffic victims has been cut by two-thirds or more in Portugal (from 2,730 in 1996 to 563 in 2016, or -79.4%), Latvia (-73.4%), Lithuania (-71.8%), Spain (-67.0%), Greece (-66.7%) and Slovenia (-66.6%). Overall in the EU, the number of road traffic victims more than halved (-57.4%) between 1996 and 2016 (Eurostat, 2016).

European roads remain the safest in the world: the EU counted 49 road fatalities per one million inhabitants, against 174 deaths per million globally in 2017. According to data from the World Health Organization about 1.3 million people die each year on the world’s roads, of which 25,300 lost their lives in the EU last year. Thanks to decisive action at local, national and EU level, the EU has made impressive progress over the past decades. However, the progress rate has lately slowed down. After two years of stagnation (2014 and 2015), the number of road fatalities was reduced by 2% in 2016, and by another 2% in 2017. While the last two years give rise to some optimism, it will be very challenging for the EU to reach its ambitious target of halving the number of road deaths between 2010 and 2020. For every person killed in traffic crashes, about five more suffer serious injuries with life-changing consequences. Serious injuries are common and often more costly to the society because of long-time rehabilitation and healthcare needs. The Commission estimates that 135,000 people are seriously injured on Europe’s roads every year. As an overall trend, the performance gap between EU Member States has been narrowing year after year. Following a pronounced discrepancy in Member States’ road safety records in the 1970s and 1990s, a clear convergence began in 2000. In 2017 year, only two EU Member States recorded a fatality rate higher than 80 deaths per million against eight in 2011. In 2017, the majority of Member States had a road fatality rate below 60 deaths per million inhabitants, and eight of them stood below 40 deaths per million inhabitants.

In 2017 can be distinguished the following trends: the average level of motorization was 500 cars per 1000 inhabitants, and the average death rate per 1 million of population was approximately 50. Given that the highest real GDP per capita was in Luxemburg (80.3 thou euro per capita with the higher motorization rate (662 cars per 1000 inhabitants). In this country the number of fatalities was 56 per 1 million inhabitants in comparison with 159 in 2000 year. From other hand in Bulgaria the real GDP euro per capita was 6.3 thou euro per capita, the motorization rate - 443 cars per 1000 inhabitants with fatalities of 99 per 1 million inhabitants. In Table 1 the EU countries have been grouped into five categories, such as: very high economic level, high economic level, upper middle economic level, lower middle and low economic level thereafter, the relationship between motorization rate growth and decrease of fatalities among these countries’ groups has been examined.

Figure 4. Road fatalities per million of population in EU

Source: CARE, 2017
Figure 5. Relationship between income growth, motorization and fatalities in countries of different economic level (source: Eurostat)

Source: Eurostat

Figure 5 shows the relationship between motorization growth rate and decline of fatalities in countries of different economic growth level.

In Luxemburg, which is country of Very high economic level, the growth of motorization level during the period 2000-2016 consist 5 percent, as the number of fatalities decreased by 35 percent.

In the EU countries with High economic level (Netherlands, Sweden, Ireland, Denmark and Austria) motorization rate grew by 15 percent and the number of fatalities – decreased by 59 percent.

In the countries of Upper middle economic level motorization rate grew by 13 percent, while fatalities – drop by 58 percent.

In the Lower middle economic level countries the growth of vehicles number was 29 percent and fatalities – drop by 57 percent.

In the countries of Low economical level motorization level grew by 62 percent, as number of fatalities decreased by 50 percent.

Figure 6. The rate of increase in motor vehicles and fatalities per motor vehicle, %.
The results in Fig.6 confirm hypothesis that in the countries of higher income level, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries of low income levels the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. The key findings will be translated into objectives, which consequently lead to measures in the area of arrangements on Motor Third Party Liability insurance regulations development and improvements in transport safety.

Conclusions

Economic growth of countries is accompanied by growth of motorization rate, which results in an increase of road traffic injuries. Although the EU guarantees the free movement of persons, the member states differ in terms of economic growth, motorization growth rates, and fatalities on the roads. Scientists are trying to find the relationship between economic growth and road traffic accidents by creating models to project traffic fatalities and the stock of motor vehicles in future. The insurance of motor third party liability (MTPL) serves as powerful instrument for regulation problems arising after accidents. Insurance companies must take into account the accident rate and deaths in road accidents when calculating insurance premiums. However, these variables vary greatly in separate EU member states.

The Commission announced on possible amendments to enhance the protection of traffic accident victims in cases when insurer is insolvent, in improvement the recognition of claims history statements, risks due to uninsured driving, harmonization of minimum amounts of cover and the scope of the Directive. To obtain the aforementioned aim, the following objectives are set: to analyze the motorization level of the EU countries, to identify relationship between economic growth and road traffic accidents victims.

EU countries have been grouped into five categories, such as: very high economic level, high economic level, upper middle economic level, lower middle and low economic level thereafter, the relationship between motorization rate growth and decrease of fatalities among these countries’ groups has been examined.

The number of passenger cars in almost all new EU Member States has grown over the last years: the average number of cars per 1000 inhabitants was 505 in 2016. Amongst the new EU Member States with the highest “motorization rates” i.e. passenger cars per 1000 inhabitants, in 2016 was recorded in Malta (615), Cyprus (593), Poland (571) and Estonia (531).

Statistics on motorization growth in old Member States showed that the highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars, Italy (625) and Finland (604). The lowest amounts of cars per 1000 inhabitants were in 2016 among Ireland (439), Denmark (429) and Portugal (470).

Results of research on the relationship between motorization rate growth and decrease of fatalities among these countries’ groups confirmed hypothesis as in the EU countries of higher income levels, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries of low income levels the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. The key findings will be translated into objectives, which consequently lead to measures in the area of arrangements of Motor Third Party Liability Insurance regulation development and improvements in transport safety.

References


Blanchet, J., Lam, H. 2013. A heavy traffic approach to modeling large life insurance portfolios, Insurance, Mathematics and Economics,


The international MAIS trauma scale (Maximum Abbreviated Injury Score) has been used for the EU definition of serious road traffic injuries as from 2014. The scale 3 and more (MAIS3+) is the one applying to seriously injured.1–27


Abstract. The article discusses the current state and prospects for the further development (modernization) in the area of information security (IS) in Kazakhstan. Special attention is paid to the challenges that may arise when taking cyber security measures in relation to special requirements of standards to security and an independent IS audit at essential objects of the information and communication infrastructure (EOICI). The purpose of the study is to analyze the challenges on introducing modern standards of IS in the context of forming the national cyber security system in the Republic of Kazakhstan. The study has determined that the current challenges on introducing modern IS standards to maintain a high level of cyber security are related to the underdevelopment of the regulatory framework for the list of EOICI, the creation of an IS audit system and an information and analytical system to form national IS indicators. Recommendations have been given, and areas for the further study have been identified.

Keywords: national security; information security; cyber security; information security standard; essential objects of the information and communication infrastructure; information security audit; national indicators of information security


JEL Classifications: O31

1. Introduction

It is difficult to overestimate the importance of information for the security (IS) of the modern world. IS is often of high priority for a country, because it defines, on the one hand, the protection and, as a result, the sustainability of the main areas of the society’s (country’s) activity with respect to dangerous information impact (destabilizing, destructive, vulnerable, etc.) and, on the other hand, the intensity of the society’s development in a particular area through the effective use of knowledge accumulated by the humanity (Polyakov, 2016, p. 11).

The analysis of scientific references about IS shows that most experts agree that IS is an integral part of the national security and is

1) The protection of vital interests of an individual, society and state, which minimizes the harm caused by incomplete, untimely and unreliable information or negative information influence, due to the negative consequences of information technologies, as well as due to unauthorized distribution of information,

2) The state of security of the information environment/space that ensures its formation, use and development in the interests of citizens, organizations, and the state (Vladimirova, 2012, p. 48).

Officially IS is defined in the Law of the Republic of Kazakhstan “On the National Security of the Republic of Kazakhstan” (2012). This is the protection of the information space of the Republic of Kazakhstan, as well
as the rights and interests of the person and citizen, society and state in the information area from real and potential threats, which ensures sustainable development and information independence of the country.

According to A.S. Grachev, A.A. Kortnev, and K.A. Lazunin, IS is the ability of the system to withstand accidental or deliberate internal and external threats – the ability to protect subjects from the impact of negative information, i.e., it is primarily associated with the activities of the state, because in most cases it goes about certain unauthorized actions with information (Grachev, Kortnev, Lazunin, 2017, p. 95).

There is no doubt that the main institution that acts as an IS agent is the state that takes security measures through a number of certain political institutions. Political IS measures include identification of unilateral and multilateral interests through the exchange of information and negotiations, objective informing about the essence of conflicts and crisis problems by mass media (MM), creation of conditions for the professional activity of MM in tension areas to provide the international community with reliable information and to form the relevant world opinion, informational support of political (referendums) and electoral processes, analytical monitoring over the compliance with fundamental human rights and freedoms, and informational contacts with opposition groups, nongovernmental organizations in order to efficiently achieve consensus between the confrontation parties (Horne, 2016; Kantemirova et al., 2018).

One of the IS components is cyber security. The International Telecommunications Union (ITU) defines it as follows: cyber security is a set of means, strategies, security principles, security guarantees, risk management approaches, actions, professional training, practical experience, insurance and technologies that can be used to protect cyberspace, resources of an organization and a user (Guide to developing a national cybersecurity strategy - Strategic engagement in cybersecurity, 2018).

Referring to the analysis of international experience, the authors state that various regulatory documents define cyber security as

A set of organizational, legal, technical and educational measures aimed at ensuring continuous functioning of cyberspace (Cyberspace Protection Policy of the Republic of Poland),

The desired state of the information technology security when the risks to the cyberspace are minimized to the acceptable level (Cyber Security Strategy of Germany),

The desired state of an information system when it can counteract the challenges of cyberspace that may affect the accuracy, integrity and confidentiality of the data stored or processed by this system (Strategy for Security and Information Systems Defense of France), and

Protection of information systems that enter the cyberspace from attacks, ensuring the confidentiality, integrity and availability of the information processed in this space, detection and counteraction to attacks and cyber incidents (National Cyber Strategy of Turkey) (van der Meulen, 2015; Lisin, 2018; Shvetsova et al., 2018).

Table 1 shows legislative acts regulating cyber security in European countries.
### Table 1. Legislative Acts Regulating Cyber Security (van der Meulen, 2015)

<table>
<thead>
<tr>
<th>Country</th>
<th>Cyber strategy</th>
<th>Responsible authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>National ICT Security Strategy (2012), Cyber Security</td>
<td>Lead group on cybersecurity, Expert Center against Cybercrime</td>
</tr>
<tr>
<td></td>
<td>Strategy (2013)</td>
<td></td>
</tr>
<tr>
<td>Great Britain</td>
<td>National Cyber Security Strategy (2011)</td>
<td>Office of Cyber Security and Information Assurance,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Center for the Protection of National Infrastructure</td>
</tr>
<tr>
<td>Spain</td>
<td>National Cyber Security Strategy (2013)</td>
<td>National Cryptologic Center, National Intelligence Center, National Security Service</td>
</tr>
<tr>
<td>Italy</td>
<td>Basics of the National Cyber Security Strategy (2013)</td>
<td>President of the Council of Ministers</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>National Cyber Security Strategy for 2015 – 2020</td>
<td>National Security Department, National Center of Cyber Security</td>
</tr>
</tbody>
</table>

**Source:** Compiled by authors

Most countries define the following main threats to the national cyberspace:

– Cyber espionage and military operations the state is aware of and supports. All technologically advanced states and corporations become an object of cyber espionage that aims at capturing state or industrial secrets, personal data or other valuable information,

– Use of the Internet for terrorist purposes. Terrorist groups use the Internet for propaganda and recruiting supporters.

– Cybercrime: theft of personal data and laundering of the illegally obtained funds. Attackers sell information on bank card numbers, passwords, and malware.

– As a rule, the national legislation of most countries regulates the issues related to personal data protection (Canada, the Netherlands, Sweden, and Finland), protection of e-commerce, security of electronic transactions and payment instruments (the USA, Canada, Poland, and Italy), and protection of important infrastructure objects and information systems (France) (Pupillo, 2018; Chernova et al., 2017; Sagiyeva et al., 2018).

Today most European countries are actively modernizing their own security sectors in compliance with the challenges, especially taking into account the potential of using the Internet. It comes with active reformation of management systems by the relevant security sector, normalizing the regulatory field, which should ensure the integrity of the state policy in this area; active explanatory work among the population on dangers of cyber threats; the increase in the number of units engaged in the cyber defense system; and strengthening the control over the national information space.

On October 6, 2016, by the Decree of the President of Kazakhstan, the Ministry of Defense and Aerospace Industry of the Republic of Kazakhstan (hereinafter referred to as the MDAI RK) was established (2016). One of the main activities of the MDAI RK is to pursue the state policy in IS in the area of informatization and communication (cyber security). By the same Decree, the Government of the Republic of Kazakhstan was ordered to establish the Committee for Information Security (hereinafter referred to as the CIS) that would actually fulfill functions of the authorized body (regulator) on developing the state policy in the area of the national IS.

According to the Concept of Cyber Security adopted on June 30, 2017 (Decree of the Government of the Republic of Kazakhstan No. 407, 2017), nowadays a set of national and harmonized technical standards in IS is being updated. In terms of compliance with IS, this primarily includes the development of relevant legal acts, the creation of a unified (universal) system of cyber threat indicators and the implementation of a national IS audit.
system at essential cyber defense objects. In addition, the main subjects of the national cyber security should also be subject to audit that should be independent, regular and carried out in accordance with international auditing standards.

At the same time, according to the Law of the Republic of Kazakhstan “On Standardization” adopted on October 5, 2018 (2018), the principle of voluntary choice of standards (clause 1 Article 4) is approved unless otherwise established by the legislation of Kazakhstan. Thus, according to this legal norm, all cyber defense objects on the territory of Kazakhstan are a priori free in choice, use, and even in the development of IS standards. However, according to the second part of the same norm, there are restrictions for the Unified Requirements in Information and Communication Technologies and IS (hereinafter referred to as the Unified Requirements) approved by Decree of the Government of the Republic of Kazakhstan No. 832 dated December 20, 2016 (2016), and they are important enough. Thus, the Unified Requirements approve a special mode of standardization, certification, auditing, and responsibility for complying with the requirements of information and cyber security for EOICI.

The purpose of the study is to analyze problems on introducing modern IS standards in the context of forming the national cyber security system of the Republic of Kazakhstan.

The hypothesis of the study is as follows: the current problems of introducing IS standards to maintain a high level of cyber security are associated with the underdevelopment of the regulatory framework for the list of EOICI, the creation of an IS audit system and an information and analytical system for the formation of national IS indicators.

According to the results of the study, it is possible to conclude that the goal set in the study has been achieved.

2. Methods

The study methodology is based on expert discussion related to determining the problems of introducing modern IS standards in the context of forming a national cyber security system of the Republic of Kazakhstan by using the moderation method.

Thirty-seven experts, employees of the CIS of the MDAI RK, as well as the management of private IT companies involved in ensuring cyber security of enterprises and organizations participated in the expert discussion.

The experts were challenged to define the main problems of introducing modern IS standards (cyber security).

The expert discussion aimed at determining the importance of the problem arising in this aspect. At the same time, the use of moderation instruments allowed managing and channeling the discussion.

The results of the discussion were processed by defining the main problems of introducing modern IS standards during the discussion and assessing the consistency of expert opinion according to the concordance coefficient (W).

3. Results

During the expert discussion by using the moderation method, three main problems of introducing modern IS standards (cyber security) were identified:

- Underdeveloped list of EOICI,
- Need to create an IS audit system, and
- Need in an information and analytical system to form national IS indicators.
Table 2 shows the consistency of expert opinion on the importance of each of the problems (calculation of the concordance coefficient).

**Table 2. Calculation of the Concordance Coefficient**

<table>
<thead>
<tr>
<th>Problem</th>
<th>EOICI</th>
<th>IS audit</th>
<th>System of IS national indicators</th>
<th>Σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of ranks (Σ xi)</td>
<td>42</td>
<td>70</td>
<td>110</td>
<td>222</td>
</tr>
<tr>
<td>Deviation from the average sum of ranks (x – x av)</td>
<td>-32</td>
<td>-4</td>
<td>36</td>
<td>-</td>
</tr>
<tr>
<td>Squares of deviations of rank sums (x – x av)²</td>
<td>1,024</td>
<td>16</td>
<td>1,296</td>
<td>2,336</td>
</tr>
</tbody>
</table>

Source: Compiled by authors

W = 12 S / m² (n³ – n), where m is the number of experts,

W = 12 · 2,336 / 372 (33 – 3) ≈ 0.853

Thus, it is possible to consider that the experts’ opinions on the importance of each problem are rather coordinated.

**Discussion**

According to Kaspersky Lab, the CIS cybercrime market doubles every two years, and Kazakhstan has become one of the top ten countries by the number of users attacked by mobile banking Trojans (position 10), mobile extortionists Trojans (position 3), miners (position 4), where users underwent the highest risk of being infected via the Internet (position 10). (Development of information threats in the second quarter of 2018. Statistics, 2018) At the same time, for the first nine months of 2018 about 1.5 thousand cybercrimes were registered in the financial sector of Kazakhstan. The level of crimes has increased five times over the past three years (Cybersecurity strategy in the financial sector of the Republic of Kazakhstan for 2018 – 2022, 2018).

The above reinforces the urgency of analyzing the problem of introducing modern IS (cyber security) standards. Speaking about the underdevelopment of the EOICI list, the experts state that it is necessary to ensure the following for all EOICI:

• Mandatory IS requirements (as set by the Government of Kazakhstan), including those to their creation, commissioning, operation and modernization, taking into account international standards and the specifics of the industry the relevant EOICI belong to,

• Mandatory independent IS audit, and the procedure and requirements to it must be also centrally approved by the Government of Kazakhstan, and

• Responsibility of owners and/or managers of enterprises, institutions and organizations included in the list of EOICI to ensure cyber protection of their communication and technological systems, to protect technological information in accordance with the requirements of the law, to promptly report cyber security incidents, and to organize an independent IS audit at such objects.

As on April 2019, due to the lack of legal acts and bylaws, all these requirements to EOICI are practically not specified, as well as there is no system and the list of EOICI.

At the same time, state information resources or sensitive information should be processed in the system using a comprehensive IS system with confirmed compliance. Obviously, almost all future EOICI are included here, which in its turn means that in accordance with the Unified Requirements, today they must comply with the requirements of the national standard ST RK GOST R ISO/MEK 15408-2006 “Information Technology.

However, in any case, the obligation to use ST RK GOST R ISO/MEK 15408-2006 is caused not by referring to EOICI as a cyber security object, but by the mode of access to the information processed in the system. Thus, obviously, a considerable number of EOICI will fall under the effect of the above standard, but, firstly, not all of them, and secondly, above all, these will be government agencies and departments.

Meanwhile, Kazakhstan continues harmonizing and introducing modern international IS standards, above all, a series of international standards ISO/IEC 27000, developed by the International Organization for Standardization (ISO) together with the International Electrotechnical Commission (IEC) that is constantly supplemented by new documents. The series is a model (framework) for the development, implementation, operation, monitoring, analysis, support and improvement of the information management system both at the general level (27001) and in certain sectors and industries – finance, transport, energy, healthcare, telecom operators, cloud computing, infrastructure projects, auditing and certification, etc. (Lipina et al., 2017; Limba et al., 2017; Luhn rt al., 2017).

The implementation of an IS management system (ISMS) in accordance with ISO/IEC 27000 makes it possible to optimize the protection of information resources and management of risks for these resources. Due to this, and also due to upgrading of standardization systems and procedures for ordinary cyber security objects, as a whole, the situation in this area is developing optimally.

However, the issues related to forming the basis of EOICI, including the “membership conditions” in it and methods of protection, remain problematic and much urgent at the same time. Due to the fact that the recently adopted Cyber Security Concept provides much stricter and more responsible requirements and the compliance with cyber security for EOICI as compared to other cyber security objects, the method and criteria for forming the list of EOICI have become special in Kazakhstan (it will directly influence the choice of objects that will and will not fall under these strict standards).

The experts formulated two criteria. According to them, the information and telecommunication system (ITS) of an object can be referred to as essential infrastructure. They are 1) a list of industries that are strategically important for the functioning of the economy and the security of the state, society and population, 2) the nature of possible negative effects in various areas in case of a cyber attack on ITS.

In the experts’ opinion, it is also necessary to scale “negative impact” on the ITS of an object (for example, duration, territorial coverage, estimated losses, threat to the national security, etc.) and, according to this scale, referring it to essential/non-essential infrastructure.

However, the experts explain that if such assessment is made by the CIS of the MDAI RK based on the lists provided by the executive authorities and other interested bodies in a nonpublic manner and guided by extremely vaguely defined criteria (which allows for their arbitrary interpretation), it seems to be a rather controversial approach, because the procedure for creating the first national registry of EOICI, apparently, requires more extensive communications and consultations – including with the nongovernmental sector. As for preparing the above offers by the sectoral executive authorities, it would be much more efficient if it involved the participation of specialists in the area of national security and ICT and relevant specialists.

In addition, according to the experts, it is necessary to provide mechanisms for continuous monitoring and updating the list of EOICI, which is necessary, taking into account the dynamics of socio-economic changes, on the one hand, and the escalation of cyber threats, on the other hand. The international experience proves it. At the same time, according to the experts, it is necessary that the formation of the EOICI list does not create prerequisites for excessive and unreasonable burden on small and medium-sized enterprises most of which must not be referred to as the essential infrastructure. In this regard, one of the experts (Sergey K., 34 years old) insists that “when preparing legislative offers for introducing responsibility for the violation of the requirements
to cyber defense”, it is necessary “to clearly define the subjects that are the owners (managers) of EOICI” “based on their importance, in particular, for the national security and defense of the state”.

In addition, the experts believe that the dynamics of the modern processes do not allow “clearly defining” such “subjects” once and forever. Therefore, there should be a clear and understandable methodology and a thoroughly coordinated system of the most specific (up to approving accurate indicators wherever possible) criteria for classifying cyber defense objects as EOICI. It will also have to be reviewed periodically, but at reasonable intervals. It is important that this system allows for the minimum possible number of ambiguous interpretations. This would help to optimize the process of forming the final registry, and would reduce the risks of interdepartmental fights, duplication of powers and corrupt practices. In the future, the EOICI registry, as well as the methodology for its formation will obviously have to be adjusted directly in practice, in the “real-time mode”.

The identification, categorization and registration of EOICI are a difficult problem not only in Kazakhstan, but also in other states. It is solved very differently in various countries. There is considerable international experience that is being studied in some places in Kazakhstan, although mostly superficially, in the context of a broader perspective. At the same time, the urgency of the problem and the unsatisfactory level of its legal understanding indicate the need in further scientific and analytical study in this area.

According to the expert opinion, in the area of cyber security, it is necessary to form a list of international standards in the area of electronic communications, information protection, information and cyber security that must be translated and harmonized. Besides, it is necessary to implement their standards and introduce the IS audit system in government agencies and essential infrastructure objects. As a part of these plans, the CIS must develop a number of draft regulations regarding the implementation of the IS audit system, ensure the implementation of IS audit at essential infrastructure objects, set requirements to IS auditors, determine the order of their certification (recertification), coordinate, organize and carry out the audit of the security of EOICI communication and technological systems for vulnerability.

Thus, the CIS must develop a Concept for the introduction of the IS audit system that should define the basic principles for introducing and implementing the IS audit system in Kazakhstan, a procedure for certifying IS auditors, their training and appraisal, and relevant control over the completeness and adequacy of service provision in this area at set intervals after the certificate is submitted, as well as systematization and generalization of the IS audit results by submitting reports to central and specialized authorities. In addition, a model for the IS audit system functioning should be offered and the main stages of its implementation in Kazakhstan should be defined.

At the same time, according to the experts, it is supposed to accredit auditors/auditing organizations for checking IS according to the modern international standard ISO/IEC 17024-2014 “Conformity assessment. General requirements for personnel certification bodies” that was confirmed and enacted in Kazakhstan in 01.01.2017. It is supposed to audit IS management systems (ISMS) in accordance with the ST RK ISO/IEC 27001-2015 standard that is generally consistent with international practices.

The idea of experts about “creating an information and analytical system for forming the national IS indicators” can be also considered as relevant to the current European standards and practices. Kazakhstan does not pay special professional attention (with some exceptions) to this issue, while the world is actively conducting relevant research and development. For example, IS indicator complexes were developed and standardized several years ago by the European Telecommunications Standards Institute (ETSI), an influential international nonprofit organization that brings together representatives of the European and global telecom industry and is officially recognized by the European Commission as the leading agency in the development of industry standards. The international standard ISO/IEC 27004-2016 is also devoted to monitoring, measuring, analyzing and evaluating security in IS management (i.e., defining technologies based on quantitative indicators – quality characteristics). The above ETSI methodology was developed in accordance with it.
Taking into account such world experience and the general orientation of the Kazakh sectoral legislation to international standards, it would be logical to harmonize or confirm the relevant standards by the Gosstandart of the Republic of Kazakhstan, formally put them into action, and further develop national IS indicators based on them, as well as to introduce the information and analytical system to form them. This way is typical, for example, for EU and many other countries. The practice shows that it provides the minimum cost with the maximum effect: safety standards are complied with, IS is strengthened and, due to the unified nature of standards, international/cross-border exchanges are not restrained.

However, some experts offer another approach:

– The creation of a “central part” (and later “territorial parts”) of an information-analytical system for the formation of national IS indicators that will provide an opportunity to monitor and inform central and specialized authorities of Kazakhstan “on the status of IS in certain institutions, regions, and the state, as a whole”,

– The creation of an integrated IS system (ISIS) with the confirmed correspondence in the information-analytical system of forming the national IS indicators,

– Periodic “works on reviewing threats to information” in this information-analytical system, assessment of its sustainable functioning and “if necessary, an increase in the capacity of the system”.

In this case, the experts say, first of all, about creating a specialized intradepartmental (controlled by CIS) administrative-bureaucratic vertical that covers the whole territory of Kazakhstan, supervisory control functions and the possibility of further expansion (“capacity increase”) based only on the relevant intradepartmental decision.

It is necessary to note that the idea of a “system to form the national IS indicators” correlates little with the Cyber Security Concept that does not mention a system of national IS indicators.

The approach to solving the key issue offered by some experts – IS audit in Kazakhstan – is ambiguous. Some experts consider the following variant as the only true: “introducing an IS audit system at the national level and using IS audit services that can be provided by national (the context makes it clear that it is in contrast to international, according to the “or-or” principle) auditors (companies)”. It is necessary to state that such model does not meet both international standards and the most successful international practices of carrying out the IS audit. It is well known that the activities of international audit companies (including sensitive areas, such as verification of EOICI IS) in the modern world are one of the foundations and constants of the adequate functioning of states and economies. The idea of refusing, even minimizing their participation in the IS audit at Kazakh objects, based on national security considerations, is somewhat ambiguous, because it can considerably narrow down the possibilities of creating modern audit mechanisms.

Some experts consistently pursue the idea of creating a closed cycle unified IS audit system (from training centers for auditors to a network of certified auditing institutions) as a part of CIS on the whole territory of Kazakhstan. Its scope would allow “monitoring the protection of information resources in the state, which would provide online information about the real state of IS in certain institutions, regions and in the state as a whole”. To a large extent, it complies with the requirements of the Cyber Security Concept. At the same time, it is necessary to take into account that attempts to create an IS audit system by using a similar model in the real life will cause an excessive concentration of relevant functions and resources in one department, which in its turn will generate a whole range of risks – administrative, regulatory, economic, etc.
Conclusion

1. Currently the national cyber security system of Kazakhstan, as well as its components such as IS standardization and certification and the associated regulatory and legal framework (bylaws) are being formed.

2. The modernization of the relevant legislation (the Kazakh Law “On Standardization”), as well as institutions and standardization procedures for ordinary cyber defense objects contributed to developing the situation in this area in the optimal direction — the IS standardization base is becoming more and more modern and diversified in Kazakhstan, industry international standards are being actively harmonized.

3. The cyber security remains potentially problematic. It includes the cyber defense of the objects related to EOICI, more precisely, the mandatory audit of compliance with the IS standard (and mandatory) requirements by such objects.

4. One of the ways to solve the problem is to organize consultations and establish cooperation between CIS specialists and reputable auditing companies (such as PricewaterhouseCoopers or Ernst & Young), specialized international organizations (such as ENISA or ISACA), and industry professional associations. Such interaction aims at searching for a confirmed mode of the IS audit system that would meet international standards in this area.

5. Despite the fact that the formation of the IS audit system will be directly related to the activities of a significant pool of (future) nongovernmental EOICI, it is necessary to consider the feasibility of organizing a number of consultations between the subjects of the national cyber security system (chaired by the CIS) and the responsible representatives of those nongovernmental objects that are the most important for ensuring the information security and, in general, the national security of Kazakhstan in order to:
   a) Coordinate positions on the conceptual vision of the IS audit system,
   b) Elaborate practical issues related to functioning of this system directly in relation to nonstate EOICI.

6. It is necessary to ensure the publicity of reports (as an annual report) of subjects of the national cyber security system of Kazakhstan about the state of implementing the provisions of the Cyber security strategy.

7. In order to properly protect EOICI from cyber attacks, it is essential to additionally study the international expertise in this area, recommendations of specialized international organizations, and the possibility of using them in Kazakhstan. In the future, taking into account the studied material, it is necessary to form a confirmed regulatory framework regarding the identification, registration and categorization of EOICI.

References


Polyakov, V.P. (2016). Aspects of information security in information training. Moscow: FSBSE “IU RO”, 135. http://iuaro.ru/wp-content/uploads/2017/08/%D0%9F%D0%BE%D0%BB%D1%8F%D0%BA%D0%BE%D0%B2-%D0%B2%D0%BD%85%D1%80%D1%81%D1%82%D0%BA%D0%B0.pdf


Abstract. The article discusses the problem of prevention of radicalisation in religious schools in Europe. In this publication the authors of the publication aim to present a systematic analysis of the legal framework of religious education and its relationship and limitations in the aim to prevent radicalisation. In order to achieve the aim of the research the following tasks will be carried out: revealing of the essence of the freedom of right of thought, religion and conscience and their relation to religious education; analysing documents, strategies and policies addressing the prevention of radicalization in Europe; evaluating the intersection of right to religious education and the need to prevent radicalisation. The question is relevant due to the ever-increasing number of terrorist acts performed by persons who have been born in European states (so called home-grown terrorists). The publication discusses the right to religion and the right to religious education and its limitations. The development of EU policy in the field of counter-terrorism and counter-radicalisation is extensively discussed. Finally, the guidelines are drawn for the conciliation of the freedom to religion and beliefs and the pressing need to prevent persons from radicalisation.

Keywords: freedom of religion; religious schools; fight against radicalisation; EU anti-radicalisation policy; prevention of terrorism; limitations of human rights.


JEL Classifications: I21, K38, H56.

1. Introduction

The security in Europe is influenced by the migration phenomenon (Besenyő 2016; Androniceanu, Vasile 2016, Vasile, Androniceanu 2016; Čajka, et al. 2018; Škuflić et al. 2018; Lialina 2019). International migration has been on the rise in the previous decades and has evolved into a worldwide phenomenon (Gryshova, et al. 2019; Todorov et al. 2019). Migration causes also problems which need to be solved by the governments in order to secure their societies which involves also clashes with the rights of the migrants.

In February 2018 it was announced that the new French government program will provide for a rigorous oversight of private Islamic schools, which have recently grown in France. Such semi-religious schools are attended by 74 thousand pupils. By spreading an ideology that is completely contrary to the values enshrined in the French Constitution, these uncontrolled institutions cause great harm to society (Sudikienė 2018). These measures are foreseen in the national plan of the French government “Prevention to Protect”. National Plan for the Prevention of Radicalization, adopted on 23 February 2018. (Le Gouvernement de la République française 2018). The very first chapter and first measures are dedicated to the prevention of radicalisation in schools and stress the importance of Republican values in French education. It further foresees a stricter oversight of religious Muslim schools in France.
Why did the need arise to take such measures of control? It is enough to look at some statistics, starting with the Paris attacks of November 2015 “by gunmen and suicide bombers hit a concert hall, a major stadium, restaurants and bars, almost simultaneously - and left 130 people dead and hundreds wounded.” (BBC 2015). All of the known attackers were either French or Belgian citizens, therefore so called ‘home-grown’ terrorists. In total, since 2015, more than 230 people in France have been killed in terror attacks, most of them perpetrated by French and European nationals affiliated with or inspired by the Islamic State in Iraq and Syria (ISIS) militant group. (The Straits Times 2018). “France’s firm belief that Islamic State militants planned the attacks – and the possibility that at least one assailant may have posed as a Syrian refugee – are fueling arguments over whether Europe is doing enough to protect itself from terrorists who might infiltrate the thousands of migrants arriving daily from the Middle East and elsewhere.” (Kis-Benedek 2016). Terrorism is one of the most dangerous and unpredictable phenomenon of our times, which is gaining a great variety of forms and a more threatening scope. (Beinoravičius, Vainiutė 2017)

The most recent report of Europol on terrorism also stresses that “In recent years there has been an increase in the frequency of jihadist attacks, but a decrease in the sophistication of their preparation and execution. Jihadist attacks, however, cause more deaths and casualties than any other terrorist attacks.” (Europol 2018). Furthermore, it is stressed in the report that “Jihadist attacks are committed primarily by homegrown terrorists, radicalised in their country of residence without having travelled to join a terrorist group abroad.” (Europol 2018). The importance of counter radicalisation may be illustrated by a story provided in the same report of Europol, where in Denmark a teenage girl was attempting to commit a terrorist act and trying to make bombs to be used in terrorist attacks against her own former local school and against a Jewish school in Copenhagen. (Europol 2018). The report indicates that “The girl, who lived in a village in the countryside, became radicalised via the internet and chat contacts in just a few months after having converted to Islam. She bought chemicals to produce TATP and started experiments with the substance in the basement of her house. She was 15 years old when she committed the offence.” (Europol 2018, p. 19). Thus, this is not a question of only adults committing such crimes, but young children and teenagers are becoming radicalised, therefore the question of countering radicalisation narrative in education settings is of utmost importance.

The European Economic and Social Committee (EESC) had stressed in 2017 the importance of addressing young people in anti-radicalisation policies as violent extremism “motivated by radical ideologies has many faces, but many of them are young. Often it is young people, who come from a wide range of socioeconomic backgrounds and with vastly different levels of education, who are recruited. Young women are increasingly being recruited too.” (EESC 2017). It also expressed concern that “Young people vulnerable to radicalisation that can lead to violent extremism often feel excluded and marginalised by society or confused by identity issues and change. Radical ideologies often claim to provide guidance, direction and support in daily life and compensate for feelings of inferiority due to various reasons. This is where civil society can play a major role by providing alternatives and, more generally, contribute to a sustainable social and values-based resilience against radicalisation.” (EESC 2017).

Radicalisation leading to violent acts of terrorism is a great danger to the security of European Union as a whole and as well to Member states. The European Security strategy outlines that in order to diminish the threat of radicalisation and terrorism it is foreseen that the work on education, communication, culture, youth and sport is important to counter violent extremism. The EU pledges to “work on counter-radicalisation by broadening our partnerships with civil society, social actors, the private sector and the victims of terrorism, as well as through inter-religious and inter-cultural dialogue. Most crucially of all, the EU will live up to its values internally and externally: this is the strongest antidote we have against violent extremism.” (EU High Representative 2016.).

In this publication the authors of the publication aim to present a systematic analysis of the legal framework of religious education and its relationship and limitations in the aim to prevent radicalization. This may be analysed from the right to religion or the right to education, but in the present publication we will deal with the right to religion and as corollary – right to religious education.
In order to achieve the aim of the research the following tasks will be carried out:
1. Revealing of the essence of the freedom of right of thought, religion and conscience and their relation to religious education;
2. Analysing documents, strategies and policies addressing the prevention of radicalization in Europe.
3. Evaluating the intersection of right to religious education and the need to prevent radicalisation.

2. Right to religion in the context of education

Rights to freedom of religion, thought and conscience are so called civil and political rights, which are referred to as the first-generation human rights. These rights usually are named as fundamental rights, because they are related to very fundamental values for a human being (the right to life, as well as spiritual life, the right to dignity, the right to freedom and equality, the right to immunity, etc.). (Pranevičienė, Margevičiūtė 2012; Birmontienė, Jarašiūnas et al. 2002). Freedom of religion or believes, conscience and thought is acknowledged as an individual right to be protected in one's spiritual and transcendental relationships, moral attitudes and intellectual activity.

Religion may be described as “the service and worship of God or the supernatural: commitment or devotion to religious faith or observance, […] a personal set or institutionalized system of religious attitudes, beliefs, and practices, […] a cause, principle, or system of beliefs held to with ardour and faith”. (Merriam-Webster 2018). Usually religion is associated with traditional majority, minority or new religious beliefs in a transcendent deity or deities. In the field of human rights, the use of term “religion” also signifies the right to non-religious beliefs. Article 18 of the Universal Declaration of Human Rights was explained by the Office of General Commissioner for Human Rights of the United Nations: “Article 18 protects theistic, non-theistic and atheistic beliefs, as well as the right not to profess any religion or belief. The terms “belief” and “religion” are to be broadly construed. Article 18 is not limited in its application to traditional religions or to religions and beliefs with institutional characteristics or practices analogous to those of traditional religions. The Committee therefore views with concern any tendency to discriminate against any religion or belief for any reason, including the fact that they are newly established, or represent religious minorities that may be the subject of hostility on the part of a predominant religious community” (UN HRC 1993).

The exercise of religion, according to the UN HRC, includes “The freedom to manifest religion or belief may be exercised “either individually or in community with others and in public or private”. The freedom to manifest religion or belief in worship, observance, practice and teaching encompasses a broad range of acts.” (UN HRC 1993). These acts include ritual and ceremonial acts directly expressing the belief, as well as “well as various practices integral to such acts, including the building of places of worship, the use of ritual formulae and objects, the display of symbols, and the observance of holidays and days of rest.” (UN HRC 1993). According to UN HRC, “In addition, the practice and teaching of religion or belief includes acts integral to the conduct by religious groups of their basic affairs, such as the freedom to choose their religious leaders, priests and teachers, the freedom to establish seminaries or religious schools and the freedom to prepare and distribute religious texts or publications.”

The parental right to influence the learning process is highlighted in the 1948 Universal Declaration of Human Rights: “Parents have a prior right to choose the kind of education that shall be given to their children.” (UN GA 1948). The International Covenant on Economic, Social and Cultural Rights emphasizes the freedom of parents and legal guardians to “choose not only schools established by state institutions for their children, but also other schools that meet the minimum standards of science that may be established or approved by the state and guarantee the religious and moral integrity of their own.” (UN, 1966a). In this provision, we can see two elements: first, the right of parents and guardians to ensure that children’s moral and religious education conforms to their own convictions; secondly, parents and carers may also choose non-state educational establishments, provided that these institutions meet the “minimum educational requirements”. (Pranevičienė, Pūraitė 2010). These minimum requirements may relate to the admission of pupils, the content of teaching or the recognition of graduation documents. (Pranevičienė, Vasiliauskienė 2017).
International Covenant on Civil and Political Rights also stresses that “The States Parties to the present Covenant undertake to have respect for the liberty of parents and, when applicable, legal guardians to ensure the religious and moral education of their children in conformity with their own convictions.” (UN, 1966b, Article 18 (4)). The UN Human Rights Committee has stressed that “that article 18.4 permits public school instruction in subjects such as the general history of religions and ethics if it is given in a neutral and objective way. The liberty of parents or legal guardians to ensure that their children receive a religious and moral education in conformity with their own convictions, set forth in article 18.4, is related to the guarantees of the freedom to teach a religion or belief stated in article 18.1. The Committee notes that public education that includes instruction in a particular religion or belief is inconsistent with article 18.4 unless provision is made for non-discriminatory exemptions or alternatives that would accommodate the wishes of parents and guardians.” (UN HRC 1993).

This right to influence the educational process, precisely because of religious beliefs, is also highlighted in several international documents. The UNESCO Convention on the prohibition of discrimination in education stresses the importance of “the establishment or maintenance, for religious or linguistic reasons, of separate educational systems or institutions offering an education which is in keeping with the wishes of the pupil’s parents or legal guardians, if participation in such systems or attendance at such institutions is optional and if the education provided conforms to such standards as may be laid down or approved by the competent authorities, in particular for education of the same level” (UNESCO 1960).

The right to religious education is also a consequence of another right – the right of education. It can be stated that “international human rights law, the European Convention on Human Rights and the European Court of Human Rights, as well as most liberal-democratic constitutions and courts, oblige states to permit freedom of education in all their consequences for religious schools.” (Maussen, Bader 2014, p. 1). In Europe, the educational systems vary widely with regard to the financing and recognition of such schools, and the types and degrees of public scrutiny and control exercised over religious schools. The right to religious schools is based on the assumption that parents are the primary decision makers when choosing the education for their children. (Maussen, Bader 2014). The requirement to comply strictly or loosely with the curricula provided by the state varies in different countries, but usually it is present, especially in case where the state finances particular schools partially or totally. The extent of independence of the school itself towards its curriculum also depends greatly on “specific societal and political trends and incidents that may matter a great deal for the significance and scope of associational freedoms of religious schools in a given society. […] ‘Radicalisation’ among Islamic youth has become a key concern leading to increased scrutiny of Islamic schools.” (Maussen, Bader 2014, p. 12). As can be seen in the practice of the states, the general education is perceived as public function and public need of the society, to prepare a child for the independent life in the particular society. The state may influence the aspects of state security in ensuring that some humanist values are implemented in the education of children in school.

3. EU policies in countering radicalisation

According to the European Commission, “radicalisation is a complex phenomenon of people embracing radical ideology that could lead to the commitment of terrorist acts’. (Bakker 2015, p. 282) The most concerning radicalisation is “violent radicalisation”, which is the most dangerous sort of radicalisation.

E. Bakker, summarising the different studies on the process and factors of radicalisation, outlines that the factors influencing radicalisation are generally categorized into internal and external dimensions. The internal ones include polarising public rhetoric, stigmatization or identity crises. “The external dimension includes Western military interventions, the role of global media and cyberspace and a general perception of injustice suffered by Muslims.” (Bakker 2015, p. 285). E. Bakker stresses that personal and collective discontent and grievances are prominent, dominating factors of both external and internal dimensions and can be held as the core of root causes of violent radicalisation and terrorism. (Bakker 2015, p. 285).

Both the studies on radicalisation and the counter policies that will be discussed below were greatly influenced by the events of 9/11 in the USA and later by 2004 Madrid and 2005 London bombings. The EU counter-
terrorism policy in general evolved in the face of new threat stemming mostly from jihadist type terrorism.

The first document outlining measures against radicalisation in EU was the 2004 EU action plan on countering terrorism. Regarding radicalisation it foresees the need to identify factors which contribute to recruitment of terrorism both within the EU and internationally, and develop a long-term strategy to address these. The action plan foresaw the conduction of various studies by 2004-2006 in this field. Furthermore, the cooperation in good governance were foreseen with Arab world in order to address factors outside EU contributing to terrorism. The last group of action was intended to develop and implement a strategy to promote cross-cultural and inter-religious understanding between Europe and the Islamic World. (Council of the EU 2004).

These actions were further supported in 2005 European Union Counter-Terrorism Strategy. The strategy has four pillars: prevent, protect, pursue and respond. The prevent pillar implies actions in order to “prevent people turning to terrorism by tackling the factors or root causes which can lead to radicalisation and recruitment, in Europe and internationally”. (Council of the EU 2005a). The Council stated that EU may help in the field of countering radicalisation by helping co-ordinate national policies; share information and determine good practice. The document foresees the key priorities in prevention, such as developing common approaches to spot and tackle problem behaviour, in particular the misuse of the internet; address incitement and recruitment in particular in key environments, that is, in prisons, places of religious training or worship, notably by implementing legislation making these behaviours offences, developing a media and communication strategy to explain better EU policies; promoting good governance, democracy, education and economic prosperity through Community and Member State assistance programmes; develop intercultural dialogue within and outside the Union, continue research in the field. (Council of the EU 2005a).

The question of counter-radicalisation was further and, in more length, addressed in the EU Strategy for Combating Radicalisation and Recruitment to Terrorism, which was adopted in 2005, and revised in 2008 and 2014, which lays the foundations for an enhanced involvement of civil society in tackling and countering radicalisation. (Council of the EU 2005b). The strategy outlines that in order to counter radicalization and terrorist recruitment, the EU resolves to “disrupt the activities of the networks and individuals who draw people into terrorism; ensure that voices of mainstream opinion prevail over those of extremism; promote yet more vigorously security, justice, democracy and opportunity for all.” (Council of the EU 2005b). Regarding education, it is mentioned that the policies in the field should take into account the needs to counter radicalization. (Council of the EU 2008).

The prevention and addressing radicalisation is a prominent issue in 2010 EU internal security strategy (European Commission 2010). Second objective of the mentioned strategy is to “prevent terrorism and address radicalisation and recruitment.” (European Commission 2010). Among the measures of empowerment of the communities to prevent radicalisation and recruitment are important because de-radicalisation “requires close cooperation with local authorities and civil society and empowering key groups in vulnerable communities. The core of the action on radicalisation and recruitment is - and should remain - at national level.” (European Commission 2010). The Commission points out that “several Member States are developing work streams in this area, and certain cities within the EU have developed local community-based approaches and prevention policies.” (European Commission 2010).

2014 revised Strategy for Combating Radicalisation and Recruitment (Council of the EU 2014) indicates the importance of promoting the education and training of young people in schools and universities on issues regarding “nationality, politics, religious and national tolerance, democratic values, cultural differences, and the historical consequences of nationally and politically instigated violence. The members of the education sector supported by field practitioners, in particular, could play a significant role by raising awareness of terrorism-related issues and identifying and providing support to individuals at risk.” (Council of the EU 2014).

The question of the relationship of education with counter-radicalisation policies is extensively addressed in the 2015 European Parliament resolution on the prevention of radicalisation and recruitment of European
citizens by terrorist organisations which dedicates analysis to the question of preventing radicalization through education and social inclusion (European Parliament 2015). The values that should be encouraged in educational institutions are promotion of integration into society and development of critical thinking, promotion of non-discrimination, strengthening understanding and tolerance. The European Parliament stresses in the document “the need to teach fundamental values and democratic principles of the Union such as human rights; highlights that it is Member States’ duty to guarantee that their education systems respect and promote EU values and principles and that their functioning does not contradict the principles of non-discrimination and integration”. (European Parliament 2015). The role of a teacher is also outlined as very important. The teachers should be empowered to take an active stand against “all forms of discrimination and racism”. Competent and supportive teachers, in Parliament’s opinion, help strengthen social ties, encourage a sense of belonging, help in “developing knowledge, skills and competences, embedding fundamental values, and enhancing social, civic and intercultural competences, critical thinking and media literacy, but also in helping young people — in close cooperation with their parents and families — to become active, responsible and open-minded members of society.” (European Parliament 2015). The Parliament stresses “the role of educational institutions in teaching youth to recognise and manage risks and make safer choices, and in promoting a strong sense of belonging, shared community, care support and responsibility for others; stresses the need to use the various opportunities that vocational education and academic courses offer in order to expose young people to the diverse national, regional, religious and ethnic identities existing in Europe” (European Parliament 2015). Thus there is in this soft law instrument quite an extensive list of requirements that European Parliament hopes that education institutions would fulfil in order to avoid and curb radicalization, thus these requirements are advised to be applicable also to religious schools forming part of the general system of secondary education.

In 2016 the Commission has adopted a Communication supporting the prevention of radicalisation leading to violent extremism, where it stressed the same idea that “schools have a key role in fostering inclusion and, as core parts of communities, work closely with parents and local associations.” (European Commission 2016) It marked that “regular contacts with representatives of civil society and role models can make a difference in motivating young people and preventing them from drifting to the margins of society.” (European Commission 2016) To the opinion of Commission, teachers are closer to pupils and thus more able to detect early signs of radicalisation ideas and address them.

The European Economic and Social Committee also expressed its opinion in 2017 on ‘Cooperation with civil society to prevent the radicalisation of young people’ where it highlighted “the importance of inclusive formal and non-formal education, which is absolutely essential for active participation in a diverse society, teaching critical thinking and media literacy as well as contributing to society’s resilience against anti-democratic, xenophobic and populist tendencies that in some cases are gaining more and more influence on main stream political discourse as it adapts to xenophobic sentiments and views.” (EESC 2017). It stressed that school, education and vocational training may play an important role in early prevention of radicalisation, as they teach critical thinking and media literacy and promote social integration by offering more opportunities, especially for young people. The Committee also stressed “the vital role played by, and the social responsibility of, religious communities in the prevention of radicalism, and calls for more strategic engagement in defending the rules and values of liberal democracy and in promoting values-based intercultural dialogue, peace and non-violence.” (EESC 2017).

Thus, the requirements stressed above are applicable to all schools as well as to religious ones. In many of the states the general secondary education is compulsory as many of the states consider it important to give relevant knowledge and skills for a young person to prepare him/her for independent life in that particular society. As the example in Lithuania in the description of primary, basic and secondary programs approved by the Minister of Education in Lithuania, the following general education goals are envisaged: “to nurture the innate spiritual, intellectual and physical powers of each student, to help reveal his individuality and to strive for creativity, so that each pupil becomes a person who is dignified, moral, caring for his health and the health of others, responsible for his actions and choices, who is constructively creating his own and Lithuanian culture, prosperity and future; to develop a citizen actively participating in Lithuanian and European sociocultural
and political life, who is aware of national and civic identity, respects other nations, historically conscious, communal, who has developed critical thinking; to create equal opportunities for all pupils, regardless of gender, race, nationality, language, origin, social status, belief, convictions or beliefs, age, sexual orientation, disability, ethnicity, religion, to achieve educational results that meet their maximum potential and to establish lifelong learning attitude.” (Lietuvos Respublikos švietimo ir mokslo ministras 2015). Therefore, the aims of the secondary education do correlate with the aims of the society in general.

4. Anti-radicalisation measures as the exception to the right to religious education

The plan of the Government of France that was mentioned in the introduction among its first aims sets out the aim to invest in school. The first sub-chapter addresses questions of recognising radicalisation in school surroundings and stresses the importance of the values of “Republican School” (French government, 2018, p. 9). Third subchapter addresses the stricter control of non-contract educational institutions and the situation of education in the family. The government aims to “change the legal regime governing the opening of non-contract private educational institutions by unifying the three current reporting regimes and increasing their efficiency.” (Le Gouvernement de la République française 2018, p. 10). Furthermore, it sets out that the aim is at “the national level, specialize teams of academic inspectors and disseminate at the territorial level a guide of good practices on the controls of non-contract private educational institutions.” (Le Gouvernement de la République française 2018, p. 9). Later on, the government sets the goal so set up at the departmental level “a restricted training of the Radicalisation Prevention and Family Support Unit (CPRAF), to coordinate the controls of non-contracted establishments and home-based education situations in the event of suspicion of radicalization.” (Le Gouvernement de la République française 2018, p. 10). The last measure under this heading aims “In case of radicalization report and under the guidance of the prefect, improve the fluidity of the transmission of information with the mayor and the academic inspectorate. The aim is to ensure that the census of children subject to compulsory schooling is exhaustive and to speed up the implementation of mandatory family education controls. Academic services must ensure that the situation of the minor is monitored in the best possible conditions.” (Le Gouvernement de la République française 2018, p. 10).

In Denmark, for a long time since the first part of XX century the prevailing tradition was the free school tradition, which entailed wide association rights to religious and other special pedagogy schools to establish their curricula and other matters of school life. “As late as 2001, the legislation covering the free schools did not entail any value clause other than that schools must provide public-school-equivalent education. There were no clauses regarding civic education or personality ideals.” (Olsen 2015, p. 27). But after the 9/11 terrorist attacks and after some scandals regarding the abuse of school finances, the scenery started to change – the new government introduced the requirement that schools have to prepare students to live in a society with freedom and democracy. (Olsen, 2015). The present rules prohibit the schools that want to receive state subsidies from basing themselves on views which “contradict gender equality, the principles of Danish democracy and the freedom of religion ‘in Denmark or other countries.’” (Olsen 2015, p. 29). Furthermore, the monitoring that takes place in Muslim schools includes the aspect of anti-radicalisation – the schools are checked whether they fulfil the ‘freedom and democracy’ requirement and whether there are changes necessary in legal acts. (Olsen, 2015). As the interviews with the directors of Muslims schools revealed that such strict oversight causes uncertainty in the school, but also the schools are very conscious about the requirements and take few risks in terms of alternative teaching programmes that might stick out and call for inspection (Olsen 2015, citing Jensen, 2013).

Here we see limitations to the right of religion and right to religious education. Under international law, some of the rights and freedoms set out in international human rights treaties may be restricted or derogated from under certain circumstances. Confession of religion or belief is one of them. The Universal Declaration on Human Rights obliges states to restrict their rights and freedoms only on the basis of the envisaged declaration, the requirements of lawful morality, public order and universal welfare (UN GA 1948). If we look at the possible derogations of the right to religion, it can be noted that the International Covenant on Civil and Political Rights outlines as possible such grounds for derogation of the right to religion: “3. Freedom to manifest one’s religion or beliefs may be subject only to such limitations as are prescribed by law and are necessary to protect public
safety, order, health, or morals or the fundamental rights and freedoms of others.” (distinguished by the author). (UN 1966b, Art. 18). The European Convention on Human Rights sets out the following grounds: “Freedom to manifest one’s religion or beliefs shall be subject only to such limitations as are prescribed by law and are necessary in a democratic society in the interests of public safety, for the protection of public order, health or morals, or for the protection of the rights and freedoms of others.” (Council of Europe 1950). So, the two are identical in setting out the limitations of the right to religion.

Given the importance of law, limitation can be applied simply to allow society processes to function smoothly and efficiently if the law is restricted. Often this requirement is called “necessary in a democratic society”. (Vitkauskaitė-Meurice, Valutytė, Gailiūtė 2012, p. 7-8) Finally, restrictions are allowed only if they are vested in one or more public or public interests. Article 18 (3) of the ICCPR identifies the conditions of the restriction, which states that the freedom to confess one’s religion or belief can only be limited to what is prescribed by law and only when it is necessary for public safety, order, health or morals or for the protection of the fundamental rights and freedoms of others. (UN 1966b). Typically, the specific interests of the state and society are considered to be to public security, order, health or morals protection the fundamental rights and freedoms of others. However, one of the most difficult conditions for limiting is the term “social order”, which is interpreted differently in different countries. (Gunn 2005). As the commentary to the ICCPR states, “no manifestation of religion or belief may amount to propaganda for war or advocacy of national, racial or religious hatred that constitutes incitement to discrimination, hostility or violence. As stated by the Committee […] States parties are under the obligation to enact laws to prohibit such acts.” (UN HRC 1993). Thus, we clearly see from the interpretation of the body closely related to the implementation of the international treaty that the expression of religion may be limited, but only to the limits where it infringes the rights of others or the needs of the society in general. The Committee further elaborated that in limiting the right in question states should proceed from the need to protect the right to equality and non-discrimination and other human rights. (UN HRC 1993). It outlined that “the concept of morals derives from many social, philosophical and religious traditions; consequently, limitations on the freedom to manifest a religion or belief for the purpose of protecting morals must be based on principles not deriving exclusively from a single tradition.” (UN HRC 1993).

In this case that is analysed the basis for the limitations of the right to religion are based on the grounds of public safety. The necessity of control of the schools in question arises from the need to control and prevent the process of radicalization, the danger of which is evident, as it leads to violent acts affecting the whole society. Therefore, the requirement that the measures have to be based on the grounds set in international human rights law is satisfied in this case. Further step of analysis is that such limitations should be prescribed by law. As seen from the examples above, the rules of control and the rules on the curriculum of the schools are set by various legal acts, the procedures of control are therefore enshrined in the law and this requirement is also met. If the inspectors or other officers of the state would start carrying out inspections and making requirements not based on the legal requirements, we could speak about arbitrariness and thus infringement of the right to express one’s religion and pursue religious education.

More questions are raised regarding the necessity of such measures and proportionality. The measures applied limiting a particular right should be necessary in order to attain the aim sought, which means that it is necessary to carry out certain actions to protect the value in question. In this case the necessity of limitations is based on the fact that radicalization occurs in many cases in early age and there are grounds to believe that such influence on the radicalization of a person may be carried out in schools, in particular in religious schools. Thus, implementing measures to prevent radicalization may be considered necessary in democratic society, but only basing these measures on the facts or grounded suspicions regarding the role of particular schools in the process of radicalisation.

The question of proportionality of control is the most debatable here. Of course, from one hand, the state has great influence on the general education of pupils and has the right to set certain requirements to the functioning of religious schools in its territory, but on the other hand, besides these requirements the content of education related to the religious questions should be allowed – as far as it does not encourage radicalisation, propaganda of war, racial and religious hatred that incites persons to discrimination, hostility or violence. Thus, the
proportionality requirement may be in conflict with the wide application of the abovementioned European values or their interpretation, if they are in contradiction with the religious beliefs of a particular religion, where it does not encourage hatred, radicalisation, or infringement of the rights of other people. The states should not use the excuse of fighting against radicalisation in wide control over the whole curriculum of a particular school.

Therefore, we see the tension in seeking to ensure public safety in both sides. The security of the state and of persons may be compromised, firstly, by allowing the radicalisation of the persons who then in turn would carry out terrorist acts and in this way the infringement of security is evident. But on the other hand, the security of the state lies in the security of its citizens. “A human security approach attempted to transform traditional notions of security, framed in terms of national and regional stability and the stability of political and economic systems, and to focus on human beings. […] Primary threats were seen as internal: economic failure, violation of human rights, political discrimination.” (Tadjbakhsh 2005). It is used to outline complex inter-related threats to contemporary society and its members (Greičius, Pranevičienė, 2010). The aims to protect “security of a person is closely related to collective aims of the society as a whole, seeking to protect both the state and every individual comprising the state.” (Pranevičienė, Vasiliauskiene 2018). On the other hand, the state, being a power in a particular territory, may pose risk to individual’s security. Individuals are forced to choose greater values, by way of agreeing to renounce certain things having less impact on their existence, in the name of securing the great values. Some scientists refer to those greatest values as natural human rights, such as the right to life, the right to property, the right to privacy, immunity right, etc. (Pranevičienė, 2011). The state and society may be considered the safe guarders of those rights, but on the other hand, they may be the biggest threats to those rights. The rights of one person and their implementation may pose great risk to the rights of others.

Thus, in this sense the security of the citizens of the state may be compromised if their right to religion was limited disproportionately. It is very important for the state to deliberate on such actions in order to find the right balance in their situation and to maximize the security of the state and all of its citizens.

Conclusions

The new issues for the security of the European states rise from the terrorist acts carried out by so-called home-grown terrorists, who were radicalised and trained here, on the soil of the European continent. As we can see from the statistics, many of the terrorist acts carried out in Europe in the last decade were carried out by religiously motivated persons who had the citizenship of one of the EU member states. Thus, the prevention of radicalisation may be considered as becoming a matter of public interest, related to the security of the states and their citizens which the states are bound to implement.

Radicalisation may be defined as the complex process during which people embrace radical ideology that could lead to the commitment of terrorist acts. The factors influencing this process are polarising public rhetoric, stigmatization or identity crises, as well as Western military interventions, the role of global media and the general perception of injustice by Muslim population. Therefore, especially after the terrorist attacks of 9/11 in the USA, the institutions of the European Union started working in the direction of prevention of radicalisation in setting strategies and implementing them that were aimed at the counter-radicalisation. During the last years the European Union policy documents have stressed the importance of education in this process and set out a number of goals and priorities in this field for the Member states.

The process of control of radicalisation in educational field may have direct influence on the right to religion and right to religious education as the Member States are controlling more strictly the religious schools in their territories, including inspections on their activity and curricula. The right to religion implies the right to hold one’s views on the service and worship of God or the supernatural. The right to religion protects theistic, non-theistic and atheistic beliefs, as well as the right not to profess any religion or belief. The right to religion, or to be more exact, the right of expression of religious beliefs may be limited on the grounds indicated in international treaties, especially if it related to the infringements of the rights of other members of the society or with the commitment of criminal acts.
This right in the field of education means the right of the parents to make influence on the content of education that is related to their religious beliefs and the right to choose religious schools for their children. The tendency in the field of education is to consider the parents as the primary decision makers for the education of their children. Thus, the control of the religious schools should be limited to what is necessary to achieve the aims of the general education and to prevent radicalisation in schools, where there is such risk. It follows that the particular legal regulation, administrative decisions, the activity of the institutions responsible for the control of religious schools should be adequate and proportionate to the aims sought and should not overstep the limits of the implementation of the right to religion. Thus, in the field of education and in general in the implementation of anti-radicalisation measures it is important to keep the balance of the needs to protect the society from the threat of terrorist acts and the needs to ensure the citizens their right to religious beliefs and other rights as they also contribute greatly to the security of the state and its citizens.

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Abstract. At the heart of any banking system, there is the provision of payments. Payments can be made via fiat or crypto currencies, bank credit or deposits, or fund transfers on the books of non-bank payment providers. When using payment systems, security and protection of people and property are extremely important, especially in relation to cyberterrorism. The purpose of cybercrime is to gain material benefit using IT systems, while its targets can be both business and political actors. The focus of this article is on a profound analysis of extracted factors which would be necessary for achieving a comprehensive understanding and depiction of users’ behaviours and risks in the field of security of payment instruments as well as technologies aimed at improving intermediated retail payment transactions.

Keywords: cyber-attack; security; payment systems; payment cards; security management; financial institution


JEL Classifications: E42, G21, G23, L81

Additional discipline: information and communication; security, protection of people and property

1. Introduction

Payment innovations improve the payment system in at least four ways (Chakravorti and Kobor 2005). Firstly, they may improve the existing clearing and settlement processes required to convert payments into cash or bank deposits. For example, the ability of a check recipient to deposit checks via her mobile phone by taking a picture and uploading that image to her financial institution improves the processing of checks. In addition, financial institutions without widespread physical presence are able to better compete with those that have extensive branch networks for demand deposit (checking) accounts with remote check deposits. The remote capture technology is generally being offered by financial institutions but needs not be (Federal Reserve Bank of Chicago 2006).

Secondly, payment innovations may provide access to existing payment networks for buyers and sellers that have not traditionally had access. For example, PayPal allowed individuals to indirectly accept card payments in an online environment (Chakravorti, 2016).

Thirdly, large retail and social networks are well-positioned to make future payment innovations especially those that leverage extensive network connectivity to promote greater sales which might otherwise be lost (Chakravorti, 2016).
Fourthly, new payment systems may be created from scratch because the existing infrastructure is outdated and may prevent future innovation. New payment systems are difficult to build because building a new infrastructure is costly and usually has to occur alongside the existing infrastructure with buy-in of many stakeholders (Chakravorti, 2016).

2. Theoretical background

Cybersecurity is a continuous planning of processes with consideration to the political, legal, economic, educational, and technical measures with the efforts to reduce the risks associated with the cyberspace (Bányász, 2018; Limba et al. 2017; Tvaronavičienė 2018; Davidavičienė et al. 2019; Batkovskiy et al. 2019). Cybersecurity is one of the main concerns of organization especially with the increase in the sophistication of cyberthreats and attacks. These vulnerabilities have led to the exploitation of the cybersecurity infrastructure by cybercriminals. The activities of cybercriminals create issues of irrevocable funds transfer, monetary loss, loss of data, security breach, exposure and theft of customer’s personal information, and infringing on intellectual property, thus, leading to significant financial brand equity loss and investor/customer confidence loss in these financial institutions (Christiansen and Piekarz, 2019; Okanazu, 2018; Mura et al., 2015). Cybernetic security issues, which are often perceived as synonymous with the safety of critical infrastructure (eg Dobrovič et al., 2017; Veselovska et al., 2017; Koraus et al., 2019a; Šišulák 2017; ), need to be emphasized.

Cybersecurity comprises technologies, systems, processes, standards, regulatory frameworks that financial institutions in euro area countries utilize to prevent any form of intrusion into the network of the organization (Schwab, 2018). Therefore, cybersecurity is an integral part of financial institutions. It thrives on e-commerce platform as a modern-day means of business transaction leveraging on the Internet and mobile banking (Abbe, 2018; Okoro and Ekwueme, 2018). In view of the jeopardizing effect on financial institutions in euro area countries, cybersecurity serves to protect these institutions (Thapliyal et al., 2017). Due to the complexities of the cyber domain, there is a lack of a sophisticated cybersecurity framework to protect the network and other systems from attack (Koraus et al., 2019b; Horecky, 2018).

The issue of cybersecurity is the primary concern of financial institutions in euro area countries as this threatens the success of the institutions (Bayuk, et al. 2012) due to the total dependence on advancements in information technology (Radu, 2002). With information technology, the financial institutions in euro area countries began e-commerce through the development of the Internet, networks, technological tools such as computers and computer systems, development of applications and software for mobile e-commerce apps, as well as development of codes, thereby placing the institutions at a competitive edge (Ras, 2016; Hajdu et al., 2014).

As a result of the use of Internet and due to vulnerabilities, that existed in the network, the growth in the economy brought about an increase in cybercrimes (Jančíková, Pasztorová 2018; Jančíková, Veselovská 2018). These vulnerabilities made it easy to hack and perpetrate crimes such as illegal transfer of funds, identity thefts, frauds, and much more (Marty 2013). Awareness of security risks research Kordik and Kurilovská (2018), reliable risk assessment method RM/RA CRAMM applicable for a crime risk assessment was described by Mamojka and Mullerova (2017) and its legal questions by Mullerova and Mamojka (2017).

3. Material and methods

The present article deals with the results of research and subsequent analysis. It aims to contribute to the knowledge and comprehension of the behaviour of payment card users with a special focus on the aspect of their security. The article analyses the opinions and attitudes of respondents toward the questions dealing with the security of payment systems and their behaviour when using payment cards. The analysis is carried out from the aspect of gender, age and education of respondents by using multidimensional statistical methods, namely factor analysis and analysis of dispersion. The research as well as the selection of representative sample were carried out as follows:

- Representative sample: 1,012 respondents
Number of questionnaires issued: 4,700
Number of (completed) questionnaires collected: 3,288

The representative sample containing 1,012 respondents was selected by random number generator from fully completed questionnaires (3,288) in such a way that it would represent the population of Slovakia over 18 years of age from the aspect of their education, size of municipality and region they live in, and occupation.

The analysed set is represented in five age categories in ranges 18-30 years, 31-40 years, 41-50 years, 51-60 years and over 60 years. These categories are composed of 206, 212, 192, 196 and 213 respondents, respectively, which represents 2.22%, 20.80%, 18.84%, 19.23%, and 20.90% of the analysed set, respectively. The research was conducted on 540 men (52.99%) and 479 women (47.01%). Geographically, the respondents were from the regions of Prešov, Košice, Banská Bystrica Žilina, Nitra, Trenčín, Trnava and Bratislava in amounts 134 (13.15%), 140 (13.74%), 117 (11.48%), 127 (12.46%), 127 (12.46%), 144 (14.13%), 112 (10.99%) and 118 (11.58%), respectively. The statistical set was composed of respondents with primary (n=300; 29.44%), secondary (n=438; 42.98%) and university education (n=281; 27.58%). The analysed sample is composed of respondents living in towns (n=518; 50.83%) and villages (n=501; 49.17%). The structure of respondents can be seen in Figures 1 – 4.

Figure 1. Structure of representative sample per residence, age and geographic region

Source: Own study
Figure 2. Structure of representative sample per education, gender and employment

Source: Own Study

Figure 3. Structure of representative sample per geographic region, gender and employment

Source: Own study
4. Results

The analysis of the behaviour of respondents when making a payment and their opinions on their security was based on answers to questions as follows:

- Q1 – Do you carry your payment card PIN code along with your payment card?
- Q2 – Have you ever changed your payment card PIN code?
- Q3 – Have you altered your payment card PIN code in a way that it would encode your date of birth?
- Q4 – Do you consider ATMs located at banks’ premises safer for withdrawing your cash?
- Q5 – Do you have trust in the security of payment systems?
- Q6 – Do personal data represent information that needs to be most importantly protected?
- Q7 – Do you rely on the security measures of your bank in payment cards?
- Q8 – Are you sure that your bank takes proper care of your money?
- Q9 – Do you have any experience with a hacking attack or bank fraud?
- Q10 – Do you think that security measures taken to protect payment card data are continuously getting better?
- Q12 - How confident are you in the security of payment systems?
- Q13 – Do you think that the payment system carries elements of high security risks?
- Q18 – Does the enhanced security of new payment methods outweigh the cost of their implementation?
- Q19 – Does the enhanced customer convenience of new payment methods outweigh the cost of their implementation?
- Q20 - Why is it more challenging to secure payment card information?
- Q22 - How confident are you that customers can protect themselves when their personal information is lost or stolen?
The reliability of the research tool was judged by using the Cronbach’s $\alpha$ coefficient. Its value was 0.81694. Based on the latter value, it is possible to state that it is not necessary to increase the value by removing any of variables. As the Cronbach $\alpha$ exceeds the value of 0.7, we can state that the research tool is reliable, and we can safely process the data.

The method is foremostly aimed at simplifying the description of group with mutual linear dependent signs, i.e. decomposing the source data matrix into structural and noise matrices. Each of main components represents a linear combination of original signs. Main components are ordered in line with their importance, i.e. with the decreasing dispersion (Tab. 1). This implies that a major portion of information on variability of original data is concentrated in the first main component and just as much information is concentrated in the last main component.

**Table 1.** Table of original values in the source matrix of researched set

<table>
<thead>
<tr>
<th>Value number</th>
<th>Eigenvalues of correlation matrix, and related statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eigenvalue</td>
</tr>
<tr>
<td>1</td>
<td>1,971471</td>
</tr>
<tr>
<td>2</td>
<td>1,255233</td>
</tr>
<tr>
<td>3</td>
<td>1,202084</td>
</tr>
<tr>
<td>4</td>
<td>1,128291</td>
</tr>
<tr>
<td>5</td>
<td>1,069369</td>
</tr>
<tr>
<td>6</td>
<td>1,054192</td>
</tr>
<tr>
<td>7</td>
<td>1,020088</td>
</tr>
<tr>
<td>8</td>
<td>0,971202</td>
</tr>
<tr>
<td>9</td>
<td>0,932597</td>
</tr>
<tr>
<td>10</td>
<td>0,858880</td>
</tr>
<tr>
<td>11</td>
<td>0,838353</td>
</tr>
<tr>
<td>12</td>
<td>0,827242</td>
</tr>
<tr>
<td>13</td>
<td>0,806948</td>
</tr>
<tr>
<td>14</td>
<td>0,772271</td>
</tr>
<tr>
<td>15</td>
<td>0,706586</td>
</tr>
<tr>
<td>16</td>
<td>0,585192</td>
</tr>
</tbody>
</table>

The table of original values in source data matrix (Tab. 1) shows that the concentrations of first, second, third, fourth, fifth, sixth and seventh main components are 12.32169 %, 7.84521 %, 7.51302 %, 7.05182 %, 6.68356 %, 6.5887 %, and 6.37555 % of variability of the original data, respectively. These seven main components, whose own number is larger than 1, concentrate within themselves 54.3795 % of variability of original data of the researched set. The diagram of the dispersion measures (Fig. 5) shows that the first main component divides the responses by vertical axis into two clusters, while at negative values of the component score of the first main component, the responses to 16 of posed questions (Q1 - Q10, Q12, Q13, Q18 – Q20 and Q22) are homogenous. As opposed to the latter, at positive values of component score of the first main component, the responses are more heterogenous. In combinations of second, third, fourth, fifth, sixth and seventh main components, the data are concentrated around the center of the coordinate system and yield a homogenous structure in all directions.
The appropriate use of factor analysis is tested by Kaiser-Mayer-Olkin (KMO) statistics and Bartlett’s test of sphericity. KMO statistics represents an index which serves for comparing the size of experimental correlation coefficients against the size of partial correlation coefficients. When the sum of squares of partial correlation coefficients between all pairs of signs is small in comparison to the sum of squares of pair correlation coefficients, the measure of KMO statistics approaches the value of 1. Low values of KMO statistics indicate that the factor analysis of original signs would not be a good approach because the correlation between the pairs of signs cannot be explained by means of the rest of signs. In accord with the value of Keiser-Mayer-Olkin statistics (0.642) and definition by Kaiser, it is possible to state that based on the used research tool, the measure of correlation is good and the choice of factor analysis for security of payment system is justified. Bartlett’s test of sphericity represents a statistical test of correlation between original signs. It tests the null statistic hypothesis $H_0$, namely whether “the correlation between the signs does not exist”, i.e. whether the correlation matrix is a unit matrix. The achieved level of significance of Bartlett’s test of sphericity $p = 0.000$ is lower than the level of significance chosen by us ($\alpha = 5\%$). Thus, we can reject the null hypothesis that the realization of the selected correlation matrix with 16 considered variables is a unit matrix. Hence, to start off, we can state that the factor analysis is appropriate for the data dealing with security of payment system.

Figure 5. Dispersion diagram of component score

Source: Own study
Table 2. Assumptions for the use of factor analysis (KMO statistics, Bartlett’s test)

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</th>
<th>0.642</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td>629.915 df 120 Sig. 0.000</td>
</tr>
</tbody>
</table>

Source: Own study

The first step to the interpretation of results of factor analysis is to analyse the factor matrix (Tab. 3) which serves for gaining the initial number of factors. The factor matrix contains factor loading for each sign, while in each factor, it represents the best linear combination of original signs while including the highest possible number of variability of signs. The first factor is always the most important because it represents the best linear relation found in original signs. The second factor represents the second best linear relation of original data, however it is restricted by a condition that it has to be orthogonal to the first factor. The factor loading explains the role of each original sign in defining the common factor. It is, in fact, a correlation coefficient between every original sign and factor.

Table 3. Factor loading

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loading (Varimax normalized) Extraction: Principal components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td>Q1</td>
<td>0.667027</td>
</tr>
<tr>
<td>Q2</td>
<td>-0.702289</td>
</tr>
<tr>
<td>Q3</td>
<td>0.667834</td>
</tr>
<tr>
<td>Q4</td>
<td>0.030219</td>
</tr>
<tr>
<td>Q5</td>
<td>0.019901</td>
</tr>
<tr>
<td>Q6</td>
<td>0.049937</td>
</tr>
<tr>
<td>Q7</td>
<td>-0.014691</td>
</tr>
<tr>
<td>Q8</td>
<td>0.217457</td>
</tr>
<tr>
<td>Q9</td>
<td>-0.170928</td>
</tr>
<tr>
<td>Q10</td>
<td>-0.483641</td>
</tr>
<tr>
<td>Q12</td>
<td>-0.202965</td>
</tr>
<tr>
<td>Q13</td>
<td>-0.062923</td>
</tr>
<tr>
<td>Q18</td>
<td>-0.031518</td>
</tr>
<tr>
<td>Q19</td>
<td>0.055803</td>
</tr>
<tr>
<td>Q20</td>
<td>0.048449</td>
</tr>
<tr>
<td>Q22</td>
<td>0.076839</td>
</tr>
<tr>
<td>Expl.Var</td>
<td>1.756082</td>
</tr>
<tr>
<td>Prp.Totl</td>
<td>0.109755</td>
</tr>
</tbody>
</table>

Source: Own study

The Table 3 makes it obvious that the first factor significantly correlates with components of research tool, namely with Q1 (Do you carry your payment card PIN code along with your payment card?), Q2 (Have you ever changed your payment card PIN code?), and Q3 (Have you altered your payment card PIN code in a way that it would encode your date of birth?). The values of factor loading reach the values of 60.7027 % and 66.7834 at components Q1 and Q3, respectively. The positive sign of factor loading reflects the indirect proportion, i.e. the evaluation of responses decreases on Likert scale with an increase in the number of respondents. Thus, in frame of the scale value, the responses stating “certainly not” or “no” are chosen. The factor loading of Q2 component of the research tool reaches the value of -70.2289. As it implies further from the analysis of Table 3, 44.4925 % of variability of Q1 component (“Do you carry your payment card PIN code along with your
payment card”), 49.321 % of variability of component Q2 (“Have you ever changed your payment card PIN code?”) and 44.6002 % of variability of component Q3 (Have you altered your payment card PIN code in a way that it would encode your date of birth?”) are explained by the first mutual factor. The second mutual factor correlates with the component Q4 (Do you consider ATMs located at banks’ premises safer for withdrawing your cash?”) Q13 (“Do you think that the payment system carries elements of high security risks?”) and Q18 (“Does the enhanced security of new payment methods outweigh the cost of their implementation?”) with the value of factor loading of 67.8758 % at component Q4, 53.586 % at component Q13, and 61.4785 % at component Q18. This implies that 46.0712 % of variability of component Q4, 28.7146 % of component Q13, and 37.7961% of variability of component Q18 are explained by the second mutual factor. The third mutual factor significantly correlates with the components Q5 (“Do you have trust in the security of payment systems?”) and Q12 (“How confident are you in the security of payment systems?”) with the value of factor loading of 65.0954 % and 55.5906 %. From Table 3, it further implies that the variability values of 42.3737 % and 30.9031 % of Q5 and Q12 components, respectively, are explained by third mutual factor.

The fourth mutual factor correlates with components Q9 (“Do you have any experience with a hacking attack or bank fraud?”) and Q22 (“How confident are you that customers can protect themselves when their personal information is lost or stolen?”) with values of factor loading of 58.0158 % at Q9 component and 3.0203 % at Q22 component, which represents the values of 33.6583 % and 53.3196 % of variability of these components explained by the fourth mutual factor. The fifth mutual factor correlates with components Q19 (“Does the enhanced customer convenience of new payment methods outweigh the cost of implementation?”) and Q20 (“Why is it more challenging to secure payment card information?”) with factor loading values of -59.284 % and 80.4773 %, which represent the variability values explained by fifth mutual factor, namely those of 35.1457 % and 64.766 % of Q19 and Q20 components, respectively. The sixth mutual factor correlates with components Q7 (“Do you rely on the security measures of your bank in payment cards?”) and Q8 (“Are you sure that your bank takes proper care of your money?”). The factor loading values are -59.284 % and -65.422 % for Q7 and Q8 components of research tool, respectively. Both components yield a negative degree of correlation. The last, seventh extracted factor correlates with Q6 component (“Do personal data represent information that needs to be most importantly protected?”) with factor loading value of 78.3608 % which represents a variability of 61.4041 % of this component explained by seventh mutual factor. Aside from defining the basic mutual correlations, we have tested also the practical significance of factors.

Based on the facts mentioned above, the factors of the main research objective, defined as a restriction of main identifiers of the security of payment systems and secure behavior of respondents, can be postulated as follows:

- Factor 1 – PIN code
- Factor 2 – Awareness of security risks,
- Factor 3 – Knowledge of security elements,
- Factor 4 – Personal experience with fraud,
- Factor 5 – Enhancement of security of payment systems,
- Factor 6 – Trust in banks
- Factor 7 – Need of protecting the security elements.

The factor analysis focuses foremostly on parameters of the factor model. It may require estimations of mutual factors, which is referred to as factor score. The values of mutual factors in n selected observed objects or observations are not only a useful tool for diagnosing the data, but possibly also an important entry into further analyses. The factor score is not an estimation of parameters in common sense because it involves estimations of values of non-observed quantities. The estimations of factor score for a given object can be imagined as its coordinates in R-dimensional space.
### Table 4. Coefficients of factor score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Score Coefficients Rotation: Varimax normalized Extraction: Principal components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td>Q1</td>
<td>0.403974</td>
</tr>
<tr>
<td>Q2</td>
<td>-0.398755</td>
</tr>
<tr>
<td>Q3</td>
<td>0.375695</td>
</tr>
<tr>
<td>Q4</td>
<td>0.027875</td>
</tr>
<tr>
<td>Q5</td>
<td>0.072687</td>
</tr>
<tr>
<td>Q6</td>
<td>0.015465</td>
</tr>
<tr>
<td>Q7</td>
<td>-0.102795</td>
</tr>
<tr>
<td>Q8</td>
<td>0.050911</td>
</tr>
<tr>
<td>Q9</td>
<td>-0.137283</td>
</tr>
<tr>
<td>Q10</td>
<td>-0.301059</td>
</tr>
<tr>
<td>Q12</td>
<td>-0.045912</td>
</tr>
<tr>
<td>Q13</td>
<td>0.011815</td>
</tr>
<tr>
<td>Q18</td>
<td>0.054389</td>
</tr>
<tr>
<td>Q19</td>
<td>0.023964</td>
</tr>
<tr>
<td>Q20</td>
<td>0.043734</td>
</tr>
<tr>
<td>Q22</td>
<td>0.055867</td>
</tr>
</tbody>
</table>

Source: Own study

In line with the defined goals of research, the subsequent section deals with the analysis of respondents’ opinions or attitudes represented by factor score in relation to extracted identifiers, factors of payment system security by means of Fisher’s ANOVA. Within the analysis, we shall be considering only the impact of significant independent variables or that of their interactions on the value of respective factor at the selected level of significance $\alpha = 0.05$.

ANOVA is an acronym standing for analysis of variance. ANOVA serves for comparing various sources or characteristics of various classes. These sources are referred to as factors and can contain several various levels. The goal is to decide whether the mean value of the measured quantity differs for various factors. This is demonstrated by testing the hypothesis on impact of factor on the mean value. In this case, the zero hypothesis states that the mean values of tested groups do not differ significantly.

### Table 5. ANOVA for Factor 2 (Awareness of security risks)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Univariate Tests of Significance for Factor n.2 Sigma-restricted parameterization</th>
<th>Effective hypothesis decomposition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SS</td>
<td>Degr. of Freedom</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0142</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>16.5457</td>
<td>4</td>
</tr>
<tr>
<td>Gender</td>
<td>0.4656</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>29.5490</td>
<td>2</td>
</tr>
<tr>
<td>Age*Gender</td>
<td>2.6165</td>
<td>4</td>
</tr>
<tr>
<td>Age*Education</td>
<td>20.4973</td>
<td>8</td>
</tr>
<tr>
<td>Gender*Education</td>
<td>1.7138</td>
<td>2</td>
</tr>
<tr>
<td>Age<em>Gender</em>Education</td>
<td>7.0529</td>
<td>8</td>
</tr>
<tr>
<td>Error</td>
<td>928.7144</td>
<td>989</td>
</tr>
</tbody>
</table>

Source: Own study
The Table 5 shows that a change in Factor 2 (Awareness of security risks) expressed by factor score is significantly influenced by the age of respondents, their education, and mutual interaction of age and education, namely at the level of significance of α = 5%. When the factor score is, as a result of factor analysis, considered a measure of consent, attitude or importance for the respondent, while a positive or negative number represents a positive perception and importance or negative attitude and unimportance of the given factor for respondents, respectively, then we can state that the average value of factor score for the category of 18 – 30 years of age represents a value of 0.4581±0.140016. This can be interpreted as an indifferent attitude to the problem of awareness of security risks for the observed age category of respondents. The category of 31-40 years of age reaches the factor score of -0.171639±0.158674.

Hence, according to the research results and subsequent analysis, the observed age category is not aware of security risks and this question is on the negative border of the bipolar scale. The category of 41-50 years of age reaches the average value of -0.15118±0.147917 of factor score, which indicates an equally negative attitude and approach to the awareness of security risks in payment instruments, especially payment cards. A higher importance represented by positive values of average factor score can be found in category of 51-60 years of age, where it reaches the value of 0.189848±0.106776. The average values of factor score in individual age categories for the second extracted factor (referred to as Awareness of security risks) are graphically depicted in Figure 5.

![Figure 5. The dependence of average value of factor score for Factor 2 on age of respondents](source: Own study)

The second factor significantly influencing the value of achieved factor score for the second extracted factor is that relating to education of respondents. This implies from Table 5 based on the achieved levels of significance (p=0.000000). The average value of achieved factor score for respondents with primary education is -0.197575±0.127074, which indicates a negative perception of the problem of awareness of security risks and its importance for the latter category of respondents. Equally negative values of factor score are also those achieved for the group of respondents with secondary education, in whom, however, the average value is only -0.039588±0.096050. The values of factor score for respondents with university education are positive and achieve the average of 0.272641±0.086965. It is only the category of respondents with university education,
in whom the awareness of security risks becomes important. The average values of factor score for individual education categories for the second extracted factor (referred to as Awareness of security risks) are graphically depicted in Figure 6.

![Figure 6. The dependence of average value of factor score for Factor 2 on education of respondents](source: Own study)

The Table 5 further shows that based on the level of significance (p=0.005595), the average value of achieved factor score for the second extracted factor referred to as Awareness of security risks is significantly influenced also by the interaction of age and education of respondents. This is illustrated in Figure 7.
Figure 7. The dependence of average value of factor score for Factor 2 on interaction of age and education of respondents

Source: Own study

The Figure 7 shows that in respondents with primary and secondary education, the awareness of security risks associated with payment cards occurs in the negative part of bipolar scale, which indicates that they tend to underestimate the possible risks. Nevertheless, these two groups yield a change in the perception of security risks, namely in the category over 51 years of age. This change can be explained by information campaigns on security risks targeted at older age categories. The basic statistical characteristics of values of factor score for the interaction of age and education are given in Table 6.

Table 6. Statistical characteristics of the achieved factor score for Factor 2 and interaction of age and education of respondents

<table>
<thead>
<tr>
<th>Effect</th>
<th>Level of Factor</th>
<th>Level of Factor</th>
<th>N</th>
<th>Factor n.2 Mean</th>
<th>Factor n.2 Std.Dev.</th>
<th>Factor n.2 Std.Err</th>
<th>Factor n.2 -95.00%</th>
<th>Factor n.2 +95.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age*Education</td>
<td>18 - 30 years</td>
<td>basic education</td>
<td>17</td>
<td>-0.312875</td>
<td>0.884238</td>
<td>0.214459</td>
<td>-0.76751</td>
<td>0.141758</td>
</tr>
<tr>
<td>Age*Education</td>
<td>18 - 30 years</td>
<td>secondary education</td>
<td>160</td>
<td>0.017704</td>
<td>1.044045</td>
<td>0.082539</td>
<td>-0.14531</td>
<td>0.180718</td>
</tr>
<tr>
<td>Age*Education</td>
<td>18 - 30 years</td>
<td>higher education</td>
<td>29</td>
<td>0.411161</td>
<td>0.865402</td>
<td>0.160701</td>
<td>0.08198</td>
<td>0.740343</td>
</tr>
<tr>
<td>Age*Education</td>
<td>31 - 40 years</td>
<td>basic education</td>
<td>75</td>
<td>-0.572878</td>
<td>1.327718</td>
<td>0.153312</td>
<td>-0.87836</td>
<td>-0.267398</td>
</tr>
<tr>
<td>Age*Education</td>
<td>31 - 40 years</td>
<td>secondary education</td>
<td>68</td>
<td>-0.141994</td>
<td>1.147753</td>
<td>0.139186</td>
<td>-0.41981</td>
<td>0.135821</td>
</tr>
<tr>
<td>Age*Education</td>
<td>31 - 40 years</td>
<td>higher education</td>
<td>69</td>
<td>0.235276</td>
<td>0.836259</td>
<td>0.100674</td>
<td>0.03438</td>
<td>0.436168</td>
</tr>
<tr>
<td>Age*Education</td>
<td>41 - 50 years</td>
<td>basic education</td>
<td>72</td>
<td>-0.352274</td>
<td>1.133427</td>
<td>0.133576</td>
<td>-0.61862</td>
<td>-0.085932</td>
</tr>
<tr>
<td>Age*Education</td>
<td>41 - 50 years</td>
<td>secondary education</td>
<td>60</td>
<td>-0.453341</td>
<td>1.073022</td>
<td>0.138527</td>
<td>-0.73053</td>
<td>-0.176150</td>
</tr>
<tr>
<td>Age*Education</td>
<td>41 - 50 years</td>
<td>higher education</td>
<td>60</td>
<td>0.392295</td>
<td>0.596288</td>
<td>0.076980</td>
<td>0.23826</td>
<td>0.546333</td>
</tr>
<tr>
<td>Age*Education</td>
<td>51 - 60 years</td>
<td>basic education</td>
<td>65</td>
<td>0.011388</td>
<td>1.029397</td>
<td>0.127681</td>
<td>-0.24368</td>
<td>0.266460</td>
</tr>
<tr>
<td>Age*Education</td>
<td>51 - 60 years</td>
<td>secondary education</td>
<td>68</td>
<td>0.051129</td>
<td>0.916058</td>
<td>0.111088</td>
<td>-0.17060</td>
<td>0.272862</td>
</tr>
<tr>
<td>Age*Education</td>
<td>51 - 60 years</td>
<td>higher education</td>
<td>63</td>
<td>0.212590</td>
<td>0.711864</td>
<td>0.089686</td>
<td>0.03331</td>
<td>0.391871</td>
</tr>
<tr>
<td>Age*Education</td>
<td>more than 60 years</td>
<td>basic education</td>
<td>71</td>
<td>0.192051</td>
<td>0.809691</td>
<td>0.096093</td>
<td>0.00040</td>
<td>0.383702</td>
</tr>
<tr>
<td>Age*Education</td>
<td>more than 60 years</td>
<td>secondary education</td>
<td>82</td>
<td>0.161062</td>
<td>0.831747</td>
<td>0.091851</td>
<td>-0.02169</td>
<td>0.343817</td>
</tr>
<tr>
<td>Age*Education</td>
<td>more than 60 years</td>
<td>higher education</td>
<td>60</td>
<td>0.192059</td>
<td>0.719194</td>
<td>0.092848</td>
<td>0.00627</td>
<td>0.377847</td>
</tr>
</tbody>
</table>

Source: Own study
The initial results presented in Table 5 do not sufficiently answer the basic question as to which age and education groups of respondents differ from each other in relation to the value of achieved factor score. A more profound understanding of the differences between individual significant factors influencing the change in average value of factor score for the second extracted factor can be aided with the use of Scheffe’s test.

Table 7. The result of Scheffe’s test per age category and value of factor score for Factor 2

<table>
<thead>
<tr>
<th>Cell No.</th>
<th>Scheffe test; variable Factor n.2 Probabilities for Post Hoc Tests Error: Between MS = .93904, df = 989.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td>1</td>
<td>18 - 30 years</td>
</tr>
<tr>
<td>2</td>
<td>31 - 40 years</td>
</tr>
<tr>
<td>3</td>
<td>41 - 50 years</td>
</tr>
<tr>
<td>4</td>
<td>51 - 60 years</td>
</tr>
<tr>
<td>5</td>
<td>more than 60 years</td>
</tr>
</tbody>
</table>

Source: Own study

Table 7 shows that for the level of significance of α=5 %, there exists a significant difference in the average value of the achieved factor score between age category older than 60 years and that in range of 31-40 years of age, as well as between the former age category and that in range of 41-50 years of age. On the other hand, all other differences between individual categories can be attributed to chance while at the level of significance of α=5 %, it is possible to consider them equal. Right here, it is necessary to indicate that in relation to age and preceding analyses, especially the younger age categories are not aware of risks arising from the use of payment cards.

Table 8. The result of Scheffe’s test per education category and value of factor score for Factor 2

<table>
<thead>
<tr>
<th>Cell No.</th>
<th>Scheffe test; variable Factor n.2 Probabilities for Post Hoc Tests Error: Between MS = .93904, df = 989.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td>1</td>
<td>Primary education</td>
</tr>
<tr>
<td>2</td>
<td>Secondary education</td>
</tr>
<tr>
<td>3</td>
<td>University education</td>
</tr>
</tbody>
</table>

Source: Own study

The results of Scheffe’s test (Tab. 8) indicate that for the level of significance of 5 %, there is a significant mutual difference between the average value of achieved factor score between respondents with university education and those with secondary and primary education. On the other hand, no significant difference in average value of achieved factor score at the level of significance of 5 % was demonstrated between the respondents with primary education and those with secondary education, while the really occurring differences cannot be attributed to chance.

Conclusions

After extracting the significant factor 2 which is composed of three components (Q4: Do you consider ATMs located at banks’ premises safer for withdrawing your cash?; Q13: Do you think that the payment system carries elements of high security risks?; Q18: Does the enhanced security of new payment methods outweigh the cost of their implementation?), it becomes clear that the attitude of respondents to the problem of awareness of security risks arising with using payment cards is influenced foremostly by their age, education and mutual interaction of the two latter attributes. The analysis of data revealed that for withdrawing cash, 75.24 % of respondents at age of 18-30 years prefer ATMs located at the premises of banks while as many as 16.02 % of respondents of the same age category do not trust the latter ATMs. A similar percentage of respondents at the
age of 31-40 years (75.47 %) equally prefer withdrawing cash from ATMs located at banks while 16.89 % of respondents of the latter age category are not concerned. The category of respondents at age of 41-50 years trust ATMs located at banks in 73.96 % which represents a decrease compared to younger categories of respondents. However, as many as 86.73 % of respondents in category of 51-60 years of age prefer ATMs located at banks while the latter ATMs are preferred by 86.85 % of respondents over 60 years of age. When we inspect the question of trust associated with cash withdrawal from the aspect of education, then ATMs located in the premises of banks are preferred by 74.67 % of respondents with primary education, 79.22 % of respondents with secondary education and as many as 85.77 % of those with university education. The second component of the research tool participating in creating the second extracted factor, namely the component Q13 (Do you think that the payment system carries elements of high security risks?) represents the key component of the latter factor. The analysis reveals that as many as 93.20 % of respondents at age of 18-31 years is aware of security risks arising from using payment systems while only 0.49 % is not aware of these risks. The category at age of 31-40 years yields surprising results, namely that as many as 80.19 % of respondents are aware of the risks, however, this is a smaller proportion from all analyzed age categories while as many as 8.49 % are not aware of these risks, which on the other hand is the highest value from all age categories. Respondents from categories over 41 years of age are aware of security risks at the level of ca 86 %, which represents a positive finding of this analysis. From the aspect of education and awareness of security risks arising from the use of payment systems, we come to a conclusion that 81.67 % of respondents with primary education are aware of these risks, while 7.00 % of the latter category are not. The analysis further reveals that 83.56 % of respondents are aware of security risks arising from the use of payment systems, while in the category of those with university education, the latter percentage is higher, namely 95.73 %. These results are the base for concluding that people with higher education are better informed and thus more aware of the risks arising from the use of the payment system, even though in general, regardless of education, the proportion of aware respondents is relatively high, namely 86.99 %. In conclusion it is necessary to state that the dispersion analysis as a whole is statistically significant at the level of α=5 % (p=0.0000). Naturally, a more profound analysis of other extracted factors would be necessary for achieving a comprehensive understanding and depiction of users’ behaviors and risks in the field of security of payment instruments. Unfortunately, the scope of present analysis is not that extensive. However, the authors intend to analyze further factors with the use of multidimensional statistical methods.

References


Kordík, M.; Kurilovská, L.; Intra Group Compliance Agreement as a tool to manage the risks in the daughter companies, , Entrepreneurship and Sustainability Issues n. 4/2018, ISSN (online) 2345-0282 p.1008-1019, https://doi.org/10.9770/jesi.2018.5.4(21)


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ASSESSMENT OF RISKS IN CONDITIONS OF PROVISION OF SECURITY OF ECONOMIC ACTIVITIES OF ORGANIZATIONS

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Abstract. The study of the evolution of the economic security of the business entity has shown that at the present stage of economic development it is important to consider the factors of influence on economic security, in particular: the effectiveness of management, personnel and financial safety, a strategic approach to the functioning of the communication system of protection, taking into account the evolution of security and active search for innovative modern domains of development of industrial organizations and increase of the responsibility of performers for the consequences of their work. This allows to reduce the risk of loss of economic safety of the business entity. It was argued that innovative conceptualization of risk as a probable threat of losses lies within the scope of activity of managers of various units and has features of probable economic and objective-subjective nature, as well as a wide range of variability of the impact on the issues of economic safety and is conditioned by the dynamic development of important societal significant economic processes at the global and national levels, which ultimately contributes to enhancement of the organization’s competitive advantages.

Keywords: risk management, economic safety, mechanism of minimization, event occurrence probability, financial position


JEL Classifications: F52, O39

1. Introduction

The treats to the safety of an industrial organization are characterized by significant changes in the external environment, which increase the probability of untimely fulfillment of obligations assumed by the subject of economic activity. At the same time, threats of this kind may have the character of universality (while generating risks of reduced profitability and unjustified increase in production costs) and specificity.

Undeniably, the risk relates to significant factors in the occurrence of profits, because of this, the receipt of a significant amount of profits is associated with differentiated risk management. Therefore, each manufacturer should chose between the possibility to get significantly higher profits from operations in the plain of risk (with the probability of loss of not only the profit, but the capital involved also) and significantly lower profitability as a result of the implementation of risk-free projects.
The entrepreneurship is accompanied by a range of diverse risks that differ in place of appearance, level of influence, possible consequences, complex of external and internal factors that influence the intensity of their manifestation. An essential part of the analysis, assessment of risk management is their detailed classification, which provides a generalization of a number of risks based on the characteristics and factors that allow to group risks.

The science literature contains the significant number of different signs of risks and their types, which evidences that scientists have no unanimity in approaches to this issue (Hilorme, T., Nazarenko Inna, Okulicz-Kozaryn, W., Getman, O. & Drobyazko, S. (2018); Tetiana, H., Chorna M., Karpenko L., Milyavskiy M. & Drobyazko S. (2018); Havriňková, K., Kordoš, M. (2019); Arribas, I., Espinós-Vañó, M. D., García, F., Tamosiuniene, R. (2019); Vorotnikov, I.L., Sukhanova, I.F., Lyavina, M.Y., Glukhova, M.I., Petrov, K.A. (2019); Korauš, A., Gombár, M., Kelemen, P., Backa, S. (2019)).

2. Literature Survey

Typically, the external risks of business activities not directly related to the business of manufacturers or their business partners, and caused significant changes in the external environment (Florio, C., & Leoni, G. (2017)). First of all, it concerns the activities at the international level, current competition in the market, significant exacerbation of the manifestations of the economic crisis in the country, available situation in the financial and credit market, and legislation in the tax area (Brustbauer, J. (2016)), consequences of natural disasters, wars, general state of industrial organizations, etc. Instead, internal risks of entrepreneurial activity are represented by the risks that arise from the operation of the manufacturer itself, its managers and counterparties (Oliva, F. L. (2016)).

In general, risk management can be provided in the form of a set of methods, techniques and necessary steps that will largely predict the likelihood of occurrence of risky events and take timely effective measures to prevent or minimize their negative outcomes (Choi, Y., Ye, X., Zhao, L., & Luo, A. C. (2016)).

There is an alternative interpretation of this definition, in which risk management is a certain process of identification, research and reduction, based on the means of effective control, or by implementing measures that can reduce the negative impact of risks in the manufacturing sector (Drobyazko, S. (2018a), Drobyazko, S. (2018b)).

In accordance with the international standard FERMA, risk management is a process by which the entity fully investigates the risks of a particular type of manufacturing activity to ensure the maximum possible effect of probable steps and, as a consequence, the entire production and economic sector of the commodity producer in general (Fraser, J. R., & Simkins, B. J. (2016); Polozova T., Musienko V., Storozhenko O., Peresada O., Geseleva N. (2019)).

3. Methods

The methods used to quantify risk are universal, but they do not always allow to perform objective evaluation. The reasons for this may be lack of time, necessary information, and relevant qualifications. In addition, it should be borne in mind that there are such types of risks that require a fundamentally different approach to their assessment. Traditionally, all available risk assessment methods are summarized as follows:

- expert methods, which allow to determine the degree of risk in the absence of the necessary information for reasonable calculations or an adequate comparison, are based on the results of a survey of highly skilled specialists with further statistical and mathematical generalization of the results;
- the economic-statistical group includes methods used only if there is a significant amount of statistical data for calculation of a reliable quantitative value of risk level. In this case, the mean square deviation, β-coefficient, coefficient of variation and others are determined;
- calculation-analytical methods aimed at calculation a relatively precise quantitative risk indicator, based on the internal information base of the entity directly (usually used to assess the risk associated with insolvency...
and the lack of financial stability);

- identical methods allow to assess the degree of risk for specific transactions on the basis of comparison with the same ones, that is, repeated operations. Typically, comparisons take both their own and borrowed experience of performance of such operations.

The most common and, to some extent, universal methods include: cost-benefit analysis, analytical, statistical, expert evaluation, etc.

4. Results

Risk qualification according to the specified categories is determined by the probability of an occurrence and the amount of losses that may arise in a particular situation. Losses from catastrophic risks are usually the largest one, and they are the smallest, usually, from minimal risks. However, such a type of risks as catastrophic ones occurs quite rarely compared to the average or the minimum risks. It is advisable to provide a set of possible risks in the form of a certain hierarchy, which is based on minimal risks, and the highest manifestation is catastrophic risks (Table 1).

<table>
<thead>
<tr>
<th>Differentiation</th>
<th>Risk level</th>
<th>Probability of occurrence,%</th>
<th>Losses relative to the forecasted level,%</th>
<th>Negative risk manifestation in the field of finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>minimal</td>
<td>0-5</td>
<td>0-10</td>
<td>Temporary financial difficulties</td>
</tr>
<tr>
<td></td>
<td>optimal</td>
<td>5-15</td>
<td>10-15</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>permissible</td>
<td>15-25</td>
<td>15-25</td>
<td>Temporary weakening of competitiveness</td>
</tr>
<tr>
<td></td>
<td>medium</td>
<td>25-50</td>
<td>25-50</td>
<td>Financial stagnation</td>
</tr>
<tr>
<td>Complete</td>
<td>maximum</td>
<td>50-70</td>
<td>50-70</td>
<td>Financial instability</td>
</tr>
<tr>
<td></td>
<td>critical</td>
<td>70-90</td>
<td>70-90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>catastrophic</td>
<td>90-100</td>
<td>90-100</td>
<td>Bankruptcy</td>
</tr>
</tbody>
</table>

Of course, the priority area of activity of the overwhelming majority of manufacturers is the manufacture of commodity products or services. However, it is inextricably linked with financial activities, which serves as a means of ensuring the normal livelihoods of the industrial organization and improving its performance. All risks arising from such activities are distinguished in the group, the so-called financial risks, which have the most significant consequences in the general range of risks of the business entity. Given this, their differentiation deserves a special attention. Financial risks in the broadest sense are those business risks that are characterized by the probability of loss of available financial resources, and in somewhat narrow sense, the likelihood of financial losses due to operating activities in the financial and credit and stock markets.

At the same time, the financial risks of the manufacturer vary greatly, and it is expedient to classify them according to the characteristic features in order to effectively manage them.

In the process of analysis of the peculiarities of risks, it is appropriate to consider their non-intersecting varieties, in order to prevent double counting. However, in this case there are certain issues that require a timely solution: the same factors can influence the positive and negative dynamics of various risks; risks that have a certain affinity and peculiarities of the risks of other varieties may at the same time be components of other groups, that is, such risks, which differ in the level of influence, can be attributed to certain economic risks, or risks identified by forms of manifestation can be attributed to the risk of public level;

One and the same kind of risk, given different conditions, can be attributed to both external and domestic ones, in particular, the risk of investment from their own sources (depreciation, profit, etc.), since the accounting government policy is based on unified approaches, however the regulatory framework provides the right to manufacturers to a certain autonomy (Stoian O., Polozova T., Didenko E., Storozhenko O., Moskvichova O. (2018)).
The study of risks in their totality and individually allows them to establish their hierarchy, to form scenarios of probable development of events in a clearly defined situation, draw up a forecast risk map, and establish limits of stability of the management system, based on simulation, as well as other types of modelling. That is, it can be stated that the risk classification is a tool of organization for risk management.

In the specific conditions of the objective manifestation of the risk and its financial, economic, moral, ethical and other types of losses, there is an urgent need for the establishment of such a mechanism, which would allow as much as possible (taking into account the objective determined by the business entity or its management) to evaluate risk in the adoption and implementation of managerial decisions. Such a mechanism includes risk management.

It is also worth to pay due attention to the specific features of risk management. First, the purpose of risk management is to timely identify the probable risks and prevent them, instead of elimination of their negative manifestations. Secondly, risk management is a complex of innovative methodological approaches and processes, the application of which is extremely important for the implementation of strategic objectives of an industrial organization (Carroll, R. (2016)).

Thirdly, risk management should be a systematic process that studies the development of a business entity in a dynamic, that is a prior level, a modern and further interconnection. Thus, it should be integrated into the general plane of corporate culture, supported by the management, and subsequently brought to the attention of each employee of the business entity as a general effective program of further development with the outline of specific tasks for the executives. Risk management as a holistic risk management system should include an effective program of modern control over the implementation of defined tasks, a comprehensive assessment of the performance of the planned activities, as well as an effective system of motivation at all levels of the organization.

At the first stage of risk management, it is expedient to analyze the production and economic environment and establish the whole range of risks, outlining their sources, as well as objects. First of all, one should identify the most probable and dangerous risks, and then move to less probable, creating a portfolio of identified risks. In general, this is a rather difficult process, for which high professionalism, proper knowledge of the characteristics of economic, organizational, technological and technical processes is important.

The investigation of the level of entrepreneurial risk is the most responsible and rather complicated stage of the existing management process, the professionalism of which is largely dependent on the effectiveness of risk management in general. It includes not only quantitative but also qualitative risk assessment (Mun, J. (2017)).

So, based on the study of risk, you can make a presentation of the likely risk manifestations, the likelihood of their occurrence and results. Based on the comparison of the risk indicators obtained with a maximum possible one, a risk management strategy can be formed, on the basis of which measures are developed to prevent or minimize the risk (Gatzert, N., & Schmit, J. (2016); Masood, O.; Tvaronavičienė, M.; Javaria, K. (2019)). That is, there is a certain selection process among alternative risk management methods.

After choosing the risk management methodology, the risk owners formulate the final steps to timely inform about the possibility of occurrence of a risk event and apply the chosen method of management. The existing risk management system should be sufficiently significant in assessment of the performance of the measures taken to minimize risks (Zhao, X., & Singhaputtangkul, N. (2016)).

At the stage of impact assessment and their correction there is a set of performance indicators based on the level of neutralization of probable losses, the effectiveness and necessity of measures (proportionality of available costs associated with the regulation of risk, to the amount of probable losses), the amount of total risk of production and economic activity an industrial organization based on the steps taken to improve it (Dalevska, N.; Khotba, V.; Kwilinski, A.; Kravchenko, S. (2019)).
The obligatory part of the risk management activity should be the organization and implementation of measures for the implementation of the planned program of actions on risk management, i.e. the determination of reasonable steps, optimal scales and possible sources of their financial support, delegation of authority to specific managers and rational deadlines of execution. During the risk management process, it is necessary to monitor the implementation of risk management measures (Bromiley, P., Rau, D., & McShane, M. K. (2016)).

In the course of processing of available data, one should determine the risk factors, the extent of which can have a significant impact on all the most important areas of the business entity, the failure of which in normal operation can cause significant financial harm. The most significant spheres of operation include the production of commodity products, sale, storage of basic and circulating assets and human resources (Choi, T. M., Chan, H. K., & Yue, X. (2017)).

Any management solution is accompanied by a certain level of risk, which is why it is very important to promptly investigate and objectively assess the probable amounts of risk posing a threat to the business entity in the case of choosing a particular area of action. The main objective of risk research is to form and provide the prospective partners with the necessary array of information to decide on the feasibility of be engaged in work on the project and development of a set of measures to protect against potential financial losses.

The objective and qualitative analysis belongs to the most complex tasks of economic riskology. This work requires the use of fundamental knowledge not only in the field of the theory of economics, finance, business, but also many basic skills, which the competitive specialist at the domestic labour market must possess. It is also important to have a set of necessary skills and some practical experience in the field of economic activity. The main tasks in carrying out qualitative risk research include identification of probable varieties of risk, assessment of the degree of their threat, and the identification of factors that form the risk factors (Singhal, A., & Ou, X. (2017)).

A significant addition to the objective analysis may be the quantitative expression of the business risk. Risk analysis by means of quantitative expression represents the numerical value of certain types of risks, as well as the existing aggregate risk of the whole area of production and economic activity. Quantitative reflection of the degree of risk is usually not characterized unambiguously. Given the probable risk assessment method used, its value may vary. In order to quantify the degree of risk, the various subjective purely intuitive methods are used. Today, Ukrainian executives, as a rule, often use intuitive methods, relying on the well-deserved authority or the accumulated experience of successful predecessors. Only a part of senior managers can give proper assessment of risk based on the application of economic and mathematical models.

The content of the method of study of expediency of costs is that the costs of a certain area of production and economic sphere, its separate components are characterized by the presence of different levels of risk. In particular, the level of risk in terms of costs associated primarily with the acquisition of raw materials is higher than the labour costs.

The establishment of the level of risk by examining expediency is aimed at identifying probable segments of risk (Table 2). To this end, the state of each element of costs is usually divided into risk areas that form the sector of general losses, in which the clearly identified losses are less than the maximum permissible level of risk.
Table 2. The risk limits depending on the state of crisis

<table>
<thead>
<tr>
<th>Area of organization activities</th>
<th>Absolute stability</th>
<th>Normal stability</th>
<th>Unstable state</th>
<th>Critical state</th>
<th>Crisis state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sectors of risk</td>
<td>Risk free sector</td>
<td>Sector of minimal risk</td>
<td>Sector of increased risk</td>
<td>Sector of critical risk</td>
<td>Sector of unacceptable risk</td>
</tr>
<tr>
<td>Maximum possible losses</td>
<td>Complete absence of losses</td>
<td>Net profit</td>
<td>Calculated profit</td>
<td>Gross profit</td>
<td>Revenue from sales and property</td>
</tr>
<tr>
<td>Level of risk</td>
<td>0</td>
<td>0-25</td>
<td>25-50</td>
<td>50-75</td>
<td>75-100</td>
</tr>
</tbody>
</table>

Significant advantages of this method can be attributed to the fact that having information on the item of expenses with the maximum allowable risk, it is possible to determine the areas of its reduction. In particular, having information that the risk relates to the rental of a vehicle, it is possible to review the issue of terms of transportation of material assets.

The main disadvantage of the method is that an entity does not properly assess potential sources of risk, instead it treats the risk as a constant, without taking into account its elements.

However, the method of expert evaluations is somewhat subjective compared to alternative ways. Such subjectivity arises as a team of experts dealing with risk assessment expresses its own subjective perception of the previous state and development prospects.

As a rule, this method is used in the case of insufficient amount of information or in case of determination of the degree of risk of this area of production and economic activity, which has no analogues, which does not allow to analyze the preliminary data.

In generalized form, the role of this method is determined by the fact that the business entity distinguishes a certain number of risks and explores how they are able to influence its production and economic activity. Such an approach is limited to the determination of the score criterion for the probability of occurrence of the risk of one or another type, as well as the level of its impact on the activities of an industrial organization.

In the conditions of the stability of the internal and external environment of the entity, the required array of data on the state of certain operations (revenue and losses), processes, vectors of economic recovery, the mechanisms of statistical approach to risk assessment are used. This approach is based on the theory of the probability of a certain distribution of random variables.

With a sufficient amount of information on the availability of certain types of risk in previous periods, the manufacturer is able to assess the likelihood of their occurrence in the future.

The analytical method for risk analysis is a set of statistical indicators based on the preliminary selection of the main characteristics with further study of the impact of risk factors on them by experts. It is a combination of statistical calculation and principles in relation to the expert analysis.

The strengths of the analytical method are the combination of factor analysis of indicators that significantly affect the risk, and the establishment of appropriate methods for reduction of the degree of its manifestation.

The risk study, being based on data on the financial position of an entity, is the most popular method of relative risk assessment for a senior manager and its business partners, as the main sources of information required are the financial statements of the manufacturer, primarily the balance sheet and the report on financial results.

The financial condition of an entity can be defined as a complex category, which is determined by a system of balanced absolute and relative values that show not only the availability but also the optimal placement and effective use of financial resources of the industrial organization.
The study of these indicators makes it possible to assess the current financial stability of the business entity.

The identity method is used when other known risk assessment methods are unacceptable. The specificity of this method is determined by the fact that in the process of studying the level of risk of a particular vector of the entrepreneurial sphere, the information should be used on the development of such areas in the past.

The objective complexity of application of this method of assessment of the level of risk is due to the fact that the indicators of previous periods need to be applied at the moment, not considering that any vector of entrepreneurial activity is in constant development.

After study and evaluation of identified risks, it is quite logical to choose the ways to reduce the risk, that is, minimization of the probable losses during those or other operations.

**5. Discussion**

The international experience contains a large number of diverse and original methods for reduction of risk, the most popular of which are: insurance; risk transfer; diversification; obtaining an additional array of relevant information; business planning; limitation; compliance with the quality standards of the manufactured products; thorough check of business partners; ensuring the security of commercial activity of an industrial organization; qualified personnel selection for a business entity.

The main approaches to risk reduction and their content are presented in Table 3.

<table>
<thead>
<tr>
<th>The mechanism of minimization</th>
<th>The essence of the method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention is the most effective method</td>
<td>refusal to carry out certain business operations, the degree of risk on which is quite significant and not fully consistent with the financial policies of the business entity; reduction of the share of borrowed funds in the production and economic circulation allows to prevent loss of financial stability; the increase of the liquidity of available assets through increase of the circulating assets in the general array makes it possible to prevent the risk of insolvency.</td>
</tr>
<tr>
<td>The minimization of risks - is used when it is impossible to avoid them</td>
<td>receipt of guarantees from the consumer regarding timely payment of the debt; narrowing the list of unreasonable force majeure situations in contracts with counterparties, which will make it possible to increase financial responsibility for the unfair performance of contractual obligations, that is, to reduce the commercial risk.</td>
</tr>
<tr>
<td>Diversification of risks - allows you to reduce the level of risk concentration</td>
<td>diversification of the spheres of activity allows using additional opportunities for obtaining revenues and profits from diverse financial and economic transactions; diversification of suppliers of products involves establishing relations with many partners in order to supply the main nomenclature of goods; diversification of existing goods for sale - introduction into the assortment of the industrial organization of products with opposite demand within certain commodity groups, which makes it possible to reduce the risk in case of worthening of the market situation in a certain commodity market; The diversification of deposit savings consists in placing available temporarily released cash assets for deposit storage in several banks.</td>
</tr>
<tr>
<td>The limitation of the risks of transactions that have the tendency to systematically go beyond the permissible risk limit; such a risk is limited by the introduction of appropriate financial and economic standards</td>
<td>the maximum possible volume of a commercial transaction aimed at the purchase of goods in the case of its implementation with the same counterparty; acceptable amount of borrowed funds in financial and economic circulation; the maximum amount of deposit in a single commercial banking institution, etc.</td>
</tr>
</tbody>
</table>

In order to minimize risks, it is advisable for managers to develop a risk management program that combines the mechanism for the formation or adjustment of appropriate risk management procedures in an industrial organization. In order to justify the feasibility of development of a risk management program, it is necessary to
determine the significance of internal threats to the organizations business, which is usually about 75% of the existing risks that have a significant impact on the functioning of an industrial organization.

The programs for minimization of unpredictable risks developed by the management needs to be correlated with innovative capabilities. Directly, the recovery and the process of modernization of a particular organization should be aimed at minimization of the risks of accidents, certain environmental damage, and so on.

**Conclusions**

The formation of a risk management program shall be carried out in two stages. The preparatory stage of the risk management program compilation includes the study of a reference and information base that is relevant to the identified problem. This allows you to approve the urgent decisions before the next - the main stage - and go directly to the development and coordination of the risk management program.

The main stage of the development of the risk management program is the synthesis of relevant information on the potential risks from which the business entity has refused the stage of pre-selection, the formation of a plan for the implementation of preventive measures and taking into account all probable risks and existing mechanisms for managing them. The risk management program should be based on key risk features and the most probable, most likely and forecasted losses.

Diagnose existing risks in several planes, which will allow you to fully characterize the overall state of threats. The environment in which there are risks is assessed first of all: natural conditions, production, socio-political situation, economic conditions, personnel, etc. The introduction of such a risk management mechanism in an industrial organization is less productive than in the case where a special department has been created in its structure that addresses issues related to threats, since the specialists of these structural units significantly reduce the sensitivity of the entity to the manifestation of the available risks.

Typically, the task of managing risks in industrial organizations is assigned to special structural units. In the event that the infrastructure of the industrial organization not provides such a unit, the management may decide to engage regular risk management specialists or external consultants. However, as experience shows, quite often the risk management functions are imposed on other structural units. Typically, these tasks can be performed by the internal audit department, controlling service, and forecasting analytical unit. In this situation, threats are diagnosed in a timely manner, and their consequences are eliminated promptly, which protects the commodity producer from the probable significant losses.

It was substantiated that risk situations are accompanied by an urgent need to choose between different variants, a polar understanding of a certain magnitude of risk by theoreticians and practitioners as a result of differences between psychological and ethical and value systems and principles. This determines the subjectivity of the vision of this category. At the same time, the risk is an objective factor, due to the fact that it is inherent in most of the existing production and economic operations, and functions not being based on the will or consciousness of the individual, and neglect or recognition of its existence by an individual. So, one can agree that the risk itself has both a subjective and objective nature.

In the course of the study, it was substantiated that socio-economic, organizational and legal factors influence the formation of economic security of an economic entity. Any industrial organization is characterized by certain features in the area of legal relations and the establishment of its own business security system. In view of the imperfection of the current legislation, as well as the level of scientific and practical experience in substantiation and creation of an effective system of economic protection of the manufacturer, it is advisable to draw attention to the achievements of the international community in this area.

Taking into account world experience it can be stated that in developed countries, as a rule, there is a coexistence of two basic systems of formation of economic protection of manufacturers: the systems of protection at the state
level, which are responsible for national security, with the spread of their influence on state and private business entities in the plane of the current normative field; private entities that form their own economic security services or use detective-security agencies develop their own systems of necessary mode of confidentiality and security. Only the combination of the capabilities of both systems can guarantee the economic security of business interests, in particular, and in general the interests of the state, by ensuring business stability, preventing the likelihood of bankruptcy, compensating for losses caused by natural disasters or unfair competition, industrial espionage or other illegal actions.

References


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JUSTIFICATION OF THE STRATEGY OF ECONOMIC SECURITY OF ORGANIZATION IN THE CONDITIONS OF INNOVATION DEVELOPMENT

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Abstract. It was argued that the development of an effective strategy for the protection of the industrial organization and ensuring its proper implementation should be based on the methodological basis of the theory of security. The fundamental changes in the process of formation of a security strategy are determined by the fact that the process specified is objectively developing and gradually becoming more complicated. At the present stage, the security strategy is formalized into a certain organized system, which should include the existing structural subdivisions of the business entity and create conditions for the protection of the priority areas of its operations. The main objective of formation of a strategy for the protection of entrepreneurship is the early distinguishing and isolation of external and internal dangers and threats, overcoming existing imbalances in the process of formation of the innovative basis for further development, creation of a safe environment for the existence of a business entity and, ultimately, achieving the stated goals of a particular industrial organization. All this allows us to formulate an appropriate strategy for its economic security.

Keywords: economic security, security strategy, innovative development

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JEL Classifications: F52, O39

1. Introduction

The need to form a stable and promising real segment of the economy and provision of a favourable foundation for improvement of the well-being of the industrialized regions determines the key vectors of urgent tasks regarding the forms and methods for the full implementation of organizations’ own strategic capabilities on a scientifically grounded platform.

The strategic management of the business entity as a basis for management activity has become widespread due to the need for an operational response to the transformation in the field of enterprise activities. These features led to an increase in the interest of scientists and manufacturers in quality new management, first of all, in relation to the problems of strategic analysis, alternative choices and development of an effective strategy. At the same time, it is almost unrealistic to predict the likely performance of an enterprise because it represents a branched open system and is subjected to a significant influence of a number of factors that are not part of the controlled zone, which in turn leads to a decrease in the viability of the outlined strategy. Therefore, the business entity’s readiness for such changes, achieving stability, productivity, and adaptability necessary for the implementation of the chosen strategy is also a very important and difficult task of modern strategic management, as well as the formation of a strategy requires appropriate skills and abilities employees of an industrial organization, since any most successful strategy does not guarantee the desired results, or, in the case
of unprofessional implementation of it, may lead to deterioration of the situation, whereas even an imperfect false strategy can yield successful results in case of the application of a highly professional approach.

The development of an effective system of the economic security strategy of an industrial enterprise and ensuring its proper existence must be based on the methodological basis of the theory of security. It is important to correctly outline the goal of the business entity’s security, set of tasks for the successful implementation of a specific goal, key functions of the established industrial enterprise security system, that is, it is necessary to clearly define the scope of the operation of the specified system.

2. Literature Survey

Consequently, the fundamental changes in the process of formation of the economic security strategy are determined by the fact that this process is completely objectively evolving and gradually becoming more complicated (Havierniková, K.; Kordoš, M. (2019)). Not so long ago, the achievement of the economic security strategy consisted in the coexistence of disparate tasks and vectors, which, as a rule, were not closely interconnected, but in essence only formally functioned (Dueri, S., Guillotreau, P., Jiménez-Toribio, R., Oliver-Ramos, R., Bopp, L., & Maury, O. (2016), Von Gliszczynski, M., & Leiserling, L. (2016)). At the present stage, these tendencies are formalized in a certain organized system, which should include existing structural subdivisions of the subject of business and create conditions for the protection of priority areas of work and availability of resources (Tetiana, H., Karpenko, L., Fedoruk, O., Shevchenko, I., & Drobyazko, S. (2018); Dobrovolskienė, N.; Tvaronavičienė, M.; Tamošiūnienė, R. (2017)).

The main goal of the outlined system of the economic security strategy of entrepreneurship is the early identification and isolation of external and internal dangers and threats, creation of a safe environment for the existence of the business entity and, eventually, the achievement of the stated goals of a certain industrial organization (Hilorme, T., Nazarenko Inna, Okulicz-Kozaryn, W., Getman, O. & Drobyazko, S. (2018); Monni, S.; Palumbo, Tvaronavičienė, M. (2017); Tvaronavičienė, M. (2018); Ciobanu A., Androniceanu A. (2018)). The effectiveness and reliability of a system of economic security strategy of a business entity are determined primarily by material and moral damage, its presence or absence. The essence of such an indicator is primarily determined by the following criteria: prevention of disclosure of confidential data; prevention of illegal actions of the personnel of the enterprise, its visitors, counteragents; maintenance of the security of property and intellectual property of the subject of management; prevention of manifestations of force majeure events; prevention of unlawful violent actions against certain (specially assigned) workers of the enterprise; early warning of attempts to gain access to certain objects of an industrial organization (Drobyazko, S. (2018a), Drobyazko, S. (2018b)).

The formation of an economic security strategy involves the need to develop a specific action plan that can prepare the company to overcome the adverse impacts that will likely arise in the future in obtaining strategic benefits that can be achieved, taking into account the existing level of threats that can be predicted and quantified, in order to protect the business entity on the path to the stated strategic objectives and to provide a higher level of security even through reduced profitability. Thus, the economic security strategy of the business entity is oriented primarily to the external environment of existence (Carr, M. (2016), Sulphey, M. M., & Alkahtani, N. (2017)).

3. Methods

It is worth noting that the way of building of an economic security strategy of the business entity is vectors for the movement and the adoption of managerial decisions for the achievement of the goal. To determine the basic security indicators it is necessary to outline the strategy of formation of an industrial organization security. In general, the economic security strategy of the business entity is a complex of most important management decisions, which are aimed at achievement of the desired level of protection of the existence of a particular enterprise.

Among the factors hampering entrepreneurs in achievement of the planned results and making productive use of their own competitive advantages, optimal implementation of their goals and prospects for further development one can distinguish the following ones:
underestimation by managers of all levels of tasks for the long-term perspective, narrowing of strategic vision, which requires a change in the external environment of the business entity;

an imbalance between the existing system of incentives for managers and other employees and key steps in implementation of the enterprise strategy; incomplete devotion and lack of commitment of performers;

lack of necessary resources for successful implementation of the main mission of the business entity;

undevelopment of a concrete, effective plan of measures for the implementation of a predefined strategy of the enterprise; relying on their own intuition and existing experience in making managerial decisions;

globalization tendencies that lead to significant changes in the internal and external plane of the functioning of the industrial enterprise substantially affect the buyers, criteria for the formation of consumer demand, production technological base, counteragents, specifics of the market space, capacity of the enterprise, entrepreneurial activity, etc.

4. Results

The formation of optimal strategy of economic security of the business entity is based on a systematic analysis of all production and economic activity for a certain period of time and the development of a set of measures that can ensure stability in the future in the operations of the business entity, as well as form the basis for its progress.

Factors that determine the proper state of the economic security strategy of the business entity are quite diverse and specific to each area of activity. However, it is possible to identify the typical factors that affect the appropriate state of the strategic security of the business entity, regardless of ownership and manufacturing sector:

The general production factors, that is, those that directly affect the activities of the manufacturer. They usually include: location of the industrial enterprise; natural resources that are available for use and their particular location on a particular locality; terms of use and key quality indicators; the availability of labour force and the level of education and skills of personnel; formed industrial and economic infrastructure and possible volumes of its exploitation; socio-economic conditions of life of the population.

A constant demand for a product is a factor that is important for the uniform balanced functioning of the organization. This factor applies to: long-term contracts on sales of products to potential buyers; competitive advantages of manufactured products; quality and guarantee obligations of the manufacturer; reasoned forecasts for demand in the market space for a particular product; the formation of a national and local order for manufactured products (Suter, M. (2016); Korauš, A.; Dobrovič, J.; Poláč, J.; Kelemen, P. (2019)).

The variability of the external environment, which has an ambivalent character: on the one hand - it may be threats in the form of manifestation of the economic crisis, instability, etc., and, on the other hand, the emergence of innovative ideas and products arising from their implementation and guaranteeing the effective existence of the business entity, subject to the prompt use of such innovations (Biresselioglu, M. E., Yildirim, C., Demir, M. H., & Tokcaer, S. (2017)).

The defining feature of the outer space at the present stage is its changeable ever-increasing state. By transforming the main Eshby cybernetic theorem for management needs, one can state that for the prompt response of enterprise managers, or more precisely to make timely and optimal managerial decisions, the timeliness of responding to threats in the external environment should be consistent with its degree of variability (Duffield, M. (2017), Emmers, R., & Caballero-Anthony, M. (2017)). That is why, it is important for business entity not only its ability to take into account the factors that are present at the moment (as a rule, negative ones), but also
take into account that in the future they can be modified or change their forms of manifestation and the level of influence. The timing of the occurrence of a probable negative event (usually associated with some indicator) and the ability of the industrial enterprise managers to predict the onset of such an event are equally important (Zhou, J., Wang, C., Li, Y., Wang, P., Li, C., Lu, P., & Mo, L. (2017)).

Stability of suppliers of basic raw materials and basic materials. For this purpose, long-term contracts should be concluded for the supply of the necessary raw materials and materials, taking into account such criteria as deadlines and quality. It is also advisable to take into account the potential capabilities of major suppliers by diversifying supplies. As a rule, it is necessary to deal with several suppliers of raw materials and materials (3-4 or more) for the elastic pricing policy.

The presence of external competition on export products, which should: to comply with world standards; be competitive in quality and warranty service; be promising; have competitive advantages over imported products in the country, which will provide support to the domestic manufacturer (Dalevska, N.; Khobta, V.; Kwilinski, A.; Kravchenko, S. (2019)).

The existence of a competitive field encourages business entities to find effective ways of development that can ensure their success and demand for their products. However, existing competition theories are related to the current market environment, but they are not able to meet the needs of the future. This is their main flaw. The fiscal regulation of the business entity’s operation involves: The formation of the security of the domestic manufacturer despite the form of ownership of the means of production; co-ordination of state policy in the field of taxation; creation of favourable conditions for manufacturers, taking into account the specific aspects inherent in a certain territory; protection in the manufacturing of products belonging to the group of critical imports; the formation of a state order for those groups of products financed from the budget and, accordingly, reduction of import for similar products.

High level of protection of information containing commercial secrets. The state is tasked with preserving the secrets of scientific and technological achievements, innovative technologies, intellectual property, “know-how”, as well as commercial secrets. The professionalism of managers of a business entity. The most important factors that can form an appropriate level of economic security for a business entity are the professional competence of senior managers and the entire team of managers (highly skilled personnel, an effective system of recruitment and training, ensuring the proper conditions of production and socio-economic support of personnel).

There are other factors of the strategy of economic security of the business entity, which are not directly related to the production and economic activity, but to a large extent affect the general state of production. Usually, they relate to the behavior of individuals, their morality or spirituality (theft, fraud, misleading). All of these factors should be considered taking into account the existing regulatory framework and directing them to achieve the production strategic goal, providing the appropriate level of strategic security for each individual manufacturer (MacLean, G. A. (2016)).

An appropriate strategy for economic security is provided through the implementation of a coherent policy, a set of approved actions that meet potential internal and external hazards. This policy will only be effective if the strategy and well-chosen tactics of security formation are clearly defined. It should be taken into account that the strategy of building economic security is based on polyaspectancy of forecasts of further socio-economic progress of the enterprise and changed according to the course of events in a certain way. The benefits of a poly-dimensional strategy are determined by the possibility of choosing among several alternatives (Arribas, I.; Espinós-Vañó, M. D.; García, F.; Tamosiuniene, R. (2019)).

At the same time, the long-term strategy of economic security of the business entity should also take into account additional aspects that ensure internal and external economic security: Uninterrupted power supply. Usually, in order to ensure a reliable operation of the business entity, it is expedient to use two alternative sources of electricity. At very important productions, it is necessary to take care of energy independence,
having created a reserve source of kinetic energy (diesel power plant). Auxiliary heat and steam supply, in the case when the industrial organization uses a municipal combined heat and power production plant. Water supply for all needs of the organization. The presence of its own source, and in the case of using a municipal water supply - a sufficient reserve of water. The creation of the insurance stock of the necessary material, raw and technical resources at the enterprise for the stable operation of the business entity under unforeseen circumstances. Reliability of consumers of products of the business entity in payment for the received products. Uninterrupted operation of transport for timely supply of material resources and products to customers.

A system of measures aimed at preservation of resources and inventory and warehouses, as well as effective organization of protection in general. To do this, it is necessary to create and implement certain steps for internal and external information, and means of signalization.

The program can also include other necessary measures, taking into account the profile of the enterprise. The corresponding long-term program of strategic development of the economic security of the business entity formed must be approved usually by the management of the enterprise after proper discussion and approval, after which it will become mandatory for execution by all employees.

A well-grounded strategic program is designed to promote stability in the work of the business entity and provide an appropriate level of economic security. So, a program designed for a long period must be provided with the necessary financial and material resources. Typically, the control functions for the timely and complete implementation of the program is imposed on the manager of the senior management.

Traditionally, the following forms of the strategy of economic security of the subject of management are distinguished: those aimed at neutralization of existing and prevention of the emergence of potential hazards; those aimed at minimization of the occurrence of threats (possible or existing) to security; those intended to cover the damage caused; those concentrated on overcoming existing strategic imbalances in the process of creation of an innovative foundation for further development.

In the process of implementation of the economic security strategy, the progressive stages of improvement of the situation in the industrial organization are:

- formation of new production and organizational structures; leasing application;
- direct participation in events of international level (exhibitions, symposiums, seminars) and implementation of world achievements in the field of scientific and practical experience;
- optimization of existing systems of calculations; increase in output;
- accumulation of investments in the sphere of resource conservation;
- proper motivation of the “resource” vector of study and design works;
- introduction of the principle of critical lending terms; construction of a data processing center for payables and receivables;
- establishment of a certain structural subdivision in the data processing center with the involvement of highly qualified specialists for tracking the process of accrual and payment of the required taxes and fees;
- increase of wages to corresponding indicators of the leading countries; assignment of managerial functions to employees of the enterprise;
- systematic improvement of the qualification level of employees; motivation of the management of the business entity to hire unemployed persons; improvement of socio-economic infrastructure of the subject of entrepreneurial activity; increase of the responsibility of employees, primarily in material form, for the results obtained.

Therefore, the creation of a strategic security of an economic entity should consist of the following stages: use of appropriate effective production factors (new equipment, labour resources of the appropriate qualification, etc.); production of marketable products oriented to market demands, improvement of qualitative characteristics and appearance; establishing close ties with those suppliers of materials, energy resources and raw materials of
good repute; adequate protection of commercial secrets of the enterprise; change, if necessary, the heads of the enterprise and its structural divisions.

To successfully implement measures to formulate the economic security strategy, it is necessary to outline the volume of necessary resources and attract both internal and external sources of financing (sale of a certain part of the property, active sale of available products, attraction of credit funds, etc.).

The development of a strategy for ensuring economic security of an economic entity should be based on key principles, in particular the definition of initial provisions for its content, structure and purpose.

Taking into account these principles will allow to form a common basis and unified approaches in order to create an appropriate strategy and a holistic approach to the issues of the security of an industrial enterprise.

The current management theory over the past few decades has overcome the rather difficult way of testing, in which various approaches and concepts emerged and disappeared as a result of the transformation of perception of the essence and importance of management for the development of each industrial enterprise, in particular, of the human community as a whole. According to well-known experts, the most important in management is the existence of a strategic vision of the manager.

This strategic vision includes:

- the perception of managerial subordination and the logic of determination of the priority areas in response to the question: to what we are heading and in what way we need to achieve this;
- the focus on distinguishing and responding to a changing environment that opens the potential and probable hazards;
- a successful combination of forms and mechanisms of obtaining and ways of using investment resources;
- the attraction of highly skilled personnel to the production and introduction of ideas on the long-term development of the business entity and overcoming existing problems;
- coordination of functional and production, strategic and current, analytical, planning and executive vectors of the business entity;
- understanding of the potential and scope of the impact on creation of a supportive environment, not being limited to responding to challenges;
- the focus on managing the processes of socio-economic progress of the business entity for the long-term perspective of creation of an optimal system of strategic management implemented using motivation to initiative and leadership instead of protection and banal imitation.

The strategic imperatives are used for the productive introduction of a business strategy of an entity. The harmonious approach to the substantiation of strategic imperatives is aimed at introduction of actual and fundamental imperatives for a particular sphere or a certain manufacturer.

The market value of an industrial enterprise depends on many factors that differ significantly in different fields. Therefore, when building a business strategy of an industrial organization it is expedient to distinguish factors such as: desirable geographic coverage, strong brand, financial and economic stability, proper quality indicators of products, the possibilities of intra-firm management in solving business interests at all levels, and the effective use of capital. On the basis of these factors, it is possible to identify the relevant strategic imperatives, which are the most important when creating an effective business strategy in an industrial organization, since they enable the desired level of formation of value.

The imperatives were grouped by function and are arranged in such a way that they are coordinated vertically and horizontally (Table 1).
Table 1. Strategic imperatives for an industrial organization

<table>
<thead>
<tr>
<th>Specification of the conditions for the implementation of imperatives</th>
<th>Generally supporting imperatives</th>
<th>Imperatives of development</th>
<th>Purposeful imperatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of own funds</td>
<td>Business processes</td>
<td>Establishing the consumer value of the goods</td>
<td>Harmonization of relations with contractors</td>
</tr>
<tr>
<td>Study of changes in the external environment</td>
<td>Attraction of counterparties</td>
<td>Development of innovations</td>
<td>Focusing on target buyers</td>
</tr>
<tr>
<td>Study of changes in the internal environment</td>
<td>Balance of operational and strategic goals</td>
<td>Implementation of know-how</td>
<td>Focusing on satisfying the needs of the buyer</td>
</tr>
<tr>
<td>Diagnostics of the capabilities of an industrial enterprise</td>
<td>Presence of modern communications</td>
<td>Brand offer</td>
<td>Balance of urgent needs and opportunities</td>
</tr>
</tbody>
</table>

The main preconditions for the implementation of each individual strategic imperative are monitoring of changes in the organization’s external environment, the availability of certain unique assets and operational analysis of the activity.

The managers of successful organizations rely, as a rule, on a strategic vision that is based on an analysis of customer inquiries, prospects and dangers, a competitive environment, perceiving such work as a routine activity, as well as studying and generalization of the internal environment of an industrial organization. The strategic vision is based on understanding by the managers in the first place and the whole team of personal responsibility for the possibility of long-term existence and comprehensive development of the subject of entrepreneurial activity, need for adequate management of the process and continuous support of the main types of production and economic activity to form and strengthen the competitive advantages, achieve high financial and economic indicators for a long time interval.

For the business entity, it is essential to realize that any strategic activity should focus on choosing such ways of life that can guarantee the optimum result in the future, taking into account the risk minimization. On the other hand, the organization is able to create an adequate level of protection against the probable threat.

Affirming the effectiveness of entrepreneurial activities in a strategic context, it is advisable to take into account strategic security at the same time.

So, if the emergence of strategic planning is the result of a dynamic external space, then the strategy of economic security becomes important in view of the deepening of crisis phenomena. In this regard, the strategic objectives of the entity and its strategy of economic security are closely interrelated.

The strategy of economic security of an industrial enterprise is aimed at creation of favorable conditions for productive work and an incentive to achieve the goal of entrepreneurial activity in a competitive environment in the presence of various risks through the operational detection and minimization of the impact of existing threats. At the same time, due attention to the state of the economic security strategy is the formation of a certain set of key indicators that confirm the safe state of the environment of the entity’s existence at a certain time of the onset of the predicted negative (positive) phenomenon.

An analysis of the activity of organizations allows to distinguish the characteristic features of business strategy development:

- focusing on innovative opportunities for increase the efficiency of work that appear on the market in order to further capitalize on the product, that is, finding the imperatives to reduce the gap between financing the desired direction of enterprise development and relevant competences (in particular, growth, takeover, creation of alliances, etc.);
- finding acceptable alternatives for consumer expediency as a method of elimination of direct hard competition; the application of approaches that will increase the profitability of an enterprise in obtaining value added;
- the introduction of strategic control imperatives that will allow to increase efficiency for some time.

The justification of the imperatives required for an industrial enterprise is aimed at introduction of a certain
positioning of long-term principles that should be implemented in order to achieve the desired performance of the business entity. In the process of strategic planning, analysis and implementation, all this will help to effectively organize the sharing of relevant resources by prioritizing efforts and time.

Since the competitive field lies in the struggle for time, resources and capital, then the systematization of strategic imperatives will allow to justify and select the most successful decisions that will allow to achieve the objectives of the business entity in the best way.

5. Discussion

When forming imperatives it is advisable to take into account the following factors of economic security: the timeliness and appropriateness of certain institutional changes with the achievement of economic security, the current state of the institutional environment, need in periodical publishing of the priority of responding to various economic threats, public opinion, effectiveness of coercive and operational mechanisms, effectiveness of solving existing and potential problems of introduction of new norms and institutions, overall level of transformation and transaction costs in implementation of institutional changes, need to focus on the dialectical factors of objects and subjects of the system, corresponding division of levels of relationships that reflect the relevant features of relations arising in the process of achievement of economic security.

The external environment, which affects the general level of economic security of the business entity is characterized by indicators of liquidity, ability to fulfill obligations on loans, solvency and competitiveness, which are in close interaction. Formation of security in the area of achievement of the creditworthiness of an industrial organization can only take place if the manufacturer has sufficient funds, fixed assets and current assets of the corresponding volume, liquid assets, which are necessary for the fulfillment of obligations assumed by them on the basis of loan agreements.

The main external indicators of determination of the overall level of economic security of an industrial organization is the presence of strong competitive advantages. If the business entity is able to achieve a high competitive level, that is, to maintain its position in a severe competition with the production and sale of finished products, then its strengths (advantages) can become a solid core of long-term security in the group of companies producing identical products and compete on the external and internal market and, thus, will provide the organization with economic success in the future.

Given the need for systematic monitoring of the current state and prospects of organizations in the analysis of the effectiveness of use of their resources and in other cases, it is expedient to be based on potential capabilities. That is, it is advisable to pay attention to the formation of the corresponding potential of organizations, since in today’s economic conditions, issues of rational use of available resources are especially relevant. The formation of competitive advantages depends on the quality of implementation of the enterprise’s potential.

For the effective functioning of organizations, it is necessary to develop qualitatively social, labour, material and technical and other elements of the potential. Therefore, the exclusive attention of enterprise managers should be given to the determination and rational use of existing and potential socio-economic capabilities.

A significant obstacle in identification of existing and potential capabilities for improvement of the efficiency of activities is the traditional way of using resources, which does not always meet the current market requirements.

It is also possible to increase social potential through mobilization of unused labour reserves. Thus, the application of efforts to eliminate the high level of downtime, occupational morbidity of workers, non-compliance of the average level of education and qualifications of employees with normative indicators can contribute to increase of the social potential of organizations. The most significant impact on the social potential of organizations is the level of education and qualifications of workers, working conditions and living conditions of employees, personnel and social policy of the organization.
Conclusions

So, the main thesis of the concept of strategic management at the present stage is: a corporate (general) strategy that should set only the vectors of the business entity’s progress and outline the general purpose of the strategic direction, while clarifying the steps to achieve the business goal in different areas is implemented through the development and introduction of functional strategies, in particular, innovative, marketing, financial and economic, staffing, etc. The strategy of the business entity security is the first in this list.

Based on the foregoing, the strategy of economic security as a certain component of lobbying and the elaboration of a complex of strategic tasks is a favourable ground for general plans of expansion and deepening of the manufacturer’s own strategically important advantages in a competitive environment. The development of an effective system of the economic security strategy of an industrial enterprise and ensuring its proper existence must be based on the methodological basis of the theory of security. It is important to correctly outline the goal of the business entity’s security, set of tasks for the successful implementation of a specific goal, key functions of the established industrial enterprise security system, that is, it is necessary to clearly define the scope of the operation of the specified system.

The formation of optimal strategy of economic security of the business entity is based on a systematic analysis of all production and economic activity for a certain period of time and the development of a set of measures that can ensure stability in the future in the operations of the business entity, as well as form the basis for its progress. The reasons for introduction of a controlling subsystem in the practice of domestic enterprises are: increase of instability of the environment; complication of the enterprise management system, which requires coordination mechanisms within the system; the need to build a system of information support of management.

Controlling is an important tool for successful operation of an enterprise, because: it provides management and owner of the organization with information for making managerial decisions, managing resources by integrating the processes of collection, processing, preparation, analyzing, and interpretation of information; provides enterprise survival at tactical and strategic management levels; contributes to the optimization of the dependence of “revenue-expenditure-profit”.

References


Dueri, S., Guillotreau, P., Jiménez-Toribio, R., Oliveros-Ramos, R., Bopp, L., & Maury, O. (2016). Food security or economic profitability?


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HUMAN DEVELOPMENT IN THE CONTEXT OF PROVISION OF THE SOCIAL SAFETY OF SOCIETY

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Abstract. Based on the study of areas, content and character of the activities of the leading subjects of the human development, the imperatives of its international regulation in the provision of social safety were synthesized. The share and value of these imperatives is strengthened by the general recognition of necessity of principal changes in the formation of the world social and economical policy and building of the society with the expanded capabilities for the self-fulfillment of an educated, healthy and materially secured person. The world system of indicators of the human development index is based on the methodological recognition of the leading importance of the level and quality of life in the formation of a system for assessment of the state of human development and includes the three leading aspects of human life - material standards of life, education level and state of health. For a long time such a system yielded positive results, where the main thing was the comparison of the world’s countries with the determined indicators.

Keywords: social safety; human development index; prosperity index; life quality; global area


JEL Classification: M5, Q2

1. Introduction

The human development as an innovative concept of modern economic growth has firmly taken the dominant position in the scientific and economic tradition of the present. The benefits of acceleration of socio-economic progress on a global scale have long been established on this basis in the minds of humanity and have become indisputable grounds for strategic decisions in the field of sustainable development by international organizations, developed countries and their associations, large multinational corporations, civil society, etc. Therefore, when solving planetary social, economic, and environmental problems, these subjects of the building of the modern architecture of world order rely first of all on the interests of man and future generations.

Along with this, the existence of large social and natural spaces, and powerful areas of human activity (international politics, economics and finance, security and ecology, culture and education) in the world, which have global significance, forms an urgent public order to determine the future system of regulation of these processes by forces of scientific political and economic thought of the present. The need for a general improvement of this part of the noosphere, stratification and updating of the existing multi-level system of institutions of global, international, supranational and regional regulation is the subject matter of the international regulation category, as opposed to the global management of human development.
2. Literature Survey

However, there is currently no clear understanding of the essence of global governance in the scientific and expert community and among the leaders of international associations and government leaders (Dufo-López, R., Cristóbal-Monreal, I. R., & Halbesleben, J. M. (2016), Petry, N., Olofin, I., Hurrell, R., Boy, E., Wirth, J., Moursi, M., ... & Rohner, F. (2016)). A few interpretations of this category are circulated in the scientific circulation at the stage of theoretical discourse.

First, the most widespread definition of global governance involves, first of all, the availability of power actions aimed at managing global processes by subjects who do not have sufficient legitimate reasons for doing so. These are international non-governmental organizations, civil society movements of various colors, corporate associations, foundations, associations that protect the recognized humanistic values (Hassanipour-Azgomi, S., Mohammadian-Hafshejani, A., Ghoncheh, M., Towhidi, F., Jamehshorani, S., & Salehiniya, H. (2016), Fidler, M. M., Soerjomataram, I., & Bray, F. (2016)).

Secondly, the view of the essence of the term of global governance, such as global government, is very relevant, which is based on the existence of a clear and legitimate basis, which is enshrined in the current legal framework and is based on financial, economic, political, legal, informational, organizational, military and technical capabilities of the leading subjects of the modern world with inevitable transformation toward multipolar architecture of the world order (Neri, M. (2016), Spangenberg, J. H. (2016); Atari, S.; Bakkar, Y.; Olaniyi, E. O.; Prause, G. (2019)).

Thirdly, the term global administration is used to denote the kind of political activity aimed at development and implementation of the most general strategic decisions to maintain or transform the parameters of the world order with the large-scale social influence of elements of the global “triad” - the great powers, transnational corporations and influential international organizations (world financial centers) (Chaaban, J., Irani, A., & Khoury, A. (2016), Acs, Z. J., Szerb, L., & Lloyd, A. (2017); Dudin, M.N.; Ivashchenko, N.P.; Gurinovich, A.G.; Tolmachev, O.M.; Sonina, L.A. (2019)).

3. Methods

The urgency of the topic is also greatly enhanced by the actual penetration of the concept of human development and the regional (national), local level. Therefore, its indisputable humanist orientation needs today the transition of ways of solving modern problems of human development in the world to another plane: it is about the need to overcome the negative trends of recent years and accelerate its pace in the future against the background of global and local threats of political, social, economic and environmental color. In this case, issues of the formation of an effective mechanism of state regulation of this complex process and the conceptual substantiation of the possibility of using the synergistic potential of all subjects of human development on the paradigmatic basis of social and economic solidarity naturally arise.

In this context, a need for correction regarding the definition of the leading subjects of human development in terms of content and purpose of their activities arise. In addition to the already mentioned global triad: global (international) institutions, national authority bodies (states), business corporations (large transnational corporations, which adhere socially responsible strategies in their activities), it is very important that main subjects of the human development include effective components of the public society (public associations, local communities) and human as the biggest value of noosphere with its internal potential (capital).

4. Results

The determination of human development ratings of UNDP has strong support from the world community, which prompts national governments to develop development strategies, and make corrections of civilizational and humanistic colouration in the political and economic course of states. HDI directly affects the international image of a state, its internal stability and solidarity of the public around values common to mankind.
Due to the lack of objective information from the national statistics authorities, UNDP carries out its own calculations to obtain results that can be compared in the analytical process. UNDP, in order to increase purposefulness of its steps in the future, widely uses predictive models of Lutz and KC (2013) to identify trends in the demographic situation, education and human development for the period up to 2050 and Pardee Center for International Futures (2013) to build scenarios of long-term human development.

Note that the Lutz and KC modeling practice has been tested since the mid-1970s, after being developed by the International Institute of Applied Systems Analysis (Austria), and built on the idea of a direct link between qualitative and quantitative parameters of the field of education with demographic processes (including destructive ones). Thus, there is a real possibility to reveal the consequences of the influence of the main demographic processes (mortality, fertility, migration, social stratification, etc.) on the population groups, which are divided by gender-age mark into 5-year cohorts.

The model of International Futures (Pardee Center for International Futures) was developed by the School of International Studies named after I. Corbin of the University of Denver (USA) as an integrated global scale model consisting of sub-models for 183 countries on the main features of human development: demographic, economic, educational, recreational, energy, agricultural, socio-political, infrastructural, technological, ecological, etc. This model has already been tested by UNDP in 2011 to identify scenarios of human development under the influence of the main ecological world trends.

Today, the most commonly used international quality assessment systems are: the general methodological concept of standards and quality of life used by the world scientific and expert community and is based both on purely economic indicators (GDP per capita, consumer price index, household expenditures, income inequalities) and subjective ones (life satisfaction, deriving, optimism); the life quality index of the Economic Intelligence Unit, which is based on the equivalence of quantitative and subjective indicators for 111 countries; EU methodology (European Committee for Statistical Systems); the life quality index of the International Living magazine, covering 190 countries by indicators such as cost of living, culture, economy, environment, freedom, health, infrastructure, security and risk, climate, etc.; sociological survey of the European Foundation for the Improvement of Living and Working Conditions; Integrated Assessment of the OESR parameters (Better Life Initiative) for 34 countries by living conditions, income, employment, education, environment, health, management efficiency, social life, security, living standards, balance between work time and leisure. At the international level, there are also many indirect methods that allow to compare countries on the basis of the standard of living of the population: human potential index, gender gap index, prosperity index, better life index, quality life index, universal index of happiness, index of society’s steadiness level, etc.

The Human Resource Potential Index (HRPI) or the Human Development Index (HDI) (Korauš, A.; Gombár, M.; Kelemen, P.; Backa, S. (2019), Tetiana, H., Karpenko, L., Fedoruk, O., Shevchenko, I., & Drobyazko, S. (2018); Prakash, R.; Garg, P. (2019)) includes three leading aspects of the human life - material standards of life, education level and health state. In order to calculate the index, data from international institutions such as WHO, UNESCO, the Institute of Statistics and Labor Market Statistics, which have resources and experience in the field of data collection in the world in the specific areas of the world, are used.

The disadvantages of this system of indicators of the population living standard consisted in the relaying of the calculations on the average indicators per country and the non-consideration of the inequalities. Subsequently, in order to eliminate these shortcomings, UNDP introduced three new indicators in 2010 - the HDI, adjusted for socio-economic inequality (the system of indicators remained unimportant), the index of gender inequality and the index of multidimensional poverty. The benefits of such an approach are the justification of the choice of indicators, as well as the possibility to expand the system of indicators in dependence on the peculiarities of cultural, spiritual and social life of the population. However, the inadequacy of the method is to use a significant number of indicators that have a subjective character, as well as a limited range of countries in which the level of life is analyzed.
The analysis of the process of formation of this and other European standards in the social and economic spheres allows us to define them as exemplary, normatively stipulated requirements, which, as a rule, set the upper and lower limits in the sphere of satisfaction of socio-economic needs of a person and have sufficient freedom regarding the national practice of their application.

Such instrumentalization of socio-economic processes is characteristic of all developed countries in the conditions of accelerated globalization. This is due to the fact that the challenges of global competition and the scale of internationalization of production will definitely contribute to reduction of state expenses on social needs, against the background of the continued declaration of the priority of human development over accelerating economic growth. Therefore, the emergence of new knowledge-intensive industries and sectors of the economy in the forefront of industrial production, increase in the role of innovation and creativity in the production process, approval of a qualitatively new system of education and retraining, formation of culture, health, tourism and sports as industries that contribute to human development an increasingly significant contribution is possible only if this process is effectively regulated (Hilorme, T., Nazarenko Inna, Okulicz-Kozaryn, W., Getman, O. & Drobyazko, S. (2018)).

At the same time, it is imperative to take into account the steady dynamics of the continuous increase in the countries of the world with a high and very high index of human development, as well as, on the contrary, an increase in countries with a low index of human development. According to UNDP reports from 1997 to 2017, with a steady increase in world GDP per capita from $5,990 USD in 1997 up to 10,082 USD - in 2015, its decrease in the amount of 13.7% (up to 8,696 USD) was recorded in 2017 (Table 1).

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total countries studied</td>
<td>174</td>
<td>173</td>
<td>177</td>
<td>182</td>
<td>187</td>
<td>188</td>
</tr>
<tr>
<td>Number of countries with high and very high human development index, share in %</td>
<td>44 (25.3)</td>
<td>53 (30.6)</td>
<td>70 (39.5)</td>
<td>83 (45.6)</td>
<td>94 (50.3)</td>
<td>105 (55.9)</td>
</tr>
<tr>
<td>Number of countries with medium human development index, share in %</td>
<td>96 (55.2)</td>
<td>84 (48.6)</td>
<td>85 (48.0)</td>
<td>75 (41.2)</td>
<td>47 (25.1)</td>
<td>38 (20.2)</td>
</tr>
<tr>
<td>Number of countries with low human development index, share in %</td>
<td>34 (19.5)</td>
<td>36 (20.8)</td>
<td>22 (12.4)</td>
<td>24 (13.2)</td>
<td>46 (24.6)</td>
<td>45 (23.9)</td>
</tr>
<tr>
<td>World average GDP per capita, USD</td>
<td>5990</td>
<td>7446</td>
<td>9543</td>
<td>9972</td>
<td>10082</td>
<td>8696</td>
</tr>
<tr>
<td>World average human development index</td>
<td>0.6831</td>
<td>0.7226</td>
<td>0.7430</td>
<td>0.7536</td>
<td>0.6820</td>
<td>0.711</td>
</tr>
</tbody>
</table>

*Source:* compiled by the author according to the data (Khazaei, S., Armanmehr, V., Nematollahi, S., Rezaeian, S., & Khazaei, S. (2017))

At the same time, the average world index of human development develops wavelike: from the level of 0.6831 in 1997 there was an increase to 0.7226 - 0.7536 in 2000 - 2010, and then as a result of the global financial and economic crisis, it dropped to 0.6820 in 2015. Subsequently, its insignificant growth was 4.3% (up to the level of 0.711).

Increasing the flexibility of social standards at a supranational level, based on a solid economic base, will invariably contribute to the emergence of stability in the world, in particular due to a significant reduction in the level of conflict-related problems of poverty, unemployment and social insecurity, which clearly demonstrates the interdependence of economic growth and unemployment (Table 2).
Table 2. Interrelation of the economic growth and level of unemployment, all world and regions, %

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Annual rates of growth of real GDP, %</th>
<th>Unemployment, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in the world</td>
<td>4.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Industrially developed countries and EU</td>
<td>2.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Central and South-East Europe (not EU) and CIS countries</td>
<td>7</td>
<td>7.9</td>
</tr>
<tr>
<td>East Asia</td>
<td>9.5</td>
<td>12.1</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>5.9</td>
<td>6.7</td>
</tr>
<tr>
<td>South Asia</td>
<td>8.7</td>
<td>9.1</td>
</tr>
<tr>
<td>Latin America and Caribbean basin</td>
<td>4.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Near East</td>
<td>5.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>5</td>
<td>5.8</td>
</tr>
<tr>
<td>Africa of South Sakhara</td>
<td>6.3</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Source: compiled by the author according to the data (Khazaei, S., Armanmehr, V., Nematollahi, S., Rezaeian, S., & Khazaei, S. (2017)).

It can be stated that the transformational processes of globalization of the economic sphere, both positive and negative, in the conditions of continuous constructive social dialogue at all levels of civil society, the consistent functioning of legitimate standards and ensuring the sustainability and reliability of the social protection system will promote the modernization of existing and the creation of new institutions and mechanisms for increasing quality of life.

On the other hand, developed countries, showing a deep interest in improvement of the human capital of developing regions, will soon be able to play the role of “exporters” of modern socio-economic standards. Today the international community prefers the social protection system of the EU countries, which, based on socially oriented economies, have achieved tangible results in increasing the wealth of their citizens, modernization of labour reserves and strengthening the stability of the domestic political situation, social consensus, etc.

Therefore, it is relevant to identify, on the example of the EU, a positive experience in the development of various social programs, their introduction into the practice of national governments with the prior implementation in the state and regional regulatory framework. In order to overcome the poverty line in the EU countries, there is an active improvement of all four economic models of social protection.

The Continental (Bismarck) model, which prevails in Germany and France, is based on the existence of insurance funds that accrue social wage deductions and firmly link the level of social protection with the duration of their professional activity (Drobyazko, S. (2018a), Drobyazko, S. (2018b)). The principle of professional solidarity is characteristic of this model and involves managing funds on a parity basis from the part of employees and entrepreneurs, which allows them to exist without state budget support. However, the existence of powerful state social programs allows low-income groups of people who, under various circumstances, do not receive insurance payments (due to lack of insurance experience), receive a budget subsidy under the mechanism of social assistance.

The Anglo-Saxon (Beveridge) model is based on the principle of national solidarity (and not professional, as the Bismark model) and establishes common conditions for reception and size of social benefits for all. The current transformation of this model is aimed at domination of social assistance of state budget origin over low social payments from insurance contributions of workers and employers in the UK and Ireland.

The Scandinavian model in Denmark, Sweden and Finland distributes social services and demands for all without exception and is not related to the size of insurance premiums, nor with the duration of professional activity. Due to the active redistribution of state funds from taxation, income equalization occurs and their reception is guaranteed.
The South European model in Spain, Italy, Greece and Portugal is on its way to its final formation. It is characterized by: low level of social protection, shifting the main burden of social support on the shoulders of family members, passivity of state policy, focusing on compensation for losses only for certain categories of citizens. This model is also characterized by significant asymmetry in the structure of social expenditures. Thus, the government of Italy places the largest share of social spending on pensions (14.7% of GDP at the European average level of 12.5%), and about 1% in support of families, education, and employment policies.

In the context of the process of improvement of European models of social protection there is also the problem of ensuring employment of the population, the solution of which is significantly hampered by conflictogenicity of external migration of labor resources. Due to the EU’s active regulatory policy on this issue, the increase in indigenous unemployment in 2008 - 2013 was less dynamic (from 6.5% in 2011 to 8.8 in 2017) than among the population of foreign origin (from 11.1% in 2011 to 14.8 in 2017) (Table 3).

<table>
<thead>
<tr>
<th>Country</th>
<th>Native population (NP)</th>
<th>Foreign origin population (FOP)</th>
<th>Difference in the unemployment level between FOP and NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>4.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Austria</td>
<td>3.5</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Belgium</td>
<td>6.4</td>
<td>6.6</td>
<td>6.9</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.1</td>
<td>7.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Germany</td>
<td>7.7</td>
<td>6.9</td>
<td>6.3</td>
</tr>
<tr>
<td>Greece</td>
<td>8.4</td>
<td>9.3</td>
<td>12.3</td>
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<td>Denmark</td>
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<tr>
<td>Ireland</td>
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<td>11.2</td>
<td>13.1</td>
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<tr>
<td>Spain</td>
<td>7.6</td>
<td>16.0</td>
<td>18.1</td>
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<tr>
<td>Italy</td>
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<td>Canada</td>
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<td>Netherlands</td>
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<td>Norway</td>
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<td>Sweden</td>
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<td>3.3</td>
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<tr>
<td>Switzerland</td>
<td>6.5</td>
<td>8.3</td>
<td>8.8</td>
</tr>
</tbody>
</table>

Source: compiled by the author according to the data (Khazaei, S., Armanmehr, V., Nematollahi, S., Rezaeian, S., & Khazaei, S. (2017)).

At the same time, the difference between the unemployment rate among the population of foreign origin and the indigenous population is significantly increased: from 4.7% in 2011 to 6.0 in 2017. The situation is getting worse today and requires additional research.

Of the 13 existing programs, the main focus is on the Employment program, which aims to improve employment status, improve professional training systems, introduce innovative methods in these areas, and Adept. The purpose of the Adept program is to promote adaptation of workers to changes and challenges in the economy, helping to maintain competitiveness in the new environment. EU initiative programs are constantly adjusted, taking into account time requirements, and subject to restructuring or enlargement. For example, the following subprograms were added to the “Adept” program: SME (small and medium business support), Strade...
(strengthening the technical base of small and medium enterprises), Telematic (provision of telecommunication and telecommunication services).

Structural funds are supported by regions lagging behind in development, where per capita income is less than 75% of the EU average (Corsica, 5 German lands, East Berlin, western and southern regions of Spain and Italy, and sparsely populated areas of Sweden and Finland). Types of aid can be: measures for infrastructure development, industrial investment in job creation, development of education system, reconstruction of recreation zones around cities, tourism development, etc. The main direction of activity of structural funds is regional. These needs account for 85% of the financial resources of the funds, with more than a quarter of the EU’s population fall under their action.

5. Discussion

Thus, human development as an innovative component of the national economy must be based on the growth of productive forces and the improvement of the material wealth of members of the society, i.e. workers. Such a process is based on knowledge and education and contributes to the formation of a class of entrepreneurs through the diffusion of property, accumulation of capital, increase of entrepreneurial activity, growth of the crisis management activity of managers.

The positive variability and stability of the quality of life of the population of the country, region, and separate territory, in addition to direct influence from the state, is greatly influenced by the formation and functioning of a number of social institutions: social partnership, social responsibility, motivation of labor activity, social competition. The objective direct effect on the quality of society’s life is made by such characteristics of the macroeconomic environment as the volume of production (ND, GDP, GNP); the volume and structure of consumption, savings, investments, income of the population; economic cycle phases; type of economic growth and development; the state of the labor market; balance of supply and demand; the degree of social division of labour.

On the other hand, raising the quality of life contributes to the accumulation of human capital, the increase in labour productivity, which has a positive effect on economic growth.

Note that the quality of life of the population is formed and changed under the influence of the combined effect of factors of different levels, however, at each stage of development, the power of influence of certain of them dominates and they become dominant for the person, family, social group and society as a whole. Moreover, there is a correlation not only between the levels of factors, but also between the factors of individual levels.

The formation and change of the quality of life of the population is a multifactorial process, the regulation of which requires the consideration of as many factors as possible, and its adequate analysis requires a set of indicators that adequately reflect their influence.

So, we found that the provision of high quality of life has become a priority issue not only for scientific research, but also for the practical work of governments in most countries of the world. It is connected with the fact that society cares not only about self-preservation, but also about sustainable social development, the need to create decent living conditions for future and present generations. In addition, the significance of the quality of life problem is increasing in the context of the prevailing trends of aging of the population, when the human resource becomes the most scarce. Based on this, at present, the state regulation of the quality of life of the population is rather relevant, as the influence of public authorities through various means (forms, methods and tools) on the development of social relations, living conditions, labour of the population of the country and factors determining quality life of the population:, demographic factors (population, age, socio-occupational structure), on which the demand of the population depends on foodstuffs, other goods and services, in particular social ones; natural and climatic ones, which the efficiency of the functioning of certain industries (for example, agriculture, tourism business, etc.), incomes of the population employed in them and the quality of its life.
depend on; environmental factors affect the formation of the needs of people in certain food products, services of social institutions; economic factors that characterize the level and dynamics of prices for food, goods and services in the region, economic policy of regional authorities to improve the level of logistics, financial support of the branches of the region, and their lending.

World experience in solving the planetary problem of reducing the global ecological footprint at the expense of large-scale introduction of modern innovative models of “clean development” (Tetiana, H., Chorna M., Karpenko L., Milyavskiy M. & Drobyazko S. (2018)), the “green economy” (Schmidt-Traub, G., Kroll, C., Texoz, K., Durand-Delacre, D., & Sachs, J. D. (2017)), “eco-innovations” (Maniyalath, N. & Narendran, R. (2016)), “environmentally correct behavior” (Samir, K. C., & Lutz, W. (2017)), etc., testifies to its ability in the context of the unification of efforts of all subjects of sustainable development on the interstate and national levels.

The ecological factor is gradually becoming a leading factor in building a world economic order against the backdrop of an increase in the share of industrial companies that are gradually advancing by taking into account the advantages of the market for environmental services: obtaining state preferences in response to production according to the standards of eco-certification, increase of access to resources due to the large-scale application of effective technologies, increase of competitiveness through obtaining a positive environmental impact and reduction of the amount of waste.

The preservation of the ecological balance is gradually becoming a leading task for national governments (Pineda, J. (2017); Smaliukienė, R., Monni, S. (2019)). Although most countries are parties to international programs and agreements on protection of the noosphere, but the effective world environmental system has not yet been formed, and its improvement is too slow. So, the resolution of environmental issues begins with a delay after their exacerbation, which makes this process overly burdensome in the economic, financial and social terms. Society can not achieve a high level of human development without the effective functioning of institutions in economic, social, cultural and political life.

Conclusion

The concept of human development at the world level through annual UNDP reports, and at the regional level - through national reports, gradually adopts a new developmental ideology, where the priority is to empower people rather than economic growth.

At the same time, the main dimensions of human development for UNDP, although being limited in number, are gradually being transformed by taking into account socio-economic, gender inequalities and enhanced by ties with common civilizational values: democracy, political human rights, social justice, etc. This provides an opportunity to better understand the problems of human development, subject them to a thorough scientific analysis, find effective ways for dynamic acceleration based on the development of development models.

In the system of indexes of prosperity, the main thing is to use comprehensive information about the social and economic life of the country. Moreover, the choice of indicators is objective, not subjective. The application of the whole complex of indices of human development at the global level allows for a careful comparative analysis of the quality and standard of living of the population of the countries and regions, which provides the basis for the formation of a targeted strategy to overcome the general civilization issues of our time.

So, the concept of human development not only puts people at the center of the progress of civilization as the main goal of political, social and economic processes, but also forms a world ideology of human development, where recognition of the benefits of such transformations of society plays a major role. Relevance, insufficient knowledge of the influence of civil society and its views on the priorities of human development, and theoretical and methodological substantiation of the factors of growth of human potential place this issue in the category of priority in the structure of socio-economic research.
References


Goals assessed in the SDG Index and Dashboards. *Nature geoscience*, 10(8), 547. URL: https://www.nature.com/articles/ngeo2985


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NATIONAL SECURITY MAINTENANCE BY LEGAL MEASURES: CASE STUDY LITHUANIA/UKRAINE

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Abstract: The purpose of this article is to fulfil a comparative study of national security legislation, as well as the formation of conceptual foundation for its development and the elaboration of proposals for the improvement thereof with regard to Ukraine. The article analyses in comparative aspect the practice of the Republic of Lithuania as one of the European countries. In the context of globalization, the research focuses on international legal systems of both international and regional levels. The comparative legal analysis of the legal measures to maintain national security revealed similarities in theoretical and methodological approaches. In the study, the author’s definition of national security is given; and a typological model of the concept of national security is formed.

Keywords: national security, public safety, threats to national security, principles of public safety.


JEL Classifications: D73, H83

1. Introduction

According to Z. Zeibote, T. Volkova and K. Todorov (2019) economic interconnectedness is the prime mover of globalization. Still for the fast development and growing competitiveness of the country in the global market preserving of the national security becomes a corner stone of country’s welfare. An economy crisis and post-crisis period is worldwide described as slimming era (because of necessary measures taken to optimize oversized processes and activities in order to minimize costs) (Jankelová et al. 2018). In the public area, managing the national security crises often requires even more. It is necessary to reconsider the existing legal and institutional framework, identify weaknesses of the system and relocate resources. The situation becomes even more complicated, when the cyber security aspects are taken into consideration. Even well developed and well self-protected from the view of traditional national security issues countries, are facing new threats, because everything that uses technologies are based on communication and information systems depends on cyber security (Limba et al. 2017; Tvaronavičienė M. 2018; Davidavičienė et al. 2019).

National security issues are connected as well with sustainability and social cohesion problems (Prause et al 2019; Prakash, Garg 2019). It is challenging to stay independent, developing and able to interconnect in case there is serious threats from the externals. These arguments proves interdisciplinary origin of the issue and encourages scientist to focus on the researching of the main aspects of national security ensuring.
The relevance of the study of the issues of legal support to national security, for the Ukrainian state, is determined primarily by the modern realities of the geostrategic position of the country and new perspectives in the development of the system of international relations, as well as the rapid and major changes in the socio-political structure of the country. The formation of the Ukrainian sovereignty is accompanied by an unexpected intensification of dangerous military instability both inside the country and abroad. Ukraine today has no potential to guarantee the safety of its democratic gains and statehood from all possible threats and crisis situations (Katchanovski 2015). The state is not always ready to consistently protect itself from possible wars and conflicts, to detect and predict the development of new and existing threats in a timely manner. Overall, theoretical comprehension of the means and methods of ensuring the national security of Ukraine is required, taking into account the international legal arsenal.

For the research, the Republic of Lithuania has been chosen intentionally, as long ago, before Lithuania became a member of transatlantic organizations, it had faced similar geopolitical issues. During the period from before NATO membership till now Lithuania has accumulated good practice in the field of national security that can be shared. Many scientists have discussed matters of legal support to national security on actively in recent studies. Steven Weber (2015) dedicated his work to administrative and legal support to national security at potential war. Gonzalo Ruiz Diaz (2017) examined an administrative support to security in public-private partnership. Cary Coglianese (2015) discussed matters of administrative law in the USA and beyond. John W. Palmer, J.D. (2010) analysed issues of national security in the context of financial crisis. Barry Buzan (2008) performed international security studies in the post-cold war era. Many researchers continue to search for the most optimal national security-supporting model.

Modern scholars discuss matters of national security legislation in close connection to the administrative, constitutional, criminal, criminal procedure, and other kinds of law to ensure national security. An essential regulative role of the provisions of law is revealed in the papers addressing the concept and mechanism of maintenance of certain types of national security: economical, military, informational, environmental, and others. However, these studies address issues of legal measures to maintain national security merely in fragments.

In our opinion, it is crucial that in Ukraine, the effect of legal regulation upon maintenance of national security and effectiveness thereof is not yet scientifically researched. The study is directly related to the main directions of scientific support to the implementation of Ukrainian national strategies and laws in this field.

The goal of this article is to develop a science-based system of legal means to ensure national security. Developing of it would allow to use positive foreign experience in the Ukrainian environment; and for the European Countries, the results would inspire national legislators to bring into practice new ideas and options for their implementation. The research was fulfilled using scientific literature and document analysis as well comparative and case study methods.

2. Issues of National Security Concept

Use of the term “administrative and legal measures” in relation to maintenance of national security is determined by the fact that the area of public administration in both Ukraine and Lithuania does not possess a sufficient degree of normativity, and is characterized by significant variability of social relations caused by the emergence of new security threats. Legal science and international legal instruments not yet sufficiently clarify the definition of the concept of national security; furthermore, there is no sufficient clarity in other definitions as well.

National security concept can be used in several points of view: scientific, political and public, so often the interpretation of it is different. From a public point of view, this term is understood as the preservation of the country’s independence and its defence against foreign threats. Political approach interprets national security as a protection and defence of the independence of the state, territorial integrity and constitutional order thereof from various threats arising both from outside and inside of the state (see Law on the Basics of National
From a scientific point of view, there is a very large variety of definitions of this term. Barry Buzan considers a concept of security “the essentially contested” due to its nature (Buzan 2008), because national security includes the whole range of public and social phenomena and different security levels. Summarising the variety of views and approaches, the researcher states that national security involves the concept of state and public security, i.e. their ability to protect their national independence, and territorial integrity as possibility to the members of the society to live and develop (Buzan 2008).

In general, the definition of national security concept is very complex. The European Court of Human Rights (hereinafter referred to as ECHR) confirms this. It is impossible to fully describe the concept of national security. It can be very wide, leaving a wide margin of discretion to the relevant authorities to define what is needed for this particular security. In addition to the well-known national security areas / types (economic, military, informational, ecological, and others), it is possible to distinguish the status of foreigners whose presence in the state poses a threat to national security. For instance, the Law on the Legal Status of Foreigners in the Republic of Lithuania (2004) does not identify what can be considered a threat to the national security. ECHR has noted that Article 8 of the European Convention on Human Rights (1953) does not compel States to enact legal provisions listing in detail all conduct that may prompt a decision to expel an individual on national security grounds. The Court stated that threats to national security may vary in character and may be unanticipated or difficult to define in advance (see C.G. and others v. Bulgaria, 2008).

The energy sector could be distinguished as another important area of national security. According to the Law on the Basics of National Security of the Republic of Lithuania (1997), the energy sector of the economy is of strategic importance to national security and provision of energy supplies may not be placed under the control of the entities of the supplying countries. The Constitutional Court of the Republic of Lithuania stated that: „the special legal regulation consolidated in the LNG Terminal Law attempts to create the legal preconditions for installing and operating a concrete LNG terminal of strategic significance to national security, through which it would be possible to supply all consumers of Lithuania with energy resources (natural gas) and thus to end the dependence on the sole monopolist external supplier of such energy resources. In guaranteeing the security of the supply of natural gas in Lithuania, the legislature has created the legal preconditions for ensuring the interest of the entire society to receive energy resources from multiple sources under non-discriminatory conditions and, by such legal regulation, it implemented the duty consolidated in Paragraph 3 of Article 46 of the Constitution to regulate economic activity so that it serves the general welfare of the nation“ (2015).

Scientists alongside the traditional security sector offer to distinguish communication security sector as well, elements of which ensure the information security sector in the system. Scientists believe that the threat to communication sector should be defined as a threat to traditional public relations and communication processes (Janeliūnas 2004)

Analysis of the national security sphere requires defining and establishing the circle of social relations that makes up its contents, and which includes the relations listed in the Figure 1.

![Figure 1. Relations that make up the contents of national security.](image-url)
The issue of clarification of the concept of national security has almost never been investigated in the legal literature. In this case it is necessary to proceed from International Covenant on Civil and Political Rights, adopted by the UN General Assembly on 16 December 1966. It states that each state undertakes “to ensure that any person whose rights or freedoms as herein recognized are violated shall have an effective remedy, notwithstanding that the violation has been committed by persons acting in an official capacity”. The absence or failure of security endangers the very existence of human and the state intended to guarantee it. The concept of security is a complex legal institution, describing the organization of the protection of the vital interests of the individual, society and state from internal and external threats (Ashmini et al 2015). It should be noted that the “security” is associated with the object carrier thereof. Thereby private, public, and state security shall be distinguished; together that make up such a category, as national security. Wherein, the complexity of the concept of national security allows creating of a typological model consisting of the following three components, which are shown in Figure 2.

![Figure 2. The typological model of the concept of national security.](image)

The presence of the following approaches is common to these three components: static – a state of safety; apophatic - an absence of threats; and passive – a compliance with regulations.

International provisions of the legislation of the US and Eastern Europe, established and sanctioned by the state, define the system of internal and external environment, preventing threat to a person. The implementation of these standards in public relations is the main content of the national security (Weber 2015).

The legal impact on national security is intended to guide the subject’s behaviour by establishing the general rules that define how to behave in specific cases, the prohibitions of committing illegal acts, the application of sanctions to the subjects in the case of violation of the prohibitions. Together with that, legal rules govern the organization and activity of bodies of state power and local self-government on national security (Chapman 2014). The purpose of national security in the countries of Eastern Europe and the United States is to protect the personal, political, social and economic rights of human and citizen, interests of society and the state (Márquez 2015).

### 3. Relation between national security and other “related” categories

The relationship between the concepts of national security and the rule of law is of a theoretical and practical interest.

Investigating the relation of law and order and national security at the international level, it is necessary to take into account all aspects of social ties and relationships. The properties of these categories have much in common: they are interpenetratable and dependent; and formed almost on the same principles; and intertwined with the state authorities and local self-government (Bustikova 2015).

According to experts, national security and the rule of law are of the same functional legal burden, the result of which is the implementation of the rule of law in the protection of life, health, honour and dignity of citizens; the provision of public safety; the formation of a regulatory environment for enterprises, institutions and organizations of different forms of ownership (Wang & Madson 2013). National security and the rule of law act as the general and the particular as in the event of violation of the law the relations connected with national security are violated as well. The rule of law is an integral part of national security. This integrity allows the
experts to examine the external and internal communications, ensuring the interaction of the individual, the society, and the state (Palmer 2010).

The analysis of the legislation shows that the national security, public order, and public safety appear as closely related and interdependent, but not identical categories. For example, the similarity of national security, public order and public safety can be seen in the following:

- national security, public order and public safety are complex social phenomena based on a certain set of social relations, which are protected by social norms. The most significant and numerous relations are governed by the rule of law. Uniformity of social relations that make up the content of each of the phenomena under consideration and settlement thereof by specific sets of legislation acts allow us to consider the latter as independent complexes, legal institutions; and concepts denoting thereof as cross-sectoral legal categories;

- general principles grounding national security, public sign of order and public safety in the state include: rule of law, stability and warranty, the mutual responsibility of the individual, the society, and the state in the field of security, and respect for the balance of the vital interests of the individual, the society and the state;

- it is difficult to identify the relationship of national security, public policy or public safety that would exist in isolation. In any set of social relations, those that give this set of qualitative certainty always dominate.

Therefore, the scope of national security and public safety may also include relations specific to public order; however the last in this area are of secondary importance, and does not determine its nature. In such cases, a violation of public relations at the same time influences the attitudes of public order (Diaz 2016).

The similarity and affinity of the nature of national security, public safety and public policy categories are noted by the Court of Justice of the European Union (hereinafter referred to as CJEU) (H. T. v. Land Baden-Württemberg 2015). The Court has already had the opportunity to explain the concepts of “public security” and “public policy” as established by Directive 2004/38, Articles 27 and 28. While this Directive aims to purposes other than Directive 2004/83, and although the Member States in accordance with their national needs, which can vary, depending on the Member State and the period in principle, are free to define the requirements to public policy and public security (P.I. v Oberbürgermeisterin der Stadt Remscheid 2012 paragraph 23, and cases cited therein), the protection of these main interests which the society seeks to give them, cannot vary according to the legal position of the offender.

The term „public security“, as it is understood by Directive 2004/38 part 3 Article 28, includes both external and internal safety of a member state (see, inter alia, paragraph 43 of Decision in Land Baden-Württemberg v Panagiotis Tsakouridis 2010, and cases cited therein), therefore threat to the functioning of institutions and essential public services as well as survival of the population, and a risk of significant negative impact on external relations or the peaceful coexistence of nations and threat to military interests might affect public safety (paragraph 44 of Land Baden-Württemberg v Panagiotis Tsakouridis, 2010).

It should also be noted that the term “public policy” as used in Directive 2004/38, in particular Articles 27 and 28, is clarified by the CJEU so that in any case it means that, in addition to the social order perturbation caused by any violation of the law, there is a real, present and sufficiently serious threat to a fundamental interest of society (see, inter alia, paragraph 40 of the decision in Byankov case (Hristo Byankov v Glaven sekretar na Ministerstvo na vatreshnite raboti, 2012) and cases cited therein).

The following features serves as the basis for the distinguishing of public policy, public security, and national security:

1. The specificity of social relations that constitute the national security, public policy and public safety. At the heart of those or other social relations there are social needs (interests) that influence the development of those particular relations.
2. The difference in the regulation measures.
4. Systems of Ukrainian and Lithuanian authorities to ensure national security

The Law On National Security of Ukraine (2018) defines the framework and principles of national security and defence, the goals and basic principles of state policy, structures the system of subordination in the security and defence sector, as well as the command, control and coordination system of the security forces and defence forces and development directions of strategic plans, providing protection for a person and a citizen.

In accordance with the mentioned Law, the President of Ukraine exercises control over the security and defence sector both directly and through the National Security and Defence Council headed by him. Cabinet of Ministers of Ukraine exercises control over the observance of legislation and implementation of state policy in the areas of national security and defence. This body reports on these issues, to the President of Ukraine and the Verkhovna Rada of Ukraine, and provides civilian control over the activities of executive authorities, that are part of the security and defence sector of Ukraine.

On the basis of the analysis of domestic legislation and international legal instruments it should be stated that a system of state support for the national security of Ukraine, consists of a subsystem of democratic civil control, which is subject to the state of law and order, staffing, state and activity of security and defence bodies, as well as the content and state of implementation strategies, doctrines, concepts, government programs and plans in the areas of national security and defence, and the management subsystem of the security and defence sector. The structure of the national security system must include the following subsystems of state support to national security as it shown in Figure 3.

<table>
<thead>
<tr>
<th>SUBSYSTEM OF DEMOCRATIC CIVIL CONTROL</th>
<th>MANAGEMENT SUBSYSTEM OF THE SECURITY AND DEFENCE SECTOR</th>
</tr>
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<tbody>
<tr>
<td>by the President of Ukraine</td>
<td>by the Cabinet of Ministers of Ukraine</td>
</tr>
<tr>
<td>by the Verkhovna Rada of Ukraine</td>
<td>by the executive authorities</td>
</tr>
<tr>
<td>by the National Security and Defence Council of Ukraine</td>
<td>by local self-government bodies</td>
</tr>
<tr>
<td>by the courts</td>
<td>by citizens, both personally and through public associations or deputies of local councils</td>
</tr>
<tr>
<td></td>
<td>the President of Ukraine (carries out direct management of the security and defence sector)</td>
</tr>
<tr>
<td></td>
<td>the National Security and Defence Council (carries out coordination of the security and defence sector, in the event of a martial law or a state of emergency, coordinates the activities of executive bodies in a special or military period)</td>
</tr>
<tr>
<td></td>
<td>Ministry of Defence of Ukraine (is the main body in the system of central bodies of executive power, which ensures the formation and implementation of state policy on issues of national security in the military sphere, defence and military construction in the peacetime and special period)</td>
</tr>
</tbody>
</table>

THE STRUCTURE OF THE NATIONAL SECURITY AND DEFENCE SECTOR

<table>
<thead>
<tr>
<th>Security forces</th>
<th>Defensive and industrial complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defence Forces</td>
<td>Citizens and public associations that volunteer to participate in national security</td>
</tr>
</tbody>
</table>

Figure 3. System of the state support of national security of Ukraine.

In addition, this body cannot be chaired by the President of Ukraine, which forms the national security policy and actually controls themselves by the NSDC constituting the head thereof. Under such conditions, system of checks and balances in the area of national security is broken, which means that none of the national security entities can be authorized more than others, and each of them should have the right impact in this area at each other. This is due to the fact that the President’s of Ukraine preferential authority in personnel matters should not determine their priority in the formulation, implementation and monitoring of the implementation of national security policy. As the effectiveness of the control is directly associated with the known subordination of those supervisory bodies, as their belonging to the president’s “frame of reference” or to any executive authorities makes an effective control impossible.
Like Ukraine, the Republic of Lithuania has formed its own system of the institutions involved in ensuring the national security. The Law on the Basics of National Security of the Republic of Lithuania (1997) provides for the state agencies, maintaining national security. They are classified as follows in Figure 4.

**MANAGING AUTHORITY**

| President of the Republic of Lithuania | Seimas of the Republic of Lithuania | Government of the Republic of Lithuania |

**EXECUTIVE AND OTHER AUTHORITIES**

| Lithuanian Ministry of Foreign Affairs | Lithuanian State Defence Council | Ministry of Defence and other NDS institutions subsidiary to Defence Minister |
| The Army | The State Security Department | Ministry of Internal Affairs, the police, the State Border Guard Service and other management agencies of the Ministry’s sphere of ensuring public security |
| The Special Investigation Service | Other ministries and state and municipal authorities in accordance with their competence |

**Figure 4.** Subsystems of the state support to national security of the Republic of Lithuania

The President of the Republic is one of the subjects ensuring national security and developing Lithuania’s national security system. President of the Republic also heads the State Defence Council, is one of the highest governing bodies, which manages national security (Law On the Basics of National Security 1996).

Lithuanian Supreme Administrative Court (hereinafter referred to as SACL) indicated that independence and freedom of action of the President of the Republic performing the functions assigned to it in accordance with the Constitution and the oath are undoubtedly a matter of national security. Attempts to restrict the President’s autonomy, threats or blackmail to force the President to perform certain actions, especially if such actions are illegal, violate the Constitution and (or) the laws, poses a real and tangible threat to national security(Lithuanian Supreme Administrative Court, 2010).

Lithuanian State Defence Council (functions of which are defined by the Law on the State Defence Council (1993)). The Council considers the most important issues of national security. For example, foreign and domestic policy provisions guaranteeing the Lithuanian national security and territorial integrity, as well as key national security policy and defence principles, and directions; provides recommendations to the President, the Seimas and the Government upon conclusion, signing and ratification of international treaties, agreements in defence and other military issues, coordinates activities of state agencies related to national security; considers the state defence issues, the main provisions of preparation for the mobilization; approves intelligence needs and priorities; determines the strategic guidelines for crisis management etc.

Some politicians proposed to amend Article 140 of the Constitution (1992) and other legislation relating to the State Defence Council (Paulauskas 2015). The amendments were intended to replace the current State Defence Council with a National Security Council, which is common to other European Union and NATO countries. According to the initiators (Paulauskas 2015) State Defence Council reform was necessary because the current name of the Council, its competence, the issues and the composition did not meet contemporary national security needs, particularly in view of the current geopolitical situation. National security is a broader concept that includes not only the military defence of the state, but foreign policy as well, including stability of the internal political, economic and social systems, advanced development of the state. Under the existing competence, the State Defence Council is currently not in a position to consider these broad questions.

Following the practice of other EU and NATO countries, the National Security Council consists of politicians. According to the initiators, Councils of no less than 14 EU Member States, are composed of top political officials in relation to national security, and non-politicians take managerial positions (chiefs of armed forces, heads of intelligence services). These usually are not permanent members of the Security Council, but have the right to attend meetings of the Council, and to advice. Current Law on State Defence Council (last amendments
made in 2012) gives the Council broader functionality than paragraph 1 of Article 140 of the Constitution; therefore doubts raise as to whether the Council can, under the Constitution, as specified by law, consider and co-ordinate national security issues. In practice, such cases have occurred, but under the Constitution, the competence of the Council on these issues could be doubted (Paulauskas 2015).

The analysis of the Lithuanian authorities to ensure national security (or participating in ensuring national security) system, emphasizes that the Law On the Basics of National Security of the Republic of Lithuania (1997) provides that „Lithuania’s national security system shall be based on the activities of state institutions and participation of every citizen of Lithuania, on the open civic society aware of dangers and its responsibility, civic-minded and prepared to defend Lithuania’s freedom“. Human and citizen’s rights and freedoms as well as personal security are indicated as one of the main objects of national security, while the citizens, their societies and organisations together with the State, its institutions of national security and defence and other institutions are named as the entities ensuring national security. The law establishes direct dependence and their interaction of Lithuanian national security system and civil society. This makes the base for democratic national security policy objectives, implementation of the tasks, formation and development of civil society.

5. National and international levels of maintaining national security

A characteristic feature of the legislative acts of foreign states is the reception of international law in domestic legal systems. Thus, according to Art. 25 of the Basic Law of the Federal Republic of Germany (1949) “general rules of international law are an integral part of the law of the Federation. They have the advantage over the laws and directly create rights and duties for the inhabitants of the federal territory.” Thus, there is a combination of national law and international law with the primacy of the latter.

Basics of legal measures to ensure national security at the international level are considered by many researchers on the grounds of constitutional statutes of different states that form the basic platform for its regulatory and legal support, in relation to the activities of law enforcement bodies. As rightly noted by experts, the legislation of the UK, Hungary, Spain, Italy, Canada, Germany, France, Japan and other countries contains certain contradictions in national security and respect for human rights and freedoms; this contradiction is determined by the collision of the collective and individual interests of human communities (Merrill, Watts 2002). However, in respect of a single person, ensuring their personal and collective security in the society of their kind should be regarded as their most important right. In some cases, the international instruments do not contain any specific wording on this issue; however, the analysis of the Universal Declaration of Human Rights and Freedoms (1948), International Covenant on Economic, Social and Cultural Rights (1966) and other instruments has revealed that this is not quite correct. Among the human rights and freedoms, international instruments refer to freedom and security of person, the right to just and favourable conditions of work, the right to free development of personality rights in the economic, social and cultural fields, the right to an adequate standard of living, physical and mental health etc. Comparison of these rights with the directions of national security in various areas gives an indication that the purpose of national security can be traced, first of all, in the establishment of the minimum conditions necessary for the realization of these rights (Mashaw, Merrill 1985).

Considering the international legal instruments, we can note the comprehensive nature of the right to international security (Coglianese 2015). International legal regulation of activity of states to ensure the international rule of law is essential for strengthening their national security. At the same time, regional security is essential for national security at the international level, and threats to the regional security are threats to the vital interests of individual states (to their territorial integrity, sovereignty, domestic legal policy). The comparative legal analysis of the legal measures of national security maintenance in the USA and Eastern European countries showed common theoretical and methodological approaches to the development of national legislation and other regulations in the field of national security (Bird, Wallich 1993).

In addition, it should be noted that the state, which belongs to one or another international organization, whose aim is promotion of international security, should not pay less attention to internal national security. SACL
noted that merely becoming of the Republic of Lithuania a member of North Atlantic defensive alliance and, since May 1, 2004 a member of the European Union by itself cannot eliminate threats to national security. Lithuanian state security is concerned not only with external threats, which may actually be reduced to some extent by becoming a member of relevant international and supranational organizations, but also with the country’s inside processes, appropriate activity of public authorities, especially those with a very significant role in ensuring national security. According to paragraph 4 of part I of the Appendix to the Law on the Basics of National Security (1997), measures of internal policy are also important in ensuring national security, and pursuant to point I of paragraph 10 of part II of the mentioned Appendix, one of the national security measures is an activity of national security institutions. Inappropriate domestic policy in general can stimulate the inner turmoil, damage to the public (society) safety, lead to social and economic or other forms of pressure, threats to economic or other interests, to undermine the prestige of state government as a constitutional state regime element and public confidence in it. So unacceptable effects on the relevant authorities and political processes making or planning such an effect may pose a threat to national security and to the Republic of Lithuania’s accession to the relevant international and supranational organizations (Lithuanian Supreme Administrative Court ruling, 2010).

The Court has also stated that following the National Security Strategy (2002) (version of the 2005), paragraph 1.4, as a member of the North Atlantic Treaty Organisation and the European Union, the Republic of Lithuania shall perceive its national security as a constituent part of the security policy of these Organisations. Furthermore, according to the National Security Strategy paragraph 3.1, vital interests of the Republic of Lithuania are as follows: sovereignty, territorial integrity and democratic constitutional order of the Republic of Lithuania; civil society, respect and protection of human and civil rights and freedoms; peace and prosperity of the State. It is obvious that these interests may be threatened and undermined even after Lithuania’s accession to the North Atlantic defence alliance and the European Union.

With reference to the international experience, it should be noted that national security on the one hand, acts as the legal basis for the functioning of the government, on the other hand, it occurs and exists where and when the government is interested in it (Coglianese 2001). It is an authority that establishes and maintains security, safeguards against violations; and, where necessary, protects as well. In the system of state power, its executive branch realises a significant amount of authority for the formation of national security and, obviously, the greatest amount of authority for its maintenance, conservation, and protection.

Domestic political decision determines to a great extent which model (towards domestic policy, in order to limit the vulnerability of the state, or towards the country’s foreign policy, to reduce the external threat and affect its sources) to focus in the fight against threats. Improper political solution in the evaluation of the threat would not increase the country’s national security, but on the contrary, it would reduce it. By the way, the threat is not a fixed thing, it is constantly changing. For this reason, some threats arise, other decrease. For example, when in Lithuania industrial output significantly reduced, the ecological situation of the country improved. So again the measured decision is needed to determine what resources to the ecological security of the country may be downsized and transferred to the economic recovery of the industry. Consequently, every threat must be constantly monitored and evaluated (Nazelskis 2001).

As a threat to national security could be anywhere, it is necessary to set limits below which the threat has to be regarded as limited, should only be monitored, and above that limit the threat is a real danger to national security. Excessively active national security policy leads to a drain of resources, danger of public paranoia. Too passive policy is dangerous as it may be not possible to face the risks on time, or it may need to use a very large resource to defeat the threat. Therefore, the threat to be evaluated not only by the authorities, which carries the evaluation out, but also the methodology is needed, with the help of which it would be implemented. So threats determine the insecurity of the state and thus condition and define the content of national security, so they can assist in identifying the place of public education in the whole national security system and its impact on the security of the country.
The study of legal measures to maintain national safety in Eastern Europe and the United States leads to the conclusion that the reform of the national security agencies in Ukraine can be carried out taking into account the positive experience of foreign countries in the development of state security systems and modern global trends of the development of such systems by the following: to prioritize preventive measures and strategies (Reinsch 1909); to strengthen the role of the state bodies and institutions to provide security and counter internal and external threats to national security in the field of national security, to strengthen cooperation with foreign countries; to improve anti-terrorism and counter-intelligence activities; to keep the regime of protection of state secrets; to concentrate intellectual, financial and other resources in priority areas of national security in the field of state safety; to increase the level of the budget and other forms of resource provision of the national security entities.

6. Conclusions

The comparative legal analysis of the legal measures to maintain national security in the Eastern European countries revealed similarity in theoretical and methodological approaches to the development of national legislation and other regulations in the field of national security.

1. Author’s definition of national security. National security means a protection of the vital interests of the individual, society, and state against external and internal threats, which is achieved by using a system of political, economic, organizational, legal, military, ideological, and other measures adequate to the threat to the vital interests of individuals, society and the state, and which provides their sustainable progressive development.

2. The typological model of the concept of national security is formed, which consists of the following elements:
   - legal and regulatory framework, which defines security in legal acts;
   - doctrinal, defining the concept of safety in the scientific literature;
   - encyclopaedic, defining the concept of security in the encyclopaedias and dictionaries.

The presence of the following approaches is common to these three components: static – a state of safety; apophatic - an absence of threats; and passive – a compliance with regulations.

3. Maintenance of national security means activities of specified range of subjects that have real capabilities (authority, resources) to protect the vital interests of the individual, society, and state against external and internal threats through the use of the system of political, economic, organizational, legal, military, ideological, and other measures, adequate to the threat to the vital interests of the individual, society and state in specific historical conditions of development of the state and society.

4. Analysis of the legislation has revealed that national security, public policy, and public safety appear as closely related and interdependent, but not identical categories.

5. International legal regulation of activity of states to ensure the international rule of law is essential for strengthening their national security. At the same time, regional security is essential for national security at the international level, and threats to the regional security are threats to the vital interests of individual states (to their territorial integrity, sovereignty, domestic legal order).

References


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METHODICAL APPROACHES TO THE FORMATION OF THE FINANCIAL INSTITUTION SECURITY SYSTEM

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Abstract. It is argued that the assessment of the security level of the bank lending activities should be made taking into account the socio-economic interests of all participants in the credit process. The developed methodology of the score assessment of the security level of credit operations of the bank includes not only an analysis of the security status of the credit operations of a particular bank, but also an assessment of the external conditions of its implementation. The process of assessment of the security level of the bank credit operations is implemented in five stages: the development of a system of security indicators for the bank credit operations; formation of the information base, which consists of bank reporting (financial and managerial) and macroeconomic indicators; analysis of security indicators; preparation of the report on the state of security; advising on adjustment of the bank’s policy to enhance security of credit operations and prevent the effects of possible threats. The introduction of a methodology for scoring in the practical activities of banks will allow to obtain objective characteristics of the security of credit operations, identify weaknesses, strengthen security measures, improve the bank’s credit policy to prevent the effects of possible threats.

Keywords: bad loans; security indicators; securitization; loan portfolio; financial level


JEL Classifications: F52, O39

1. Introduction

The analysis of the causes and conditions of the formation of a bad credit debt shows that its significant growth occurs during periods of economic, political, and social cataclysms and various crises. It is during such periods that entrepreneurial activity (and not only banking activity) undergoes significant stress, the consequence of which is the violation of its rhythm, failure of business entities to fulfill obligations and the emergence and growth of debts. Under such conditions, an important element of entrepreneurial behaviour must be mutual support and exit out of the situation by joint efforts. Unfortunately, there is no appreciable understanding in the interrelations of banks with their borrowers, depositors, and creditors, their relationships are subject to acute conflicts, in which each party aspires to solve problems independently, including at the expense of other parties. The consequence of this approach is a long-term resolution of problems, the growth of the volume of bad debts, losses, and even loss of business prospects.
2. Literature Survey

The organizational block takes an important place in the system implemented, because it should contain the main organizational principles for the further work of the bank with bad debts (Wang, Y., Hahn, C., & Sutrave, K. (2016, February); Bondar M., Iershova N. (2015)). Given the diversity of lending relationships between banks with their borrowers, the different bank facilities for servicing loans, and the heterogeneity of borrowers’ activities in the market, banks themselves shall determine the relevance of loans to troubled ones, while developing appropriate rules (Wiengarten, F., Fan, D., Lo, C. K., & Pagell, M. (2017), Lindsay, J. D. (2018); Dalevska, N.; Khobta, V.; Kwilinski, A.; Kravchenko, S. (2019)). Similar situations with borrowers violating their credit obligations in some banks can cause problems, while others do not, so the work of banks with such violations will be different (Austin, J.M., Demski, R., Callender, T., Lee, K. K., Hoffman, A., Allen, L., ... & Pronovost, P. J. (2017), Carpinelli, L., Cascarino, G., Giacomelli, S., & Vacca, V. (2017); Dobrovolskienė, N.; Tvaronavičienė, M.; Tamošiūnienė, R. (2017)). But under all conditions, banks’ approaches to recognition of loans as bad ones must clearly be known to their borrowers. In accordance with the methods of recognition of a loan debt as a bad one, the bank should classify such loans by the methods of dealing with them. As an option, we can offer the following classification:

- loans with a value of the risk index up to 0.2 (up to 30 days of delay in accordance with the procedure defined by the Provision on the procedure for the formation and use of reserves by banks for reimbursement of possible losses on active banking operations). The state of service is considered to be high and good. Obviously, the methods of dealing with such loans should be based on compromises in negotiations with the debtors without termination of loan and other agreements;
- loans with the value of the risk index up to 0.4-0.5 (the term of delay is 30 to 90 days). Methods of dealing with such loans may be of an economic nature and involve the suspension or termination of loan agreements;
- loans with an indicator of risk greater than 0.51 (overdue for more than 90 days). The repayment of loan debts with such a delay should be considered in court.

3. Methods

The organization of direct work on the repayment of debts shall be carried out based on the selected classification. Such an organization may provide for actions relay in on external subjects (courts, law enforcement agencies, collectors and other enterprises) or without such support - at the expense of their own forces. In this case one cane recommend the bank to act on its own with respect to debts with a risk of no more than 0.5 or when the size of the bad debt is not more than 10% of the loan portfolio.

There should be developed common approaches to the use of security forces and the application of appropriate measures to protect the subjects in the process of their credit or other relationships. The common approaches in the common defence system will be built through the creation of appropriate security levels: informational, personnel, financial, and regulatory.

4. Results

The information level involves protection of the interests of participants in lending activities through minimization of information threats and counteracting them. A secure information space for the relationships of these participants is created in the formation and use of credit resources by the bank. We recommend to create joint information databases, develop common methods for detection, identification, evaluation, protection and counteraction to disinformation, rumors, discreditation, blackmailing, and informational impact technologies, and coordinate the activities of participants in the field of their information security in fulfilling their obligations.

The personnel level shall be formed through provision of counteraction to any manifestations of unfair and criminal behaviour by personnel of participants of loan activity on the basis of development of uniform methods and criteria of control of behaviour and work of employees involved in the preparation and support of certain operations.
The financial security level includes:

formation of joint bodies of coordination and management of operations in the concrete relations of participants of credit operations;

the creation of joint working groups of representatives of participants of credit operations for carrying out of corresponding operations; the determination of their functions and the introduction of a single procedure for reporting on the state of their operations, this can be especially effective for operations that are significant in volume or are strategic for the participants in credit operations;

introduction of centralized and independent control of the state and dynamics of operations in an automated mode, with periodic communication of its results to each of the participants in credit operations; formation of tactics of actions of participants of credit activity in case of violation of technology of operations, unforeseen relationship of use (provision) of funds or unfair behaviour of participants.

The regulatory level of security shall be created by introduction of appropriate restrictions and prohibitions both in the technology of operations and in the relations of the participants of credit operations. The regulatory measures exclude actions of participants, which can negatively affect the results of corporate interest in credit operations.

The methods of provision of security should be diverse and aimed at crossing all possible types of threats and areas of their actions: informational, economic, social-personnel, technological, technical, and legal. Moreover, there should not be any specialization of methods for participants in credit operations. The latter must possess a complete arsenal of such methods, applying them within the limits of their functions assigned to them in the relevant relationships (Dang, T. V., Gorton, G., Holmström, B., & Ordonez, G. (2017); Faridi, M.F.; Sulphey, M. M. (2019)). At the same time, the need for application or methodology for the use of security methods must be coordinated with all stakeholders and be motivated by the danger of threats and be adequate to the situation.

That is, the credit activity security system should be focused on ensuring the development of credit relations in accordance with the previously agreed and approved scenario and to prevent its violations. To this end, a significant part of security measures should focus on creation of favorable conditions for the establishment and development of relationships. An important place in this should be devoted to building a scenario for the development of a specific transaction and the relationships of its subjects, identification the most vulnerable their technologies and stages, and formation of possible options for using the security system capabilities to counter threats and protection against them. In all circumstances, any changes in the technology of operations and the relationships of participants in lending activities should be as predictable and controlled as possible.

The function of legal priority ensures that all security measures shall be carried out in accordance with the standards developed jointly by all participants in credit operations. The basis of such rules should be formed by appropriate legal framework for the relationship of the named participants, including with regard to the regulation of measures of protection of their interests (Bauer, S., & Bernroider, E. W. (2017); Limba T., Agafonov K., Paukštė L., Damkus, M., Pleta T. (2017); Masood, O., Tvaronavičienė, M., Javaria, K. (2019); Chunikhin, S.A., Kuzmin, E.A., Pushkareva, L.V. (2019); Ashraf, M., Masood, O., Tvaronavičienė, M., Aktan, B., Garškaitė-Milvydienė, K., Lace, N. (2019); Masood, O., Aktan, B., Gavurová, B., Fakhry, B., Tvaronavičienė, M., Martinkutė-Kaulienė, R. (2017)). That is, ensuring the security of credit operations should be accompanied by relevant local rules that extend its impact on all its participants in the field of relations caused by the formation or use of credit resources.

As you can see, an information base that is used when creating a system of security indicators of insurance activities is formed on the basis of macroeconomic indicators and indicators of credit operations. The indicator system is composed of indicators that reflect the level of financial and economic stability, adaptation, countering threats, continuous development and efficiency of use of resources (Mironova, N., Dimitrov, N., Tsenkov, Y. (2019); Nikolov K., N. Mironova. (2019)).
At the first stage of the determination of an integrated security assessment of the bank credit operations, the selection of a set of indicators shall be carried out in order to assess the status of functional components of security, which ensures the adoption of managerial decisions regarding the analysis, prevention and neutralization of real and potential threats to the security of credit operations of the banks.

The development of an effective system of indicators of the security of credit operations of banks is a complicated methodological problem, since their quantity and quality should be sufficient in order to timely and adequately signal about the emergence and development of destabilizing trends in the bank, while not burdening the security system created for error-free and operational responding to possible threats. So, the list of indicators should ensure, on the one hand, the implementation of the most powerful and reliable analysis, and, on the other hand, the opportunity to quickly obtain information for their calculations. In this case, it is necessary to exclude those indicators that are not subject to calculation or duplicate each other (Drobyazko, S. (2018a), Drobyazko, S. (2018b)). That is why it is expedient to calculate the security indicators of the bank credit operations based on the data of public accounting statements of banks, which will enable to quickly determine the security level of credit operations and to conduct its rating in a competitive environment.

The author selected four criteria to help assess the security of credit operations of banks, as shown in Table 1.

<table>
<thead>
<tr>
<th>Criteria for the security of banks’ lending activities</th>
<th>Security indicators of banks’ lending activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Criterion of efficiency of formation and use of banking resources</td>
<td>the rate of use of paid resources; the rate of use of aggregate liabilities; the rate of use of deposits.</td>
</tr>
<tr>
<td>2. Risk Criterion</td>
<td>ratio of loans to liabilities; level of credit portfolio problematicity; ratio of capital to loan; ratio of bank reserves for coverage of losses.</td>
</tr>
<tr>
<td>3. The criterion of efficiency of the bank operation</td>
<td>profitability of the attracted resources; profitability of assets; profitability of credit operations</td>
</tr>
<tr>
<td>4. The criterion for the bank security level</td>
<td>the norm of instant liquidity; the ratio of received and issued inter-bank loans; multiplier of capital.</td>
</tr>
</tbody>
</table>

The formation of the credit resources, as well as their use is related to the functions of the credit and, first of all, with redistribution function. The redistribution process are connected to the accumulation of credit resources, on the one hand, and placement them in loans - on the other hand. The strengthening of the resources base promotes the increase in the capabilities of banks to meet the current and investment needs of the economy subjects and households in additional financial resources. Each operation of banks, which implementation is related to the change in the volume and composition of its resources, brings profit or expenses. The criterion of the effectiveness of the formation and use of bank resources allows to perform an adequate analysis of the real situation in the bank and formulate ways to improve the security of credit operations of banks.

We propose to evaluate the efficiency of the formation and use of bank resources using the rate of utilization of paid resources, coefficient of use of aggregate liabilities, coefficient of use of deposits and ratio of loans and liabilities.

The risk criterion is based on the features included in the risk classification of the bank. The value of assessment of the risk criterion is that it is possible to simulate banking activity on its basis and carry out a comprehensive search of internal reserves in order to increase the effectiveness of the security of the bank credit operations. The approach proposed by the author is aimed not at the transfer of all types of bank risks, but the creation of a certain system of bank risk indicators, which allows banks not to omit their individual varieties in determining the total size of risks in their activities. We propose that such indicators include the ratio of capital to issued the loans issued, level of bad loans and coefficient of provisions for losses at the expense of the banks reserves.
The analysis makes it possible to determine the trends and regularities of the activity, to assess the impact of external and internal factors on the functioning of the banks; scientifically substantiate the planning of further work and control over its implementation; determine the development potential and reserves for improvement of its efficiency. The effectiveness of the bank should be determined through the calculation of profitability of attracted resources, assets and credit operations.

Under the criterion of the bank security level one should understand the stability of the financial and economic development of the bank. The ability to quickly settle under current liabilities creates prerequisites for the stable operation of the bank. The slightest signs of a failure by the banks to fulfill their obligations can cause panic among the clients, which in turn can lead to bankruptcy of the commercial bank. The level of bad loans in the loan portfolio is capable of signalling of the decline in financial security at early stages. The level of aggressiveness of the credit policy of the bank has a direct impact on the level of its protection and financial security. Recently, the importance of controlling the currency position has increased significantly (Stattev, S.V., Boiarchuk, A., Portna, O., Dielini, M., Pylypiak, O. (2019); Koev, S.R, Moroz, I., Mushynska, N., Kovin’ko, O., Kovalchuk, S. (2019)).

In addition to the specified indicators, it is mandatory to take into account the external conditions of the credit activity and their impact on the security of credit relations. In a market economy, the bank is an open system, the activity of which is the interaction of internal and external environment. These two components are constantly in tight interconnection. Depending on the force of influence of factors of each environment, one of them is dominant over the other and affects its functioning.

By systematizing and singling out certain factors, one must take into account that the security system of the credit operations of banks is formed simultaneously under the influence of a whole complex of economic processes and phenomena. Factors do not operate in isolation but systemically.

The determination of the main characteristics of the values of indicators used in the analysis of the level of security shall be performed at the second stage.

For indicators of financial statements of banks, the economically feasible minimum and maximum values of the indicators or their lower and upper limits shall be determined, macroeconomic indicators shall be investigated in the dynamics, that is, their change in a certain direction will indicate a decrease or strengthening of the level of security of the bank credit operations.

Exceptions here are macroeconomic indicators that do not have threshold values, so we will evaluate them in dynamics, that is, the change in such indicators in a certain direction should be regarded as a positive or negative feature.

The third stage is an expert assessment, in which the weighting coefficients are assigned to the calculated indicators. In the conditions of considerable uncertainty of the environment, it is proposed to use one of the traditional heuristic methods to solve the problem - the method of expert evaluations.

The presented methodology for assessment of the security of credit operations of the bank takes into account two components:

1) external conditions of bank credit operations, that is, assessment of macroeconomic indicators of security of the bank credit operation (the maximum sum of scores is 35);

2) the state of security of credit operations of a particular bank, which is evaluated using two components, namely assessment of the performance of the functions of the security system of credit operations (estimated condition of the three components) and assessment of security indicators of credit operations of banks (the maximum sum of scores is 95) (Figure 1).
The assessment of the banks’ credit operations shall be carried out based on the determined indicators of the security of credit operations of banks.

1-5 points are assigned to each of indicators: 1 - the minimum value, 5 - the maximum value. If the bank does not meet the recommended or normative values - 1 point, the average value - 3 points, meets normative or recommended values - 5 points. The total maximum amount of points the bank receives for this block is 65 points. The macro indicator of security of the bank credit operations are evaluated in the same way.

The assessment of the security of the bank credit operations shall be carried out using the analysis of the degree of execution of functions, which should be executed by this system, giving 10 scores for the implementation of each element of the security system of bank credit operations.

1. The element “Rules of Conduct” assesses the information-analytical and consultative-organizational function and the function of mutual support and control (the maximum amount of points - 10).

2. The element “Technology of operations (relationships)” evaluates the individual-situational and adaptive functions, as well as the functions of operational autonomy and management (the maximum amount of points - 10).

3. The element “Means of Protection” evaluates corporate security and integrated approach, legal priority and planned function (maximum sum of points - 10).

That is, the maximum score of estimation of functions of the security system of credit operations is 30 points.

On the basis of the obtained sum of scores for assessment of the functions of the security system of credit operations and assessment the security performance of credit operations of banks (internal and external), a conclusion can be made on the level of security of credit operations of the bank (Table 2).

Table 2. An assessment of the security of bank credit operations

<table>
<thead>
<tr>
<th>The number of points received by the bank</th>
<th>20 to 40 points</th>
<th>41 to 60 points</th>
<th>61 to 100 points</th>
<th>101 to 130 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>The level of security of credit operations of the Bank of Ukraine</td>
<td>critical</td>
<td>low</td>
<td>medium</td>
<td>high</td>
</tr>
</tbody>
</table>

The fourth stage of the assessment is to provide recommendations for changing or maintaining a bank’s credit policy based on the obtained quantitative assessment.

For a visual assessment of the security performance of credit operations, experts prepare a “Report on the assessment of credit operations of the bank”: the name of the bank, which assesses security; indication of the period for which the assessment is made; formation of a system of indicators for analysis; provision of the results of their calculation and determination of the number of points for each indicator in tabular form; determination of the level of security assessment; advising on changing the bank’s credit policy.
The application of the proposed security system of credit operations of the bank enables to generate security measures, rules of conduct and technology of conduction of operations at any stage of credit operations. Given the fact that the use of credit resources is performed mainly in the form of credit operations and the fact that the latters in their development go through three stages (preparation of the transaction, its maintenance (monitoring) and repayment of credit funds), each of them will comply with their security measures, rules of conduct and the technology of the relationship (Table 3).

<table>
<thead>
<tr>
<th>Stages of a credit operation</th>
<th>Contents of the security system of credit operations of the bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preparation of the operation</td>
<td>formation of safe conditions for conduction of a credit operation</td>
</tr>
<tr>
<td>2. Monitoring</td>
<td>timely detection of signs that may indicate a violation of the terms of a credit operation</td>
</tr>
<tr>
<td>3. Return of funds</td>
<td>taking measures for the most complete fulfillment of obligations by each participant of a credit operation.</td>
</tr>
</tbody>
</table>

Considering credit operations as a complex, multi-stage system of its relations with the participants of such operations and paying considerable attention to each of their stages, one can distinguish one of them, which is the most complicated, labor-intensive and costly for the bank. It is a question of the bank’s work on repayment of credit debt, which due for one reason or another was not returned by borrowers in accordance with their contractual obligations. Unfortunately, today such work is a constant attribute of credit operations of domestic banks.

The mechanism for managing the process of returning bad loans is ensured through the creation of a corresponding coordination group in the bank consisting of representatives of the bank, debtor and the entities involved in the recovery of debts.

The main instrument of influence on the debt situation will be negotiations and agreements, information measures of support of the process of repayment of debts, and legal measures.

An important place in the proposed system is given to the structural unit, through which forces and means the direct work on the return of debts is carried out. At present, a significant part of banks have subdivisions in their structure that are dealing with bad debts. Without going into a detailed analysis of their work, taking into account only significant amounts of bad debts that did not change significantly, and sometimes even grow, one can make a conclusion on expediency of their existence. In addition, these units perform work that could be successfully performed by other units involved in lending, such as: credit, security, legal, and risk units. In addition, the existence of units dealing with bad debts, as a rule, does not depend on the results of their work, and their methods, as a rule, are patterned.

5. Discussion

In addition, banks bear additional costs for the maintenance of such units. Taking into account that modern business activity (including banking) is accompanied by large volumes of bad debts, the services on their return are began to be offered more and more often in the market. The emergence of such proposals has led to the formation of a new type of activities - work on the repayment of debts. Specific conditions of the present tiem, in which banks were, makes such activity quite relevant. Proceeding from this and in order to make bank deal with bad credit debts more professionally, banks are proposed to create their own collection companies. The establishment of such enterprises could involve not only one but a few banks. When dealing with the debts of banks, such enterprises could simultaneously provide services to other entities, thereby enhancing their professional skills and minimizing their maintenance costs.

The urgency of the bad loan debt securitization is caused by the large capacity of the market of such debts and significant valid credit transactions that enables to form an additional segment of the stock market and positive prospects of its development (Provan, D. J., Dekker, S. W., & Rae, A. J. (2017), Sexton, J. B. & Klinect, J. R. (2017)). The main advantages of securitization of bad loan debts are: the possibility of redistribution of
the risk of a large concentration of bad loans in banks, providing banks with additional sources of financial resources, release bank balances from negative assets, improvement of their credit rating, improvement of banks’ liquidity, creation of a secondary market for such assets, which are the loans.

An important point in this approach is that the securitization of bad credit debts does not seriously impair the interests of credit relations subjects, enabling them to resolve all issues without conflict.

**Conclusions**

The security system proposed forms the relevant functions in each of its components that are implemented in various areas of relations: economic, informational, legal, and organizational ones, supporting them at a given level and avoiding contradictions or conflicts. The security system capabilities are formed from the capabilities of each of the participants in credit operations, to whom mutually agreed powers on protection of the security object are delegated.

As a result of the use of the methodology for assessment of the security of credit operations of banks, one can determine whether there are internal forces and resources in the bank to implement the available capabilities, to which extent the bank is prepared to withstand the negative impact of the external environment, and, importantly, this analysis will help to identify internal deficiencies that need to be addressed and will provide a high level of security of the bank credit operations.

The use of the considered indicators in assessment of the level of security of lending activities of the bank allows it to correctly form its investment and credit policy and make sound management decisions for determination of the optimal structure of capital.

The introduction of the developed algorithm for security analysis of credit operations of the bank on the basis of calculation of the level of functional components of the security of credit operations of the bank will significantly increase the efficiency of the entire bank management system, since it will enable continuous monitoring and evaluation of the state of the security, timely detection of threats and risks, and make effective decisions to minimize them.

The complex nature of the proposals aimed at protection of the interests of credit institutions in the procedure for the recovery of bad debts will not allow to break the relationship between the bank and their clients and will provide better repayment of debts through the application of various methods of working with loan debts. The accent is transferred from the debtor to the debt, and the result is achieved through the joint work of the debtor and the bank.

Typically, the task of managing risks in industrial organizations is assigned to special structural units. In the event that the infrastructure of the industrial organization not provides such a unit, the management may decide to engage regular risk management specialists or external consultants. However, as experience shows, quite often the risk management functions are imposed on other structural units. Typically, these tasks can be performed by the internal audit department, controlling service, and forecasting analytical unit. In this situation, threats are diagnosed in a timely manner, and their consequences are eliminated promptly, which protects the commodity producer from the probable significant losses.

It was substantiated that risk situations are accompanied by an urgent need to choose between different variants, a polar understanding of a certain magnitude of risk by theoreticians and practitioners as a result of differences between psychological and ethical and value systems and principles. This determines the subjectivity of the vision of this category. At the same time, the risk is an objective factor, due to the fact that it is inherent in most of the existing production and economic operations, and functions not being based on the will or consciousness of the individual, and neglect or recognition of its existence by an individual. So, one can agree that the risk itself has both a subjective and objective nature.
In the course of the study, it was substantiated that socio-economic, organizational and legal factors influence the formation of economic security of an economic entity. Any industrial organization is characterized by certain features in the area of legal relations and the establishment of its own business security system. In view of the imperfection of the current legislation, as well as the level of scientific and practical experience in substantiation and creation of an effective system of economic protection of the manufacturer, it is advisable to draw attention to the achievements of the international community in this area.

Taking into account world experience it can be stated that in developed countries, as a rule, there is a coexistence of two basic systems of formation of economic protection of manufacturers: the systems of protection at the state level, which are responsible for national security, with the spread of their influence on state and private business entities in the plane of the current normative field; private entities that form their own economic security services or use detective-security agencies develop their own systems of necessary mode of confidentiality and security. Only the combination of the capabilities of both systems can guarantee the economic security of business interests, in particular, and in general the interests of the state, by ensuring business stability, preventing the likelihood of bankruptcy, compensating for losses caused by natural disasters or unfair competition, industrial espionage or other illegal actions.

References


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Providing Security for the Development of High-Technology Organizations

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Abstract. In scientific work the peculiarities of innovation processes in the activity of high-tech companies are determined. The functional and managerial components of ensuring the security of development of high-tech companies are determined on the basis of establishing centers of responsibility for the support of innovative projects. The model of support of sustainable innovation development is developed and the algorithm of formation of the structure of business of high-tech companies with the purpose of strengthening of organizational security of out-of-date development is offered. The recommendations on harmonization of innovation development and security of commercial activity for high-tech companies are given.

Keywords: development security; high-technology organizations; technology business; innovation process; responsibility center; innovation project; business structure; R&D


JEL Classifications: O11, O32

1. Introduction

The most important factor in securing the development of high-tech companies is effective management. In the economy of the leading countries of the world there is a steady tendency of the growth of the role of high-tech, resource-saving technologies and industries. The undisputed evidence of the domination of such a direction of safe economic development is, on the one hand, the fact that the most expensive companies in the world, whose shares are quoted in the stock market, are not the largest resource-extracting and processing companies, but those who specialize in intellectual, science-intensive, high-tech products, and on the other hand, those that consistently reduce the specific energy consumption per unit of output and its prices.

Currently, in all developed countries, an active search for social and organizational changes is being implemented that will open up new ways of life and consumption, and will allow to weaken or completely remove institutional barriers to the spread of new technological improvements. The problem of ensuring the security of development and innovation management within the national economy and the management of high-tech structures and companies is sufficiently broadly presented in the work of a number of research scientists (Akman, and Yilmaz (2008); David, (2015); Freeman (2002); Grant (2010); Kogabayev and Maziliauskas (2017); Lawson and Samson (2001); Nuryakin, at. (2018); Powell (2017); Tidd and Bessant, (2013); Von Hippel (2008); Tvaronavičienė (2018); Havierniková, Kordoš (2019)).
But at the same time, most of the scientists try to determine the causes of the failures of forming the innovation vector of the economy, the emergence of challenges for commercial security, the perspective directions of reform and changes in the management system of high-tech industries and companies. These provisions are the basis for the study of the role of high-tech companies in the world economy and the definition of problem points, socio-economic components that impede the rapid introduction of innovative production technologies and management in the company’s management system and enhance the innovation activity in the economy of the country.

The aim of the study is to identify problems and obstacles in the security of sustainable development and management of high-tech structures and companies, identify urgent measures and programs in order to enhance and strengthen the role of innovation in industries in order to move to the concept of safe innovation development.

2. Science-based companies: the essence and formation

In the leading industrialized countries of the world, the approach to innovation development, called the innovative explosion or a complex of interconnected innovations, is particularly striking. This approach was suggested by a researcher (Rivera (2017)) and it is based on the fact that innovations for a company operating in the international market of products and services should be considered as a continuous process that affects various aspects of its activities (Figure 1).

![Figure 1. Innovation process within high-tech companies](source: Rivera, 2017)

Innovation is considered to be the main path for sustainable growth and safe development. With the help of innovation, that is, the introduction of new technology into the world market (T), application in the form of new goods and services (A), the formation of new markets (M) and / or the introduction of new organizational forms (O), the final value for consumers, and first of all, their loyalty is aggravated (Ortt et al. (2008); Limba T., Agafonov K., Paukštė L., Damkus, M., Plėta T. (2017)).

The affiliation of the branches of the economy to the category of high-tech is characterized by the world practice of the indicator of the science-intensive production, which is determined by the ratio of the amount of expenditures on R&D (Research & Development - VR&D) to the volume of gross production in this industry.
It is generally accepted that for high-tech industries, this figure should be 1.2-1.5 or more times higher than the average for the manufacturing industry. For example, in the US, the most high-tech industries recognized: the aerospace complex - 19%, the radio industry - 7%, the machine-building industry - 4.8% (World Bank national accounts data, and OECD National Accounts data files).

Specific features of the organization, management and management of high-tech industries are:
- complex nature of the company’s activity, which requires solving all the problems of engineering: from scientific research to serial production;
- combination of the target orientation of research, development and production for a concrete result with perspective directions of work of system-wide, fundamental purpose;
- high scientific and technical level of manufactured products;
- a significant proportion of R&D spending;
- the domination of the process of technology change over stationary production and the consequent need for a regular update of core production assets, the development of experimental and experimental base;
- polytechnicity of research and development, diversification and multi-nomenclature of production;
- high dynamics of development of production, realized in the constant updating of its elements (objects of research, development and production, technologies, circuit and design decisions, information flows), the change in quantitative and qualitative indicators, which complicates the problem of uniform loading and use of production potential;
- branched internal and inter-industry cooperation caused by the complexity of high-tech products and specialization companies;
- a high degree of uncertainty (entropy) in the management of state of the art development, which requires the use of predictive technology estimates for the future when making decisions. Creation of qualitatively new products, as a rule, is carried out in parallel with the development of the main components (circuit and design decisions, physical principles, technologies, etc.). Achievement of the given technical and economic parameters of this production is characterized by a high degree of scientific and technical risk in the general case. The risk of creating new components of the system determines a strategy based on research in fundamental and applied science and technology, on the development of alternatives to components. However, this strategy can lead to a significant increase in the cost of resources, the feasibility of which is not always justified;
- intensive investment process, which is the most important factor in achieving the goals of research and development of high scientific and technical level, which accompanies the implementation of large projects;
- the presence of unique teams with a large share of scientists, highly skilled engineering workers and industrial and industrial personnel in the total number employed in development and production (Barberis at. (2017); Janssen, at. al. (2015)).

The analysis of studies in this format showed that most high-tech companies in developing countries identified the most significant problems of entrepreneurial activity and commercial security: high tax burden, limited financial resources, instability of the legal framework, and lack of certainty of the requirements of the legislation that creates conditions for them. poor-quality interpretation (Figure 2).
The transition from the economic crisis to revival and recovery requires ahead of investment growth primarily in the active part of fixed assets and renewal of fixed assets at the latest technological base. The latest technological base in the state economy is determined by the technology and technology of the fourth, fifth and sixth technological phases and the absence of the first three stages. At the same time under the technological system is understood the totality of technical systems and technological processes that express a certain generation (level) of scientific and technological development.

Therefore, one of the main tasks of activating innovation activity is to renew capital at the latest technological base.

Each generation of technics, technology in its life cycle runs five phases (Wheelen and Hunger (2015)):
1. the origin of the idea;
2. its scientific and practical development;
3. development in the production, consumption and distribution, usage of sectors of production and consumption markets in a large number;
4. stable production with further improvement of the quality of technology and technology;
5. aging and crowding out of production and consumption, replacing new, more progressive and efficient generations.

Duration of the life cycle, depending on the type of technology and technology, the scope of its application, the rate of acceleration of the NTP is different and varies from several years to two or more decades.

The peculiarity of the general trend of generational change is that the last phase of the cycle of the generation, and the first phases of the cycle of generations that come, coincide in time. The analysis of world experience shows that the mass replacement of generations of technology and technology occurs once every decade and underlies the medium-term cycles of technological devices and periodic crises. Technological crises are characterized by deterioration of the quality parameters of products and technologies used, due to their moral aging, the appearance of pseudo-innovations. The crisis phase of medium-term technological cycles usually lasts a year or two and is overcome as the technology and technology of the new generation.

Figure 2. Common problems and challenges to the security of commercial activity of high-tech companies in developing countries

Source: World Bank national accounts data, and OECD National Accounts data files.
The crisis with the change of technological devices is deeper, if it coincides with the crisis in the economy. Its characteristic features are low efficiency of the latest generation of devices, and negative changes in the structure of the economy (Bagno et al. (2017)).

At present, there is an industrial development of the sixth technological device, which includes nanoelectronics, genetic engineering, multimedia interactive information systems, high-temperature superconductivity, and the like. So in the US, the process of turning inventions and scientific results into a successful technological business is extremely developed. Exports of high-tech products bring about $ 700 billion to the United States. year, Germany 530, Japan - 400 (OECD Main Science and Technology indicators).

World experience shows that financing of design and development of new technologies due to significant risks can not be sufficiently carried out at the expense of the state. Therefore, the role of such investors in the world is often venture capital funds that can take risks for the sake of high profits from the implementation of successful projects that compensate for unsuccessful investments. There are more than 900 venture companies in the United States, which annually invest $ 35 billion in innovative projects. A similar pattern is observed in other developed countries (Čirjevskis (2016)). According to statistics, only one of 100 proposals to the venture fund receives funding and only 30% of the financed projects in three years - five years are successful. The profit of the venture capitalist is 10-15% higher than the bank interest rate (OECD Main Science and Technology indicators).

However, the expanded reproduction of hi-tech technologies requires the creation of such an economic environment in which the effect of their application manifested itself and would have a stimulating effect on all technological reprocessing of the final product. In order to achieve such a result, it is necessary to use systematic methods of management and stimulation of transition processes to new technologies and safe development.

3. Formation of the structure of business in the management system of high-tech company

We believe that the formation of a business structure in the management system of a high-tech company should include the allocation of responsibility centers. Under the center of responsibility (CS), it is understood as a segment inside the company, where it is expedient to accumulate information about costs and results of activities and headed by the responsible decision-maker. Construction of a business structure of companies based on the centers of responsibility and effective management of them is possible only with a clear formulation of tasks and the division of competences, which allows you to assign responsible for the results of activities. The main rule used by a high-tech company in determining the effectiveness of the CBA is: «You can answer for what you can directly influence.»

For the convenience of collecting data on costs and their analysis in the structure of the center of responsibility distinguish the place of occurrence of costs. Typically, these are jobs or spheres of activity that are part of the CBA, for which it is possible to keep a record of costs, but it is impractical (or impossible) to analyze the results of the activity (Barker, and Duhaime, 1997). Place of occurrence of costs (MVB) - a place or area of activity, where there were certain costs, where it is possible to initially register their magnitude.

Managing costs and outcomes at the centers of responsibility is aimed at satisfying the needs of internal planning and improving the effectiveness of companies in general. It should be noted that the structure of the centers of responsibility does not always coincide with the organizational structure of the company, as separate units can be divided into several centers of responsibility or, conversely, several units are united in one responsibility center (Holtzman (2008)).

Features of the management system by the centers of responsibility are as follows:

- determination of the area of authority and responsibility of each manager (the manager is responsible only for those indicators that he can control, which may be affected);
- personalization of documents of internal reporting;
the involvement of the managers of the responsibility centers in preparing the reports for the past period and plans (budgets) for the future period.

The choice of how the division of a high-tech company into the centers of responsibility is determined by the specifics of a particular situation. It is necessary to take into account the following requirements:
- availability of indicators for measuring the volume of activity;
- the responsible person who manages and is responsible for the activities of the CBA;
- clearly defined sphere of authority and responsibility of the manager of the CBA;
- the degree of detail is sufficient for analysis, but not excessive, so that keeping records is not too laborious;

1. The existence of any type of organization’s cost of a CS, for which these costs would be direct (Basel and Brühl (2013)).

Traditionally, there are three types of CV which, in turn, can be classified in a number of subspecies:

1. Profit centers:
   - investment centers;
   - profit centers;
   - Centers of revenue (income).
2. Service centers.
3. Cost centers:
   - Centers of functional expenses;
   - centers of general expenses (centers of liability) (Čirjevskis, A. (2016)).

The cost center structure is presented in Figure 3.

<table>
<thead>
<tr>
<th>Profit-center</th>
<th>Service-center</th>
<th>Cost center</th>
<th>Development center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Works on real market prices with the income from external circulation for market companies</td>
<td>Estimated according to the data on circulation in the domestic market of companies at similar prices to the market, called “transfer prices”</td>
<td>Carries out standard works and is responsible only for non-exceeding (or saving) the planned costs, subject to a certain amount of work</td>
<td>The activities of this unit form the future performance of companies; its activity can be evaluated based on the results of initiated innovation projects or the received effects in their relationship with them</td>
</tr>
</tbody>
</table>

**Figure 3.** New components of organizational structure in high-tech companies

*Source:* Designed by the authors

The main feature of the profit center is that the given CB runs at real market prices, with the receipt of income from circulation from the external for the companies of the market. Profit centers can be formed according to different principles and criteria, which are selected in accordance with the changing market situation. In practice, the distribution of centers by products, regions, affiliates, countries, and types of customers has become widespread. Profit centers can interact with each other within the matrix of interconnections between several business areas. Cost centers perform standard work and can only be responsible for not exceeding (or saving) the costs planned for them, subject to a certain amount of work. They are characterized by strong integration into the structure of the company, the lack of need for customer search. Note that cost centers are able to meet only the costs that are regulated, the cost of which management can control and provide through the development of appropriate measures. This may be either costs associated with the operation of this CRO, or costs associated with the material provision of other divisions of companies. In the first case, CVs are referred to as «centers of functional costs,» in the second, «centers of total costs.»

In high-tech companies there are, as a rule, different directions of activity. This is due to the fact that companies that constantly carry out scientific and high-tech developments and maintain a high level of innovation, must abide by the conditions of profitability and liquidity. Therefore, the company, along with promising areas of high technical and technological level, have one or more fields of «supporting business» and, in addition, conduct a constant search on a long-term perspective on science and practice (Busse and Carl (2011)).
For high-tech production, coordination of the work of the CV is especially important as each component of the organizational structure should not only fulfill its role, but also implement it in a strictly timed manner, defined in correlation with the current state and prospects of the activities of other CVs. At the same time, the question arises whether existing directions are profitable and promising for companies, and if so, what efforts are needed for their support or development.

1. A proposal has been made for the production of a new product.
2. Approved study plan for a new product.
3. Technical conclusions are presented.
4. A product specification is prepared.
5. A decision was made about the possibility of producing a product.
6. A prototype is manufactured.
7. The production is completed.
8. Approved product testing plan
9. The results of the tests are presented and the decision on the presentation on the market is taken.
10. Composed budget sales.
11. Schedule of events and preparation of promotional materials for trial sale.
12. The production of a product for pilot sale has been completed.
14. Finished sale.
15. Estimated sales results.
16. The decision was made to issue modified and technically advanced samples in the relevant market.
17. The production of modified and technically-completed samples in the relevant market has begun.

Figure 4. Diagram of the process of planning the work of centers for the development of international projects in a high-tech company

Source: Designed by the authors
Moreover, prospects can be understood in different ways:

– as an ability to bring a significant profit for companies;
– as an ability to support other (more perspective directions) during their development;
– as an ability to create (maintain) the desired level of scientific and technical potential of companies, the bar of its innovation (Ireland, et al. (2013)).

In a high-tech company, there are necessarily auxiliary, service units not directly related to the development and production of products. According to the classification of the centers of responsibility listed above, they can be either categorized as service centers (if the volume of services provided by them or products can vary and CVs are able to affect their volume) or to cost centers (if the volume of services unchanged or not dependent on CV).

But apart from the production units and the auxiliary service units for high-tech industries, the presence of development units, conducting research and design works, or on a permanent basis for manufacturers that are also active or currently in this state, is characterized by the presence of the former product this business line has entered a stage of aging, or perhaps it is a completely new business direction of the company. Most domestic companies, faced with the question of positioning such units (KB, development departments, etc.) in the structure of the international business of the company, classified them as «cost centers». In our opinion, this is not true, since the activities of these divisions form the future result of the company and, accordingly, their activities can be evaluated by the effects of initiated innovation projects, or, in any case, in their relationship with them. Therefore, it seems advisable to introduce high-tech industries of another category of CV-centers for the development of international projects (CDM) (Gomes and Wojahn (2017)).

Using the diagram (Figure 4), you can analyze the typical cycle of strategic planning in the CU of production - from the moment of the conception of a new product until the moment of its introduction into the market.

The activity of such CV forms the future performance of the company. Its activities can be evaluated by the effects of international initiated innovation projects or the resulting effects in their interactions.

In the beginning, the choice is made of the conceptual model of the organizational structure of the business. That is, the well-known linear-functional, divisional, matrix and design structures are analyzed. In the case if it is intended to select the units working in the future, then the decision on the formation of the RP is taken (Figure 5).

The following are considered variants of organization of activities of the CI. If the CI is to be organized on a permanent basis, an analysis of possible forms of integration of the CI into the organizational structure of the company is carried out. In case if the integration form is rejected by the decision of the company’s management, then the project groups may be formed instead of the CR. In adopting a positive decision, the organizational structure of a high-tech company in the concept of CV with the allocation of CR is being developed.

The creation of high-tech companies with the focus on their own development in the structure of high-tech companies is particularly appropriate in Ukrainian business conditions, since research institutes and small innovative companies do not have interesting innovative proposals (Karpenko et al. (2018)).
Thus, the analysis made it possible to reveal a range of main problems of functioning and management of domestic high-tech organizations and companies. This as follows:

- lack of financial resources, which causes the search for sources of funding and rational use of those funds, due to the reasonability of choosing promising directions for innovation activity;
- the lack of a balanced distribution of company resources between current and strategic innovation activities;
- increased riskiness of innovation activity, caused both by small scale of the company and uncertainty of the result;

**Figure 5.** An algorithm for forming a business structure in a high-tech company

*Source:* Designed by the authors
– the need for systematic technological re-equipment of production by modern equipment;
– limited opportunities for marketing activities;
– imperfection of staff motivation, taking into account the increased importance of individual specialists (Tetiana et al. (2018)).

Thus, achieving success in the development of small business in the field of science-intensive is related to the need to address a number of important management problems, which should include:
– ensuring the balance of current and strategic innovation activities;
– increasing the reasonableness of choosing promising directions for innovation activity;
– provision of conditions for reducing the risks of innovative activity of high-tech companies;
– definition of rational financial and temporary conditions for the activation of innovation activity;
– assessment of the state and planning of innovative activity of high-tech companies;

Functional and structural description and consolidation of responsibility in the implementation of the management process for the development of small high-tech companies.

4. Evaluation of the effectiveness of safe innovative development of high-tech company

It should be noted the need to form a business management structure in a high-tech company, through the separation of the development center. The activity of such a development center forms the future performance. His activities can be evaluated by the effects of initiated innovation projects or the resulting effects in their relationship with Dobrovič, et. al 2018). In a high-tech company focused on the development of the internal structure of business management, it is necessary to allocate responsibility centers that have their own projects at a certain stage of development of the life cycle of a high-tech product. The presence in the structure of high-tech companies of development centers can realize the full innovation cycle: from research to commercialization.

Table 1 shows examples of R & D structure and performance indicators for sustainable innovation development.

<table>
<thead>
<tr>
<th>Structural indicators (R_{sk})</th>
<th>Result indicators (R_{pl})</th>
</tr>
</thead>
<tbody>
<tr>
<td>R_{sk1} - The degree of maturity of the project;</td>
<td>R_{pl1} - The quality of the result ;</td>
</tr>
<tr>
<td>R_{sk2} - Oversized inputs / phase of the project;</td>
<td>R_{pl2} - Adherence to the terms;</td>
</tr>
<tr>
<td>R_{sk3} - Time of implementation of each phase of the project;</td>
<td>R_{pl3} - Process speed;</td>
</tr>
<tr>
<td>R_{sk4} - The number of errors found during the project phases;</td>
<td>R_{pl4} - Cost deviation;</td>
</tr>
<tr>
<td>R_{sk5} - Number of phases changes;</td>
<td>R_{pl5} - Project costs (mastered and remaining);</td>
</tr>
<tr>
<td>R_{sk6} - The structure of the project staff;</td>
<td>R_{pl6} - Expenses for error correction unproductive costs);</td>
</tr>
<tr>
<td>R_{sk7} - The proportion of costs to other organizations to the cost of the project</td>
<td>R_{pl7} - Level of customer satisfaction.</td>
</tr>
</tbody>
</table>

Source: Designed by the authors

In R&D projects, the target values of structural indicators stem from the goals and characteristics of projects. Target values of performance indicators are oriented towards product goals.

They document the entire customer, product requirements, product concept, design concept and production, as well as economic performance of the product (price, costs, sales, results and time of entry, target customers). The second component of the R&D indicator is the measured values. These values are formed in the form of databases for projects (Prause (2016); Bezpalov, V.V., Fedyunin, D.V., Solopova, N.A., Avtonomova, S.A., Lochan, S.A. (2019)).
In these databases, reflecting the entire package of works, the following numbers are given:
- dates of the beginning of the work package;
- the terms of the completion of the entire package of works;
- estimated working hours;
- consumption of materials;
- degree of readiness of the project at the time of measurement;
- quality of the result (Utterback (2004)).

With these six initial data, you can measure all metrics that are distributed in phases, with the exception of customer satisfaction. Below, in Table 2, as an example, a number of formulas for calculation of indicators based on data from a package are given.

**Table 2. Formulas for calculation of indicators of structure and effectiveness of safe innovative development of high-tech company**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Formulas of calculation</th>
</tr>
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<tbody>
<tr>
<td>$R_p$ (Quality of the result)</td>
<td>the number of work performed on the working package (RP) without alterations / total number of works in the package;</td>
</tr>
<tr>
<td>$R_{o}$ (Observance of the terms)</td>
<td>number of works without exceeding of terms / total number of works;</td>
</tr>
<tr>
<td>$R_{p}$ (Process speed)</td>
<td>The amount of work performed for the measuring period TO -T-1;</td>
</tr>
<tr>
<td>$R_{d}$ (Cost deviation)</td>
<td>The number of works performed without exceeding the cost / total number of works in the package.</td>
</tr>
</tbody>
</table>

*Source:* Designed by the authors

Obtaining measurable values from the work pack has the advantage. Data on costs, terms, and quality go beyond the same object and at the same time. In doing so, the requirements for integration are fulfilled, ie the indicators are related to each other and are measured in synchrony with time and content. Work packages are available in all projects that apply project management methods.

If there are no packages, there is no successful program execution. Practice shows that the cost of getting the above initial data is minimal (Ushakov (2012); Dobrovolskienė, N.; Tvaronavičienė, M.; Tamošiūnienė, R. (2017)). It is usually sufficient to calculate packet values with a weekly or two-week interval. But the shorter the circle, the earlier you can detect the deviation from the target and correct them. The upper limit in terms is about four weeks.

On the basis of the analysis of the disadvantages of existing systems of indicators for assessing the effectiveness of R&D, as well as based on the proposed systematization and the requirements set forth in ,
Figure 6. Structural-logical model of formation and interrelation of indicators of security of innovative development of high-tech company

Source: Designed by the authors
the work indicators, a methodical approach to the formation and interconnection of indicators of the performance of the sustainable innovation development of high-tech companies was substantiated in order to implement Rajnoha projects, and Lesníková, 2016). The main elements of the proposed approach are presented in Figure 6.

In the upper part of the model, the initial parameters for the formation of a system of R&D indicators, on the basis of which the goals and parameters of the project (Fproj; X1, X2, X3 ... Xn) are formed, as well as the purposes of creating the product and its basic parameters (Oprod; Y1, Y2, Y3 ... Ym). On their basis, structure indicators (RS1, RS2, RS3 ... RSK) and performance (RP1, RP2, RP3 ... RPL) R & D are formed.

Based on the purpose of the Fproj project and the purpose of creating the product Oprod, the planned indicators (RSKplan, RPLplan) R&D are formed. It should be noted that the formation of planned indicators should be carried out with the direct support of the R & D control unit, which will ensure a higher level of integration and coordination in the case of implementation of several R & D at the same time.

Planned indicators are formed both in terms of subdivisions and processes - RPLplan (D1, D2, D3 .. Dz) / RPLplan (Q1, Q2, Q3 ... QH), and on projects - (RSKplan).

During the implementation of projects and processes by subdivisions, data on actual performance indicators (RSKfact; RPLfact) are presented, which are presented to the project manager in the form of a report with a mandatory interpretation of the results obtained.

After evaluating the results, an appropriate decision is made:
- in the case of fixing the allowable deviations for costs, terms, as well as reducing the likelihood of failure to achieve the specified technical parameters of the project, a decision is made to extend the project with appropriate adjustment of indicators;
- in the case of unacceptable deviations on the critical parameters of the project, a decision is made or substantial adjustment of the objectives and parameters of the project, as well as the purpose of creating the product, or the termination of the project

Conclusions

The necessity of introducing an algorithm for the formation of the structure of management of international projects in high-tech companies has been developed and substantiated, with the purpose of ensuring adequate commercial security, through the allocation of responsibility centers, namely, the profit center, service center, cost center, with the purpose of quality control of costs and results for international projects and contracts and satisfaction of internal planning needs, increase of company’s efficiency on the world market of products.

The main feature of the profit center is that this CD operates on real market prices of the world market with the receipt of income from circulation from the international market. Centers of profit are limited in the adoption of international investment decisions and are not free in the formation of assets of high-tech companies, are valued at the magnitude of profit, taking into account the restrictions on assets. The result of the service center’s activity is estimated according to the data on the domestic market of the company at prices similar to market ones, which are called «transfer prices». On this basis, the necessity of introducing for the high-tech manufactures of CD-centers of development of international projects (CRM) was substantiated. The presence in the structure of high-tech companies of the CIAM allows to realize a complete innovation cycle: from research to commercialization of international innovation projects.

In order to evaluate R&D performance in the activities of high-tech companies, a methodological approach to the formation and interconnection of indicators of security performance of innovative development of a high-tech company with the purpose of realization of projects was proposed and substantiated. Indicators of the evaluation of the effectiveness of the implementation of an innovation project (project group) in order to stabilize development are formed.
References


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A POTENTIAL INFLUENCE OF TAX INEQUALITY ON THE SUSTAINABLE PUBLIC MANAGEMENT

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Abstract. The sustainability of national finances is certainly an important issue for a country’s development. These aggregate perceptions change the public sector of the nation and the safety of citizens’ lives. Therefore, a significant focus on broadly improving financial research can be a significant issue. In addition, this activity may be organized in connection with applicable higher education programs. On the other hand, the understanding of financial management of governments in different countries are treated differently. This is becoming an increasingly important condition that broadly discussion does not directly benefit the overall development of financial education in recent years. One of the possible ways to deal with personal finances in various economic conditions may be a change in the attitude towards knowledge financing among top management in universities. Young people can be supported by financial education programs that are clearly included in their undergraduate or postgraduate courses. A proper management of education programs can help improve student learning experiences and economic well-being. In addition, training based on transparent public administration reliably fosters patriots of the country and people’s intolerance for non-transparent activities of public servants. Another important task of the paper is to show how the management of public debt and government spending can affect the sustainability of fiscal policy. In addition, this document also attempts to clarify questions about the economic importance of financial education at all levels of education. This concept of tax burden can encourage every citizen to be responsible for the activities of government employees and for the transparency of the budget planning process. Improving government revenues is indeed a complicated procedure. Because the same concept of taxes is used as in fixed costs for the public sector, when a person does not directly receive anything but additional payments for most public sector services. Thus, the confusion of economical terms is fairly constant, that again demonstrates a need for public finance literacy in all finance areas. Definitely it is a serious programme for scientists. One of the problems is regarding a realization of the country’s tax burden. The official average tax burden is usually more than thirty percent from the Lithuania’s nominal gross domestic product in recent years. On the other hand an average tax burden for a private person is usually more than forty percent of the average nominal labour related income. Nevertheless, political leaders and experts suggest the need to increase the accumulated tax burden in Lithuania. However, there may be a fundamental error in the fact that social insurance contributions and compulsory medical insurance contributions to funds are not counted in the tax burden of individuals and legal entities. Fortunately, last year’s budget already considers social benefits as part of tax revenues. Unfortunately, in the continuity of the fiscal policy of Lithuania in the XXI century there is a small number of signs. Public finance and taxes are the very essential issue of the country’s economic policy. Without a taxation any state cannot exist, therefore taxes are one of the utmost important component of state’s fiscal policies. Taxes are the main source of a revenue for the national budget and when redistributed it generates the public expenditure. Because the government does not create a factual product the implementation of various functions of the state requires immense funds. Therefore, taxes are really important and significant source of the public finance revenue. Moreover, a problem could be the contrasting taxation inequality in Lithuania and in some other EU countries. Therefore, the equality of a tax burden can be an indicator for the public finance sustainability. The object of the publication is analysis of a possible taxation injustice in Lithuania. The aim of the publication is to imply a conception of a tax difference margin in the present-day’s public finance. The main research methods that were used include scientific literature and public finance analysis, data collection and systematization, comparative statistical data analysis, graphical data representation, proportional analysis.

Keywords: Public Management; Public Finance; GDP-Tax Ratio; Sustainable Taxes


JEL Classifications: H12, H63, E65
1. Introduction

Finance and public spending management have a historical concept of the educational process and are one of the key economic and financial preparations in modern education. A fiscal entity is possible with a number of complex aspects, such as constant changes in the market economy, and the historical origin of money and monetary policy. Financial education could be related to any undergraduate program (e.g. Senan 2018; Caplinska, Ohotina 2019). Moreover, a knowledge of the terminology related to budget and the taxation is familiar only for a minority of students. The purpose of this paper is to disclose the importance of financial management for students, including the public perception of the administrative and financial aspects of improper management of public revenues associated with the tax burden. The Lithuania’s official average tax burden is usually more than thirty percent of the country’s nominal gross domestic product in recent years (Table 1). Differently an average tax burden for private persons is usually more than fifty percent from the average nominal labour related income. A certain difference apparently shows inequality in tax burden of legal and private persons. In other words that demonstrates unequal taxation concerning the capital income and the labour income. This inequality creates some tension and is likely to create even more.

Government finances and taxes are a very important issue of a country’s economic policy. Without taxation, no state can exist; therefore, taxes are one of the most important components of the state budget policy. Taxes are the main source of income for the national budget, and when it is redistributed it generates government spending. Since the government does not create an actual product, the implementation of various functions of the state requires huge funds. Therefore, taxes are a truly important and significant source of revenue for public finances. Moreover, the problem may be a contrasting tax disparity in Lithuania and in some other EU countries. Therefore, equality of tax burden can be an indicator of the sustainability of public finances. The publication object is an analysis of possible tax injustice in Lithuania. The purpose of the publication is to introduce the concept of tax differentials in modern public finances. The main research methods used were the analysis of public finances in the legal and scientific literature, data collection and systematization, comparative statistical analysis of data, graphical presentation of data, proportional analysis.

Moreover the taxation policy can play an important role in reducing inequalities in the distribution of post-tax income. In addition, tax policy is a key to increase revenues for financing government spending on transfers, health and education that are conducive to low-income households as well as growth-friendly infrastructures that can also improve social justice (De Haan 2002). There is a lot of attention to related questions in the recent scientific literature (Diržytė et al. 2017; Luzgina 2017; Osipov et al. 2018; Vandina et al. 2018; Kosova et al. 2019).

Furthermore an intention of the paper is to reveal how taxation, public spending and fiscal policy could be perceived by taxpayers. In addition, it also attempts to answer the questions about the financial and economic importance on financial education. Additionally an idea of the article is to show a large difference concerning the tax burden for various layers of the society. The research methods and analysis used in the research were qualitative and quantitative research methods; the data was collected in the local department of statistics and in other financial institutions. Some empirical evidence was compiled from teaching public finance and from preparing research studies and textbooks.

Continuity and sustainability of public finances is currently a topic in the discussion of economic policy and public administration. However, this occurs as a result of the residual effects of the previous debt crises in Europe and the long-term pressure of government spending caused by obstructive demographic changes in more developed countries. This paper analyzes some of the conceptualizations that were used to assess the continuity of public finances in the case of Lithuania. In addition, hypothetical public finance revenues sustainability criteria was moderately overviewed. There is little agreement among economic experts about the exact theoretical standard of government financial continuity and, in particular, sustainability. It is desirable that each conceptualization for assessing continuity and sustainability uses its own personal, sometimes different, definitions. In this case, the strengths and weaknesses of each of the approaches are studied and conditionally
equated to each other. It was found that each formulation has its own functions. Approaches should be considered as cumulative content. The availability of data and modeling resources, directions of analysis, and other case-specific limitations affect the relative quality of the approaches in different situations. Currently, the continuity and sustainability of public finances is a hot question in many modern countries. The uncertainty was raised by several reviewers and analysts of state-funded finances in Western countries, where these finances are the form of sustainable development. After the financial crisis of the first decade of the twenty-first century, the national debt of many countries has risen sharply due to the forced accumulation of various resources and savings aimed at the financial sector and a fully system economy. Ascending commitments integrated with long-term subjects, similar to modifications at the sociological level, affect the symmetry between the number of people in the workforce and the number of pensioners.

2. Agenda of Tax Burden in the Public Administration

The relationship between growth and inequality has long been an important issue for economists, and over the years several influential theories have emerged. But for most people, the problem comes down to this - increasing inequality is good or bad for growth? Those who believe that this is good, or at least necessary, argue that it stimulates entrepreneurs and is a source of general investment for the economy. Those who believe that this is bad, argue that it may prevent poorer people from investing in their education and encouraging them to grab a larger piece of the economic pie without increasing it (Keely 2015).

The personal tax debate is quite common without the concept of personal tax burden. In economics, the tax field or tax burden is the effect of a particular tax on the distribution of economic wealth. The imposition of a tax drives a wedge between the price that consumers pay and the price that producers get for the product, which usually imposes an economic burden on both producers and consumers. The concept was brought to the attention of the French physiocrats, who argued that all taxes ultimately fell on landowners and at the expense of land rent. It is said that the tax burden falls on the group that ultimately bears or ultimately must pay tax. The key concept is that the level of tax burden or tax burden depends not on where the income is collected, but on the price elasticity of demand and the price elasticity of supply.

The theory of tax burden has a number of practical results. For example, in some countries, social security taxes are paid by the employee and by the employer in half. However, some economists believe that the employee bears almost the entire tax burden, because the employer transfers the tax in the form of lower wages. It is believed that the tax liability falls on the employee. However, with the same success it can be argued that in some cases the amount of tax falls on the employer. This is due to the fact that both the price elasticity of demand and the price elasticity of supply influence how the tax falls. Price controls, such as minimum wages, which set a minimum price level, and market distortions, such as subsidies or social benefits, also complicate the analysis.

There are many misconceptions regarding the importance of financial education programs in higher education institutions and other institutions. It is especially important that public finances understand their publicity in totalitarian times anyway, public finances were called “state finances” because understanding the tax burden was a rather minor issue for the dominant idea of creating a “new world, or at least national socialism.” Unfortunately, these provisions often remain in the perception of some civil servants and even in the concepts of the new generation. At the same time, typical economic, financial and administrative State’s strategic problems are almost always linked to corruption and the non-transparent situation in the public sector. Thus, as already mentioned, these situations are probably the most common events in the management of public finances. Therefore, finances and especially public financial literacy can be one of contributing to the perception of corruption by the state.

In general, the concept of public finance in the educational process begins with tax and budget concepts. Revenues from municipal taxes and the structure of the budget can be presented as a good example in which people could see the structure of government finances, and this should probably be the closest example for
every citizen of another country. On the other hand, such an approach may be more suitable for second or third year students, especially for part-time or postgraduate studies. Most students come directly from high school undergraduate or undergraduate programs and, as a rule, are not familiar with the practice of independent living and self-payment. Even more difficult is the understanding of the state and national budgets or, on the other hand, the theoretical financing of private entrepreneurship. However, their financing is carried out at the expense of income from taxable and non-taxable income. From the point of view of financial education, this is more or less significant. At the same time, a person begins to understand the role of the state (and municipalities) in the economy. Then the admission to the functions of state regulation of the economy as a function of redistribution, social functions and control functions is materialized. Financial education is also important for understanding the structure of revenues and expenditures of the state and local governments, for the basic laws that provide the basis for tax collection and allocation of appointments.

Tax submissions are often complex. As with the same concept, “taxes and fees for the public sector did not directly receive anything but fees for specific services” (Brammer, Walker 2017). Thus, the confusion in terms is rather constant, which once again demonstrates the need for public finance literacy in all areas of the curriculum for students or cadets. The tax burden of an authorized Lithuanian is usually less than thirty percent of the nominal gross domestic product of a country in recent years. Nevertheless, political leaders and so-called experts constantly point out the need to increase the accumulated tax burden in Lithuania (Table 1). However, there may be a fundamental error in the fact that social insurance contributions and compulsory medical insurance contributions to funds are not counted in the tax burden of individuals and legal entities. Luckily, last year’s budget already considers social benefits as part of tax revenues. Moreover, modern changes have eliminated these problems when the all social benefits were included in employee’s wages before taxes.

3. A Potential Taxation Inequality

In the public economy there are several theories of taxation. Governments at all levels (national, regional and municipal) need to increase revenues from various sources to finance public sector spending. According to the benefit theory, the state should levy taxes from individuals in accordance with the benefits provided to them. The more benefits a person receives from the activities of the state, the more he must pay the state. This principle has been seriously criticized for the following reasons: i) If the state supports a certain relationship between the benefits provided and the benefits obtained. This will be against the basic principle of tax. The tax, as we know, is a compulsory contribution, which is paid to government agencies to cover government expenses and provide general benefits. In case of tax no direct payment. ii) most of the costs incurred by the stylus are for the general benefit of its citizens. It is impossible to estimate the benefit that a particular person enjoys every year. iii) if we apply this principle in practice, then the poor will have to pay the highest taxes, because they receive more benefits from state services. If we get more from the poor at the expense of taxes, this is contrary to the principle of justice. In the theory of the cost of services, some economists were of the opinion that if the state would charge the actual cost of the services provided by the population, it would satisfy the idea of justice or fairness in taxation. The principle of the cost of services, no doubt, can be applied to some extent in cases where the services are out of price and are fairly easy to identify, for example, postal, railway services, electricity supply, etc. But most of the expenses incurred by the state cannot be fixed for each person, because it cannot be precisely defined. For example, how can we measure the cost of the services of the police, the armed forces, the judiciary, etc., for different people. Dalton also rejected this theory on the grounds that there are no reciprocal conditions in the tax (Dalton 1962).

Ability to pay theory describes the most popular and generally accepted principle of justice or fairness in taxation is that citizens must pay taxes to the government in accordance with their ability to pay. It seems very reasonable and fair that taxes should be levied on the basis of the taxable capacity of the individual. For example, if the taxable ability of person A is greater than that of person B, the first should be asked to pay more taxes than the last. It seems that if taxes are levied according to this principle, as stated above, equity can be achieved. But our difficulties do not end here. The fact is that when we put this theory into practice, our
difficulties actually begin. The problem arises with the definition of solvency. Economists are not unanimous in what should be the exact measure of a person’s ability or ability to pay. The main points of view put forward in this respect are the following: i) Ownership of property. Some economists believe that owning a property is a very good basis for measuring solvency. This idea is rightly rejected on the grounds that if a person earns a large income but does not spend on the purchase of any property, he will then avoid taxation. On the other hand, another person who receives income acquires property and will be subject to taxation. Is it not strange and unjustified that a person who receives a large income is exempt from taxes, and another person with a small income is heavily levied; (ii) Cost-based tax: Some economists also argue that the capability or ability to pay tax should be measured by the costs incurred by a person. The more expenses, the higher the tax should be, and vice versa. The point of view is unreasonable and unfair in all respects. A person who has a large family for support must spend more than a person who has a small family. If we make expenses. As a solvency test, a former person who is already burdened with a large number of dependents will have to “pay more taxes than the latter with a small family. So it is unjustified. iii) Income as a basis. Most economists believe that income should be the basis for measuring a person’s financial condition (Saez 2011). This seems very fair, and simply if the income of one person is more than another, then the first should be asked to pay more for state support than the second. That is why in the modern tax system of the many countries are considered the best test for measuring the solvency of a person. However, the proportional principle satisfies the idea of justice in taxation some classical economists proposed the principle of proportionality in taxation (Mill 2006). These economists were of the opinion that if taxes were levied in proportion to the incomes of individuals, this would bring equal sacrifices. The modern economists, however, differ with this view. They assert that when income increases, the marginal utility of income decreases. The equality of sacrifice can only be achieved if the persons with high incomes are taxed at higher rates and those with low income at lower rates. They favour progressive system of taxation, in all modern tax systems.

Regrettably, there are a few signs in the attempts to decrease the tax burden inequality and to promote the continuity of Lithuania’s fiscal policy (Table 2,3,4). Moreover, it could be stated that insufficient financial education led to the nowadays situation. A similar evaluation about Lithuania’s fiscal policy efficiency and the fiscal policy sustainability could be applied. It is not possible to neglect that wealth taxes are medieval taxes when nobody even had thoughts about value added tax, about excise duties, about profit tax and even about income tax. Therefore an inequality in the tax burden increases. For better taxation in post emerging markets the positive tax administration also counts. New IT systems used in tax administration increasingly include tools such as advanced risk management mechanisms to identify potential missing revenues. Efforts to reduce inconsistencies in the coastal zone by increasing the efficiency of information exchange between tax authorities have gained a new impulse. Tax refugees, often rich, have fewer places to hide their money. These initiatives also support the international efforts of the IMF, OECD, UN and World Bank to help low-income countries to develop more efficient tax systems (Saez, et al. 2011). Formally about 30 percent of the GDP is redistributed in Lithuania through taxes when the EU average is 38 percent (Table 1). According to the authors calculations about 34 percent of the GDP is redistributed in Lithuania (Table 6 and 7). Although in Lithuania there are many different taxes, only a few huge taxes bring to the government the greatest profit. About 40 percent of the Lithuanian national budget is collected as value added tax. The tax rate is 21 percent and obviously it is added to the price. Twenty percent of the national budget is collected in personal income tax. This is deceptive, however, since most of the income tax goes to other budgets (municipal and social), some of them are even formally considered to be other taxes. The real burden is great - every employer must pay the state almost as much money as it pays to employees (that is, 40-50 percent of actual income tax). Although the nominally fixed income tax rate is actually progressive, since the non-taxable part gradually decreases as wages increase. Corporate income tax (known as profit tax) is 15 percent, with an additional 15 percent on most dividends paid to individuals (which means a 30 percent effective tax rate on dividends). Nevertheless revenues from the profit tax create only eight percent of the national budget proceeds. Excise duties constitute the third largest income for the state (about twenty percent). Fuel, electricity, tobacco and alcohol are subject to additional excise tax. For this reason, car fuel in Lithuania is almost twice as expensive as in the countries where are no excise duties (Tables 8,9,10). Real estate tax is paid only by companies and property owners, which is considered expensive (from 0.3 to 3 percent of the market price per year). Land tax is paid by each owner (from 0.01 to 4 percent).
Municipalities determine the actual percentage and the market value of the property. Moreover, the official calculations of the national tax burden announced in the Eurostat publications (apparently based on data from the Lithuanian Department of Statistics) probably are decreased. According to authors calculations the average tax to GDP ratio could be 35 percent that is quite close to the EU average 38 percent (Table 6). The formal tax burden as the GDP-Tax ratio is about thirty percent from Lithuania’s gross domestic product in the last years (see Table 1). Besides, the average tax burden for a private person could be defined as the Salary-Tax Ratio is usually more than fifty five percent from the monthly average salary (Table 9,10,11).

**Table 1.** Lithuania’s Tax to GDP Ratio* (percent)

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<tbody>
<tr>
<td>Tax to GDP Ratio</td>
<td>30.1</td>
<td>30.6</td>
<td>28.7</td>
<td>27.6</td>
<td>27.3</td>
<td>27.3</td>
<td>27.9</td>
<td>29.4</td>
<td>30.1</td>
<td>29.9</td>
<td>30.1</td>
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*Some components of Social insurance funds probably are not included in taxes.

*Source: European Commission, ECB

**Table 2.** Lithuania’s National Budget (mln Eur)

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<tr>
<td>National Budget (mln.Eur)</td>
<td>7696</td>
<td>7425</td>
<td>7588</td>
<td>7640</td>
<td>7459</td>
<td>7656</td>
<td>7829</td>
<td>8331</td>
<td>8686</td>
<td>9046</td>
<td>9560</td>
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*Source: Lithuania’s Department of Statistics, 2009-2019

**Table 3.** Lithuania Social Insurance Fund’s Budget - SoDra (mln Eur)

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<tbody>
<tr>
<td>SoDra Budget (mln.Eur)</td>
<td>3248</td>
<td>3289</td>
<td>3037</td>
<td>3217</td>
<td>3363</td>
<td>3252</td>
<td>3059</td>
<td>3285</td>
<td>3439</td>
<td>3793</td>
<td>4198</td>
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</tbody>
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*Source: Lithuania SoDra Statistics, 2009-2019

**Table 4.** Lithuania’s Compulsory Health Insurance Funds (CHIF) budget (mln Eur)

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</tr>
</thead>
<tbody>
<tr>
<td>CHIF Budget (mln.Eur)</td>
<td>1270</td>
<td>1270</td>
<td>1160</td>
<td>1207</td>
<td>1154</td>
<td>1193</td>
<td>1282</td>
<td>1382</td>
<td>1440</td>
<td>1574</td>
<td>1764</td>
</tr>
</tbody>
</table>

*Source: Lithuania’s Department of Statistics, 2009-2019

**Table 5.** Lithuania’s Annual GDP 2008-2018 (mln Eur)

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<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Lithuania’s GDP (mln.Eur)</td>
<td>32 696</td>
<td>26 935</td>
<td>28 028</td>
<td>31 275</td>
<td>33 348</td>
<td>34 959</td>
<td>36 568</td>
<td>37 433</td>
<td>38 849</td>
<td>42 190</td>
<td>45 113</td>
</tr>
</tbody>
</table>

*Source: Lithuania’s Department of Statistics, 2009-2019

778
Table 6. Lithuania’s Tax to GDP Ratio with Included Social Insurance and Compulsory Health Insurance Funds (percent)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Tax to GDP Ratio</td>
<td>37.3</td>
<td>44.5</td>
<td>42.0</td>
<td>38.6</td>
<td>35.9</td>
<td>34.6</td>
<td>33.3</td>
<td>34.7</td>
<td>34.9</td>
<td>34.2</td>
<td>34.4</td>
</tr>
</tbody>
</table>

Source: Based on the author’s calculation

Table 7. Lithuania’s GDP per Capita in Actual Prices (Eur)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>10223</td>
<td>8515</td>
<td>9 049</td>
<td>10 328</td>
<td>11 161</td>
<td>11 819</td>
<td>12 470</td>
<td>12 886</td>
<td>13 545</td>
<td>14 916</td>
<td>16 103</td>
</tr>
</tbody>
</table>

Source: Lithuania’s Department of Statistics, 2009-2019

Table 8. Lithuania’s Average Monthly Salary Before Taxes Brutto (Eur)

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Monthly Salary (Eur)</td>
<td>672</td>
<td>614</td>
<td>614</td>
<td>630</td>
<td>646</td>
<td>678</td>
<td>715</td>
<td>757</td>
<td>823</td>
<td>885</td>
<td>970</td>
</tr>
</tbody>
</table>

Source: Lithuania’s Department of Statistics, 2009-2019

Table 9. Lithuania’s Average Monthly Salary After Taxes (Netto) without Social Insurance Tax paid by Employer (Eur)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Monthly Salary (Eur)</td>
<td>514</td>
<td>477</td>
<td>478</td>
<td>489</td>
<td>501</td>
<td>524</td>
<td>554</td>
<td>589</td>
<td>637</td>
<td>691</td>
<td>752</td>
</tr>
</tbody>
</table>

Source: Lithuania’s Department of Statistics, 2009-2019

Table 10. Lithuania’s Average Monthly Salary Tax Burden Including Social Insurance Tax paid by Employer (Eur)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Monthly Employee and Employer Tax Burden (Eur)</td>
<td>386</td>
<td>346</td>
<td>345</td>
<td>355</td>
<td>365</td>
<td>385</td>
<td>404</td>
<td>425</td>
<td>466</td>
<td>495</td>
<td>548</td>
</tr>
</tbody>
</table>

Source: Author’s Calculation

Table 11. Lithuania’s Average Monthly Employee Income-Tax Ratio including Social Insurance Tax paid by Employer (percent)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Monthly Average Salary-Tax Ratio (percent)</td>
<td>57.4</td>
<td>56.4</td>
<td>56.2</td>
<td>56.4</td>
<td>56.5</td>
<td>56.8</td>
<td>56.5</td>
<td>56.1</td>
<td>56.6</td>
<td>55.9</td>
<td>56.5</td>
</tr>
</tbody>
</table>

Source: Author’s Calculation

Presented data clearly testifies to the inequality of the general tax burden- that is closer to the legal persons and businesses - and private persons tax burden on their salary income. Obviously it demonstrates unequal taxation of income from capital and labor income. The injustice probably produces some tension and can produce even more.
4. Conclusions

The fast growth of emerging economies in the last decades has brought hundreds of millions of people out of absolute poverty and reduced income inequality around the world as a whole. Concurrently, before the financial and economic crisis of the previous decade, the most economies had high growth rates. However, in the post emerging economies, not in all regions, citizens have benefited equally in these years of the growth. In contrast, income distribution tends to become more unequal. Nonetheless taxation system did not help to decrease these inequalities in many cases. It is obvious that there is some need for a wider financial education and better understanding of public and private finance risks in all levels of administration managers. Eventually a demand for advanced financial education with the idea on transparency in budget and taxation could be evident. The clearness of public spending and procurement and budgetary policy are essential issues for each country. The formal Lithuania’s tax burden also known as the GDP-Tax ratio is about thirty percent from the gross domestic product. However, the average tax burden for a private person could be defined as the income from salary and the taxes paid ratio. That is usually more than fifty percent from the average salary. This difference indicates an inequality of the general tax burden (GDP-tax ratio) - that is closer to the legal persons and businesses - and private persons tax burden (salary-tax ratio) on their salary income. Evidently it demonstrates an unequal taxation on the income from capital and the labor income. Moreover it demonstrates a possible inequality of the tax burden for businesses and for private individuals. Obviously it demonstrates the unequal taxation on income from capital and income linked to labor relations. This inequality creates some tension and can create even more. Therefore the process of financial education and financial literacy has existent importance to the general civic education for improving the financial understanding and skills in the public sector. Very often, the best citizen participation in the governance of their country is the payment of taxes that are intended for the most important state functions. One way to determine the country’s aggregated or consolidated taxes paid by natural and legal persons could be the tax burden rate. Moreover the public finance data often reflects the country’s approach to the calculation of the tax burden in the former emerging markets government institutions. Therefore, understanding of the real tax burden should encourage citizen’s insistence for the clarity of public attendants in their operations and taxation equality improving processes. That also could be an outstanding financial literacy method for the country’s sustainability with greater involvement in fiscal politics movements. Tax policy can play an important role in reducing inequality in the distribution of income after tax. In addition, tax policies are crucial for increasing revenues to finance government spending on transfers, health care, and education, which tend to favor low-income households, as well as growth-enhancing infrastructure that can also improve social justice.

References:


Senan, N.A.M. 2018. Developmental review program impact on enhancing the effectiveness of “Teaching and Learning” in accounting


Tax Burden for Typical Workers in the EU. 2014. New Direction - The Foundation for European Reform, Bruxelles, Belgium


The Case for Financial Literacy in Developing Countries. (2014). The International Bank for Reconstruction and Development, Washington, DC

Abstract. The scientific work is devoted to the issue of sustainable development of various corporate structures in order to increase their level of security through the use of consolidation strategies. The econometric modeling of the use of the strategic approach in the corporate consolidation of business structures has been carried out; the indicators of corporate governance estimate on the pre-integration phase have been proposed. The model of corporatization of corporate structures and the growth of the level of corporate security within the framework of consolidation strategies have been developed based on the emergent effect of the new structure. The methodical approach has been formed in order to optimize the choice of business structures that claim to become part of the consolidated system.

Keywords: corporation; corporate security; level of corporate governance; consolidation strategy; integration; strategic management; investor; profitability index (PI)


JEL Classifications: M16, P11

1. Introduction

The core of strategic management, which must provide long-term sustainable development and proper organizational and economic security within the corporate structure, is the process of developing and implementing a common strategy. The modern corporate level is carried out in conditions of increased instability and uncertainty of factors of the environment. This leads to imbalance, which manifests itself, above all, in the failure of the board of the company of its functions and disproportions in the distribution of power. It is the set of reasons that determines the importance of strategic management of the development and transformation of corporate structures under the influence of changes in qualitative and quantitative characteristics of the factors of the external international and national environment. It also stipulates the use of a practical tool for strategic management in the “strategy-corporate security” system, which is presented in detail in such research papers (Acur, and Englyst, 2006; Collis, and Cynthia, 2005; Cravens, and Percy, 2009; Dodgson, 2018; Hitt, et al. 2007; Hu, and Izumida, 2008; Rothaermel, 2015; Ardalan et al., 2017; Kordík and Kurilovská, 2019; Kazansky and Andrassy, 2019; Hasanudin et al., 2019).

We can assert that the strategy developed for the future period combines the strategies of integrated and diversified growth. The development of domains, which are close to the main products, can be formulated as the directions of diversification. The presented aspects of application of the strategic approach have formed the methodological basis of development processes and security of functioning of corporate structures on the basis of consolidation strategies.
2. Methodology of research

Let us make modeling of the application of the strategic approach in corporate consolidation. We introduce a number of indicators in order to assess the quality of corporate governance. In order to assess the general set of entrepreneurial structures in consolidation, we use the half-sum of the smallest and largest values of this set:

$$X_{cep} = 0.5 \times (X_1 + X_n)$$  \hspace{1cm} (1)

– The arithmetic mean of all observations:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$  \hspace{1cm} (2)

In order to decide which estimate is more acceptable, it is necessary to determine the properties of statistical estimates. The most important ones are:

– Bias of an estimator.

An estimate \(a_n(x_1, \ldots, x_n)\) is unbiased if its mathematical expectation is equal to the actual value of the parameter:

$$M(a_n = a_n(x_1, \ldots, x_n)) = a$$  \hspace{1cm} (3)

– Capability.

Let us assume that \(a_n(x_1, \ldots, x_n)\). The estimate of the parameter \(a \) is called capable, if the probability of a significant deviation from \(a_n\) \(a\) tends to zero when \(n \to \infty\), then for any \(E > 0\), the condition is fulfilled:

$$P\left|a_n - a\right| < E \to 1, \text{ when } n \to \infty,$$  \hspace{1cm} (4)

– Efficiency.

The unbiased estimate \(a_n(x_1, \ldots, x_n)\) is called effective if it has the smallest dispersion among the unbiased estimates of the parameter \(a\) by a sample of volume \(n\).

The arithmetic mean found in the sample is usually considered as an estimate of value \(a\):

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$  \hspace{1cm} (5)

– Sample mean.

From the law of large numbers it turns out that such an estimate is capable, that is, the value \(\bar{x}_n\) tends to \(a\) when \(n \to \infty\).

Let us find the mathematical expectation of the sample mean:
\[
M(\bar{X}_n) = M\left(\frac{1}{n} \sum_{i=1}^{n} X_i\right) = \frac{1}{n} \sum_{i=1}^{n} M(X_i) = \frac{1}{n}na = a
\] (6)

It coincides with the value of \(a\). This means that the sample mean is an unbiased estimate of the mathematical expectation. In the case of a normal distribution of the general set, the value of \(X_n\) is also an effective estimate.

3. **Assessment of the level of corporate governance while ensuring corporate security**

The overall rating depends on the most important criteria that affect the level of corporate governance, namely (Bradley, and Sundaram, (2006; Kiymaz, and Baker, 2008; Douma, et al. 2006; Drobyazko S., 2018a,b):

1. The corporation’s readiness to adhere to the principles of corporate behavior;
2. Structure of corporate property;
3. General Meeting of Shareholders;
4. Board of Directors of the Corporation (Supervisory Board);
5. Executive authority;
6. Corporate secretary;
7. Significant corporate actions;
8. Disclosure by corporation;
9. Corporate Shareholder Register;
10. Control over financial and economic activity of the corporation;
11. Dividend policy of the corporation;
12. Corporate Conflict Resolution.

The estimate of each of the 12 criteria is based on open and accessible information, fixed:

– in the annual report of the corporation;
– in the quarterly report of issuers of securities;
– in reports on significant facts (events) affecting financially, namely the economic activity of the issuer of issuance securities;
– in the news feed of news agencies;
– on the official website of the corporation;
– in the information provided by the corporation;
– in the information of the general meeting of shareholders; etc.

The methodology for assessing the level of corporate governance makes it possible to get a quantitative assessment separately for each of the 12 indicators and the overall corporate governance as a whole. Each indicator consists of a set of criteria characterizing the company’s activities. The assessment is based on the opinion of the respondent, which is expressed in the determination of the weighting factor (from 0 to 1) for each criterion (Vachon, 2007).

When calculating the level of corporate governance, the following factors are used:

– \(i\) – ordinal index of the indicator, \(i = 1,2,3... 12\);
– \(j\) – ordinal index of the criterion in the indicator, \(j = 1,2,3...12\);
– \(A_{ij}\) – the coefficient of compliance of the existing corporate governance criterion \(j\) of the indicator \(i\). Where 0 means the criterion is not implemented in the corporation, 1 means the criterion is fully implemented in the corporation;
– \(B_{ij}\) – the weight of the indicator \(i\) in criterion \(j\), according to the respondent. Where 0 means the criterion is not implemented in the corporation, 1 means the criterion is fully implemented in the corporation;
– \(C_{ij}\) – the weight of the indicator \(i\) in criterion \(j\), calculated on the basis of the data of the activities of the companies;
– \(D_{ij}\) – coefficient of compliance with the criterion \(j\) for assessing the level of corporate governance of the company under study by the calculation criterion;
- \( E_{ij} \) – coefficient of compliance with the criterion \( j \) for assessing the level of corporate governance of the company under study according to the respondent;
- \( N_{ij} \) – the value of the criterion \( j \) for assessing the level of corporate governance determined on the basis of data of the companies;
- \( M_{ij} \) – the value of the criterion \( j \) for assessing the level of corporate governance determined according to the respondent;
- \( G_{ij} \) – the value of the level of the criterion \( j \), determined on the basis of the data of the activities of the companies;
- \( H_{ij} \) – the value of the level of the criterion \( j \), determined according to the respondent’s data;
- \( K \) – the level of corporate governance in the corporation, determined on the basis of business activity data;
- \( L \) – the level of corporate governance in the corporation, determined according to the respondent.

The final assessment of the level of corporate governance is expressed in percentages (100% is the highest level of corporate governance, 0% is the lowest level of corporate governance) and is formed by summing up the final results for each of the 12 indicators (Table 1). An assessment is made by the Board of Directors of the corporate structure, in order to determine the efficiency of the system of corporate relations.

**Table 1.** Assessment of the level of corporate governance in ensuring corporate security

<table>
<thead>
<tr>
<th># of indicator ( ij )</th>
<th>Criteria for assessing the level of corporate governance</th>
<th>Coefficient from 0 to 1, ( A_{ij} )</th>
<th>Weight of the criterion according to the respondent from 0% to 100%, ( B_{ij} )</th>
<th>Weight criterion ( C_{ij} )</th>
<th>Total, ( D_{ij} = A_{ij} \times B_{ij} ) (according to the respondent)</th>
<th>Total, ( E_{ij} = \sum D_{ij} )</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>


Each of the indicators has its weight as a result of the analysis of violations of the law and the code of corporate behavior in the field of corporate structure (Petrishcheva, 2011). Let us calculate the quality of corporate governance on an example and according to the Pharmcare company of the pharmaceutical industry (Table 2).

**Table 2.** Corporate governance indicators of Pharmcare Company for the period of 2013-2017.

<table>
<thead>
<tr>
<th># of indicator</th>
<th>Corporate governance indicators</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The corporation’s readiness to adhere to the principles of corporate behavior</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Structure of corporate property</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>General Meeting of Shareholders</td>
<td>17</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Board of Directors of the Corporation</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>Executive authority</td>
<td>9</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Corporate secretary</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Significant corporate actions</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>Disclosure by corporation</td>
<td>13</td>
<td>12</td>
<td>13</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>Corporate Shareholder Register</td>
<td>12</td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Control over financial and economic activity of the corporation</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Dividend policy of the corporation</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>Corporate Conflict Resolution</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Statistics on M&A deals, 2018
The final result of the significance of the indicator assessment of the level of corporate governance for Pharmcare Corporation is calculated as the arithmetic mean of the values of corporate governance indicators based on the results of a specified time period (Table 3).

Table 3. The final value of the corporate governance indicator

<table>
<thead>
<tr>
<th># of indicator</th>
<th>Corporate governance indicators</th>
<th>Significance of the indicator and the level of corporate governance, $C_i%$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The corporation’s readiness to adhere to the principles of corporate behavior</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Structure of corporate property</td>
<td>4,2</td>
</tr>
<tr>
<td>3</td>
<td>General Meeting of Shareholders</td>
<td>14,4</td>
</tr>
<tr>
<td>4</td>
<td>Board of Directors of the Corporation</td>
<td>10,6</td>
</tr>
<tr>
<td>5</td>
<td>Executive authority</td>
<td>9,8</td>
</tr>
<tr>
<td>6</td>
<td>Corporate secretary</td>
<td>7,6</td>
</tr>
<tr>
<td>7</td>
<td>Significant corporate actions</td>
<td>7,2</td>
</tr>
<tr>
<td>8</td>
<td>Disclosure by corporation</td>
<td>12,2</td>
</tr>
<tr>
<td>9</td>
<td>Corporate Shareholder Register</td>
<td>14,4</td>
</tr>
<tr>
<td>10</td>
<td>Control over financial and economic activity of the corporation</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Dividend policy of the corporation</td>
<td>5,8</td>
</tr>
<tr>
<td>12</td>
<td>Corporate Conflict Resolution</td>
<td>7,8</td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Statistics on M&A deals, 2018, calculation authors

Similarly, the weightings of the criteria for each of the indicators are determined ($C_i\%$).

In order to determine the level of corporate governance, respondents need to assess how corporate governance of the corporation concerned meets the criteria set out in column 2 of Table 1. In column 3, the value of conformity ($A_{ij}$) from 0 (criterion is not executed) to 1 (criterion is executed completely) is fixed.

The method allows respondents to specify their own weighting factors in column 4 of the table ($B_{ij}$) based on its criteria, taking into account the specifics of a particular company (Alam, et al. 2014; Makedon, and Korneyev, 2014).

The level of corporate governance is calculated in the following order:
1. The respondent evaluates how much, in his opinion, the criterion for assessing the level of corporate governance, recorded in column 2 of the table is performed by the corporation. Score ($A_{ij}$) from 0 (criterion is not executed) to 1 (criterion is executed completely) is fixed in the corresponding cell.
2. The respondent needs to determine which weight of the criteria will be used when calculating the level of corporate governance:
   – methodology proposed by the authors ($C_i\%$);
   – methodology proposed by the respondent taking into account the specifics of a particular company. In this case, one must specify the weight of the criteria ($B_{ij}$). By default, the calculated weights are as component weights $B_{ij}$. They can also be changed at the request of the respondent (Thompson, 2010).
3. Subsequent actions are performed by the program automatically, namely:
   a. The calculation is made of how much the level of corporate governance meets a specific criterion (depending on the weights used) (formulas (6–7)):

\[
D_{ij} = A_{ij} C_{ij} \quad i=1,2,... \quad j=1,2...12
\] (6)
b. The calculation is made of how much the level of corporate governance meets a specific component (depending on the weights used) (formulas (8–9):

\[ G_i = \sum \frac{D_{ij} \times C_j}{100}, \quad j=1,2...12 \]  

\[ H_i = \sum \frac{E_{ij} \times B_j}{100}, \quad j=1,2...12 \]  

(8)  

(9)  

c. The total level of corporate governance is calculated (depending on the weights used) (formulas (10–11):

\[ K_i = \sum G_i, \quad i=1,2...12 \]  

\[ K_2 = \sum H_i, \quad i=1,2...12 \]  

(10)  

(11)  

4. The program generates a summary table (Table 4) that contains the control and final value for each of the 12 indicators of corporate governance, as well as the estimated total value of the level of corporate governance for a specific corporate structure.

**Table 4. Assessment of the level of corporate governance in ensuring corporate security**

<table>
<thead>
<tr>
<th>Criteria for assessing the level of corporate governance</th>
<th>Control value of corporate governance indicator</th>
<th>Control value of the corporate governance indicator, taking into account the weights of the respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculated value of the corporate governance indicator</td>
<td>Calculated value of the corporate governance indicator, taking into account the weights of the respondent</td>
</tr>
<tr>
<td>The corporation’s readiness to adhere to the principles of corporate behavior</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Structure of corporate property</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>General Meeting of Shareholders</td>
<td>14.4</td>
<td>14.4</td>
</tr>
<tr>
<td>Board of Directors of the Corporation</td>
<td>10.6</td>
<td>10.6</td>
</tr>
<tr>
<td>Executive authority</td>
<td>9.8</td>
<td>9.8</td>
</tr>
<tr>
<td>Corporate secretary of the corporation</td>
<td>7.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Significant corporate actions</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Disclosure by corporation</td>
<td>12.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Corporate Shareholder Register</td>
<td>14.4</td>
<td>14.4</td>
</tr>
<tr>
<td>Control over financial and economic activity of the corporation</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Dividend policy of the corporation</td>
<td>5.8</td>
<td>5.8</td>
</tr>
</tbody>
</table>
Corporate Conflict Resolution

<table>
<thead>
<tr>
<th></th>
<th>7,8</th>
<th>7,8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated value of the</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>corporate governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>indicator, ( K_1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Calculated value of the</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>corporate governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>indicator, taking into</td>
<td></td>
<td></td>
</tr>
<tr>
<td>account the weights of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>respondent, ( K_2 )</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Designed by the authors

The table shows clearly how the level of the final value of a specific indicator of the level of corporate governance differs from the control one. The value of the calculated level of corporate governance characterizes the quality of governance in the corporate structure as a whole.

4. Model of corporatization of corporate structures within the framework of consolidation strategies

The main sources of the effect of using consolidation strategies in order to ensure sustainable development are to reduce production costs and to increase profitable parts.

Reduced production costs are provided at the expense of (Bruner, R. F. (2004; Creswell, 2008):

- the release of non-core and unloaded capacities, the realization of released property assets and their exclusion beyond the tax base;
- the release of functionally duplicate workers;
- the use of privileges and discounts due to demand for credit resources, insurance services, used raw materials, materials, completing products, and so on;
- the use of schemes of intracooperative deliveries at exclusive prices and price agreements;
- the use of the consolidated corporate balance in order to reduce tax deductions.

An increase in the profit part is provided by:

- obtaining new incomes (from the sale of the released property or leasing it);
- elimination of the effect of competitive price reduction, including according to the dumping scheme;
- increase of investment attractiveness of enterprises for portfolio investors;
- increase of attractiveness for customers due to increased reliability of supply and commodity products and increase sales volumes.

Eventually, corporatization companies acquire new individual properties, called “immanent” effect (\( E_{imm} \)) and the overall systemic “emergent” effect (\( E_{em} \)).

Immanent effect arises under the influence of a set of factors determined by the measures taken at each of the enterprises in the process of creating a corporation (Zaremba, and Plotnicki, 2016; Hamza, et. al. 2016). These factors can be classified in three groups:

1. factors of increasing the technical level of production and products;
2. factors of improving the organization of production, labor, management improvement;
3. intracorporate factors.

The emergent effect is characterized by the emergence of the newly created corporate structure of economic integrity inherent in companies that make it up.

It should be noted that the term “emergent effect” corresponds to the term, which is more often used, namely the “synergy effect” (from Greek synergos which means acting together). The difference in the effect of synergy from the emergent one is that it is characterized by sharper deviations of the resulting value of the effect in the
positive or negative side due to significant differences in the potentials of corporatized enterprises (Hietala, et. al. (2003).

An assessment of the economic effect of emergence or synergy ($E_s$) when applying a consolidation strategy can be presented as:

$$E_s = E_{enlarg.} + E_{devel.} + E_{gd.}$$ (12)

where:
- $E_{enlarg.}$ is the effect of enlarging the scale of industrial activity and the unification of industrial capital;
- $E_{devel.}$ is effect of corporation development;
- $E_{gd.}$ is the effect of the combined influence of factors of growth and development on vertical integration.

The values of the constituents of the formula (12) can be represented as:

$$E_{enlarg.} = E_{scale} + E_{ic.}$$ (13)

where:
- $E_{scale}$ – the effect of enlarging the scale of industrial activity of corporation;
- $E_{ic.}$ – the effect of the merger of industrial capital of the corporation.

The value of $E_{devel.}$ of the formula (12) can be represented as:

$$E_{devel.} = E_{str.} + E_{org.} + E_{gov.}$$ (14)

$$E_{str.} = E_{div.} + E_{per.}$$ (15)

$$E_{org.} = E_{coop.} + E_{sp.}$$ (16)

$$E_{gov.} = E_{m} + E_{cs.} + E_{cor.}$$ (17)

The value of $E_{gd.}$ of the formula (12) can be represented as:

$$E_{gd.} = E_{vi.} + E_{bic}$$ (18)

Let us explain the content of component formulas (15–18):
- $E_{str.}$ is the strategic effect of corporation activity;
- $E_{org.}$ is the effect of improving the organizational structure;
- $E_{gov.}$ is the effect of improving the corporate governance system;
- $E_{div.}$ is the effect of diversifying the activities of the corporation;
- $E_{per.}$ is the effect of peripheral development: branch network, dealer network;
- $E_{coop.}$ is the effect of the development of internal cooperation of the corporation;
- $E_{sp.}$ is the effect of specialization within the corporation;
- $E_{m}$ is the effect of the functioning of the general management system;
- $E_{cs.}$ is the effect of corporate consolidation reporting;
- $E_{cor.}$ is the effect of the coordinated actions of the corporation in the industry and in the market;
- $E_{vi.}$ is the effect of vertical integration;
- $E_{bic}$ is the effect of combining bank and industrial capital.

Measures for each of the listed factors of an emergent (synergistic) effect make it possible to:
- coordinate supply and provide savings on taxes through integration;
- minimize transaction costs;
- diversify production;
– improve specialization of production;
– restructure production with market orientation;
– form new relations of ownership with their influence on the management and organization of activities;
– solve the problem of asymmetry of information within the corporation over non-payment;
– control financial flows through the banks in the corporation;
– reduce the cost of borrowed capital within the corporation;
– increase the contractual discipline within the corporation by increasing the confidence in mutual capital participation (guarantee of contractual obligations);

It is possible to determine the total emergent (synergetic) effect by the formula (Hamza, et. al. 2016):

\[ E_s = PN + E_e + E_n + E_d \]  

where:

– \( PN \) is the estimated additional income from strategic measures;
– \( E_e \) – saving current production and non-production costs;
– \( E_n \) – saving tax payments;
– \( E_d \) – other types of savings.

Consolidated synergistic strategy effect can be calculated using discounting effects each year by the formula:

\[ C = C_0 \times (1+r)^n \]  

where:

– \( r \) is an interest rate;
– \( n \) is a number of years since the merger of companies.

It is necessary to make a comprehensive assessment of various integration options based on qualitative (content) and quantitative (formalized) characteristics of the project and all its participants in the basis of decisions on the economic feasibility of the creation of corporate consolidated systems.

The organizational project for a corporation is considered justified, and integration is appropriate if the main groups of criteria meet the criteria for assessing the benefits of integration (Bjuggren, et. al. 2007):

– criteria of justification and expediency of creation of the corporate integrated system;
– criteria of efficiency and stability of the corporation;

In addition, when comparing different projects and choosing the best one, they should also be analyzed using the following indicators:

– net present value (\( NPV \));
– profitability index (\( PI \));
– internal rate of return (\( IRR \));
– payback period of the project.

Net present value (\( NPV \)) is defined as the sum of current effects for the entire estimated period, is given to the initial step, or as an overrun of integral results over integral costs. The value of \( NPV \) at the constant rate of discount (\( E \)) is calculated by the formula:

\[ NPV = \sum_{t=0}^{T} \left( R_t - B_t \right) \times \frac{1}{(1+E)^t} \]  

where:
\( R_t \) is the results achieved at the \( t \)-th step of the calculation;
\( B_t \) is costs incurred at the same step;
\( T \) is a calculation horizon (equal to the number of step of calculation, at which the object is being evaluated);
\( E_t = (R_t - B_t) \) is the effect achieved at the \( t \)-th step of the calculation (Oyerogba, et. al. 2014).

If \( NPV \) of the corporatization program at a given rate of discount is positive, it may be of interest to the investor. The greater \( NPV \), the more effective the project is. If the program is implemented with a negative \( NPV \), the investor will suffer losses, that is, the program is ineffective. In practice, for the purpose of defining \( NPV \), a modified formula is often used, in which capital investments are excluded from \( PN \). In this case, \( PN' \) denotes the costs of the \( t \)-th step of calculation, provided that capital investment does not include them. Then the value of \( NPV \) is determined by the formula

\[
\sum_{t=0}^{T} \left( R_t - B_t \right) \times \frac{1}{(1+E)^t} - K
\]

where:
\( K \) is an amount of discounted capital investments;
\( B_t \) is the costs of the \( t \)-th step of calculation, provided that capital investment does not include them.

The modified indicator of \( NPV \) expresses the difference between the sum of the resulted effects and the time brought to the same time by the amount of capital investments \( (K) \).

The profitability index \( (PI) \) of the program is defined as the ratio of the sum of the reduced effects to the value of capital investments by the formula:

\[
PI = \frac{1}{K} \sum_{t=0}^{T} \left( R_t - B_t \right) \times \frac{1}{(1+E)^t}
\]

The profitability index is closely related to \( NPV \). It is constructed from the same elements and its value is related to the value of \( NPV \): if \( NPV \) is positive, then \( PI > 1 \) and vice versa. If \( PI > 1 \), the production scheme is effective, if \( PI < 1 \) it is ineffective.

The internal rate of return \( (IRR) \) of the corporatization program is the norm of discount \( (E) \), in which the value of the reduced effects is equal to the reduced capital investment, ie \( (IRR) \) is the solution of the equation (24):

\[
IRR = \frac{\sum_{t=0}^{T} \frac{R_t - B_t - K}{(1+E)^t}}{K}
\]

\( IRR \) of the corporatization program defines the upper limit for the investor’s rate of return on capital invested in this project (Oyerogba, et. al. 2014).

In the case when the investor requires a rate of return on capital of less than or equal to \( IRR \), investment in this program is justified. Otherwise, investments in this program are inappropriate. In practice, \( IRR \) is often determined analytically, as the threshold value of the program’s profitability, which ensures zero \( NPV \) calculated for the lifetime of the investment. This is done by the selection method, that is, by overcoming different thresholds of profitability. The project is considered cost-effective at the value of \( IRR \) not lower than the initial threshold value. It is believed that the difference in objectives and conditions of the implementation of the corporatization program also affects the choice of the minimum level of return on capital investments (Gupta, P. G. (2012); Drobyazko S. (2018)). The payback period is a minimum period of time (from the beginning of the program), after which the integral effect remains not negative. The payback period should be determined using the discount method.
As already noted earlier, the task of selecting enterprises in the created integrated system is two-dimensional and should be solved in two stages. Therefore, at the second stage, there is the problem of selecting partners from a set of competitive companies. The basis for such selection should be taken as much as possible, the resulting effect during their operation. This determines the need to select a criterion for such a set (Makedon, 2012).

Based on these recommendations, according to the optimization criterion considered by us, it is possible to adopt a discounted income indicator, and the decision method is the method of ranking the initial set of enterprises. In order to solve this problem, we first determine the efficiency of each unit of investment (conventional currency) by the formula:

\[
\frac{E_i}{U_i}
\]

where:

– \( E_i \) is the efficiency of the \( i \)-th particular business structure consisting of a consolidated system;

– \( U_i \) is a necessary investment in a specific \( i \)-th enterprise structure with its functioning in the consolidated system.

Or vice versa, we determine the relationship \( \frac{U_i}{E_i} \). After that, we form the following series:

\[
\frac{E_1}{U_1} \geq \frac{E_2}{U_2} \geq \frac{E_3}{U_3} \geq \ldots \geq \frac{E_i}{U_i} \geq \ldots \geq \frac{E_n}{U_n}
\]

Or inversed set:

\[
\frac{U_1}{E_1} \leq \frac{U_2}{E_2} \leq \frac{U_3}{E_3} \leq \ldots \leq \frac{U_i}{E_i} \leq \ldots \leq \frac{U_n}{E_n}
\]

Then we create series of companies; starting with the first, as long as the sum of required investment for all companies will not equal (or approximately equal) to the financial resources of the corporation that can be used to create an integrated series. As a result, we receive series of companies, whose functioning provides the maximum economic effect (Tvaronavičienė, 2018).

Consequently, a formed set of business structures should satisfy the following two inequalities:

\[
\begin{align*}
\left\{ \frac{E_1}{U_1} & \geq \frac{E_2}{U_2} \geq \frac{E_3}{U_3} \geq \ldots \geq \frac{E_i}{U_i} \geq \ldots \geq \frac{E_n}{U_n} \\
\sum_{i=1}^{k} U_i & \leq U_c
\end{align*}
\]

Or inequalities:
\[
\left\{ \begin{array}{c}
\frac{U_1}{E_1} \leq \frac{U_2}{E_2} \leq \frac{U_3}{E_3} \leq \ldots \leq \frac{U_i}{E_i} \leq \ldots \leq \frac{U_n}{E_n} \\
\sum_{i=1}^{n} U_i \leq U_c
\end{array} \right. 
\]  
\text{(29)}

where:

- \( U_c \) is a total financial resources of the corporation for the consolidation project;
- \( K \) is a number of entrepreneurial structures that are part of the group.

5. Rationalization of a set of business structures for inclusion in a united corporate structure

The company was supposed to form an optimal set of business entities that claim to be part of the consolidated system that was being built, provided that the total financial resources that the company has to consolidate is $125,000 million. The rest of the initial data for calculation is shown in Table 5.

Table 5. Economic indicators of entrepreneurial structures that are applying for inclusion in a consolidation association

<table>
<thead>
<tr>
<th>Candidate number</th>
<th>Investment need, million dollars USA</th>
<th>Net discounted income, million dollars USA</th>
<th>Need to invest $1 US of net discounted income</th>
<th>Company rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4000</td>
<td>2000</td>
<td>2,0</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>10000</td>
<td>3000</td>
<td>3,33</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>25000</td>
<td>15000</td>
<td>1,66</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>20000</td>
<td>4000</td>
<td>5,0</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>15000</td>
<td>4600</td>
<td>3,26</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>30000</td>
<td>18000</td>
<td>1,67</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>8000</td>
<td>4400</td>
<td>1,82</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>14000</td>
<td>5000</td>
<td>2,8</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>7000</td>
<td>3600</td>
<td>1,94</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>6000</td>
<td>4800</td>
<td>1,25</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>5000</td>
<td>2800</td>
<td>1,79</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>12000</td>
<td>7000</td>
<td>1,71</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>15000</td>
<td>10000</td>
<td>1,5</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>8000</td>
<td>5000</td>
<td>1,6</td>
<td>3</td>
</tr>
<tr>
<td>Total:</td>
<td>179000</td>
<td>89200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: calculation authors

Table 5 shows that the initial set of entrepreneurial structures requires investments in the amount of $179,000 million dollars. The amount of financial resources available to the corporation is $125,000 million.

Consequently, the whole set of companies in Table 5 can not be included in the created structure. Therefore, it is necessary to select from the initial set those companies that would provide the maximum economic effect in the functioning of the future consolidated system.

Table 5 shows not only the initial data of this example, but also the results of calculating the investment need for each dollar. US investment, expected economic effect, as well as the rank of each company, which is determined by the ratio \( \frac{E_i}{U_i} \). Based on the calculated rank and initial data, we form a rational set of business structures, inclusion of which is expedient to include from defined set. The results of organization of such a set of formation of business structures are summarized in Table 6.
Table 6. Formation of a rational set of business structures for inclusion in a consolidation association

<table>
<thead>
<tr>
<th>Candidate rank</th>
<th>Number of object in the initial set</th>
<th>Investment need, million dollars USA</th>
<th>The need for investment (by increment), million dollars USA</th>
<th>Net discounted income, million dollars USA</th>
<th>Net discounted income (by increment), million dollars USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>6000</td>
<td>6000</td>
<td>4800</td>
<td>4800</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>15000</td>
<td>21000</td>
<td>10000</td>
<td>14800</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>8000</td>
<td>29000</td>
<td>5000</td>
<td>19800</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>25000</td>
<td>54000</td>
<td>15000</td>
<td>34800</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>30000</td>
<td>84000</td>
<td>18000</td>
<td>52800</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>12000</td>
<td>96000</td>
<td>7000</td>
<td>59800</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>5000</td>
<td>101000</td>
<td>2800</td>
<td>62600</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>8000</td>
<td>109000</td>
<td>4400</td>
<td>67000</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>7000</td>
<td>116000</td>
<td>3600</td>
<td>70600</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>4000</td>
<td>120000</td>
<td>2000</td>
<td>72600</td>
</tr>
<tr>
<td>11</td>
<td>8</td>
<td>14000</td>
<td>134000</td>
<td>5000</td>
<td>77600</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>15000</td>
<td>149000</td>
<td>4600</td>
<td>82200</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>10000</td>
<td>159000</td>
<td>3000</td>
<td>85200</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>20000</td>
<td>179000</td>
<td>4000</td>
<td>89200</td>
</tr>
</tbody>
</table>

Source: calculation by authors

From the Table 6, it should be noted that with financial resources of $125,000 million dollars, only 10 candidates with numbers in the initial set should be included in the set of business structures that are being formed: 10, 13, 14, 3, 6, 12, 11, 7, 9, 1. In this case, the reserve contains $5.0 million dollars.

The total expected net disposable income in the functioning of the listed candidates in the consolidated system will make $5 - 72600 million dollars, as it follows from the same table.

For comparison, let us create the most favorable set of business structures, which is included in the organized system.

Obviously, when forming such a set, the initial set of candidates for inclusion should be ranked not by the degree of reduction, but by the degree of growth in investment needs, that is, it should first be included in the molded set of companies with the maximum need for investments per unit of NPV. Then it is a company following it and so on, until the total investment need again does not turn out to be equal (or approximately equal) to the resources available. For such a formation, for the initial data, we accept the same data in Table 5.

And the results of formation of such a set are summarized in Table 7.

Table 7. The results of formation of a set of business structures for inclusion in a consolidation association

<table>
<thead>
<tr>
<th>Candidate rank</th>
<th>Number of object in the initial set</th>
<th>Investment need, million dollars USA</th>
<th>The need for investment (by increment), million dollars USA</th>
<th>Net discounted income, million dollars USA</th>
<th>Net discounted income (by increment), million dollars USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>20000</td>
<td>20000</td>
<td>4000</td>
<td>4000</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>10000</td>
<td>30000</td>
<td>3000</td>
<td>7000</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>15000</td>
<td>45000</td>
<td>4600</td>
<td>11600</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>14000</td>
<td>59000</td>
<td>5000</td>
<td>16600</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>4000</td>
<td>63000</td>
<td>2000</td>
<td>18600</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>7000</td>
<td>70000</td>
<td>3600</td>
<td>22200</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>8000</td>
<td>78000</td>
<td>4400</td>
<td>26600</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>5000</td>
<td>83000</td>
<td>2800</td>
<td>29400</td>
</tr>
<tr>
<td>9</td>
<td>12</td>
<td>12000</td>
<td>95000</td>
<td>7000</td>
<td>36400</td>
</tr>
</tbody>
</table>
From the Table 7 we can see that the set formed should include the same 10 candidates, but with the following initial numbers: 4, 2, 5, 8.1, 9, 7, 11, 12, 6. This set of companies with their functioning in the structure of the system being organized, will provide NPV in the amount of $ 54,400 million dollars.

Comparing this amount with the amount provided by the previously formed set (see Table 4) at $ 72600 million dollars, we can see that the difference is significant. This example confirms the expediency and validity of the predicted method for the formation and organization of integrated structures.

Conclusions

It has been established by the study that existing methods for assessing the level of corporate governance do not fully meet market needs. On the basis of the obtained results, the scientific and methodological principles have been developed in order to assess the quality of corporate governance level and to ensure adequate corporate security within the framework of the use of consolidation strategies of sustainable development on the basis of 12 criteria: 1) the corporation’s readiness to adhere to the principles of corporate behavior; 2) structure of corporate property; 3) General Meeting of Shareholders; 4) Board of Directors of the Corporation; 5) executive authority; 6) corporate secretary; 7) significant corporate actions; 8) disclosure by corporation; 9) Corporate Shareholder Register; 10) control over financial and economic activity of the corporation; 11) dividend policy of the corporation; 12) Corporate Conflict Resolution.

It has been determined that the main sources of the effect of combining business structures within the limits of consolidation strategies is reducing the production costs and increasing the level of corporate security.

It has been substantiated that entrepreneurial structures acquire new individual properties in the course of corporatization: there is an “immanent” effect ($E_{imm}$) (it arises under the influence of a set of factors determined by the measures taken at each of the enterprises in the process of creation of the corporation) and the overall systemic “emergent” effect ($E_{em}$) (it characterized by the emergence of the newly created corporate structure of economic integrity, inherent in each corporate structure that will form a corporation).

The model of corporatization of business structures has been developed in the context of consolidation and development security strategies; the model has been tested on the example of the formation of a new company.

References


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ACCUMULATION AND FULFILMENT OF THE HUMAN CAPITAL POTENTIAL IN ORDER TO STRENGTHEN THE ECONOMIC SECURITY

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Abstract. The research work considers the essence and features of human capital accumulation at the company level in order to provide its economic security. The main components of intellectual capital in the format of human, organizational and customer capital have been studied. The managerial rationality of using the method of direct evaluation of intellectual capital and the method based on market capitalization has been proved. Both methods give the greatest organizational effect in providing economic security. The empirical study of using the quantitative assessment of human capital of a machine-building company has been carried out in order to strengthen its economic security.

Keywords: economic security; human capital; sustainable development; intellectual capital; evaluation method; human resources (HR); company staff


JEL Classifications: J24

1. Introduction

The current state of economic development is under the influence of unpredictable internal and external factors that have different nature and mechanism of influence on the companies. This requires urgent search for ways in order to strengthen the level of their economic security, first of all by increasing the efficiency of using current human capital and releasing existing labor potential. In order to solve this problem, first of all, one has to intensify the processes of acquiring key competencies and to form effective mechanisms for managing the process of accumulation of the overall potential of companies. This will make it possible to compensate for the uncertain influence of external factors.

The questions of human capital potential formation and economic security is widely illustrated in a number of scientific papers (Ahammad, 2017; Garfield, 2014; Laursen, and Foss, 2003; Martin and Hetrick, 2006; Meyer, et al. 2010; Mosley, 2007; William, 2016; Kumar et al., 2019). The following problems have been, and continue to be, the most urgent alongside with others – these are ensuring stable competitive positions of domestic companies and searching for ways in order to increase the efficiency of their activities on the basis of intensive
use of internal resources, especially in the field of personnel.

The human capital, together with a system of motivating factors, is exactly the most important source of ensuring promising competitiveness of companies and increasing the level of economic security.

This is the very reason why the high level of relevance of the research is devoted to expanding the spectrum of theoretical and methodological foundations of strengthening and positive qualitative transformation of the economic security of business structures.

2. Concept of human capital

The concept of human capital (HC) undergoes rather radical changes in its own development. Initially, the authors of HC concept were committed to more precisely explain and promote the idea of equal role with material resources of intangible non-separable assets from person in creating a cumulative social product, to justify the validity of such an approach, to show its theoretical and practical outputs instead of giving a concise definition of the new category introduced by them (Hamid and Yahya, 2011; Makedon et al. 2019; Arribas, I.; Espinós-Vañó, M. D.; García, F.; Tamosiuniene, R., 2019). Human capital is formed by means of investments in a person, among which one can distinguish education, training, health care, migration, and the search for information on prices and profits. The concept of human capital has considerably expanded in economic theory. Recent calculations made by experts from the World Bank include its consumer expenditure. These are family expenditures on food, clothing, housing, education, health, culture, as well as government expenditures on these goals. The canonical HC definition does not exist until now, as well as there is no unity of opinions about meaningful content of this concept.

It is quite obviously that the HC is the foundation of the company’s intellectual capital and a part of its economic security, since all other components are derivatives of human capital. Today HC is interpreted as one of the components of a more general category, called the intellectual capital. Therefore, in terms of ensuring sustainable development and strengthening economic security, one should analyze these aspects. So the concept of intellectual capital includes at least three main components: 1) human capital; 2) organizational capital; 3) customer capital.

The components of intellectual capital corresponds to the following definitions, which are the generalization of most of the world’s scientific sources (Lievens et al. 2007; Markoulli, et al. 2017; Schuler, and Jackson, 2005; Zhou, J., Wang, et al. 2017; Sagiyeva et al., 2019).

**Human Capital** is a set of individual knowledge, experience, skills and abilities of company staff and its capability to perceive changes.

**Organizational capital** is an internal structure of the organization; it is based on processes, strategies, concepts, patents, methodologies, databases, trade secrets, brands, etc. It contains the intellectual property of the organization (patents, trademarks, copyrights, service marks, design rights, etc.) and its infrastructure. The organizational capital does not change in the conditions of the termination of individual employees.

**Customer capital** is the loyalty of customers, their continuity and reliability, the efficiency of the chain of promotion of goods.

In addition to the given selection of the main components of human capital, there are several additional components, into which the main components can be divided. According to the materials published by the specialists of the Swedish company Scania, these components are defined as follows:

**Structural capital.** It is what remains in the organization when employees being carriers of human capital are returning home. Structural capital, for example, includes databases, consumer lists, guides, trademarks, and
organizational structures.

*Intellectual capital.* It consists of structural capital and human capital, takes into account the possibility of future income in terms of human contribution, its capability to continuously create and generate even more value.

Human capital is already interpreted in this approach as the aggregate amount of investment in education, the capability and future employee. It may also be considered as the competence of the employee, his/hers capability to communicate and create value for the customer.

*Organizational capital* is considered in accordance with this approach as systematized and gathered together competency plus systems that allow realize the company’s capability to innovate, as well as organizational capacity to create capital. It consists of process, cultural and innovation capital.

*Innovation capital.* The capability to upgrade a company is expressed in the form of intellectual property; in other words, it is protected by commercial law, as well as by other intangible assets and values, such as work practices and trade secrets.

*Process capital.* It is the aggregate value of processes, which both create and do not create value.

It should be noted that human capital includes such an important parameter as the capability of employees to perceive changes. This human capital parameter becomes the most important one in terms both of intense dynamic processes in the economic system and the need to provide economic security.

### 3. Evaluation of human capital of the company

During sufficient period, human capital has been measured solely by qualitative approaches that determine the availability and degree of manifestation of such qualitative characteristics as the capability to think extraordinary, use skills and experience combined with intuition, etc.

In particular, the mentioned qualitative characteristics are an integral part of the intellectual capital of the company. The contribution of staff to overall results is determined in such directions (Grip de et al. 2001; Macky, and Boxall, 2007; Drobyazko S., 2018a,b; Prakash, Garg, 2019):
- contribution to the development of new scientific directions;
- contribution to the increase of company profits;
- contribution to the development of relations with customers;
- contribution to the coordination of the divisions;
- contribution to the successful implementation of linear functions.

In terms of the expert approach, one evaluates both the qualitative characteristics of a particular employee and the set of properties of human potential. With greater objectivity of this method, weighting factors are used. The calculation procedure includes three stages:
1. Determination of key indicators that identify the employee contribution to the intellectual capital of the company.
2. Determination of sampling weights (significance factors) for each indicator, based on how often each indicator is manifested by the employee who is being tested.
3. Determination of the rating scale in order to assess each indicator.

The results are then analyzed and the average rating for each employee is determined. These values are compared with the reference ones, obtained by the empirical method (by summing all the points for all qualitative indicators). An expert approach involves various modifications and is a necessary component of the assessment of human capital.
There are plenty of quantitative methods in order to measure and assess intellectual assets of companies, each of which has certain advantages and disadvantages. None of these methods can be considered as universal one; consequentially, it has led some powerful companies to develop their own techniques that can more accurately assess their real intellectual potential. Nevertheless, all existing methods can be divided into two major classes:

1. method of direct evaluation of intellectual capital (direct intellectual capital method, DIC) (Lee, and Hong, 2002);

The method of direct evaluation of intellectual capital is reduced to the direct measurement of the value of intangible assets; all their components (together or separately) are evaluated in order to make this.

The method based on market capitalization determines the difference between market capitalization of the company and the value of its shareholders’ securities.

The most commonly used methods belonging to the first group are:

– Sveiby’s Intangible Assets Monitor (IAM), which was developed in the early 90’s of the last century;
– navigator of intangible assets of Scania AB (Sweden), which was offered at the end of the 90s of the last century.

Sveiby’s Intangible Assets Monitor (Myloni, et al. 2006; Korauš, A.; Gombár, M.; Kelemen, P.; Backa, S., 2019) considers three categories of non-material categories to be evaluated (Table 1):

1. competence of staff (capability to act in different situations);
2. internal structure (unstructured, “raw” information; databases, knowledge bases; tools for data and knowledge mining; technological and business processes; patents and rights, etc.);
3. external structure (trademarks, brands, relations with customers and suppliers).

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Competences</th>
<th>Internal structure</th>
<th>External structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth and upgrade</td>
<td>Number of years of study</td>
<td>Investing in research and development</td>
<td>Growth of the market share</td>
</tr>
<tr>
<td>Efficiency of use</td>
<td>Added value per employee</td>
<td>Percentage of support staff</td>
<td>Profit from one customer</td>
</tr>
<tr>
<td>Stability</td>
<td>Professional labour turnover</td>
<td>Support labour turnover</td>
<td>Reorders</td>
</tr>
</tbody>
</table>

Source: Myloni, et al. 2006

According to the Sveiby’s approach, three characteristics of each element are defined: their growth and upgrade, efficiency of use and stability. According to this approach, the system has five categories:

1) finances (traditional financial indicators are analyzed);
2) customers (type of customers, duration of relationships, reliability);
3) process (it is analyzed how the organization uses its own information and technological resources);
4) future upgrade and development of the organization;
5) staff of the organization (it is measured by the productivity of intellectual work).

4. Case: Measurement of human capital of Scania AB

Let us consider the possibility to assess the intellectual capital for the Swedish company Scania AB. Let us distribute employees to their capability to create an added value that drives buyers to prefer the products of this company (Table 2).
Table 2. Distribution of Scania AB employees according to their capability to create an added value

<table>
<thead>
<tr>
<th>Hard to replace</th>
<th>Easy to replace</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low added value</strong></td>
<td><strong>Low added value</strong></td>
</tr>
<tr>
<td>• staff members</td>
<td>• cleaning woman</td>
</tr>
<tr>
<td><strong>High added value</strong></td>
<td><strong>High added value</strong></td>
</tr>
<tr>
<td>• purchasing managers</td>
<td>• drivers</td>
</tr>
<tr>
<td>• sales managers</td>
<td>• accountant</td>
</tr>
</tbody>
</table>

Source: Designed by the authors

In the lower left quadrant of the Table 2, unskilled or semi-skilled labor is displayed. The company does need such people, but success does not depend on them. Dozens of people will respond to the vacancy announcement, and the term of study itself is minimal.

In the left upper quadrant, there are people who have mastered more complex operations. This is skilled warehouse staff for Scania AB who knows the entire range of products. It is difficult to find a replacement for them, because it is necessary not only to know the product in the field of electrical products, but also to understand it, and in order to make it, one has to obtain either a special education or to possess relevant experience. The task of management with respect to these people is to fill their activities with new information content (Štiglic, 2017).

Employees placed in the lower right quadrant of the Table 2, earn a profit, providing high quality products for the company; these are people with special skills and abilities. For example, timely and quality delivery of goods to customers plays a huge role in shaping the image for Scania AB, however good drivers can be found on the job market quite easily.

And, finally, the experts are placed in the upper right quadrant of the Table 2; these are purchasing and sales managers being irreplaceable specialists. The human capital of Scania AB is realized precisely in people of the right upper quadrant of the Table 2, namely those whose talents multiplied by experience make it possible to conclude agreements and contracts favorable for the company, to establish relations with buyers and suppliers, to create additional value, to encourage customers to buy the goods exactly at the company «Scania AB». The higher the saturation of business with human capital, the higher the percentage of highly profitable work done by people who are difficult to replace - the more valuable their services are and the more successful the company increases its competitive advantages and stimulates the strengthening of economic security.

Describing the human capital of Scania AB, we will plot a table with the characteristics of human capital for each manager, evaluating them on a 10-point scale in the Table 3.

Table 3. Evaluation of human capital of Scania AB

<table>
<thead>
<tr>
<th>Category of employees</th>
<th>T</th>
<th>H</th>
<th>G</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Education</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2 Experience in this specialty</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>3 Training at the expense of the company</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4 Average salary</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>5 Attitude of employees to work (devotion to the job)</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>6 Implementation of the annual plan</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>7 Satisfaction with the job, occupied position</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>8 Satisfaction with the remuneration system</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: Residents and social processes (2017), calculation by authors
The abbreviation T, H, G and C denotes the following categories of employees:
T – main and auxiliary workers, technical staff;
H – middle and low level of managers;
G – top management;
C – engineering and technical staff.
Let us plot the results obtained on the graph (Fig. 1) in the form of irregular polygons.

Fig. 1. Quantitative assessment of human capital of Scania AB

*Source:* Designed by the authors

Everything inside polygons is what the company currently owns; everything beyond its borders is what can be obtained. The radar chart contains a lot of information, but its main value is that it gives a complete picture of intellectual capital. As it was shown by the research in the field of intellectual capital of the company, human capital was the weakest link. The management of Scania AB must pay particular attention to: the education of its employees and their professional improvement; the current system of labor distribution of managers; the development of a new remuneration system and payment of bonuses.

The assessment of national human capital is of great interest in addition to assessing human capital of the company in terms of addressing the challenge of ensuring strategic competitiveness and proper economic security. According to rather widespread representations, the sustainable development of companies largely depends on the competitiveness of the state, which in its turn is strongly influenced by national human capital.

5. Efficiency of human capital in the system of economic security

National human capital is significantly different in quality and value per capita, as well as in its efficiency for different countries. These HC indicators depend on the quality and ethics of work, which are historically determined by the level of economic freedom and mentality. The economic freedom of the country is currently measured by the international index of economic freedom, which, in turn, is calculated on 10 complex indicators, which reflect generally the quality of labor, business, and management.

The correlation between human capital and investments is determined by following expression:
\[ HC = f(j, q, I, X) = c \times I, \] (1)

where \( j \) is the labor index quality in a broad definition,
\( q \) is the quality index of accumulated HC,
\( I \) is investments in HC,
\( X \) is other variables on which the HC depends, including the accumulated HC itself.

The index of investment transformation into human capital \( c \) determines numerically the efficiency or productivity of HC. The value of the HC can be more than 1 (for the most developed countries with the highest quality of HC, with a developed innovative economy, knowledge- and information-based economy, information society) and less than 1 for developing countries and the underdeveloped countries of the world.

For countries with poor quality of work and low productivity of LC, \( c \) is several times lower than in developed countries, as well as labor productivity (Bordens, 2006).

The index of investment transformation into HC reflects the integral efficiency of HC, which, in turn, determines average labor productivity in industries with high added value and in the production of knowledge (industries with high technologies, scientific products, innovations, new technologies, production of high technologies).

The efficiency of human capital \( c \) reflects how many units of HC can be obtained per unit of investment in a given country. Moreover, the number of these units (numerical value of \( c \)) is determined mainly by the integral efficiency of the accumulated national HC.

The efficiency of accumulated human capital \( c \) is defined as follows:

\[ c = 0.5 \times (j + q) \times k \] (2)

\[ k = \frac{\text{GDP} - \text{Exports of natural products}}{\text{GDP}} \] (3)

where \( k \) is the index of raw material economy that reflects the raw material nature of a poorly diversified and backward economy suffering from a “Dutch disease.”

GDP and export of natural products are determined at the current exchange rate. Numerical coefficient 0.5 reflects the equality of the specific weight of labor \( j \) in its expanded definition and the specific weight of the quality of the accumulated human capital \( q \) (Smith, 2006).

The labor index \( j \), in its broader definition, reflects economic freedom, including ethics and working conditions, ethics and entrepreneurial conditions, people’s mentality, and the effectiveness of state institutions in this direction.

The index \( q \) of the accumulated national human capital reflects the efficiency of skilled labor resources, the creative power of the accumulated LC, the indices \( j \) and \( q \) are included in the calculation of formula with equal weights.

The labor index is defined as follows:

\[ j = T \times L \times B \times P, \] (4)

where \( T \) is the index of traditions (mentality);
\( L \) is the index of labor quality;
\( B \) is the index of business quality;
\( P \) is the index of law-abidingness of the population (or its legal nihilism).
The normalized Index of Economic Freedom (IEF) is widely used in international practice and reflects on the merits and numerically the set of private coefficients of formula (3), as shown by analysis and calculations. Therefore, formula (2) uses the international IEF index in order to simplify calculations, to increase their reliability and representativeness (Residents and social processes 2017).

The Index of Economic Freedom is calculated on the basis of 10 subindices: Freedom of business, Freedom of Trade, Fiscal freedom, Government expenditures, Freedom of prices, Freedom of investment, Freedom of the financial sector, Protection of property rights, Level of corruption and Freedom of Labor Market. All these indicators are correlated to the characteristics and quality of the conditions in the country for work and business, and, therefore, they determine the investment attractiveness of the country.

The value of each indicator varies from 0 to 100 points (100 points means the maximum level of economic freedom). In fact, subindices reflect ethics, quality and productivity (including entrepreneurial, managerial, and intellectual work) and conditions for its free and effective implementation. Therefore, the IEF index is used for calculations in normalized units of the index of economic freedom, which greatly simplifies the calculations (the IEF index is divided by 100).

\[ j = \frac{\text{IEF}}{100}, \]  

(5)

The HC quality index combines the influence of another group of subindices (factors) on the HC efficiency index.

\[ q = l \times h \times s \times i \times e, \]  

(6)

where
- \( l \) is the index of quality of life of the population of the country,
- \( h \) is the index of HC inflow outside of the subject (outflow from it);
- \( s \) is the index of science and synergetics;
- \( i \) is the Human Development Index (HDI);
- \( e \) is the index of the efficiency of the national elite.

Coefficient of HC inflow is equal:

\[ h = \frac{\text{(the initial number of scientists, the inflow (- outflow) of scientists)}}{\text{the initial number of}} \]

The index of science and synergetics:

\[ s = (1 + 10^n + w), \]  

(7)

where
- \( n \) is gross domestic investments in science in parts of GDP (in the UNESCO terminology),
- \( w \) is the country’s share in total world investment in science.

The index of the efficiency of the national elite:

\[ e = \frac{\text{(GDP – The shadow economy sector)}}{\text{GDP}}. \]  

(8)

Thus, indices of international organizations are used in order to calculate the efficiency indexes of HC: Index of Economic Freedom, IEF; index of quality of life of the population (QL); Human Development Index (HDI), as well as index of science and synergetics calculated according to the report of UNESCO for 2018; index of HC inflow outside of the subject (outflow from it); quality index of accumulated HC (its calculation is made by the group of indicators and indices); index of the efficiency of the national elite and the shadow economy; the index of raw material economy, reflecting the type of mainly raw material economy and the dependence of the country with the industrial raw material economy on the export of raw materials (Zander, and Kogut, 1995).
Calculations of the HC efficiency on a large number of indicators reflect the HC quality and efficiency, as well as the average productivity of the country or another entity and the level of its economic security. On the other hand, HDI smooths out on a small number of calculated indicators (three) and the geometric average difference between them in terms of HC quality and efficiency in the world.

For example, in 2018, HDI amounted to 0.902 in the USA, in Russia - 0.719, and in Ukraine - 0.561 (difference -35%). This, of course, does not reflect the gap between countries on human potential and value per capita (and productivity) of national HCs of these countries. The ratio of the indices of the HC efficiency is different: the USA index is 7.1 times higher than the Ukrainian one, which is close to the ratio of average productivity in these countries (Table 4).

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of economy</th>
<th>HC Efficiency Index</th>
<th>Index of raw material economy</th>
<th>Index of Economic Freedom (IEF)</th>
<th>HC Quality Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Knowledge- and information- based</td>
<td>1,225</td>
<td>1</td>
<td>0,78</td>
<td>1,67</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Innovative</td>
<td>0,855</td>
<td>1</td>
<td>0,75</td>
<td>0,96</td>
</tr>
<tr>
<td>Germany</td>
<td>Innovative</td>
<td>0,93</td>
<td>1</td>
<td>0,72</td>
<td>1,14</td>
</tr>
<tr>
<td>Japan</td>
<td>Innovative</td>
<td>0,93</td>
<td>1</td>
<td>0,73</td>
<td>1,13</td>
</tr>
<tr>
<td>China</td>
<td>Industrial with elements of innovative one</td>
<td>0,49</td>
<td>1</td>
<td>0,52</td>
<td>0,45</td>
</tr>
<tr>
<td>India</td>
<td>Industrial with elements of innovative one</td>
<td>0,37</td>
<td>1</td>
<td>0,55</td>
<td>0,19</td>
</tr>
<tr>
<td>Russia</td>
<td>Industrial raw material</td>
<td>0,30</td>
<td>0.75</td>
<td>0,51</td>
<td>0,31</td>
</tr>
<tr>
<td>Estonia</td>
<td>Industrial</td>
<td>0,67</td>
<td>1</td>
<td>0,75</td>
<td>0,59</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Industrial raw material</td>
<td>0,29</td>
<td>0.75</td>
<td>0,56</td>
<td>0,62</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Industrial raw material</td>
<td>0,29</td>
<td>0.75</td>
<td>0,56</td>
<td>0,62</td>
</tr>
</tbody>
</table>

Source: Human Development Reports (2018), calculation authors

The main disadvantage of HDI lies in the fact that this index does not reflect the quality of education and GDP per capita. In developed countries, the quality and cost of education are much higher than in poor or developing countries. A significant share of the oil and gas sector of the economy and its revenues is pushed up by the HDI rating, for example, the oil-producing Arab countries. And these countries almost do not involve their national HC even in oil and gas production. Therefore, a lowering factor is used in order to account for high export earnings, when calculating the efficiency of the national HCs of the countries with raw material economies. It equals, for example, 0.75 for Russia, 0.56 for Kazakhstan, and 0.43 for Ukraine. This index equals 1 for developed and developing countries with a diversified economy.

The level of corruption and the criminalization of national human capital is taken into account through the subindices of all major indices: IEF, QL, the quality index of the elite and the shadow economy, the inflow index of the HC, and others.

The basic reasons of low levels of HC efficiency and quality indices of Russia and Kazakhstan are the raw material nature of the economy and exports, a significant proportion of passive HC and negative HC (as a result of low investments in HC, high corruption and criminalization of countries).

The task of developing an algorithm for evaluating the company’s readiness for the development of a human capital management system is considered in the work (Throsby, (2010). In this paper, it is proposed to use only two criteria, namely the importance of the problem and the company’s ability to solve this particular problem.
(Table 5) in order to generally assess the determination of the priority and sequence of the first steps of the formation of a knowledge management system. In any reasonable sense, such an approach follows the logic of constructing the Mission and Core Competencies (MCC) matrix used in strategic management (Yu, 2014).

According to the experience of using MCC matrix, the importance of the task is recommended to assess from the point of view of ensuring the company’s competitiveness, stability of its existence and image.

It is necessary to assess the availability, first of all, of intellectual capital and the sufficiency of material resources in determining the capability to solve problems.

The priority of problem solving is quantified as a product of assessments of the importance and capability (PricewaterhouseCoopers methodology).

Table 5. Criteria for prioritizing tasks

<table>
<thead>
<tr>
<th>Question</th>
<th>General task evaluation</th>
<th>Scale of points</th>
</tr>
</thead>
</table>
| How important is this task for the company?        | Importance              | 1 – not important
|                                                    |                         | 2 – not too important
|                                                    |                         | 3 – very important                   |
| Is the company capable of solving this problem?    | Capability              | 1 – not capable
|                                                    |                         | 2 – partially capable
|                                                    |                         | 3 – capable                          |

*Source:* Designed by the authors

A similar approach was used in the work (Laursen, and Foss, 2003) in order to evaluate the company’s innovation activity. In order to more accurately and objectively make an assessment, it is suggested not to use two, but three criteria, namely readiness, capability and opportunity.

It is argued that this approach is universal, because it makes it possible to evaluate not only the company’s capability to innovate, but also to determine the internal motivation and characteristics of external conditions.

Evaluation criteria can be interpreted as follows:

1. The readiness reflects the desire for innovation, as well as the availability of the necessary resources for it.
2. The capability reflects the features of the object, the presence of certain qualities, experience and specific knowledge.
3. The opportunity reflects the presence of internal conditions for the implementation of innovation activities and external conditions that are favorable to this activity.

Each of the criteria considered is complex.

In this scientific work, it is proposed to use three criteria: capability, opportunity and necessity in order to assess the organization’s readiness for the formation of a knowledge management system. Selected criteria have the following interpretation:

1. The capability characterizes the presence and degree of “maturity” of intellectual capital.
2. The opportunity characterizes the presence of all the necessary conditions for the existence of a “knowledge spiral”.
3. The necessity characterizes the level of awareness of top management of the importance and priority of work related to the creation of the organization that learns.
Conclusions

The analysis of relevant implementation of approaches in order to form and improve the quality of human capital potential of industrial companies makes it possible to draw the following conclusions:

It has been established that the main components of non-material reserves for ensuring long-term sustainable development of companies are creative potential of employees, human capital and motivational type. The use of these reserves makes it possible to obtain the socio-economic effect, consisting of providing a positive psychological climate at the enterprise, increasing the involvement of employees in solving the goals and objectives of the enterprise, optimizing labor costs, increasing the qualification level of employees and increasing the level of economic security.

Based on the integration of approaches to the assessment of human capital and creative potential in the system of sustainable development, a system of criteria for the effective use of internal intangibles has been proposed in order to ensure the competitiveness of the company and to stabilize its economic security.

The characteristics of human capital can be interpreted in the context of use in order to ensure an increase in the rates of sustainable development of companies as follows:

– The readiness reflects the desire for innovation, as well as the availability of the necessary resources for it.
– The capability reflects the features of the object, the presence of certain qualities, experience and specific knowledge.
– The opportunity reflects the presence of internal conditions for the implementation of innovation activities and external conditions that are favorable to this activity.

References


Grip de, A., Loo van, J. and Sanders, J. (2001). The Industry Employability Index: Taking account of supply and demand characteristics. Research Centre for Education and the Labour Market (ROA), Faculty of Economics and Business Administration, Maastricht University. URL: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.199.3518&rep=rep1&type=pdf


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Open Access
FOOD SECURITY AND THE TRADE VIA LENSES OF SANCTIONS

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Abstract. Our paper focuses on the issues of food security and agricultural trade. Specifically, we tackle the issue of economic self-sufficiency of a country using an example of the import ban on agricultural production as one form of economic sanctions. Our paper attempts to estimate the impact of sanctions in separate regions, rather then on the aggregate country level. We propose an original methodology of estimating allocation of import ban effects based on the OECD Customer Support Estimate (CSE). Our results demonstrate that in case of some agricultural products (e.g. potatoes) consumers in most of Russian regions were net beneficiaries before 2014, but the magnitude of the benefits decreased significantly after the introduction of sanctions. This provided Russian agricultural producers with more support arising from the market price differential. All in all, we find no significant evidence of the import ban impact, however after 2014 the cumulative cost paid by consumers in different regions declined significantly due to other factors, leaving consumers in the position of net beneficiaries. Our results demonstrate that despite the economic sanctions are important, they do not affect food security of neither of conflicting parties.

Keywords: food security; agricultural trade; economic development; agricultural market; economic sanctions; European Union


JEL Classifications: C10, F10, Q17

Additional disciplines political sciences; sociology; cultural studies; international relations

1. Introduction

Food security and agricultural trade constitute two very important issues in the security and sustainable development of any country. Nowadays, due to the vast development of international trade, any country in the world is hardly to become completely self-sufficient in the face of the economic sanctions on food and agricultural products (Tireuov et al., 2018; Akhmetova and Suleimenova, 2018; Vorotnikov et al., 2019; Bohdaniuk et al., 2019). Economic sanctions are often applied as tool of foreign policy. The result, as expected, is hampering of international trade and hardening the conditions for international economic exchange (Balitskiy et al., 2014; Brodzicki 2016; Ciešlik et al. 2016; Niño-Amézquita et al. 2017; Tvaronavičienė, 2018).

In 2014, the United States (U.S.) and the European Union (EU) applied restrictive measures that included target economic sanctions against Russian Federation. As an answer to Western sanctions, in August 2014, Russia replied with countersanctions and introduced an import ban (the so-called “Russian embargo”) on the several
European agricultural products, including meat, fish, cheese, milk, fresh fish, vegetables, and fruits. Russian import ban referred to all the goods originated from the United States, EU Member States, Norway, Canada, and Australia (Vorotnikov et al. 2019).

In March 2014, the European Council approved the first diplomatic action in response to Russian aggression in Ukraine: economic sanctions were imposed in July 2014 and strengthened them in September 2014.

Trade relations between Russia and the EU were already volatile prior to sanctions due to the Russian economy showing signs of weakness.

Russian import ban was introduced by the Russian government in 2014 and included meat, fish, cheese, milk, fresh fish, vegetables and fruits produced in the EU, the USA, Norway, Australia and Iceland. Import ban was a reaction on European sanctions, imposed by EU on Russian Federation.

Import ban might lead one to be curious on whether the import ban has helped to achieve food security and self-sufficiency in terms of products in the scope of the ban. In other words, the issue of calculating the cost of achieving self-sufficiency and food security arises.

This paper takes a look at the Consumer Support Estimate (or CSE) as one of the indicators that characterizes the amount of transfers to consumers of agricultural products as a result of the policies adopted in the country of interest. CSE was developed by OECD along with other indicators, such as Producers Support Estimate (or PSE), General Services Support Estimate (GSSE) and Total Support Estimate (TSE) in order to evaluate the amount and direction of support to producers and consumers of agricultural commodities. (OECD, 2016). We employ a methodology in which CSE is calculated for a specific commodity on country level. This approach gives us an overview of a transfers in a country on macro level, while it does not capture the differences between separate regions. It can be a significant restraint for the countries with heterogeneous regional structure of economic development. The paper stimulates the differences in CSE between different regions (or federal districts) of Russian Federation in order to capture the influence of import ban introduced by Russian Federation for specified commodities on transfers to/from consumers.

2. Literature review

With relation to the general topic of sanctions impact on economy, several works exist. Hufbauer et al. (1997) studied the impact of U.S. economic sanctions and its impact on trade, jobs, and wages. Authors applied gravity model to the cross-sectional data set for the years of 1985, 1990 and 1995 to find the effect of US sanctions on bilateral merchandise trade flows (export plus import). The results showed a large impact of sanctions on trade flows, which caused reduction of around 90 percent. Later Hufbauer and Oegg (2003) attempted to apply Andrew Rose’s gravity model, which includes 14 control variables, to assess the impact of economic sanctions on U.S. trade. As authors attempted to estimate the effect of limited, moderate and extensive sanctions, it was found that limited and moderate sanctions had little or no effect on trade flows, while extensive sanctions had a large depressing effect on bilateral trade, decreasing trade flows between U.S. and countries by 95 to 99 percent. With regard to that, Kaempfer and Lowenberg (2007) state that an import ban always leads to redistributitional impact on both sanctioning and targeted country.

Another interesting piece of research focuses on short-run and long-run effects of sanctions on foreign direct investment (FDI) (Mirkina, 2018). The author tests the effect of sanction imposition on foreign investment on the larger set of data for 184 countries from 1970 to 2010 using bias-corrected estimator introduced by Pesaran (Pesaran, 2006), that addresses common methodological issues of sanctions’ studies, such as highly-trending or non-stationary variables, cross-sectionally correlated errors of panel regressions, and parameters’ heterogeneity. The results show, that sanctions seem to have effect on FDI, but when all sanctions are considered together or when extensive and limited sanctions are separated this effect is not statistically significant. High-cost sanctions have a significant negative effect in the short run. However, this effect disappears in the long run, low-cost
sanctions do not show statistically significant impact (Mirkina, 2018).

The US sanctions seem to have substantial and significant negative effect on FDI in the long run. The author points out two possible explanations. The first is that in case of unilateral US sanctions investors might be slower in making disinvestment decisions than in case of international, i.e. initiated by United Nations, sanctions. In this case the adjustment of the economy to the new equilibrium may be delayed. The second explanation reverts to the reasoning of the sanctions: the country with higher US FDI is less likely to be sanctioned by US, but once sanctions are imposed the declining US FDI will contribute to the success of the sanctions. However, the author leaves further testing of these two hypotheses for future research (Mirkina, 2018).

Current academic discussion on the whole topic of EU-Russia trade goes in two parallel directions: about the economic effects of EU sanctions and about the economic effect of Russian embargo. Within the discussion on economic effects of EU sanctions on Russia some of the researchers conclude that there is an evidence for sanctions impact, but they cannot be considered as a leading factor for Russian economy development for the given period. Gurvich and Prilepskiy (2015) estimated the sanctions impact at the level of minus 2.4 percent of GDP by the year 2017, but this impact is 3.3 times lower than the impact of oil prices shock.

The possible economic effect on US, EU and Russian Federation was assessed in (Dong and Li, 2018), using numerical general equilibrium model and economic sanction game methodology. The findings of the authors show, that all sanction involved countries will be hurt, but comparatively Russia will be hurt more, than U.S. and EU. According to the scenarios suggested by authors, in case of soft sanctions Russian GDP would decline by 1.45%, hard sanctions – 4.35%, and forbidden sanctions by 8.86%.

Regarding the effect of Russian embargo on agricultural sector, in the very beginning of the story the Policy department of European Parliament estimated that Russian import ban will affect 73% of EU import to Russia (Kraatz, 2014). Nevertheless, some of the researchers come the conclusion that the effect in EU economies could be too small (Andronicanu & Popescu, C.R., 2017). After reviewing data on agricultural trade between EU countries, (Dreve et al., 2015) conclude that even if the loss of the Russian market will cause job losses, the effect on labor market would be too small to be reflected in national statistics, as the share of agriculture in GDP is low in most countries. At the same time, (Kutлина-Dimitrova, 2017) after modelling simulation using computable general equilibrium model (also known as CGE model) shows, that the impact of the ban on total exports of the EU, the USA, Norway, Canada and Australia is limited, nevertheless at a disaggregate level there are sectors – ‘vegetables and fruits’, ‘other meat’ and ‘dairy products’ – which experience two-digit percentage change declines.

Smukta et al. (2016) analysed how Russian embargo affected the structure of Russian agri-food imports and show, that the most affected product groups were perishable vegetables and fruits. At the same time, authors show that embargo resulted in decreased competition on the domestic market, and in combination with other factors (Andronicanu, 2017a; Andronicanu, 2017b), such as rouble depreciation and increase of transaction costs, led to rapid growth of food prices, from 2.66% in 2013 to 14.1% in 2014.

Regarding domestic effects of import ban, some authors point out that the results vary across sub-sectors, with increases in production of pork and decreases among dairy, beef and fish producers (Wengle, 2016). At the same time, there is an evidence that Russia has become more self-sufficient in food and seafood. Western trading partners for food and seafood have been replaced by partners from Asia and Central Asia (Wegren and Elvestad, 2018).

The effects on consumer’s demand are examined in (Berendeeva and Ratnikova, 2018). The authors attempted to assess the changes in price and income elasticity of demand for foodstuff products before and after Russian import ban imposition using QUAIDS model based on the data of Russian Longitudinal Economic Survey (2010-2016) for two types of households: urban households and landowners. The results of the modelling show increase in price elasticity of demand for almost all product categories, except meat and meat products, for both groups of households. Meat and meat products’ price elasticity of demand for landowners significantly decreased, showing
low sensitivity of demand to changes in price and high dependence of Russian landowners’ households on meat products. These findings complement the previous survey (Staudigel and Schrock, 2015), showing that meat accounts up to 28% of household’s food budget, representing the biggest category of food expenditures.

One of the very important additions to the discussion is the concept of food security and self-sufficiency. Wegren et al. (2017) point out, that Russia’s political leaders have a different understanding of food security than traditional usage. From their perspective, Russian variant of food security connects food trade to national security, making Russia food insecure based on food imports. Thus, it is crucial to achieve self-sufficiency in terms of foodstuffs products, because otherwise the country is vulnerable. With regard to the above, it appears that from its introduction back in 2010, the Russian food security policy resulted in improvements of average per capita food consumption, although the poor consume much less (Wegren et al., 2016). This fact brings one to the important question: who paid the cost of self-sufficiency, and what is the value of this cost?

3. Methodology

The data for the research comes from OECD (2016) database (CSE, producer prices, production volumes) and Federal State Statistics Service of Russian Federation (Rosstat 2019) (federal and regional producer prices, federal and regional production volumes). Data covers period from 2010 to 2016. Time period of the data used is chosen based on the availability of the most recent data. Our research questions are formulated as follows:

1. How country Consumer Support Estimate can be separated into Consumer Support Estimates for regions of the country (federal districts of Russia)?
2. How can the impact of differences in production and prices of a single commodity among regions be estimated?
3. How can the Consumer Support Estimate be allocated to each producer inside the specified region?
4. What evidence of Russian import ban impact can be found in changes of Consumer Support Estimate after 2014?

Consumer Support Estimate is calculated according to OECD methodology (see OECD, 2016):

$$CSE_c = TCT_c - (TPC_c + OTC_c) + EFC_c$$  \(1\)

where: $CSE_c$ - consumer support estimate for commodity $c$ in local currency; $TCT_c$ - value of transfers to consumers from taxpayers for commodity $c$ in local currency; $TPC_c$ - transfers to producers from consumers for commodity $c$ in local currency; $OTC_c$ - other transfers to consumers of commodity $c$ in local currency; $EFC_c$ - exceed feed cost for commodity $c$ in local currency.

Single Commodity Transfer (SCT) shows the transfers to producers that relate only to specific commodity. In case of imported commodity, it is calculated as follows:

$$consumer \, SCT_c = TCT_c - QP_c \times (PP_c - RP_c) - OTC_c + EFC_c$$  \(2\)

where $consumer \, SCT_c$ - single commodity transfer to consumers of commodity $c$ (hereafter SCT);

For the purposes of SCT calculation for Russian Federation, OECD uses several different prices as $BP_c$ in order to arrive to $RP_c$, or reference price. The examples for the commodities that are in the import ban list can be seen on the Table 1.

Moreover, OECD calculates the indicators of support for a range of commodities that accounts for the largest part of countries import and export. The list of commodities is specified for each country and is included in Table 1 that follows. Several commodities from the list has been under the import ban from 2014 including the beef and veal, milk, poultry, potatoes, and pork.
Table 1. Types of prices used as border price for commodities included in import ban list, according to OECD methodology.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Commodity sign</th>
<th>Russia’s position in trade for the commodity</th>
<th>Price used as border price</th>
<th>Type of price used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef and veal</td>
<td>BF</td>
<td>Net importer</td>
<td>Import price (CIF)</td>
<td>Traded price, Country’s own prices</td>
</tr>
<tr>
<td>Milk</td>
<td>MK</td>
<td>Net importer</td>
<td>Import price (CIF)</td>
<td>Traded price, Country’s own prices</td>
</tr>
<tr>
<td>Poultry</td>
<td>PT</td>
<td>Net importer</td>
<td>Import price (CIF)</td>
<td>Traded price, Country’s own prices</td>
</tr>
<tr>
<td>Potatoes</td>
<td>PO</td>
<td>Net importer</td>
<td>Import price (CIF)</td>
<td>Traded price, Country’s own prices</td>
</tr>
<tr>
<td>Pigmeat</td>
<td>PK</td>
<td>Net importer</td>
<td>Export price (FOB)</td>
<td>Traded price, other country</td>
</tr>
</tbody>
</table>

Source: OECD

Estimations for single commodity transfer are made on aggregate level for the whole economy of the country. It does not account for differences between regions. It is especially the case for Russian Federation, as it consists of more than 80 regions, grouped in federal districts, and the regions and federal districts vary significantly in commodity prices, agricultural production and consumption. It is possible to calculate corresponding coefficients that will break down country’s SCT to recalculate it into SCT for separate federal districts.

In case of potatoes, OECD estimates $TCT_c$, $OTC_c$, and $EFC_c$ are equal to zero. In this relation, share of specific region $j$ in country’s SCT for potatoes can be expressed as:

$$SCT_{cj} = (\alpha_{1cj} * QP_c^* * a_{zj} * PP_c - \alpha_{1cj} * QP_c^* * a_{zj} * RP_c)$$  \hspace{1cm} (3)

where $\alpha_{1cj}$ - regional coefficient for $QP_c$;

$\alpha_{zj}$ - regional coefficient for $PP_c$;

$\alpha_{zj}$ - regional coefficient for $RP_c$.

SCT in different regions can be calculated according to the differences in productions quantities, producer’s prices and reference prices (assuming both $PP$ and $RP$ are constants among regions). There are no differences in quality between imported and domestically produced products, and no weight adjustment made, reference price is equal:

$$RP_c = BP_c$$  \hspace{1cm} (4)

As prices used in calculation are adjusted to the farm gate level, the costs of transportation of imported product to country’s wholesale market increase reference price, while costs of transportation of domestically produced products to the wholesale market decrease reference price. Due to the fact that reliable data on transportation costs in both directions are difficult to obtain, these costs can be omitted in majority of cases as per OECD methodology.

Allocation of SCT to a specified producer inside a region becomes complicated due to the fact, that not all produced volume of commodity is consumed inside the region, and not all consumed volume of commodity is produced inside the region. At the same time, allocation to a producer might be done on the basis of fertile land. For higher precision, fertile land of a specific commodity might be used for calculations.

Allocation of SCT to a producer on per hectare of fertile land helps to capture differences in production capacity of the region, rather than consumption volumes. This type of allocation can also be very helpful to attribute the region’s SCT to farm size category (small farms, medium farms, vertically integrated agricultural holdings etc), as well as to attribute the region’s SCT to each individual farm, as this information is normally easy to obtain from statistical databases. It is important to mention, that SCT per hectare should be considered with opposite sign in comparison to SCT. This is done due to the fact, that SCT shows transfers from consumer’s point of view, while SCT per hectare makes more sense from producer’s perspective.
4. Results and discussions

Consumer SCT for potatoes for different Russian federal districts are shown in the Table 2. Values for Russian Federation are calculated as a sum of values for all regions. For Russian Federation in general, in year 2010 single commodity transfer to producers was equal to 202,837 mln rubles, while it dropped to negative 22,840 mln rubles in the next year of 2011. The changes in SCT are mainly due to significant increase in potatoes production that entailed producers’ price decrease, whilst reference price, i.e. border price, did not show significant changes (see Table 3). During the period of 2012-2016 there was no visible trend, as SCT showed significant differences between consecutive years. Regions of Russia did not show a trend in SCT as well. All of them had higher values in 2010 and 2012, while negative values in 2014 and (except Siberian Federal District) in 2015.

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</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>SCTc1</td>
<td>47,820.42</td>
<td>503.73</td>
<td>111,611.16</td>
<td>21,800.46</td>
<td>-13,060.73</td>
<td>-5,375.01</td>
<td>80,032.31</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>SCTc2</td>
<td>13,378.32</td>
<td>-916.75</td>
<td>15,544.80</td>
<td>908.85</td>
<td>-5,439.73</td>
<td>-11,376.83</td>
<td>7,733.50</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>SCTc3</td>
<td>11,749.92</td>
<td>-8,631.24</td>
<td>8,473.67</td>
<td>-3,613.28</td>
<td>-7,112.91</td>
<td>-7,799.62</td>
<td>12,912.05</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>SCTc4</td>
<td>9,885.73</td>
<td>-5,334.91</td>
<td>11,490.42</td>
<td>-1,602.28</td>
<td>-5,994.43</td>
<td>-7,378.36</td>
<td>5,218.92</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>SCTc5</td>
<td>32,380.71</td>
<td>-12,438.76</td>
<td>87,828.16</td>
<td>11,527.73</td>
<td>-4,747.37</td>
<td>-23,848.34</td>
<td>62,597.25</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>SCTc6</td>
<td>20,057.35</td>
<td>-4,088.68</td>
<td>23,410.60</td>
<td>6,439.61</td>
<td>-2,162.26</td>
<td>-3,629.58</td>
<td>13,330.51</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>SCTc7</td>
<td>58,947.54</td>
<td>18,533.03</td>
<td>49,378.84</td>
<td>946.57</td>
<td>-2,187.70</td>
<td>1,951.40</td>
<td>48,788.77</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>SCTc8</td>
<td>8,617.33</td>
<td>-10,466.96</td>
<td>5,298.58</td>
<td>-7,414.47</td>
<td>-13,584.25</td>
<td>-17,832.87</td>
<td>-2,898.33</td>
</tr>
</tbody>
</table>

Source: own calculations

Production volumes, producers’ prices and reference prices in regions of Russia had the same dynamics as in Russian Federation in general.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Russian Federation</td>
<td>Prod:</td>
<td>21140.50</td>
<td>32681.30</td>
<td>29532.40</td>
<td>30184.40</td>
<td>31501.50</td>
<td>33645.90</td>
<td>31107.80</td>
</tr>
<tr>
<td></td>
<td>price:</td>
<td>19503.73</td>
<td>8470.63</td>
<td>9571.62</td>
<td>12451.11</td>
<td>14550.22</td>
<td>12680.47</td>
<td>14461.31</td>
</tr>
<tr>
<td></td>
<td>Ref price</td>
<td>16124.36</td>
<td>18653.68</td>
<td>18193.75</td>
<td>10149.47</td>
<td>11787.73</td>
<td>14429.24</td>
<td>16425.30</td>
</tr>
</tbody>
</table>

Source: Rosstat, OECD.

Comparison of averages gives another insight into the movement in SCT in regions of Russia. As seen on the Table 4, average SCT during the period of 2002-2013, before Russian import ban, was positive in all regions except two, Southern and Far Eastern Federal Districts. Values of 3-year average before Russian import ban (2011-2013) had the same sign as in 2002-2013 but are higher in value for each of the regions. Comparison of 3-year average before and after import ban (2014-2016) reveals decrease for all regions, except Southern Federal District which showed 46.95% increase in transfers from producers to consumers. At the same time, in case of Southern Federal District the 3-year average values changed from negative 1,256.95 mln rubles to negative 666.83 mln rubles, which is the lowest absolute changes in 3-year average after 2013 across all Russian regions. All other regions experienced significant decrease in 3-year average. This fact constitutes, that transfers from producers to consumers decreased in the period after Russian import ban for the majority of
Russian regions. For majority of Russian regions, consumers were net receivers of transfers during the whole period of 2002-2016, but after Russian import ban the value of this net benefit decreased significantly. While there is an evidence that Russian consumers benefited after 2013, the magnitude of how much consumers benefited in one region in comparison to other was significantly different for different regions. At the same time, it is important to understand what the drivers of this benefit were. Methodology proposed in this paper helps to estimate in percentage terms the differences in SCT between regions, taking into consideration how far each region’s SCT is from expected value, calculated using median values.

Table 4. Changes in averages for commodity SCT for potatoes for years 2010-2016, in millions of rubles

<table>
<thead>
<tr>
<th>Region</th>
<th>2002-2013 average</th>
<th>2011-2013 average</th>
<th>2014-2016 average</th>
<th>Absolute change of average after 2013</th>
<th>% change of average after 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>21,013.60</td>
<td>44,638.45</td>
<td>20,532.19</td>
<td>-24,106.26</td>
<td>-54.00%</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>2,706.57</td>
<td>5,178.97</td>
<td>-3,027.69</td>
<td>-8,206.65</td>
<td>-158.46%</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>-2,439.53</td>
<td>-1,256.95</td>
<td>-666.83</td>
<td>590.13</td>
<td>46.95%</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>1,203.25</td>
<td>1,517.74</td>
<td>-2,717.96</td>
<td>-4,235.70</td>
<td>-279.08%</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>15,729.43</td>
<td>28,972.38</td>
<td>11,333.85</td>
<td>-17,638.53</td>
<td>-60.88%</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>5,266.66</td>
<td>8,587.18</td>
<td>2,512.89</td>
<td>-6,074.28</td>
<td>-70.74%</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>15,032.02</td>
<td>22,952.81</td>
<td>16,184.16</td>
<td>-6,768.66</td>
<td>-29.49%</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>-923.45</td>
<td>-4,194.28</td>
<td>-11,438.48</td>
<td>-7,244.20</td>
<td>-172.72%</td>
</tr>
</tbody>
</table>

Source: own calculations

Components of regional SCT shows the production and price elasticity of SCT.

Table 5. Components of regional SCT after applying Taylor series approach for years 2010-2016, in millions of rubles

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production elasticity of SCT</td>
<td>195,362.09</td>
<td>-46,866.76</td>
<td>316,829.05</td>
<td>12,447.13</td>
<td>-81,083.12</td>
<td>-119,193.23</td>
<td>181,948.56</td>
</tr>
<tr>
<td>Price elasticity of SCT</td>
<td>-15,448.29</td>
<td>-23,746.86</td>
<td>-14,544.94</td>
<td>-19,357.31</td>
<td>-28,279.51</td>
<td>-28,864.48</td>
<td>-23,056.98</td>
</tr>
</tbody>
</table>

Source: own calculations

Impacts of differences in production and differences in prices that are shown on Table 6 and Table 7, provide an evidence, that the main driver of the differences in SCT among Russian regions is difference in production. Except Far Eastern Federal District, all of the regions showed dependence on production coefficient, because production coefficient describes more than 50% of difference in SCT in at least 4 cases out of 7. For Far Eastern Federal District, price coefficient describes more than 50% of difference for the whole period of 2010-2016.

Table 6. Impacts of production coefficient $\alpha_{ij}$ on regional SCT after applying Taylor series approach for years 2010-2016, in %.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>100.00%</td>
<td>148.54%</td>
<td>97.72%</td>
<td>66.23%</td>
<td>113.70%</td>
<td>125.96%</td>
<td>89.03%</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>299.76%</td>
<td>35.70%</td>
<td>88.69%</td>
<td>-123.48%</td>
<td>-277.69%</td>
<td>-36.76%</td>
<td>82.32%</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>72.70%</td>
<td>-12.08%</td>
<td>15.28%</td>
<td>2.96%</td>
<td>-52.14%</td>
<td>-418.77%</td>
<td>393.04%</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>73.27%</td>
<td>-30.84%</td>
<td>51.93%</td>
<td>7.85%</td>
<td>-116.27%</td>
<td>-374.64%</td>
<td>45.64%</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>100.00%</td>
<td>98.55%</td>
<td>98.04%</td>
<td>50.85%</td>
<td>142.76%</td>
<td>107.48%</td>
<td>84.57%</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>53.40%</td>
<td>115.56%</td>
<td>68.52%</td>
<td>3.43%</td>
<td>-39.36%</td>
<td>-36.45%</td>
<td>393.04%</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>93.52%</td>
<td>-91.83%</td>
<td>98.00%</td>
<td>155.12%</td>
<td>242.33%</td>
<td>433.63%</td>
<td>71.08%</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>43.19%</td>
<td>-10.43%</td>
<td>32.94%</td>
<td>2.62%</td>
<td>-15.34%</td>
<td>-16.43%</td>
<td>25.84%</td>
</tr>
</tbody>
</table>

Source: own calculations
Table 7. Impacts of price coefficient $\alpha_{2cj}$ on regional SCT after applying Taylor series approach for years 2010-2016, in %.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>0.00%</td>
<td>-48.54%</td>
<td>2.28%</td>
<td>33.77%</td>
<td>-13.70%</td>
<td>-25.96%</td>
<td>10.97%</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>-199.76%</td>
<td>64.30%</td>
<td>11.31%</td>
<td>223.48%</td>
<td>377.69%</td>
<td>136.76%</td>
<td>17.68%</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>27.30%</td>
<td>112.08%</td>
<td>84.72%</td>
<td>97.04%</td>
<td>152.14%</td>
<td>518.77%</td>
<td>-293.04%</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>26.73%</td>
<td>130.84%</td>
<td>48.07%</td>
<td>92.15%</td>
<td>216.27%</td>
<td>474.64%</td>
<td>54.36%</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>0.00%</td>
<td>1.45%</td>
<td>1.96%</td>
<td>49.15%</td>
<td>-42.76%</td>
<td>-7.48%</td>
<td>15.43%</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>46.60%</td>
<td>-15.56%</td>
<td>31.48%</td>
<td>96.57%</td>
<td>136.76%</td>
<td>17.68%</td>
<td>136.45%</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>6.48%</td>
<td>191.83%</td>
<td>2.00%</td>
<td>-55.12%</td>
<td>-142.33%</td>
<td>-333.63%</td>
<td>28.92%</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>56.81%</td>
<td>110.43%</td>
<td>67.06%</td>
<td>97.38%</td>
<td>115.34%</td>
<td>116.43%</td>
<td>74.16%</td>
</tr>
</tbody>
</table>

Source: own calculations

Table 8. Fertile land used for potatoes for years 2010-2016, in hectares

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>575,860.00</td>
<td>568,060.00</td>
<td>549,860.00</td>
<td>507,670.00</td>
<td>483,800.00</td>
<td>475,140.00</td>
<td>430,750.00</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>90,640.00</td>
<td>91,470.00</td>
<td>88,420.00</td>
<td>77,200.00</td>
<td>73,470.00</td>
<td>74,080.00</td>
<td>71,760.00</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>143,800.00</td>
<td>146,500.00</td>
<td>148,500.00</td>
<td>141,000.00</td>
<td>139,300.00</td>
<td>141,660.00</td>
<td>84,520.00</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>86,530.00</td>
<td>91,130.00</td>
<td>93,090.00</td>
<td>77,390.00</td>
<td>76,280.00</td>
<td>77,000.00</td>
<td>70,050.00</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>534,570.00</td>
<td>493,980.00</td>
<td>476,480.00</td>
<td>433,990.00</td>
<td>402,640.00</td>
<td>395,000.00</td>
<td>363,470.00</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>145,790.00</td>
<td>147,010.00</td>
<td>149,380.00</td>
<td>142,270.00</td>
<td>134,790.00</td>
<td>130,700.00</td>
<td>124,830.00</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>314,220.00</td>
<td>305,570.00</td>
<td>294,650.00</td>
<td>276,190.00</td>
<td>262,010.00</td>
<td>250,950.00</td>
<td>235,800.00</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>81,850.00</td>
<td>80,050.00</td>
<td>77,220.00</td>
<td>70,830.00</td>
<td>66,310.00</td>
<td>63,940.00</td>
<td>60,090.00</td>
</tr>
</tbody>
</table>

Source: Rosstat (2019)

Change in the position of producers can be assessed by allocation of SCT in region to the hectare of fertile land used for potatoes. Table 8 shows the square of fertile land for potatoes for Russian regions, while Table 9 shows the SCT value per hectare.

After Russian import ban in 2014, all regions show either decrease in SCT per hectare or change in sign of transfer. Negative SCT per hectare means that producers are net receivers of transfers from consumers, and this situation is observed in almost all the regions in years 2014-2015.

Table 9. SCT for potatoes per hectare of fertile land for years 2010-2016, in thousands of rubles

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>83,041.75</td>
<td>886.75</td>
<td>202,981.04</td>
<td>42,942.19</td>
<td>-26,996.14</td>
<td>-11,312.48</td>
<td>185,797.59</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>147,598.38</td>
<td>-10,022.43</td>
<td>175,806.41</td>
<td>11,772.68</td>
<td>-74,040.16</td>
<td>-153,574.92</td>
<td>107,768.99</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>81,710.13</td>
<td>-58,916.33</td>
<td>57,061.73</td>
<td>-25,626.13</td>
<td>-51,061.79</td>
<td>-55,058.71</td>
<td>152,769.14</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>114,246.31</td>
<td>-58,541.73</td>
<td>123,433.40</td>
<td>-20,704.01</td>
<td>-78,584.55</td>
<td>-95,822.89</td>
<td>74,502.84</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>60,573.37</td>
<td>-25,180.70</td>
<td>184,327.07</td>
<td>26,562.19</td>
<td>-11,790.62</td>
<td>-60,375.54</td>
<td>172,221.23</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>137,577.02</td>
<td>-27,812.24</td>
<td>156,718.45</td>
<td>45,263.31</td>
<td>-16,041.66</td>
<td>-27,770.28</td>
<td>106,789.33</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>187,599.58</td>
<td>60,650.68</td>
<td>167,584.74</td>
<td>3,427.24</td>
<td>-8,349.69</td>
<td>7,776.06</td>
<td>206,907.43</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>105,282.00</td>
<td>-130,755.25</td>
<td>68,616.67</td>
<td>-104,679.85</td>
<td>-204,859.70</td>
<td>-278,900.06</td>
<td>-48,233.14</td>
</tr>
</tbody>
</table>

Source: own calculations

Significant decline in SCT per hectare in 2014 can be an evidence of Russian import ban effect, as it was introduced in 2014, but it can be noticed that almost the same situation has happened in 2011. The reason behind can be found in comparison of price coefficient impact from Table 7. In both 2011 and 2014-2015, the
impact of price coefficient on the difference between regions was higher than 50% in majority of the regions. Generally speaking, higher impact of price coefficient is associated with higher transfers from consumers to producers. Producers benefit more from increase in price of potatoes, then from increase in production volumes.

It is important to mention, that production volume of potatoes in Russian Federation in 2010 and 2011 increased during one year from 21,140.50 mln tons to 32,681.30, and the producers’ price dropped from 19,503.73 rubles per ton to 8,470.63 rubles per ton. Reference price stayed on comparably stable level of 16,124.36 rubles per ton in 2010 and 18,653.68 rubles per ton in 2011. Sharp increase in production caused drop in prices on domestic market, and this fact should have led consumers to become net receivers of transfers. On the country level this was true, but did not happen in each region, therefore transfers in separate regions show different picture, different from the transfers on the country level.

At the same time, SCT per hectare has remarkably grown in 2016, offsetting the impact of import ban. Cumulative amount of SCT per hectare for the years 2010-2016 are shown on the Table 10.

Table 10. Cumulative SCT for potatoes per hectare of fertile land for years 2010-2016, in thousands of rubles

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Federal District</td>
<td>477,340.70</td>
<td>394,298.94</td>
<td>393,412.19</td>
<td>190,431.15</td>
<td>147,488.96</td>
<td>174,485.11</td>
<td>185,797.59</td>
</tr>
<tr>
<td>North-Western Federal District</td>
<td>205,308.95</td>
<td>57,710.57</td>
<td>67,733.00</td>
<td>-108,073.41</td>
<td>-119,846.08</td>
<td>-45,805.92</td>
<td>107,768.99</td>
</tr>
<tr>
<td>Southern Federal District</td>
<td>100,878.04</td>
<td>19,167.91</td>
<td>78,084.24</td>
<td>21,022.51</td>
<td>46,648.64</td>
<td>97,710.43</td>
<td>152,769.14</td>
</tr>
<tr>
<td>North-Caucasian Federal District</td>
<td>58,529.37</td>
<td>-55,716.95</td>
<td>2,824.79</td>
<td>-120,608.61</td>
<td>-99,904.61</td>
<td>-21,320.05</td>
<td>74,502.84</td>
</tr>
<tr>
<td>Volga Federal District</td>
<td>346,337.01</td>
<td>285,763.64</td>
<td>310,944.33</td>
<td>126,617.26</td>
<td>100,055.07</td>
<td>111,845.69</td>
<td>172,221.23</td>
</tr>
<tr>
<td>Ural Federal District</td>
<td>374,723.94</td>
<td>237,146.91</td>
<td>264,959.15</td>
<td>108,240.70</td>
<td>62,977.39</td>
<td>79,019.05</td>
<td>106,789.33</td>
</tr>
<tr>
<td>Siberian Federal District</td>
<td>625,596.04</td>
<td>437,996.46</td>
<td>377,345.78</td>
<td>209,761.04</td>
<td>206,333.80</td>
<td>214,683.50</td>
<td>206,907.43</td>
</tr>
<tr>
<td>Far Eastern Federal District</td>
<td>-593,529.33</td>
<td>-698,811.33</td>
<td>-568,056.08</td>
<td>-636,672.76</td>
<td>-531,992.91</td>
<td>-327,133.20</td>
<td>-48,233.14</td>
</tr>
</tbody>
</table>

Source: own calculations

Our results that are based on the cumulative data show that in almost all regions and in all years the SCT per hectare amounts were positive, meaning net transfers from producers to consumers. Only Far Eastern Federal district has shown negative SCT per hectare, which means that producers were in the position of net beneficiaries during all period.

Conclusions

Overall, one can see that the volume of agricultural products trade and the food security are influenced by sanctions and import bans. Although the reason of Western sanctions and embargo on Russia was political, the consequences of this decision reflected in the economies of both sides. Russian food security had experienced impact from Russian import ban after its introduction that entailed changes in domestic production volumes and led to increased self-sufficiency. However, the changes of food security in separate regions entailed by Russian import ban are not fully clear, as well as the cost of achieving food security by limiting agri-food import.

Main evidences from differences in CSE among Russian regions that stem from the current research, can be formulated as follows. During the years 2010-2011 the changes in SCT are mainly due to significant increase in potatoes production that entailed producers’ price decrease, whilst reference price, i.e. border price, did not show significant changes. During the period of 2012-2016 there was no visible trend, as SCT showed significant differences between consecutive years. Regions of Russia did not show a trend in SCT as well. All of them had higher values in 2010 and 2012, while negative values in 2014 and (except Siberian Federal District) in 2015. Generally, potatoes market in Russian Federation has showed, that producers have incurred most of the cost of achieving food security and self-sufficiency. During the period of 2010-2016, consumers were in the position of net beneficiaries in all Russian regions except Far Eastern Federal District. At the same time, after Russian
import ban in 2014 the value of this net benefit decreased significantly. The main driver of the differences in SCT among Russian regions is difference in production.

There is an evidence of negative SCT per hectare in almost all the regions in 2014-2015 which means, that producers are net receivers of transfers from consumers, but this effect disappears in 2016. While comparing period before and after import ban, the ban has not led to significant increase in transfers from consumers to producers. Our findings support the conclusion, that import ban had effect in 2014-2015 in some of the regions of Russian Federation, but this effect disappears already in 2016, meaning that import ban cannot be considered as a sustainable source of support for producers.

Acknowledgements

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References


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Abstract. The paper deals with consumer preferences of young people (members of Y generation) in relation to general principles of sustainability in environmental and social aspects of consumer goods purchase. The aim of the article is to evaluate the relationship between the general attitudes to the above-mentioned issues and the awareness of the “fair trade” business concept in the context of sustainable development of the young generation aged 15 - 34 in the Czech Republic. The presented results were obtained through primary research involving 840 respondents from the Czech Republic. Within the research, the quota selection features were taken into account, which were gender, age, educational attainment and respondent’s residence area. The results show that young people are interested in the origin of consumer goods they buy. They are willing to invest more in the purchase of goods if their price reflects the quality, the environmentally friendly way and the working conditions of the producers. From the point of view of the specific knowledge of the concept of Fair Trade, it was found that almost half knows it. It has been proven that young people who are interested in the origin of goods also know Fair Trade.

Keywords: behaviour; consumer; sustainability; fair trade; marketing; young generation


JEL Classifications: F10, F18, Q56

1. Introduction

Sustainable development emphasizes the interdependencies that exist between lifestyle, environmental quality and fair distribution of resources. The concept of sustainable development has traditionally been linked to environmental issues. However, one of the components of sustainable development is also the social dimension. Equal opportunities for individuals are a prerequisite for the harmonious development of human society. Social sustainability means a balance of social forces.

At the time of accelerating globalization, the differences in living conditions of developed and developing countries are still persisting and often grow (Jiroudková et al. 2015; Tvaronavičienė, Gatautis 2017; Prakash, Garg 2019). Therefore, various forms of development aid are being promoted in the international environment. In other words, people from more advanced countries are looking for ways and forms to improve living conditions in the least developed countries. One of these forms of development aid is also the idea of Fair Trade. The standard of living of the population of developed countries is unprecedentedly high. Some populations look for new ways of life and self-expression in the consumer society. Issues related to environmental sustainability, sustainable consumption and ethical consumerism are always at the forefront (Castaldo et al., 2009; Strielkowski, 2017; or Rausser et al., 2018; Bombiak, 2019; Dudin et al., 2019).

The “fair trade” business concept represents one of the possible ways of alleviating poverty in developing countries. The funds received from customers go directly to producers or growers and can be used in a transparent
way to improve their insoluble life situation. The “Fair trade” concept is thus based on the principle of social and economic solidarity between the poorer and richer parts of the world. This system allows the consumer to influence the distribution of power in the world trade by his or her individual choice of purchase. An individual can declare personal attitudes and preferences (Chiabai et al. 2014; or Varanavicius et al., 2017; Mayorova et al., 2018). The progressive growth of the fair trade market is becoming an important indicator of the moral self-expression of consumers. The concept is a strong platform for social solidarity in a global context. Fair Trade is therefore closely related to the principle of sustainable development.

At all historical stages, it has always been a young generation who has been the bearer of new ideas. The young generation initiates both economic and social development. Today’s young people (members of the Y generation) are individuals who are just entering the productive period of their lives. Thus, they are young consumers who form a group of current and future customers. Their attitudes and preferences will influence the shape of trade in the coming years. It is therefore a highly topical issue to find out the views, attitudes and preferences of this young generation of consumers in relation to alternative business concepts.

The aim of the article is to evaluate the relationship between the general attitudes to the above-mentioned issues and the awareness of the fair trade business concept in the context of sustainable development of the young generation aged 15-34 in the Czech Republic.

2. Theoretical background

The idea of Fair Trade is very closely linked to the issue of sustainability. The concept of sustainable development is defined in the Bruntland Commission Report (1987). The official title of this report is: Our common future as a development that ensures the quality of life of the present generation while retaining the choice for future generations to meet their own needs (Hauff, 1999). Social sustainability means a balance of social forces with sustainable development. The creation of a space for sustainable development is very important in all of its aspects (Hrabánková & Boháčková, 2009). Economic progress is not sustainable without social development, while social development without economic progress is not feasible (WEF, 2019). Stieglitz & Charlton (2006) emphasize that the market is not able to solve all of society’s problems. Government intervention cannot be a source of redress for all market failures. Current global governance therefore requires a policy of fair, sustainable and democratic growth (Čábelková et al., 2015b).

The contemporary world is heavily globalized, commercially interconnected, but also divided into a rich Global North and a poor Global South. Different developments in developing and developed countries to a large extent also influenced agricultural trade (Janda et al., 2013; Abrham et al., 2015). Since the second half of the nineties occurs due to the transformation of the agrarian sector to changes in the relations between the two global areas. Agricultural products represent one of the first and the most important internationally traded commodities. Agricultural trade expands and deepens market ties that define globalization in the current concept (Raynolds et al., 2007). Smutka, Maitah & Svatoš (2018) draw attention to the need to identify the main differences in agricultural trade between developed and developing countries. Fair Trade Business volume is not significant in the global economy. However, a steady increase in the sector can be observed. Fair Trade concept becomes a way of moral expression of conscious consumers from Europe and the USA (Goodman, 2004). Fair Trade can be seen as an ethical alternative to neoliberal market practice (Alvarado, 2009).

The definition of Fair Trade according to FINE (2001) is considered a well-established and generally accepted definition. According to this definition: „Fair Trade is a trading partnership, based on dialogue, transparency and respect that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers – especially in poorer southern countries. Fair trade organizations, backed by consumers, are engaged actively in supporting producers, raising awareness and in campaigning for changes in the rules and practice of conventional international trade“ (Carter et al., 2015; Salvador et al., 2014; Ballet and Carimentrand, 2010; or Becchetti and Huybrechts, 2008).
Fair Trade Business affects many areas. It is not only the preservation of sustainability, but also the area of human rights, awareness of responsibility for producers and changes in some structures of international trade. Focusing on corporate social responsibility is very important (Ciobanu et al., 2019; Bernardi, 2019).

Furthermore, the transfer of additional activities (processing, packaging) to the countries of origin has a positive effect. The Fair Trade concept provides producers with guaranteed prices, fair revenues, better working conditions and the preservation of local crafts (Gould, 2003).

Fair Trade production is mainly imported into advanced market economies. The largest Fair Trade markets are currently Europe, North America (USA and Canada) and the Pacific region (Australia, New Zealand and Japan). Global sales of certified fair trade products are increasing. The highest sales volumes of fair trade products in Europe are recorded in the UK, Germany, France and Switzerland (Sen, Garnizova and Negecov, 2015). European countries are important importers of fair trade production. The advanced countries of Europe play a significant role in promoting the fair trade concept. However, there are differences between countries within the European area, especially in terms of acceptance and awareness of Fair trade.

Hume (2010) pays attention to the importance of avoiding the negative environmental impact of excessive consumption for sustainability (Androniceanu, 2017; Havrierniková, Kordoš, 2019). Particular attention should be drawn to consumer behavior in relation to ethical principles of consumption and sustainability (Coppola et al., 2017, Terstappen et al., 2013).

**Figure 1.** Stages of awareness model for the consumption decision process of fair trade products

Source: Sampedro in Manzano et al. (2012)

Jisana (2014) states that the consumer is every person involved in the consumption process. A consumer is an individual who buys for personal use or realizes the needs of a family or household through purchase. Stávková & Sharma (2005) consider the family to be the most important consumer unit and one of the most important primary consumer reference groups. According to Leal in Manzano, Rivas & Bonilla (2012), consumer behavior includes all activities that are actively pursued through their informed choice. Activities take place throughout the purchasing process, before and after it. The similar results are obtained by some studies in tourism where tourists are consumers enjoying the destination before, during, and after their visit (Strielkowski et al., 2012; or Radovic et al., 2017).

Roberts & Lilien (1993) emphasize the diversity of consumers in terms of personalities, values, preferences and other characteristics. In this context, Manchiraju & Sadachar (2014) define an ethical consumer as a person who has certain political, religious, environmental, social or other reasons to prefer a particular product.
In Figure 1 above are shown the factors and their roles that influence the decision-making process in Fair Trade. Sampedro (2003) created this model on the basis of the level of social awareness in the decision-making process. Consumer decision-making process involves several phases: social disinterest, social attitude, ethical behavior and social commitment behavior (Sampedro in Manzano, Rivas & Bonilla 2012).

The concept of generation is understood in a very broad way in the contemporary world. It allows understanding of the differences in the age groups of the society. It helps to identify personality development in historical time (Corsten, 2007; Pilcher, 1994). The result of the generalization of the concept of generation is the concept of cohort. A cohort is a group of people who have experienced an event in the same time period (May, 2010). Hammarström (2004) states that the age cohort is the link between the individual course of life and the historical changes in society (Vasile & Androniceanu, 2018). Corsten (2007) concludes that these sets of persons can be viewed in two ways. Groups of persons can be examined for their common characteristics (eg level of education, professional qualifications, income). On the other hand, there are also subjective characteristics (attitudes, value beliefs, preferences or motives) (Corsten, 2007).

The Y Generation are young people, born in the 1980s and 1990s. The exact definition of generations may vary according to individual authors. Some authors define the date of birth exactly. Other authors have reported only generally the decade of birth (Kim and Jang, 2014, Zotyková, 2014, Jang, Kim and Bonn, 2011). The authors do not coincide even in the exact years of birth. Zotyková (2014) states that in some cases younger people can also be added to the Y generation. The term “young adults and young people” is also used to refer to this population (Zotyková, 2014). An overview of the Y generation definitions is given in Table 1.

### Table 1. Definition of Generation Y (different authors’ approaches)

<table>
<thead>
<tr>
<th>Period of birth</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978 – 1988</td>
<td>Martin, 2005</td>
</tr>
<tr>
<td>1980 – 1994</td>
<td>Kumar &amp; Lim, 2008; Weiler, 2005</td>
</tr>
<tr>
<td>1980 – 1999</td>
<td>Lissitsa &amp; Kol, 2016; Gurau 2012; Crampton &amp; Hodge, 2009</td>
</tr>
<tr>
<td>1981 - 1999</td>
<td>Bolton et al., 2013</td>
</tr>
<tr>
<td>1982 - 2000</td>
<td>Brosdahl &amp; Carpenter, 2011; McCrindle, 2009; Strauss &amp; Howe, 2000</td>
</tr>
</tbody>
</table>

Source: Own elaboration, 2019

Each individual is formed throughout the life by a variety of internal and external influences that shape his personality. A whole generation is also affected by the times in which she grew up. Members of generation Y have certain specific characteristics that determine their behavior and attitudes.

Vysekalová et al. (2011) emphasizes the importance of social links and life in the community. Technology is being used by the young generation to build their social life. Members of the Y generation prefer to be part of a group within which they can share information. They do not consider the loss of privacy important (Zemke, Raines & Filipczak, 2013; Van den Bergh & Behrer, 2012). Their typical features include great flexibility that reflects them in all areas of life. Generation Y is able to solve more stimuli at the same time. Generation Y is more sensitive to visual stimuli and prefer summary information. (Vysekalová, et al., 2011).

Vysekalová et al (2011) consider that generation Y is more responsive to environmental problems. However, Van den Bergh & Behrer (2012), on the other hand, argue that environmental protection is not a typical issue of this generation, but that it is the result of today’s development in relation to sustainable development. Suchomel (2005) notes that this age group has a strong interest in ethical consumption.
3. Research objective and methodology

Theoretical bases of the article were compiled through the analysis of secondary sources (examining documents, i.e. books and scientific articles) and the synthesis of knowledge. Current statistical data were taken from the official Internet information sources. Primary data were obtained through quantitative research by means of a questionnaire survey. The sample of respondents was obtained by a quotas choice.

The data were obtained by quantitative research using a questionnaire survey among 840 respondents \((n = 840)\) from the age of 15 to 34.

As for gender, 49.6\% (417) of the respondents were females and 50.4\% (423) were males. In terms of the age, the age group from 15 to 19 years was represented by 170 (20.2\%) respondents. The age group from 20 to 24 years was represented by 200 (23.8\%) respondents. The respondents in the age from 25 to 29 years accounted for 210 (25.0\%) and the respondents in the age from 30 to 34 years accounted for 260 (31.0\%) respondents. 347 persons (41.3\%) had permanent residence in Prague, and 176 (21.0\%) persons had permanent residence in the South Bohemian Region. The Ústí Region was represented by 229 (27.3\%) persons and Karlovy Vary Region were represented by 88 (10.5\%). Approximately a fifth of respondents 167 (19.9\%) have university education and 285 (33.9\%) respondents have secondary education with the GCSE. Graduates of secondary education without the GCSE accounted for 194 (23.1\%) of the total number of the respondents, the respondents with elementary education accounted for 194 (23.1\%).

As a part of descriptive statistics, absolute and relative frequencies were used. Furthermore, contingency tables were used. During the data analysis, the following null hypotheses were tested:

- \(H_01\): The level of interest in the origin of a product when purchasing regular consumer goods does not depend on the respondent’s sex.
- \(H_02\): The level of interest in the origin of a product when purchasing regular consumer goods is independent of the respondent’s age.
- \(H_03\): The degree of interest in the origin of a product when purchasing regular consumer goods does not depend on the respondent’s level of educational attainment.
- \(H_04\): The willingness to pay a higher price for a product if its price reflects higher quality does not depend on the respondent’s sex.
- \(H_05\): The willingness to pay a higher price for a product, if its price reflects the environmentally friendly production method, does not depend on the respondent’s sex.
- \(H_06\): The willingness to pay a higher price for a product, if its price reflects the contribution to the higher wages of the people who contributed to its production, does not depend on the respondent’s gender.
- \(H_07\): The willingness to pay a higher price for a product if its price reflects higher investment in working conditions of people in the production process does not depend on the respondent’s sex.
- \(H_08\): Knowledge of the concept of Fair Trade does not depend on the respondent’s sex.
- \(H_09\): Knowledge of the term Fair Trade does not depend on the respondent’s age.
- \(H_{10}\): Knowledge of Fair Trade does not depend on respondent level of education.

In this paper the following abbreviations are used: FT - Fair Trade, GCSE - General Certificate of Secondary Education, USA – United States of America.

4. Results and discussion

In the first part of the questionnaire were examined general attitudes and preferences of young consumers - members of the generation Y for social and environmental issues. All respondents \((n = 840)\) answered to this group of questions.
Interest in the origin of products for regular consumer goods

Participants were asked about level of their interested in origin of products for regular consumer goods. The respondents’ answers are in the following table (Table 2.).

Table 2. The level of interest of respondents in the origin of products when purchasing regular consumer goods

<table>
<thead>
<tr>
<th>Answer</th>
<th>Total</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absolute</td>
<td>Relative</td>
<td>Absolute</td>
</tr>
<tr>
<td>Very interested</td>
<td>84</td>
<td>10.0%</td>
<td>51</td>
</tr>
<tr>
<td>Moderately interested</td>
<td>339</td>
<td>40.4%</td>
<td>191</td>
</tr>
<tr>
<td>Slightly interested</td>
<td>250</td>
<td>29.8%</td>
<td>120</td>
</tr>
<tr>
<td>Not at all interested</td>
<td>140</td>
<td>16.7%</td>
<td>48</td>
</tr>
<tr>
<td>Don’t know</td>
<td>27</td>
<td>3.2%</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>840</td>
<td>100.0%</td>
<td>417</td>
</tr>
</tbody>
</table>

Source: Own research. 2017

The results show (Figure 3) that approximately half of the participants (50.4%, 423) responded positively, of which 10.0% (84) of the respondents declared a high interest and 40.4% (339) indicated the answer “moderately interested”. Women were clearly more interested in the origin of the product. Less than a third (29.8%, 250) of respondents were slightly interested. 16.7% (140) of the respondents not at all interested.

More than half of the men did not show interest in the origin of the purchased goods (52.4%, 222), while women took this position by approximately 40% (168). Only 3.2% (27) of the respondents had neutral opinion. Null hypotheses about independence not only on sex but also on other independent variables that were determined for this question were tested.

H₀₁: The level of interest in the origin of a product when purchasing regular consumer goods does not depend on the respondent’s sex.

Table 3. The level of interest in the origin of products when purchasing ordinary consumer goods in relation to the respondent’s sex

<table>
<thead>
<tr>
<th>Sex/Answer</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>51</td>
<td>191</td>
<td>120</td>
<td>48</td>
<td>7</td>
<td>417</td>
</tr>
<tr>
<td>Man</td>
<td>33</td>
<td>148</td>
<td>130</td>
<td>92</td>
<td>20</td>
<td>423</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>339</td>
<td>250</td>
<td>140</td>
<td>27</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies by sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>12.2%</td>
<td>45.8%</td>
<td>28.8%</td>
<td>11.5%</td>
<td>1.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Man</td>
<td>7.8%</td>
<td>35.0%</td>
<td>30.7%</td>
<td>21.7%</td>
<td>4.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>10.0%</td>
<td>40.4%</td>
<td>29.8%</td>
<td>16.7%</td>
<td>3.2%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Adjusted residues

<table>
<thead>
<tr>
<th>Sex</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>2.14</td>
<td>3.19</td>
<td>- 0.62</td>
<td>- 3.98</td>
<td>- 2.51</td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>-2.14</td>
<td>-3.19</td>
<td>0.62</td>
<td>3.98</td>
<td>2.51</td>
<td></td>
</tr>
</tbody>
</table>

Source: Own research, 2017

The results (Table 3.) show that the χ² value (29.76) is higher than the critical value (9.49) at 0.05 significance level. The null hypothesis can be rejected. The interest in the origin of products when purchasing is related to the respondent’s gender. The dependence, measured by Cramér’s V, is weak (V = 0.19). Statistically significant differences between theoretical and actual observed frequencies were found using the adjusted residue method. At the significance level 0.001 residuals between the empirical and theoretical frequency expresses that statistically significantly are men less interested in origin of purchased goods.
**H₂**: The level of interest in the origin of a product when purchasing regular consumer goods is independent of the respondent’s age.

Table 4. The rate of interest of respondents in the origin of products when purchasing regular consumer goods in relation to the respondent age category

<table>
<thead>
<tr>
<th>Age/Answer</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 19 old</td>
<td>15</td>
<td>68</td>
<td>55</td>
<td>27</td>
<td>5</td>
<td>170</td>
</tr>
<tr>
<td>20 – 24 old</td>
<td>16</td>
<td>75</td>
<td>63</td>
<td>38</td>
<td>8</td>
<td>200</td>
</tr>
<tr>
<td>25 – 29 old</td>
<td>19</td>
<td>89</td>
<td>64</td>
<td>33</td>
<td>5</td>
<td>210</td>
</tr>
<tr>
<td>30 - 34 old</td>
<td>34</td>
<td>107</td>
<td>68</td>
<td>42</td>
<td>9</td>
<td>260</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>339</td>
<td>250</td>
<td>140</td>
<td>27</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies within the age category

<table>
<thead>
<tr>
<th>Age/Answer</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 19 old</td>
<td>8.8%</td>
<td>40.0%</td>
<td>32.4%</td>
<td>15.9%</td>
<td>2.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>20 – 24 old</td>
<td>8.0%</td>
<td>37.5%</td>
<td>31.5%</td>
<td>19.0%</td>
<td>4.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>25 – 29 old</td>
<td>9.0%</td>
<td>42.4%</td>
<td>30.5%</td>
<td>15.7%</td>
<td>2.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>30 - 34 old</td>
<td>13.1%</td>
<td>41.2%</td>
<td>26.2%</td>
<td>16.2%</td>
<td>3.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>10.0%</td>
<td>40.4%</td>
<td>29.8%</td>
<td>16.7%</td>
<td>3.2%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: Own research, 2017

Null hypothesis cannot be rejected. From result of χ² test there is no statistical dependence between age of respondents and their interest in origin of goods. Respondents are in different categories of age. With increasing age it is possible to see increased interest in quality of purchased goods but results are not statistically significant.

**H₃**: The degree of interest in the origin of a product when purchasing regular consumer goods does not depend on the respondent’s level of educational attainment.

Table 5. The level of interest of respondents in the origin of products when purchasing regular consumer goods in relation to the respondent’s educational attainment

<table>
<thead>
<tr>
<th>educational attainment/Answer</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>14</td>
<td>71</td>
<td>58</td>
<td>47</td>
<td>4</td>
<td>194</td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>11</td>
<td>71</td>
<td>62</td>
<td>39</td>
<td>11</td>
<td>194</td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>29</td>
<td>119</td>
<td>83</td>
<td>43</td>
<td>11</td>
<td>285</td>
</tr>
<tr>
<td>University</td>
<td>30</td>
<td>78</td>
<td>47</td>
<td>11</td>
<td>1</td>
<td>167</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>339</td>
<td>250</td>
<td>140</td>
<td>27</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies within educational attainment

<table>
<thead>
<tr>
<th>educational attainment/Answer</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>7.2%</td>
<td>36.6%</td>
<td>29.9%</td>
<td>24.2%</td>
<td>2.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>5.7%</td>
<td>36.6%</td>
<td>32.0%</td>
<td>20.1%</td>
<td>5.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>10.2%</td>
<td>41.8%</td>
<td>29.1%</td>
<td>15.1%</td>
<td>3.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>University</td>
<td>18.0%</td>
<td>46.7%</td>
<td>28.1%</td>
<td>6.6%</td>
<td>0.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>10.0%</td>
<td>40.4%</td>
<td>29.8%</td>
<td>16.7%</td>
<td>3.2%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Adjusted residues

<table>
<thead>
<tr>
<th>educational attainment/Answer</th>
<th>Basic</th>
<th>Secondary without the GCSE</th>
<th>Secondary with the GCSE</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>-1.47</td>
<td>-1.22</td>
<td>-0.95</td>
<td>0.05</td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>-2.29</td>
<td>-1.22</td>
<td>0.76</td>
<td>1.46</td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>0.12</td>
<td>-0.29</td>
<td>-0.88</td>
<td>0.76</td>
</tr>
<tr>
<td>University</td>
<td>3.83</td>
<td>1.87</td>
<td>-0.91</td>
<td>-3.90</td>
</tr>
</tbody>
</table>

Source: Own research, 2017
The χ² statistic value (46.41) is higher than the critical χ² value (21.03) of 12 degrees of freedom at 0.05 significance level. The null hypothesis can be rejected. The level of interest of respondents in the origin of products depends on the level of educational. However, the dependence measured by Cramér’s V is weak ($V = 0.14$). The adjusted residue analysis shows that a statistically significant difference from the theoretical frequencies (level of significance of 0.001) shows mainly in preferences of university students who declare a high interest in the origin of products in their answers. 18% of university graduates are very interested in origin of goods in comparison with average of whole sample (10%). Only 6.6% of university-educated respondents declared Not at all interested compared to 16.6% of the whole sample. On the other hand, respondents with basic education answered not at all interested in 25% of cases.

Willingness to pay more for a product if the price reflects selected aspects

Attitude of the young generation to the general principles of Fair Trade was examined. Most consumers are quite sensitive to the price of their purchases. Respondents were asked if they would be willing to pay a higher price for the product if it reflected specific aspects.

Of the total number of respondents ($n = 840$), almost 80% (79.5%; 668) would accept a higher price if this would reflect a higher product quality. Another positively accepted reason for the higher product price was the environmentally friendly way of its production (60.6%; 509). The above-mentioned answers show the interest of the generation Y in quality production and environmental issues.

The second group of questions reflects respondents’ reflection on social issues. Less than 45% of respondents said they would be willing to pay a higher price if it reflected higher investment in people’s working conditions (43.5%; 365) and 38.0% (319) of people would accept a higher price in the case of a contribution to the higher wages of people who contributed to the product with their work.

Given the visible differences in the attitudes of men and women, null hypotheses for individual variants of possible responses in relation to the gender of respondents, which are summarized in the following table, were determined and tested (Table 6.).

| Hypothesis                                                                 | degree of freedom | Statistics $\chi^2$ | Critical value | Cramér’s $V$ |
|                                                                           |                  |                    |               |             |
| H₄: The willingness to pay a higher price for a product if its price reflects higher quality does not depend on the respondent’s sex. | 2                 | 10.99              | 5.99         | 0.11        |
| H₅: Willingness to pay a higher price for a product, if its price reflects the environmentally friendly production method, does not depend on the respondent’s sex. | 2                 | 38.16              | 5.99         | 0.21        |
| H₆: The willingness to pay a higher price for a product, if its price reflects the contribution to the higher wages of the people who contributed to its production, does not depend on the respondent’s gender. | 2                 | 18.81              | 5.99         | 0.15        |
| H₇: The willingness to pay a higher price for a product if its price reflects higher investment in working conditions of people in the production process does not depend on the respondent’s sex. | 2                 | 18.95              | 5.99         | 0.15        |

*Source:* Own research, 2017

All null hypotheses were rejected. The degree of contingency was measured by Cramér’s $V$.

Knowledge of fair trade

The selected answers showed that from total number of respondents ($n = 840$), more than half (54%, 454 persons) had never encountered the term, partial knowledge of the term (answer “yes, I’ve heard about it, but I don’t know exactly” 22.9% (192 persons) declared it. Approximately the same number of respondents believed that Fair Trade was known (23.1%, 194 persons).
Null hypotheses have been established and then tested to verify relationships between socio-demographic characteristics and fair trade knowledge.

**H₈:** Knowledge of the concept of Fair Trade does not depend on the respondent’s sex.

**Table 7.** Knowledge of Fair Trade in relation to respondent’s sex

<table>
<thead>
<tr>
<th>Sex/Answer</th>
<th>Yes, I am familiar with Fair Trade</th>
<th>Yes, I’ve heard about it, but I don’t know exactly what it is</th>
<th>No, I’ve never heard about Fair Trade</th>
<th>Celkem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>116</td>
<td>104</td>
<td>197</td>
<td>417</td>
</tr>
<tr>
<td>Man</td>
<td>78</td>
<td>88</td>
<td>257</td>
<td>423</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>192</td>
<td>454</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies within sex

<table>
<thead>
<tr>
<th>Sex/Answer</th>
<th>Woman</th>
<th>Man</th>
<th>Celkem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>27.8%</td>
<td>18.4%</td>
<td>23.1%</td>
</tr>
<tr>
<td>No</td>
<td>24.9%</td>
<td>20.8%</td>
<td>22.9%</td>
</tr>
<tr>
<td>Total</td>
<td>47.2%</td>
<td>60.8%</td>
<td>54.0%</td>
</tr>
</tbody>
</table>

Adjust residuals

<table>
<thead>
<tr>
<th>Sex/Answer</th>
<th>Woman</th>
<th>Man</th>
<th>Celkem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust Residuals</td>
<td>3.22</td>
<td>1.43</td>
<td>-3.93</td>
</tr>
</tbody>
</table>

Source: Own research, 2017

The $\chi^2$ value is higher than the critical value of 2 degrees of freedom at significance level 0.05. The null hypothesis can be rejected. Knowledge of Fair Trade depends on the sex of the respondent. The dependence measured by Cramér’s $V$ is weak ($V = 0.14$). Significant differences were found by adjusted residue method. Better knowledge was declared by women in the “yes” response (27.8% vs. 18.4% of men), while men in the “no” response (47.2% women, 60.8% men). Around a quarter of the respondents, without a statistically significant for gender difference, at least heard the term, even though they did not know exactly content. Another monitored variable was age category.

**H₉:** Knowledge of the term Fair Trade does not depend on the respondent’s age.

**Table 8.** Knowledge of Fair Trade in relation to respondent age

<table>
<thead>
<tr>
<th>Age/Answer</th>
<th>Yes, I am familiar with Fair Trade</th>
<th>Yes, I’ve heard about it, but I don’t know exactly what it is</th>
<th>No, I’ve never heard about Fair Trade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 19 old</td>
<td>17</td>
<td>35</td>
<td>118</td>
<td>170</td>
</tr>
<tr>
<td>20 - 24 old</td>
<td>54</td>
<td>46</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>25 - 29 old</td>
<td>62</td>
<td>54</td>
<td>94</td>
<td>210</td>
</tr>
<tr>
<td>30 - 34 let</td>
<td>61</td>
<td>57</td>
<td>142</td>
<td>260</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>192</td>
<td>454</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies within age

<table>
<thead>
<tr>
<th>Age/Answer</th>
<th>15 - 19 let</th>
<th>20 - 24 let</th>
<th>25 - 29 let</th>
<th>30 - 34 let</th>
<th>Celkem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>10.0%</td>
<td>27.0%</td>
<td>29.5%</td>
<td>23.5%</td>
<td>23.1%</td>
</tr>
<tr>
<td>No</td>
<td>20.6%</td>
<td>23.0%</td>
<td>25.7%</td>
<td>21.9%</td>
<td>22.9%</td>
</tr>
<tr>
<td>Total</td>
<td>69.4%</td>
<td>50.0%</td>
<td>44.8%</td>
<td>54.6%</td>
<td>54.0%</td>
</tr>
</tbody>
</table>

Source: Own research, 2017

The $\chi^2$ statistic is below the critical value at 0.05 significance level. Null hypothesis cannot be rejected. The dependence of the knowledge of Fair Trade on the age of respondents has not been proven. It should be mentioned that the younger generation aged 15-34 was the subject of research, which is largely homogenised
by using of new communication technologies.

The results of many similar researches (e.g., Taylor and Boasson, 2014) indicate a strong link between Fair Trade knowledge and educational attainment. The same conclusions can be accepted on the basis of this research (see Table 9).

**H₀₁₀**: Knowledge of Fair Trade does not depend on respondent level of education.

Table 9. Knowledge of Fair Trade in relation to the respondent’s education

<table>
<thead>
<tr>
<th>Educational attainment / Answer</th>
<th>Yes, I am familiar with Fair Trade</th>
<th>Yes, I’ve heard about it, but I don’t know exactly what it is</th>
<th>No, I’ve never heard about Fair Trade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>14</td>
<td>37</td>
<td>143</td>
<td>194</td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>16</td>
<td>38</td>
<td>140</td>
<td>194</td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>77</td>
<td>72</td>
<td>136</td>
<td>285</td>
</tr>
<tr>
<td>University</td>
<td>87</td>
<td>45</td>
<td>35</td>
<td>167</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>192</td>
<td>454</td>
<td>840</td>
</tr>
</tbody>
</table>

Relative frequencies within education levels

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Yes, I am familiar with Fair Trade</th>
<th>Yes, I’ve heard about it, but I don’t know exactly what it is</th>
<th>No, I’ve never heard about Fair Trade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>7.2 %</td>
<td>19.1 %</td>
<td>73.7 %</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>8.2 %</td>
<td>19.6 %</td>
<td>72.2 %</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>27.0 %</td>
<td>25.3 %</td>
<td>47.7 %</td>
<td>100.0 %</td>
</tr>
<tr>
<td>University</td>
<td>52.1 %</td>
<td>26.9 %</td>
<td>21.0 %</td>
<td>100.0 %</td>
</tr>
<tr>
<td>Total</td>
<td>23.1 %</td>
<td>22.9 %</td>
<td>54.0 %</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Adjusted residues

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>-5.98</td>
<td>-1.43</td>
<td>6.27</td>
<td></td>
</tr>
<tr>
<td>Secondary without the GCSE</td>
<td>-5.60</td>
<td>-1.24</td>
<td>5.77</td>
<td></td>
</tr>
<tr>
<td>Secondary with the GCSE</td>
<td>1.93</td>
<td>1.19</td>
<td>-2.64</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>9.93</td>
<td>1.41</td>
<td>-9.59</td>
<td></td>
</tr>
</tbody>
</table>

Source: Own research. 2017

The $\chi^2$ value is higher than critical value at 0.05 significance level. The null hypothesis can be rejected. Knowledge of Fair Trade depends on respondent’s education. The dependence measured by Cramer V is strong ($V = 0.32$). Significant differences were found by the adjusted residue method. In particular, there was a strong dependence between university education and the answer ‘yes’ and basic education or education without GCSE and the answer ‘no’. While 52.1% knew about the term, and 26.9% of university students heard about Fair Trade. Only 7.2% and 19.1% respondents with basic education know and hear about Fair Trade. 8.2 % respondents with secondary education with the GCSE know about Fair Trade and 19.6% respondents heard about that term, respectively. More than three quarters of respondents with basic education or without GCSE have never hear term Fair Trade. Subsequently, the relationship between respondents’ interest in the origin of the product and its knowledge of Fair Trade was investigated.

Table 10. The link between the respondent’s interest in the origin of purchased goods and his knowledge of fair trade

<table>
<thead>
<tr>
<th>Interest in the origin of purchased goods / Knowledge of Fair Trade</th>
<th>Yes, I am familiar with Fair Trade</th>
<th>Yes, I’ve heard about it, but I don’t know exactly what it is</th>
<th>No, I’ve never heard about Fair Trade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very interested</td>
<td>35</td>
<td>16</td>
<td>33</td>
<td>84</td>
</tr>
<tr>
<td>Moderately interested</td>
<td>98</td>
<td>94</td>
<td>147</td>
<td>339</td>
</tr>
<tr>
<td>Slightly interested</td>
<td>50</td>
<td>53</td>
<td>147</td>
<td>250</td>
</tr>
<tr>
<td>Not at all interested</td>
<td>10</td>
<td>22</td>
<td>108</td>
<td>140</td>
</tr>
<tr>
<td>Don’t know</td>
<td>1</td>
<td>7</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>192</td>
<td>454</td>
<td>840</td>
</tr>
</tbody>
</table>
The relative frequency of Fair Trade knowledge in the same answers to the question of interest in product origin

<table>
<thead>
<tr>
<th>Interest Level</th>
<th>Very interested</th>
<th>Moderately interested</th>
<th>Slightly interested</th>
<th>Not at all interested</th>
<th>Don’t know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41.7 %</td>
<td>19.0%</td>
<td>39.3%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very interested</td>
<td>28.9%</td>
<td>27.7%</td>
<td>43.4%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately interested</td>
<td>20.0%</td>
<td>21.2%</td>
<td>58.8%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slightly interested</td>
<td>7.1%</td>
<td>15.7%</td>
<td>77.1%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all interested</td>
<td>3.7%</td>
<td>25.9%</td>
<td>70.4%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.1%</td>
<td>22.9%</td>
<td>54.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adjusted residues

<table>
<thead>
<tr>
<th>Interest Level</th>
<th>Adjusted residues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very interested</td>
<td>4.26</td>
</tr>
<tr>
<td>Moderately interested</td>
<td>3.29</td>
</tr>
<tr>
<td>Slightly interested</td>
<td>-1.39</td>
</tr>
<tr>
<td>Not at all interested</td>
<td>-4.91</td>
</tr>
<tr>
<td>Don’t know</td>
<td>-2.43</td>
</tr>
</tbody>
</table>

Source: Own research

The $\chi^2$ statistic value is higher than the critical value at 0.05 significance level. The null hypothesis can be rejected. The knowledge of Fair Trade depends on how the respondent is interested in food quality. The dependency strength measured by Cramér’s $V$ is medium ($V = 0.21$). Significant differences were found by the adjusted residue method. It has been shown that those who are very interested in the origin of goods know Fair Trade ($\alpha = 0.001$). Those who are not interested in the origin of goods don’t know the term Fair Trade ($\alpha = 0.001$)

Yamoah (2014) states that it is necessary to examine the motivation of an ethical consumer to buy production in a wider context. On the basis of consumer research, he states that the purchase is stimulated not only by social but also by personal interest. The results of the questionnaire survey, from the willingness to pay a higher price for the product, indicate a high acceptance rate of respondents. Yadav (2016) considers interest in the environment as an expression of altruism. Bissinger & Leufkens (2017) state that “effective purchases indicate that buyers of organic products are primarily motivated by sustainability considerations, then by health and ultimately expected quality improvement”. Furthermore, Bissinger & Leufkens (2017) point out the importance of ethical labels for food in terms of consumer preferences.

Pedregal & Ozcaglar-Toulouse (2011), based on their research, state that university graduates, city dwellers, and higher income groups are the most involved in buying Fair Trade products. Taylor & Boasson (2014) note that people with a liberal political opinion, women and younger people who have reached a higher level of education are willing to accept a higher product price. Manchiraju & Sadachar (2014) also hold this view. Women have a greater degree of altruism, and the strongest dependence has been found between Fair Trade knowledge and educational attainment. The expansion of the fair trade concept is influenced by the adoption of this business concept, mostly by civil society. Consumer, NGO and media activities are positive in this respect (Karjalainen and Moxham, 2013; Čábelková et al. 2015a).

5. Conclusions

The business concept of Fair Trade is a trading method its aim is to promote the opportunity of producers from third-world countries to obtain a fair proportion of the profit and sources for decent life.

The contribution of this paper is the presentation of current results in the field of young consumer’s awareness of business concept Fair Trade and its environmental and social aspects. In the competitive environment, the Fair Trade is very important for organisations, consumers and the whole society.

The first question was examined social and environmental issues. The results show that 50% of the participants responded positively. Women were clearly more interested in the origin of the product. Less than a 30% of
respondends were slightly interested. 17% of the respondents not at all interested. Only 3% of the respondents had neutral opinion. Of the total number of respondents, almost 80% would accept a higher price if this would reflect a higher product quality. Another positively accepted reason for the higher product price was the environmentally friendly way of its production (61%). The above-mentioned answers show the interest of the generation Y in quality production and environmental issues. Less than 45% of respondents said they would be willing to pay a higher price if it reflected higher investment in people’s working conditions (44%) and (38%) of people would accept a higher price in the case of a contribution to the higher wages of people who contributed to the product with their work. The results of the primary survey showed, that 46% of young respondents have a knowledge of business concept Fair Trade. Knowledge of Fair Trade depends on respondent’s education (dependence is strong).

The theoretical contribution of this paper consists in highlighting the issue Fair Trade in relation to sustainable, environmental and social aspects, while the practical contribution is to present the results of research. The limiting factor of this paper may be the fact that the survey was conducted only among young people in the Czech Republic. A possible direction for future research is the implementation of a questionnaire survey within the other aged group of people and comparison the results.

References


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INFLUENCE OF IPO ON MACROECONOMIC SECURITY OF COUNTRIES

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Abstract. In the scientific work the influence of the factor of primary public offer of securities on the macroeconomic security of the country is considered. A comparative description of the main financing attraction tools is presented. The advantages and disadvantages of using IPO in countries with developed stock market and developing countries are explored. The analysis of the development of European and Ukrainian markets of IPOs in terms of impact on general macroeconomic security has been carried out. The relationship between macroeconomic stability and economic development of the IPO is established.

Key words: IPO stock market; stock exchange; macroeconomic security; correlation-regression analysis; investment; state of the national economy


JEL Classifications: G11, O47

1. Introduction

The pattern of the global economy development determines the need for companies to invest in the development and stabilization of economic security, shaping the demand for the international capital market. One of the modern methods of attracting external financing is the primary public offering or primary public offering (IPO). The total amount of funds attracted within the framework of IPO deals on the world market annually reaches hundreds of billions of US dollars and becomes comparable to the national GDP of many countries, shaping their macroeconomic security.

During the current stage of development of the global IPO market (1997-2017), more than 25 thousand companies succeeded in attracting money through IPO in the world. Under the influence of globalization, which leads to the simplification of the transboundary movement of capital, the global financial centers focus on IPO markets, which changes the supply-side balance on regional and national equity markets, especially in the equity markets of developing countries (Korauš, A.; Gombár, M.; Kelemen, P.; Backa, S.; 2019; Karpenko, L.; Serbov, M.; Kwilinski, A.; Makedon, V. & Drobyazko, S., 2018; Mokhova, N.; Zinecker, M.; Meluzín, T. 2018; Masood, O.; Tvaronavičienė, M.; Javaria, K. 2019).
The intensity of IPO implementation, their efficiency (dynamics of securities quotations) and success (volume of attracted capital), as well as activity in the IPO markets are some of the parameters that allow to assess the state of the national macroeconomic security, as well as to determine the mood of investors and predict their behavior. IPO process participants should take into account the manifestation of global, regional and national patterns and trends in the market of primary public offerings. The global IPO market is influenced by various factors, including macroeconomic, political and geopolitical. One of the main objectives of the IPO is to maximize the capital attracted, while the high quality execution of technical preparation for an IPO does not guarantee a successful, efficient and profitable placement. Macroeconomic indicators, the state of the capital market, the current phase of the economic cycle, the choice of the site and the time for the placement, as well as internal indicators of the issuing company and many other factors can have a decisive influence both on the effectiveness of the IPO and on the level of macroeconomic security of the country.

Understanding the essence of the factors that influence the process of implementing an IPO both at the national and global markets will allow to increase the level of efficiency of placements and provide proper security (Drobyazko S., 2018a, b; Tvaronavičienė, M. 2018; Shuyan, L.; Fabuš, M., 2019).

The theoretical basis for research on the market for primary public placement was the work of leading scholars and economists, namely (Bruton et al. 2009; Elston, and Yang, 2010; Engelen and Essen 2010; Hoechle and Schmid 2007; Lin and Chuang, 2011; Johnston, and Madura, 2009). The fundamental basis of this study was also the work of studying the world and regional capital markets (Afza et al. 2013; Boulton et al. 2009; Makedon and Korneyev 2014; Mangena and Pike 2005; Welch and Ritter; 2002; Štiglic, D., 2017; Masood et al., 2017; Ashraf et al., 2019).

The basic work on the theme of foreign authors of interest to us, is devoted, mainly, to studying the issues of determining the IPO time and stock market analysis. The markets of the developing countries were less studied, and the IPO market in Ukraine was studied by single researchers. In modern scientific literature and scientific periodicals insufficient attention is paid to the influence of the quality of IPO on the macroeconomic security of the country, this aspect and determines the scientific expediency and relevance of this study.

2. The main tools for attracting funding

Initial public offering of IPO shares is considered one of the most effective and fastest investment attraction tools, which is gaining popularity among Ukrainian companies as well. Participants of investment activity, in accordance with the current legislation of Ukraine, citizens and legal entities of Ukraine and other countries that can ensure the implementation of investments as executors of orders or on the basis of an investor’s order may be citizens. Investment activity of companies is related to its need to finance its activities by using certain objects of ownership of a legal entity. For companies, a perspective way of attracting additional capital may be the placement of shares through the initial public offering of shares on the stock exchange (IPO). In this way, the company deducts a part of its ownership (or even its entirety) into open-label free-selling (Bochner et al. 2016; Masood, O.; Tvaronavičienė, M.; Javaria, K., 2019).

In Table 1 the comparative characteristics of the main instruments for attracting financing by companies in the international investment market are shown.

Comparing the above-mentioned ways of raising capital, it can be concluded that for companies it is easier and more affordable for companies to sell a stake in a company through participation in M & A transactions (mergers and acquisitions).
Table 1. Comparative characteristics of the main capital attraction tools

<table>
<thead>
<tr>
<th>Tool for attracting capital</th>
<th>IPO</th>
<th>M&amp;A (mergers and acquisitions)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>– maintaining the control over the company;</td>
<td>– there are no restrictions on the organizational and legal form of companies;</td>
</tr>
<tr>
<td></td>
<td>– obtaining a market valuation of the company;</td>
<td>– lack of requirements for further public disclosure;</td>
</tr>
<tr>
<td></td>
<td>– improvement of financial reputation of the company, which enables cheaper debt capital attraction in the future;</td>
<td>– the possibility of obtaining a price above market;</td>
</tr>
<tr>
<td></td>
<td>– enhancing the recognition and image of the company, which will contribute expanding sales markets and attracting the best human resources</td>
<td>– potential source of further funding;</td>
</tr>
<tr>
<td></td>
<td>– there are no restrictions on the organizational and legal form of companies;</td>
<td>– there is no need to bring the company into compliance with the criteria of stock exchanges;</td>
</tr>
<tr>
<td></td>
<td>– lack of requirements for further public disclosure;</td>
<td>– relatively low transaction costs</td>
</tr>
<tr>
<td></td>
<td>– the possibility of obtaining a price above market;</td>
<td>– restrictions on strategic decisions admissions;</td>
</tr>
<tr>
<td></td>
<td>– potential source of further funding;</td>
<td>– absence of a market valuation of a company</td>
</tr>
<tr>
<td></td>
<td>– there is no need to bring the company into compliance with the criteria of stock exchanges;</td>
<td>– relatively low transaction costs</td>
</tr>
<tr>
<td></td>
<td>– relatively low transaction costs</td>
<td></td>
</tr>
</tbody>
</table>

**Disadvantages**

<table>
<thead>
<tr>
<th>Tool for attracting capital</th>
<th>IPO</th>
<th>M&amp;A (mergers and acquisitions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– restrictions on the legal form of companies;</td>
<td>– restrictions on strategic decisions admissions;</td>
</tr>
<tr>
<td></td>
<td>– the need to bring the company into compliance with certain criteria;</td>
<td>– absence of a market valuation of a company</td>
</tr>
<tr>
<td></td>
<td>– permanent requirements for disclosure of information, interaction with investors;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the effect of the situation on the financial markets in the value of shares of the company;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– relatively high costs</td>
<td></td>
</tr>
</tbody>
</table>


In spite of this, public offering of shares provides many benefits, which may be of great significance for a company that is in the stage of its active development. Consequently, it can not be clearly stated that this or that capital attraction tool is the best. The right choice depends on the personal goals of the company’s owners, the strategic goals of the company, the company’s willingness to become public or to a certain investor, as well as the market environment. In addition, IPOs and M & As can be complementary tools that are appropriate at different stages of company development and towards achieving different strategic goals and achieving security of economic development. (Consulting firm (Poland).

The interest in conducting IPOs in recent times is due to the fact that this is the most effective way to simultaneously attract the necessary amount of additional financial resources, attract strategic investors and maintain state control over its strategic assets.

For countries with a developed stock market, an IPO is considered to be one of the most effective instruments for raising capital, due to the following benefits that the company gains due to its holding (Gajewski, and Gresse, 2006; Loughran, and Ritter, 2004):

– definition of market value of the company;
– ensuring the growth of the company’s value;
– improvement of financial condition;
– increase in liquidity of shares;
– access to the stock market;
– formation of economic security;
– attracting and retaining key personnel;
– absence of debt obligations;
– attracting financial resources in the future on favorable terms;
– ensuring macroeconomic security.

The main disadvantages of the IPO can be (Poberezhets, et. al. 2018):

– changing the level of corporate rights and control;
– significant expenses;
– duration of implementation;
3. Trends in the development of the European IPO market

The European IPO market remains one of the leading markets in the world and significantly increases the volume of placed shares. Despite the fact that the value of the European IPO in 2016 amounted to 27.9 billion euros, a decrease of 51% compared to 2015, in 2017 a stable economic and political situation in Europe contributed to the growth of the market (EY Global, 2017).

The reasons for the reduction of the European IPO market in 2016 were, first of all, political uncertainty and slowdown of the growth rate of the economy. Political uncertainty, falling oil and commodity prices, as well as concerns over economic slowdown in China, prevented European markets from launching an IPO in 2016. In 2015, there were only five IPOs in the media sector (IPO, which increased more than 1 billion euros).

At the same time, on some stock exchanges there was an increase in the IPO. So 2016 will be remembered as a great year for Nasdaq Nordic, as revenues on this stock exchange have grown by 33%, which has led to growing trends in Europe. Nasdaq Nordic accounted for 28% of all European IPOs in 2016, compared with 10% in 2015, with the second and third largest IPO in Europe, Dong A / S and Nets. Conversely, the London Stock Exchange accounts for 24% of its IPO revenues in 2016 compared with 29% in 2015.

The cost of IPOs for companies amounted to EUR 43.9 billion in 2017, up 57% from EUR 27.9 billion compared with 2016. Overall, in 2017, there were 348 IPOs across Europe, compared with 268 IPOs in 2016. An average price of € 195 million in 2017 will increase by 6% to € 184 million in 2016.

The value of the European IPO in 2017 amounted to EUR 43.9 billion, an increase of 57% compared with 2016, when the volume of IPO increased by 30%. Improving the economic environment throughout the EU has provided an ideal environment for the prosperity of the IPO market, as a number of candidates who postponed their plans to hold an IPO in 2016, entered the list in 2017. Geopolitical uncertainty remains linked to Brexit’s ongoing talks, however, markets confirm to be stable when volatility remains low and indicators reach record highs.

London returned to its first place both in value and volume, rising by 12.5 billion euros, an increase of 86% by 2016, mainly due to an increase in the number of investment instruments and an increase in cross-border IPO operations (IPO Watch Europe, 2017). The London and Irish stock exchanges also jointly organized the largest European IPO in 2017, Allied Irish Banks plc. Borsa Italiana is also part of the London Stock Exchange, which became the second most active exchange in terms of raising the value of € 5.2 billion after the Pirelli mega-IPO (IPO Watch Europe, 2018).

In Figure 1 the dynamics of the volume of the European IPO (IPO) market in 2007-2017 is shown. With regard to the European market for IPO, during the post-crisis period, the lowest stock exchanges in Europe were the volume of attracted capital in 2008, 2009, 2012: 14; 7.1 and 11.3 billion euro respectively (IPO Watch Europe, 2018).
Figure 1. Dynamics of the European IPO (IPO) market volume in 2007-2017

Source: Prepared by the authors from statistical processing results year

In Table 2 the dynamics of IPO production on European stock exchanges in 2015-2017 is shown.

Table 2. Dynamics of issuance of IPOs on European stock exchanges in 2015-2017

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Years</th>
<th>Absolute deviation, +/-</th>
<th>Rate of increase, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>London Group of Stock Exchanges</td>
<td>16370 8043 17634</td>
<td>-8327 9591</td>
<td>-50,87 119,25</td>
</tr>
<tr>
<td>London Stock Exchange</td>
<td>- 67 12472</td>
<td>67 12405</td>
<td>- 18514,93</td>
</tr>
<tr>
<td>Borsa Italiana</td>
<td>- 1343 5162</td>
<td>1343 3819</td>
<td>- 284,36</td>
</tr>
<tr>
<td>Nasdaq Nordic</td>
<td>5905 7861 3996</td>
<td>1956 -3865</td>
<td>33,12 -49,17</td>
</tr>
<tr>
<td>Nasdaq Stockholm</td>
<td>5216 2222 2326</td>
<td>-2994 104</td>
<td>-57,40 4,68</td>
</tr>
<tr>
<td>Nasdaq Helsinki</td>
<td>409 676 1475</td>
<td>267 799</td>
<td>65,28 118,20</td>
</tr>
<tr>
<td>Nasdaq Copenhagen</td>
<td>168 4891 185</td>
<td>4723 -4706</td>
<td>2811,31 -96,22</td>
</tr>
<tr>
<td>Nasdaq Tallinn</td>
<td>- 14 4</td>
<td>14 -10</td>
<td>- -71,43</td>
</tr>
<tr>
<td>Nasdaq Riga</td>
<td>- - 3</td>
<td>- 3</td>
<td>- -</td>
</tr>
<tr>
<td>Nasdaq Iceland</td>
<td>112 58 -</td>
<td>-54 -</td>
<td>-48,21 -</td>
</tr>
<tr>
<td>Nasdaq Vilnius</td>
<td>- 3 -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Nasdaq Copenhagen</td>
<td>168 -168 0</td>
<td>-100,00 -</td>
<td>-</td>
</tr>
<tr>
<td>Six Swiss exchanges</td>
<td>2039 733 3853</td>
<td>-1306 3120</td>
<td>-64,05 425,65</td>
</tr>
<tr>
<td>Irish Stock Exchange</td>
<td>394 - 3756</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>BME (spanish stock exchange)</td>
<td>7794 1327 3696</td>
<td>-6467 2369</td>
<td>-82,97 178,52</td>
</tr>
<tr>
<td>Euronext</td>
<td>11228 3455 3258</td>
<td>-7773 -197</td>
<td>-69,23 -5,70</td>
</tr>
<tr>
<td>Euronext Paris</td>
<td>472 824 1976</td>
<td>352 1152</td>
<td>74,58 139,81</td>
</tr>
<tr>
<td>Euronext Amsterdam</td>
<td>6113 2608 678</td>
<td>-3505 -1930</td>
<td>-57,34 -74,00</td>
</tr>
<tr>
<td>Euronext Brussels</td>
<td>395 23 604</td>
<td>-372 581</td>
<td>-94,18 2526,09</td>
</tr>
</tbody>
</table>
Most European exchanges recorded a decline in 2015, however, the stock exchange Nasdaq Nordic became an exception, as the shares of companies listed on this exchange increased by 33% (NASDAQ).

In Table 3 the leading European companies in 2017 on the release of the initial placement of shares are shown.

Table 3. Leading European companies in 2017 on the issue of initial placement of shares

<table>
<thead>
<tr>
<th>Company</th>
<th>millions euros</th>
<th>Industry</th>
<th>Stock exchange</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allied Irish Banks plc</td>
<td>2,986</td>
<td>Finances</td>
<td>Irish stock exchange; London stock exchange</td>
<td>Ireland</td>
</tr>
<tr>
<td>Pirelli &amp; C SpA</td>
<td>2,275</td>
<td>Consumer goods</td>
<td>Borsa Italian</td>
<td>Italy</td>
</tr>
<tr>
<td>Landis &amp; Gyr Holding AG</td>
<td>2,08</td>
<td>Industrial companies</td>
<td>Six swiss exchanges</td>
<td>Switzerland</td>
</tr>
<tr>
<td>BAWAG Group AG</td>
<td>1,68</td>
<td>Finances</td>
<td>Wiener Börse</td>
<td>Australia</td>
</tr>
<tr>
<td>Galenica Sante AG</td>
<td>1,544</td>
<td>Consumer services</td>
<td>Six swiss exchanges</td>
<td>Switzerland</td>
</tr>
<tr>
<td>EN+ Group plc</td>
<td>1,287</td>
<td>Basic materials</td>
<td>London stock exchange</td>
<td>Russian federation</td>
</tr>
<tr>
<td>ALD SA</td>
<td>1,156</td>
<td>Industrial companies</td>
<td>Euronext</td>
<td>France</td>
</tr>
<tr>
<td>Play Communications SA</td>
<td>1,041</td>
<td>Telecommunications</td>
<td>Warsaw stock exchange</td>
<td>Poland</td>
</tr>
<tr>
<td>J2 Acquisition Ltd</td>
<td>1,029</td>
<td>Finances</td>
<td>London stock exchange</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Gestamp Automocion SA</td>
<td>870</td>
<td>Consumer goods</td>
<td>BME</td>
<td>Spain</td>
</tr>
<tr>
<td>Total</td>
<td>15,948</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: EY Global, 2017

Investment companies, including SPACs and Real Estate Investments (REITs), accounted for 25% of the UK’s volumes and values in the IPO market. The annual profit from IPO is about 40 billion, and volumes grew by about 13%, according to a recent analysis by PwC. The levels of foreclosed and delayed IPO (IPO) dropped almost twofold in 2017. The London Stock Exchange has become the most active market in Europe in 2017, with nearly 30% of revenue generated from European IPOs created in London.

In Table 4 the dynamics of the European market for IRO by sectors in 2015-2017 is shown.
Table 4. Dynamics of the European market of IRO by sectors in 2015-2017

<table>
<thead>
<tr>
<th>Volume, million euros</th>
<th>Years</th>
<th>Absolute deviation, +/-</th>
<th>Rate of increase, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finances</td>
<td>20500</td>
<td>7962</td>
<td>16719</td>
</tr>
<tr>
<td>Industrial companies</td>
<td>13162</td>
<td>4121</td>
<td>7887</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>4017</td>
<td>1827</td>
<td>6428</td>
</tr>
<tr>
<td>Consumer services</td>
<td>6298</td>
<td>3517</td>
<td>4716</td>
</tr>
<tr>
<td>Healthcare</td>
<td>2971</td>
<td>2351</td>
<td>2115</td>
</tr>
<tr>
<td>Technology</td>
<td>2969</td>
<td>309</td>
<td>2053</td>
</tr>
<tr>
<td>Basic materials</td>
<td>1546</td>
<td>33</td>
<td>1933</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>5441</td>
<td>438</td>
<td>1248</td>
</tr>
<tr>
<td>Utilities sector</td>
<td>444</td>
<td>716</td>
<td>501</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>44</td>
<td>170</td>
<td>315</td>
</tr>
<tr>
<td>Total</td>
<td>57392</td>
<td>27888</td>
<td>43915</td>
</tr>
</tbody>
</table>

Source: IPO Watch Europe, 2017; IPO Watch Europe, 2018

Therefore, it may be noted that the Irish company placed the largest share in the European IPO market in 2017. Exit companies to the European IPO market increased by 50% in 2017 compared to 2016. The London Stock Exchange has become the most active market in Europe, where revenues from IPO increased by about 75% higher than in 2016.

The financial sector remains the largest IPO sector, despite a significant decline in 2015, due to the elimination of shares by Nets and ASR Nederland. The utilities sector recovered after 2015, after the mega IPO of NGO and Dong Energy (EY Global, 2017).

Studies have shown that the global market of IRO, the emergence of which dates from the beginning of the seventeenth century, has repeatedly changed the vector of its development due to certain historical events. However, its most significant achievements occurred only at the present stage of development of the world economy as a result of the expansion of integration and globalization processes, which had a significant impact on the functioning of international capital markets. The possibility of IPO operations in the world market is conditioned by: a) the internationalization of national markets and the formation of the world capital market; b) its steady growth irrespective of the dynamics of the development of the world economy; c) the increase of financial challenges caused by the high degree of uncertainty of the development of national markets, which increases the probability of a negative impact of one economy on another (Oyegoke, 2012). The analysis of the current state and trends of the world market of IPO has allowed to distinguish such key trends of its development:

- there is a slight increase in the number and volume of IPOs, with the exception of the temporary fall of markets due to global crises;
- impact on the activity of the market of IPO on the growth (fall) of the economy due to global economic crises;
- Another variability of leadership positions in the markets of IPOs of the leading countries of the world. The main role in this process is played by the Chinese issuers who are undergoing the process of privatization, and the American financial corporations that are trying to solve their problems through the attraction of capital in the open market.

In the context of globalization, important factors in the development of companies in different countries of the world are also foreign investments that are rotated in the international capital market, and in particular in the public offering market (IPO). Despite the current investment situation, the overall dynamics of the IPO market is growing, attracting funds through the IRO is increasingly becoming a source of financing for the development of companies. Therefore, the study of this means of attracting foreign investment is of interest to many companies that plan to improve their investment attractiveness.
4. Ukrainian IPO market

The IPO market has started its fully functioning in Ukraine since 2005. The history of the IPO in Ukraine counts over 13 years since the first Ukrainian placement held on February 11, 2005 at the Alternative Stock Exchange of the London Stock Exchange (AIM LSE; Information Agency UNIAN).

In its development, the IPO market, like any other financial market, is exposed to world market conditions (IPO / SPO v Ukraine). Over the past 15 years, with the world’s largest market IPO was achieved in 2007, when, according to the audit company EY, the amount of attracted capital companies around the world amounted to $338 billion. In the same year, a record number of placements - almost 2 thousand (State Statistics Service of Ukraine, 2018). It is during the phase of world market growth in 2005-2007 (National Securities and Stock Market Commission, 2018). The IPO was held by Ukrainian agroholdings Ukrproduct, Astarta, Landkom and Kernel. The fall of the IPO market led to the fact that in 2008 only one Ukrainian agro company - MHP conducted an IPO. In 2009, there were no placement of securities of agricultural corporations from Ukraine (Resolution of the Board of the National Bank of Ukraine, 2015, State Statistics Service of Ukraine, 2018).

In Table 5 the IPO volume of Ukrainian companies in 2007-2017 is shown.

<table>
<thead>
<tr>
<th>The name of the company that made the IPO / SPO</th>
<th>Industry</th>
<th>Stock exchange</th>
<th>Amount of attracted funds, million USD</th>
<th>End/placement date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrexpo</td>
<td>Metallurgy and Mining</td>
<td>L</td>
<td>449</td>
<td>20.06.2007</td>
</tr>
<tr>
<td>Nostra Terra</td>
<td>Oil and gas</td>
<td>LSE’s AIM</td>
<td>72</td>
<td>20.07.2007</td>
</tr>
<tr>
<td>Landkom</td>
<td>Agriculture and agroindustrial complex</td>
<td>LSE’s AIM</td>
<td>110</td>
<td>22.11.2007</td>
</tr>
<tr>
<td>Kernel Holding</td>
<td>Food, Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>220</td>
<td>23.11.2007</td>
</tr>
<tr>
<td>Kernel Holding / SPO-1</td>
<td>Food, Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>84</td>
<td>12.03.2008</td>
</tr>
<tr>
<td>Cadogan Petroleum</td>
<td>Oil and gas</td>
<td>L</td>
<td>302</td>
<td>23.06.2008</td>
</tr>
<tr>
<td>Kernel Holding / SPO-2</td>
<td>Food, Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>81</td>
<td>05.05.2010</td>
</tr>
<tr>
<td>AVANGUARD AGROHOLDING</td>
<td>Agriculture and agroindustrial complex</td>
<td>L</td>
<td>188</td>
<td>06.05.2010</td>
</tr>
<tr>
<td>Russian navigational technologies</td>
<td>Technologies, telecommunications and media</td>
<td>MMBB</td>
<td>10</td>
<td>07.07.2010</td>
</tr>
<tr>
<td>Agroliga</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>1</td>
<td>30.09.2010</td>
</tr>
<tr>
<td>Agroton</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>54</td>
<td>29.10.2010</td>
</tr>
<tr>
<td>Milkiland</td>
<td>Food industry</td>
<td>Warsaw</td>
<td>79</td>
<td>26.11.2010</td>
</tr>
<tr>
<td>Geo-Alliance</td>
<td>Oil and gas</td>
<td>Warsaw</td>
<td>255</td>
<td>08.12.2010</td>
</tr>
<tr>
<td>Sadovaya Group</td>
<td>coal</td>
<td>Warsaw</td>
<td>31</td>
<td>21.12.2010</td>
</tr>
<tr>
<td>Black Iron</td>
<td>Metallurgy and Mining</td>
<td>Toronto</td>
<td>36</td>
<td>29.03.2011</td>
</tr>
<tr>
<td>Kernel Holding</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>140</td>
<td>01.04.2011</td>
</tr>
<tr>
<td>KSG Agro</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>44</td>
<td>15.04.2011</td>
</tr>
<tr>
<td>Industrial dairy company</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>30</td>
<td>21.04.2011</td>
</tr>
<tr>
<td>Yandex</td>
<td>Technologies, telecommunications and media</td>
<td>NASDAQ</td>
<td>1 435</td>
<td>23.05.2011</td>
</tr>
<tr>
<td>Westa ISIC S.A.</td>
<td>other industries</td>
<td>Warsaw</td>
<td>48</td>
<td>06.06.2011</td>
</tr>
<tr>
<td>Ovostar Union N.V.</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>33</td>
<td>20.06.2011</td>
</tr>
<tr>
<td>Continental Farmers Group</td>
<td>Agriculture and agroindustrial complex</td>
<td>London</td>
<td>24</td>
<td>28.06.2011</td>
</tr>
<tr>
<td>ViOil Holding S.A.</td>
<td>Agriculture and agroindustrial complex</td>
<td>Warsaw</td>
<td>150</td>
<td>06.07.2011</td>
</tr>
<tr>
<td>Coal Energy</td>
<td>coal</td>
<td>Warsaw</td>
<td>80</td>
<td>15.07.2011</td>
</tr>
<tr>
<td>AgroGeneration (SPO)</td>
<td>Agriculture and agroindustrial complex</td>
<td>NYSE</td>
<td>16</td>
<td>21.07.2011</td>
</tr>
</tbody>
</table>
In Figure 2 reflects the dynamics of the IPO market in Ukraine in 2007-2017.

![Figure 2. Dynamics of the IPO market in Ukraine in 2007-2017](image)

**Source:** Prepared by the authors from statistical processing results

In order to study the influence of indicators of IRO on the parameters of macroeconomic security, we used a correlation-regression analysis to determine the pair effect (Figure 3).

![Figure 3. Dependence of macroeconomic security parameters on volumes of IRO](image)

**Source:** Prepared by the authors from the statistical processing results
According to the calculations we can conclude that the determination coefficient $R^2 = 0.58$ means that 58% of the variation in the volume of IPO ($Y$) is due to the variation of factor $X$ - the volume of GDP, and 42% - by influence of other factors not included in the model. The determination coefficient $R^2 = 0.53$ means that 53% of the variation in the volume of the IPO ($Y$) is due to the variation of factor $X$ - the disposable income per capita and 47% the effects of other factors not included in the model. The determination coefficient $R^2 = 0.51$ means that 51% of the variation in the volume of the IPO ($Y$) is due to the variation of the factor $X$ - the unemployment rate, and 49% - by the actions of other factors not included in the model. The determination coefficient $R^2 = 0.51$ means that 51% variation in the volume of IPO ($Y$) is due to the variation of factor $X$ - trade balance, and 49% due to other factors not included in the model (National Rating Agency "Rurik", 2018). The closest connection and the greatest impact on the volume of IRO is the volume of GDP.

Conclusions

One of the major problems is the dependence of the IPO market on the growth rate of the economy, as during the financial crises the production of IPO is significantly reduced. The main content of economic growth is to increase the country’s economic potential and its macroeconomic security, the capacity of its economy, that is, to increase its real GDP. In addition, the level of economic security of the country is measured by the level of unemployment, disposable income per capita, trade balance and other indicators.

There is an increase of IPO at the European IPO market at the period of 2016-2017. In 2017, the number of companies in the European market increased by 50%, compared with 2016. The London Stock Exchange has become the most active market in Europe, where IPO revenues have increased by about 75% higher than in 2016. The largest share in the IPO market is in the financial sector by IPO. While the world IPO (IPO) market is gradually recovering and shows growth trends, the Ukrainian IPO market is characterized by low awareness of companies and their ability to place shares in order to attract investment resources. During the period of 2008-2014 Ukrainian companies implemented 59 IPO (IPO) placements, attracted $ 6.2 billion, representing 0.9% of global volumes by number of placements and 0.6% of funds raised, but the average the size of transactions is 105 billion dollars. USA.

According to the results of the correlation-regression analysis, it was established that the decline of the IRO was influenced by the economic downturn in Ukraine, reflected in the growth of unemployment, the reduction of GDP, the negative trade balance, the reduction of disposable income per capita, etc., which indicates a direct dependence between volumes of IRO on the parameters of macroeconomic safety.

References


Consulting firm (Poland) [Online]. Available on the Internet: progressholding.pl. URL: https://www.atkearney.pl/

Elston, J.A.; Yang, J.J. (2010). Venture capital, ownership structure, accounting standards and IPO underpricing: evidence from


IPO / SPO v Ukraine. Available on the Internet: http://www.preqveca.ru/placements/?sf%5Bipo_t%5D=&sf%5Bipo%5D=0&sf%5Bstatus%5D=0&sf%5Bcount%5D=3&sf%5Bspec%5D=0&sf%5Blisting%5D=0&sf%5Bppt%5D=01.01.2007&sf%5Bppt%5D=31.12.2017&sf%5Bpct%5D=0&sf%5Bbnd%5D=0&sf%5Bpet%5D=0&search_r


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ASSESSING ENVIRONMENTAL SECURITY OF DIFFERENTIATED TERRITORIES

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Abstract. The scientific work illustrates the newly developed methodical approach to complex statistical research of environmental security of differentiated territories. It is based on the method of integrated assessment of the level of environmental security as the result of the mutual influence of industrial and economic, nature-protective activities of environmental innovations. On its basis, the analysis of environmental situation has been carried out both of the countries of the world and separate territories. The directions of improvement of statistical observation have been justified in the field of environmental security, which include modernization of the forms of manifestation of international observation practice. This provides a combination of statistical indicators and the correct conduct of interterritorial comparisons.

Keywords: environmental security, environmental situation, typology of territories, industrial and economic activity, industrial emissions, statistical analysis, environmental innovations, modeling.


JEL Classifications: J24

1. Introduction

As a result of aggravation of environmental problems (atmospheric pollution, reduction of minerals, destruction of plant and animal species), there is a growing need for effective environmental policy based on the analysis of statistical data on the state of the environmental security of territories. This necessitates the development of the concept of environmental security, especially regarding the improvement of statistical observation and the formation of a system of indicators of environmental security of countries and territories.

Under present conditions of growing demand for statistical information characterizing the environmental situation of differentiated territories (countries, regions, municipalities), the solution of the task of assessing their level of environmental security is becoming even more relevant, since

– there is no adequate and comparable system of indicators that would make it possible to conduct international and regional comparisons;
– the current analytical tools used, macro- and mezo-economic indicators do not give a chance to obtain comparable results, since they are aimed at solving narrow problems and their application cannot be extended to other territories;
– the problem of developing a generalized indicator for the characterization of environmental security remains unresolved;
Environmental security is a multidimensional complex phenomenon, which, of course, complicates the process of its integrated assessment. Such tasks are solved by various methods and techniques that are presented in the numerous works (Aradau, 2014; Baker, et al. 2015; Harrington and Clifford, 2017; Zemlickiene Razminienė, Tvaronavičienė, 2018; Mcdonald, 2018; Von et al. 2014; Watts, 2013; Yusoff, 2013; Drobyazko et al., 2019; Olaniyi, et al. 2019; Areiqat et al., 2019; Cherchyk et al. 2019; Dalevska et al. 2019; Eddelani et al. 2019; Smaliukienė, Monni, 2019). We can state that scientific publications do not adequately cover issues of typology of differentiated territories of the world in terms of environmental security, which forms an informational basis for the adoption of effective management decisions in this area, forecasting and development of measures in order to prove environmental security.

2. Methodology of research

The statistical study of the ecological security of differentiated territories is multidimensional, since it depends on many factors. On the basis of the studied material, the approach to the integrated study of environmental security is presented, shown in Figure 1.

![Methodical approach to complex statistical research of environmental security of differentiated territories](Fig.1.png)

**Source:** Designed by the authors.

At the first stage, the object of observation is identified: country, territory, municipal entity. Artificially formed territories can also be considered as objects of observation. The analysis of ecological security at the world level is complicated due to the lack of a generally recognized system of indicators that characterize the ecological security of countries and provide the possibility of interstate comparisons (Schmidt-Bleek, 2009; Olaniyi, O.E.; Prause, G.; Bakkar, Y., 2019).

The study of environmental security of differentiated territories also has problems due to two aspects: the first aspect is the lack of information (nomenclature of indicators, methodology for obtaining them); the second aspect is historically driven heterogeneity of the economic space. In conducting comparisons between differentiated territories in the world, one has to take into account their differentiation, and also to understand that their heterogeneity can change in time (Corry, 2017). This is manifested in all spheres of life: economic, social, institutional, environmental, natural and climatic, and other spheres.
The important aspect that does not contribute to increasing the reliability of data at the level of differentiated territories is its size. It is obvious that, in other equal conditions, the smaller the value of the studied general population, the more significant are the errors of measurement, namely, errors, inaccuracies, registrations of a separate unit of the population (Stevens, et al. 2012; Masood, O.; Tvaronavičienė, M.; Javaria, K. 2019).

At the second stage, a system of indicators is created taking into account the features of the selected observation object. Note that the formation of the system of indicators is complicated by a number of reasons:

– there is no single methodological approach to the definition of a system of indicators at the international and national levels;
– lack of published information; for example, in the statistics database of territorial entities, there are only two sections describing environmental security: production and consumption wastes, atmospheric air protection.

Thus, in order to overcome the problems discussed above, the selection of indicators in order to assess the level of environmental security should be based on the following assumptions

– open access and availability of statistical information necessary for the calculation of the integrated assessment of the level of environmental security, which will ensure the practical use of the developed methodology;
– the possibility of obtaining information for a number of years, which will make it possible to study the development of the phenomenon in the dynamics.

The third stage is the development of a methodology for assessing the level of environmental security, which is based on the construction of an integrated assessment across the population of indicators (Mudgal, 2012) and on individual units of assessments of environmental security factors.

The fourth stage is the development of a methodology for a comprehensive analysis of the state of differentiated territories according to the level of their environmental security on the basis of a combination of methods of temporal, spatial and factor analysis.

3. Spatial grouping of differentiated territories

The application of various methods of multidimensional statistical analysis gives a chance to implement the typology of differentiated territories, to construct matrices of strategic management, to identify factors that shape the ecological security of studied observation objects, to assess the level of differentiation of territories according to the level of environmental security and to determine the trends and patterns of its development. The spatial analysis is performed on the joint use of geostatistical methods, analysis of differentiation and methods of portfolio analysis (McDonald, 2012). The spatial grouping makes it possible to group objects based on object attributes and additional spatial/temporal constraints, as shown in Table 1.
Table 1. Types of spatial constraints for the spatial grouping of differentiated territories

<table>
<thead>
<tr>
<th>Types of spatial constraints</th>
<th>Working principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlated to the common edge</td>
<td>Groups with continuous polygon objects. Only polygons with a common edge may belong to the same group.</td>
</tr>
<tr>
<td>Correlated to a common vertex</td>
<td>Groups with continuous polygon objects. Only polygons with a common edge or a common vertex may belong to the same group.</td>
</tr>
<tr>
<td>Delaunay triangulation</td>
<td>Objects of the same group will have, at least, one common natural neighbor with another object of this group. Conceptually, the Delaunay triangulation method creates a network of non-overlapping triangles, based on centroids of objects. Each object is a node of a triangle, and nodes with common edges are considered to be neighbors.</td>
</tr>
<tr>
<td>k-nearest neighbors algorithm</td>
<td>Objects of the same group will be located next to each other. Each object will be a neighbor, at least for one other object in the group. Neighborly correlations are built on the nearest k-objects, with an integer K for the Number of Neighbors parameter.</td>
</tr>
<tr>
<td>File of spatial weights</td>
<td>Spatial and, if necessary, temporary correlations are determined by the file of spatial weights. A spatial weights matrix or a spatial weights matrix for a network is created.</td>
</tr>
<tr>
<td>No spatial constraints</td>
<td>Objects are grouped only with the use of proximity in the data space. Objects do not have to be located adjacent to each other in space or time in order to get into the same group.</td>
</tr>
</tbody>
</table>

Source: Hardt, 2017; Sustainable development and environment. UNECE

When spatial grouping is made, a spatial constraint and a distance determination method are specified. With its implementation, one can use Euclidean distance and the k-nearest neighbors algorithm as a spatial constraint, in which the number of neighbors should be indicated. The number of neighbors by default is 8 and cannot be less than 2 for the “k-nearest neighbor”. This value reflects the exact number of candidates for the nearest neighbors, which is considered when constructing groups. An object will not be included in the group if one of the other objects in this group is not the nearest “k-neighbor” (Hardt, 2017).

The results of the spatial grouping of differentiated territories should be used in order to construct index maps that reflect their environmental security. The use of typology methods of differentiated territories is based on the aggregate concept (Chalecki, 2016) using artificial and natural breaks. According to this concept, it is possible to make a preliminary indication of the types of territories (countries, territorial and municipal entities) on the level of environmental security. We can distinguish five types: 1) crisis; 2) low; 3) average; 4) favorable; 5) high.

In order to implement the typological grouping for the determined types, an integral level of environmental security is used, calculated on all indicators. The level of environmental security of differentiated territories may be in the range (0.00 - 1.00). By performing an artificial breakdown by intervals, we obtain: 1) the crisis level (0.00; 0.20); 2) low - (0.20; 0.40); 3) average - (0.40; 0.60); 4) favorable - (0.60; 0.80); 5) high - (0.80; 1.00).

In order to perform temporal analysis, the methods of periodization, analysis of trends in the development of environmental security on the basis of neural network modeling are used. The essence of the latter’s application is that it allows the classification of territories based on the given reference representatives of certain classes in dynamics (Chapin, et al. 2010). The algorithm for classification of observation objects on the level of environmental security on the basis of neural network modeling includes the following:

1. Formation of a system of indicators characterizing ecological security carried out taking into account the specifics of the selected observation object;

2. Bringing the initial array of data to a single dimension based on normalization procedures. This procedure gives a chance to bring the data to a single scale (Fagan, 2017);

3. Determination of reference representatives of classes of territories according to the level of environmental security.
security on the basis of cluster analysis. The application of this method (in order to split the initial population of objects into the same number of classes) makes it possible in a few years to identify the stable representatives of the groups received. These representatives will serve as benchmarks (samples) of highlighted classes;

4. The solution of the classification problem is performed using networks of the following types: the probabilistic neural network and the linear network, the multilayer perceptron, the Kohonen network, the radial basis function. The architecture of the fuzzy neural network in this case has three layers of neurons: the input, the hidden and the output. The input layer is represented by a system of indicators characterizing the ecological security of territories. By means of synopsis, the connection of the input layer with a hidden layer of neurons is provided, in which the activity of the neuron is determined as the Euclidean distance. The output layer is presented by neurons, which calculates the Gaussian functions activity of belonging to the class. Using the Gaussian function provides the elimination of “noise” (unnecessary information) available in the input data (Floyd, 2015; Drobyazko S., 2017);

5. Control over the quality of the result, based on cross-checking, which involves splitting the observations into research and control populations.

Within these guidelines, an error function is formed which requires minimization in the process of controlled neural network training. This function is intended to evaluate the quality of the neural network during training. The neural network’s capability to solve the tasks set before it depends on the quality of its training. In order to improve the results, it is possible to use re-learning of a network that has such a disadvantage as the loss of capability to generalize the phenomena under study. In order to ensure the reliability of the final model, one can use the test set of observations, when the amount of instructive data allows. The final model must be tested on the data from the reserve set. This ensures the reliability of the results and indicates that the results achieved are real (Cook, J. et al. 2016).

6. Getting an able-bodied neural network that makes it possible to classify the territory by the level of environmental security and can be used for objects of different levels of aggregation.

The parallel application of several methods of the data typology enables not only to identify the stable place of the studied population of objects in the space of indicators, but also to identify the type of studying territory in terms of environmental security. This gives a chance to verify the results obtained and to study the patterns of development of the studied phenomenon.

Within the allocation of spatial factors of environmental security, it is expedient to use geostatistical analysis, in particular, the calculation of research regression. The dependent variable is the integral assessment - the level of environmental security; the independent variables are parameters reflecting the economic and industrial development of differentiated territories, the state of environmental activities and the implementation of environmental innovations. As a result, a model is being developed that can identify indicators that have the greatest influence on the level of environmental security.

At the fifth stage, conclusions are drawn on the state and dynamics of ecological security of the territories, recommendations and proposals for the adoption of managerial decisions in the development of programs in order to ensure environmental security.

4. Methodology for assessing the level of environmental security of differentiated territories

The development of a methodology for assessing the level of environmental security is a key element in conducting this study. The methodology for assessing the level of environmental security consists of the following steps: formation of the information base of the study, reduction and data restoration, normalization, breakdown into blocks, calculation of integral indicators by blocks, calculation of the level of environmental security (Fig. 2).
At the first stage, the information base of the research is formed on the basis of these official sources according to the chosen observation object. As a result, the following information arrays of data are created depending on the object of observation.

1. For the world as a whole:
   – production and economic activity: renewable energy sources (renewable electricity generation, as a percentage of total electricity production, renewable energy consumption, as a percentage of total final energy consumption), rent payments and adjusted savings (share of natural resources lease, as a percentage of GDP, adjusted savings on the cost of consumption of fixed capital, as a percentage of GDP, corrected savings on the value of the loss from emissions, as a percentage of GDP);
   – environmental activities: water resources (renewable internal sources of fresh water per capita, cubic meters), atmospheric air protection (emissions to the atmosphere of pollutants, thousand tons by species: greenhouse gases, nitrous oxide, methane), natural territories (terrestrial and marine areas, protected as a percentage of the total area of the territory), which are especially protected, the climate (annual precipitation level, mm per year) (Environment. The World Bank, 2017);
   – environmental innovations (this block is not considered due to its not developed at the world level).

2. Separate inland areas:
   – production and economic activity is considered through a set of indicators: production indices by type of economic activity «Processing production», as a percentage of the previous year; production indices by type of economic activity «Production and distribution of electricity, gas and water», as a percentage of the previous
Month 1: Indices of production by type of economic activity «Extraction of minerals», as a percentage of the previous year; indices of industrial production, as a percentage of the previous year; volume of work performed on the type of economic activity (Karpenko, et al. 2018);

- environmental activities include the following blocks of indicators: atmospheric air protection, water status, production and consumption wastes, specially protected natural areas, forestry, climate, environmental costs (Clark, 2014). It should be noted that the indicator characterizing the costs of environmental protection is expedient to be converted into a relative indicator, calculating it to GDP at the level of the country and separate territories, and at the level of municipal formations - to the volume of shipped goods of own production, performed works and services on its own.

- environmental innovations are considered through a group of indicators that characterize the share of organizations that implemented innovations that increase environmental security, both in the production process of goods, works and services, and as a result of consumer use of innovative products, as well as special costs associated with with environmental innovations (Hardt, 2017).

Despite the fact that municipalities are relatively independent from the external environment, the parameters that characterize the country as a whole remain intrinsic to it, but they have their own specifics. Therefore, for the analysis of environmental security of the territories of this level of aggregation, it is proposed to expand the actual list of indicators that characterize the protection of atmospheric air and waste from production and consumption, the indicators of the national and regional level, the functioning of the municipal entity that characterizes the specifics (Rajapaksa, et al. 2018). As a result, a comprehensive study on the environmental security of municipalities is proposed to be conducted in three constituent parts:

1. Indicators characterizing the ecological state and reflecting two components of environmental security: environmental activities, ecological innovations: air protection, waste products, water resources, environmental costs, environmental innovations. It should be noted that due to the data deficit at the level of municipalities, the regional and national components are taken into account:

   a) environmental costs (investments in fixed capital, directed on environmental protection and rational use of natural resources per capita; the share of current (operational) costs for environmental protection, including the payment for environmental protection services at the cost of goods shipped from own production, performed works and services on their own (without small business entities), percents; costs of biodiversity conservation and protection of natural territories, dol. US per capita; expenses for protection and rehabilitation of land, surface and underground waters, dol. US per capita; expenses on protection of atmospheric air and prevention of climate change, dol. US per capita);

   b) water resources (volume of reversible and consistently used water, thousand cubic meters per capita; use of fresh water, thousand cubic meters per capita; volume of reversible and consistently used water, thousand cubic meters per capita; discharge of contaminated sewage in surface water objects, thousand cubic meters per capita);

   c) environmental innovations (the share of organizations that carry out environmental innovations, which ensure the increase of environmental security in the production of goods, works and services, as a percentage of the total number of organizations that carry out environmental innovations: reduction of energy expenditures by organizations for the production of units of goods, works, services; reduction by organizations of material costs for the production of units of goods, works, services; reduction of carbon dioxide (CO₂) emissions into the atmosphere; decrease by organizations of pollution of the environment (atmospheric air, land, water resources, noise reduction); replacement of raw material and materials organizations with safe or less dangerous ones; organization of recycling (recycling) waste production) (Stevens, et al. 2012);

2. Indicators characterizing socio-economic development and reflecting industrial and economic activity: the number of medical and preventive institutions (units); number of organizations that carry out educational activities in educational programs of preschool education, supervision and care for children (units); number of sports facilities - total (units); number of organizations of cultural-recreational type (unit); number of children’s and youth sports schools (units); investment in fixed assets at the expense of the municipal budget, dol. US; investments in fixed assets, carried out by organizations located on the territory of the municipal education
(without small business entities), dol. US; the percentage of unprofitable organizations in the total number of organizations, percent; percentage of profitable organizations, percent; accounts payable, dol. US; receivable, dol. US; commissioning of residential houses on the territory of the municipality - sq. m. of total area; number of municipal bodies for the protection of public order (units) (Rob, et al. 2004);

3. Indicators characterizing the development of human potential: the percentage of children aged 1-6 who receive a preschool educational service and/or service from its contents in municipal educational institutions, the total number of children aged 1-6 years, the percentage; the number of those engaged in youth sports schools, people; the number of those studying in general educational institutions, taking into account the separate units (branches), people; total fertility rate, millet; total mortality rate, millet) Gandini, et al. 2017).

The formed data array has a heterogeneity of indicators and there may be no data for individual territories, therefore, at the second stage, if necessary, a recovery and reduction of data is carried out in order to increase the reliability of the results of the analysis.

The system of indicators with reconstructed data is subject to correlation analysis for testing for multicollinearity. The main criterion for the exclusion of the indicator from the system is the high value of the pair correlation coefficient.

Comparison of matrices of pair correlations over several years made it possible to determine indicators that strongly correlate with other indicators. These include: “Indices of industrial production, as a percentage of the previous year; the share of organizations that carried out innovations, which provide reduction of material costs for the production of goods, works and services, as a percentage; the share of organizations that carried out innovations that provide reduction of energy consumption per unit of goods, works, services, as a percentage; the share of organizations that carried out innovations that reduce the emission of carbon dioxide (CO₂) into the atmosphere, as a percentage” (Zhaoxue and Linyu, 2010).

The controversial point is the consideration of indicators: the share of organizations that implemented innovations that reduce the pollution of the environment, and the turnover of road transport organizations of all types of activities. Since the relatively high correlation coefficients were fixed not for each year under study, it was decided to leave them in the system of indicators. As a result, the system of initial indicators has the value of correlation coefficients with other indicators not exceeding 0.55 (Schoer, et al. 2012).

At the third stage, the normalization procedure is carried out, since “the feature of the initial data set is the incomparability of the units of measurement and the multi-directionality of their influence on the level of environmental security. These disadvantages can be eliminated in different ways. In order to move away from different units of measurement, the procedure of standardization or normalization of indicators is carried out”.

In this study, the following formulas are used in order to eliminate the multi-directional effects of indicators on the level of environmental security:

\[ x_{\text{norm }ij} = \frac{x_{ij}}{x_{\text{max }ij}} \]  
\[ x_{\text{norm }ij} = 1 - \frac{x_{ij}}{x_{\text{max }ij}} \]

where:
\[ x_{\text{norm }ij} \] is the normalized value of the \( i \)-indicator for \( j \)-territory;
\[ x_{ij} \] is the actual value of the \( i \)-indicator for \( j \)-territory;
\[ x_{\text{max }ij} \] is the maximum value of the \( i \)-indicator for \( j \)-territory.
Formula (1) is used if the parameter has a positive influence on the formation of the integral assessment, and formula (2) is used in the case of negative influence.

At the fourth stage, the allocation of the main indicator blocks is based on factor analysis. When interpreting its results, it is necessary that the number of factors is small, and in the sum they should explain the main part of the overall dispersion of the system of primary indicators (Table 2).

Table 2. Blocks of indicators characterizing environmental security of differentiated territories

<table>
<thead>
<tr>
<th>№</th>
<th>Block name</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Indicators reflecting the negative influence of human activities on the state of the environment</td>
<td>– “Emissions of pollutants into the air from stationary sources, as a percentage of the previous year; – discharge of contaminated wastewater into surface water bodies, thousands cubic meters per capita; – use fresh water, thousands cubic meters per capita.</td>
</tr>
<tr>
<td>2</td>
<td>Indicators reflecting the beneficial influence of human activities on the state of the environment</td>
<td>– volume of reversible and consistently used water, thousands cubic meters per capita; – the share of restored forest lands to the area of forest lands damaged by fires, in percentages; – absorption of substances polluting the atmosphere away from stationary sources, as a percentage of the previous year</td>
</tr>
<tr>
<td>3</td>
<td>Indicators reflecting the implementation of environmental innovations by organization</td>
<td>– the share of organizations that reduce pollution of the environment (atmospheric air, land, water resources, noise reduction), as a percentage; – the share of organizations that carry out the replacement of raw materials and materials or use safe or less dangerous, as a percentage; – the share of organizations that perform recycling (recycling) of waste from production, water or materials, as a percentage.</td>
</tr>
<tr>
<td>4</td>
<td>Indicators characterizing production activity that affects environmental security</td>
<td>– production indices - “Extraction of minerals”, as a percentage of the previous year; – production indices - “Production and distribution of electricity, gas and water”, as a percentage of the previous year; – production indices - “Processing production”, as a percentage of the previous year; – transportation of goods by road transport organizations of all types of activity, mln tons.</td>
</tr>
</tbody>
</table>

Source: Marzec, 2015; UNDP. Human Development Report, 2018

At the fifth stage, the construction of integrated indicators is carried out according to the blocks of indicators, which are used both for groupings of differentiated territories, and for a detailed consideration of their position on the value of the integral integrated assessment of the level of environmental security (formula 3).

\[
I_k = \frac{\sum_{i=1}^{m} x_{\text{norm}_{ij}}}{m_k}
\]  

(3)

where:

\( I_k \) – is the private index of environmental security in the \( k \)-th block of indicators;

\( m_k \) is the number of indicators studied, in \( k \)-th block of indicators.

At the sixth stage, a consolidated assessment of the environmental security of differentiated territories is calculated based on the application of a multidimensional mean. The level of environmental security is based on two variants: as in the whole system of indicators (Formula 4), and on the blocks of indicators (Formula 5).

\[
\bar{I}_j = \frac{\sum_{i=1}^{n} x_{\text{norm}_{ij}}}{n}
\]  

(4)

\[
\bar{I}_{kj} = \frac{\sum_{k=1}^{k} I_k}{k}
\]  

(5)

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$I_j, I_{kj}$ is the level of environmental security for each $j$-territory;
$n$ is the number of indicators being studied for each $j$-territory;
$k$ is the number of indicator blocks for each $j$-territory.

The normalized integral assessment, calculated by the formula (5), makes it possible to obtain, in addition to a generalized idea about the state of the phenomenon under study, an assessment of the level of environmental security of the studied differentiated territories in the context of the individual factors forming it.

5. Comparative analysis of countries on the level of environmental security

Data collection for conducting international comparisons has been carried out on the following information sources: the Eurostat database, the OECD, the World Bank and the national statistics of the countries. It has been established that the comparability of research results at the international level can be achieved only with the use of the World Bank database, which publishes statistical information of countries.

The selection of indicators has been carried out on a comparative system of indicators for conducting interstate calculations for assessing the level of environmental security (Table 4).

<table>
<thead>
<tr>
<th>№</th>
<th>Block name</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water resources</td>
<td>– renewable domestic freshwater resources per capita, cubic meters;</td>
</tr>
<tr>
<td>2</td>
<td>Protection of atmospheric air</td>
<td>– total volume of greenhouse gas emissions, thousand tons;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– CO$_2$ emissions, thousand tons;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– nitrous oxide emissions, thousand tons;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– methane emissions, thousand tons;</td>
</tr>
<tr>
<td>3</td>
<td>Natural protected areas</td>
<td>– land and marine protected areas, percentage of the total area of the territory;</td>
</tr>
<tr>
<td>4</td>
<td>Renewable energy resources</td>
<td>– renewable sources of electricity generation, as a percentage of total electricity production;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– renewable energy consumption, as a percentage of total final energy consumption</td>
</tr>
<tr>
<td>5</td>
<td>Climate</td>
<td>– annual precipitation, mm per year;</td>
</tr>
<tr>
<td>6</td>
<td>Lease payments and adjusted savings for the use of natural resources</td>
<td>– the share of lease of natural resources, as a percentage of GDP;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– adjusted savings on the cost of capital consumption, as a percentage of GDP;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– adjusted savings on the cost of losses from solids emissions, as a percentage of GDP.</td>
</tr>
</tbody>
</table>

Source: Marzec, 2015; StatCounter, 2018

The qualitative analysis of the established system of indicators revealed the possibility of studying environmental security at the international level for 1998, 2008 and 2018, as only during this period information was collected on most indicators characterizing the state of the environment. The statistical survey is performed with the following assumptions:

– if the value of the indicator in the studied period is absent, then the value of this indicator for the previous period is taken;

– in the case of considering the indicator “protected land and marine areas, as a percentage of the total area of the territory”, the data for 1998, 2008, 2018 are equal to the corresponding data for 1994, 2004 and 2014.

The analysis of data within each year made it possible to establish that some indicators are not measured in all countries. In order to improve the quality of comparisons from the list of countries excluded countries with more than 2/3 passes throughout the system of indicators. As a result, 92 countries have been selected. On the basis of the proposed methodology for constructing the level of environmental security, the normalization of data has been performed and on their basis an integral assessment of the sample of countries of the world has been calculated (Table 5).
Table 5. Level of environmental security of countries for 1998, 2008 and 2018

<table>
<thead>
<tr>
<th>№</th>
<th>Country</th>
<th>Level of environmental security</th>
<th>№</th>
<th>Country</th>
<th>Level of environmental security</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Argentina</td>
<td>0.44, 0.51, 0.51</td>
<td>47</td>
<td>Jordan</td>
<td>0.41, 0.45, 0.45</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>0.41, 0.41, 0.41</td>
<td>48</td>
<td>Japan</td>
<td>0.43, 0.47, 0.47</td>
</tr>
<tr>
<td>3</td>
<td>Austria</td>
<td>0.51, 0.56, 0.56</td>
<td>49</td>
<td>Kenya</td>
<td>0.50, 0.52, 0.52</td>
</tr>
<tr>
<td>4</td>
<td>Burundi</td>
<td>0.56, 0.62, 0.62</td>
<td>50</td>
<td>Republic of Korea</td>
<td>0.43, 0.46, 0.46</td>
</tr>
<tr>
<td>5</td>
<td>Belgium</td>
<td>0.42, 0.48, 0.48</td>
<td>51</td>
<td>Laos</td>
<td>0.51, 0.59, 0.59</td>
</tr>
<tr>
<td>6</td>
<td>Burkina Faso</td>
<td>0.46, 0.50, 0.50</td>
<td>52</td>
<td>Sri Lanka</td>
<td>0.47, 0.48, 0.48</td>
</tr>
<tr>
<td>7</td>
<td>Bangladesh</td>
<td>0.43, 0.48, 0.48</td>
<td>53</td>
<td>Luxembourg</td>
<td>0.41, 0.48, 0.48</td>
</tr>
<tr>
<td>8</td>
<td>Bulgaria</td>
<td>0.43, 0.47, 0.47</td>
<td>54</td>
<td>Morocco</td>
<td>0.42, 0.46, 0.46</td>
</tr>
<tr>
<td>9</td>
<td>Belarus</td>
<td>0.42, 0.47, 0.47</td>
<td>55</td>
<td>Madagascar</td>
<td>0.46, 0.50, 0.50</td>
</tr>
<tr>
<td>10</td>
<td>Bolivia</td>
<td>0.49, 0.53, 0.53</td>
<td>56</td>
<td>Mexico</td>
<td>0.42, 0.45, 0.45</td>
</tr>
<tr>
<td>11</td>
<td>Brazil</td>
<td>0.49, 0.49, 0.49</td>
<td>57</td>
<td>Mali</td>
<td>0.48, 0.50, 0.50</td>
</tr>
<tr>
<td>12</td>
<td>Kingdom of Bhutan</td>
<td>0.63, 0.68, 0.68</td>
<td>58</td>
<td>Mozambique</td>
<td>0.52, 0.56, 0.56</td>
</tr>
<tr>
<td>13</td>
<td>Central African Republic</td>
<td>0.50, 0.55, 0.55</td>
<td>59</td>
<td>Malaysia</td>
<td>0.54, 0.56, 0.56</td>
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<tr>
<td>14</td>
<td>Canada</td>
<td>0.48, 0.47, 0.47</td>
<td>60</td>
<td>Namibia</td>
<td>0.51, 0.57, 0.57</td>
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<tr>
<td>15</td>
<td>Switzerland</td>
<td>0.49, 0.54, 0.54</td>
<td>61</td>
<td>Nigeria</td>
<td>0.52, 0.52, 0.52</td>
</tr>
<tr>
<td>16</td>
<td>Chile</td>
<td>0.52, 0.54, 0.54</td>
<td>62</td>
<td>Nicaragua</td>
<td>0.48, 0.52, 0.52</td>
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<td>17</td>
<td>China</td>
<td>0.27, 0.26, 0.26</td>
<td>63</td>
<td>Netherlands</td>
<td>0.42, 0.47, 0.47</td>
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<tr>
<td>18</td>
<td>Republic of Côte d'Ivoire</td>
<td>0.52, 0.53, 0.53</td>
<td>64</td>
<td>Norway</td>
<td>0.52, 0.56, 0.56</td>
</tr>
<tr>
<td>19</td>
<td>Republic of Cameroon</td>
<td>0.54, 0.56, 0.56</td>
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<td>Nepal</td>
<td>0.47, 0.54, 0.54</td>
</tr>
<tr>
<td>20</td>
<td>Republic of the Congo</td>
<td>0.62, 0.72, 0.72</td>
<td>66</td>
<td>New Zealand</td>
<td>0.53, 0.54, 0.54</td>
</tr>
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<td>21</td>
<td>Colombia</td>
<td>0.57, 0.62, 0.62</td>
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<td>Pakistan</td>
<td>0.45, 0.48, 0.48</td>
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<td>22</td>
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<td>Panama</td>
<td>0.51, 0.56, 0.56</td>
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<td>24</td>
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<td>0.47, 0.51, 0.51</td>
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<td>Denmark</td>
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<td>Papua New Guinea</td>
<td>0.57, 0.62, 0.62</td>
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<tr>
<td>26</td>
<td>Dominican Republic</td>
<td>0.43, 0.49, 0.49</td>
<td>72</td>
<td>Poland</td>
<td>0.47, 0.48, 0.48</td>
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<tr>
<td>27</td>
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<td>0.42, 0.47, 0.47</td>
<td>73</td>
<td>Portugal</td>
<td>0.43, 0.47, 0.47</td>
</tr>
<tr>
<td>28</td>
<td>Ecuador</td>
<td>0.56, 0.61, 0.61</td>
<td>74</td>
<td>Romania</td>
<td>0.48, 0.52, 0.52</td>
</tr>
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<td>29</td>
<td>Egypt</td>
<td>0.44, 0.46, 0.46</td>
<td>75</td>
<td>Russia</td>
<td>0.42, 0.41, 0.41</td>
</tr>
<tr>
<td>30</td>
<td>Spain</td>
<td>0.42, 0.46, 0.46</td>
<td>76</td>
<td>Rwanda</td>
<td>0.54, 0.55, 0.55</td>
</tr>
<tr>
<td>31</td>
<td>Finland</td>
<td>0.45, 0.47, 0.47</td>
<td>77</td>
<td>Senegal</td>
<td>0.44, 0.50, 0.50</td>
</tr>
<tr>
<td>32</td>
<td>Fiji</td>
<td>0.57, 0.59, 0.59</td>
<td>78</td>
<td>El Salvador</td>
<td>0.46, 0.49, 0.49</td>
</tr>
<tr>
<td>33</td>
<td>France</td>
<td>0.42, 0.48, 0.48</td>
<td>79</td>
<td>Suriname</td>
<td>0.63, 0.67, 0.67</td>
</tr>
<tr>
<td>34</td>
<td>Gabon</td>
<td>0.59, 0.61, 0.61</td>
<td>80</td>
<td>Sweden</td>
<td>0.45, 0.50, 0.50</td>
</tr>
<tr>
<td>35</td>
<td>UK</td>
<td>0.42, 0.46, 0.46</td>
<td>81</td>
<td>Togo</td>
<td>0.53, 0.55, 0.55</td>
</tr>
<tr>
<td>36</td>
<td>Ghana</td>
<td>0.49, 0.52, 0.52</td>
<td>82</td>
<td>Thailand</td>
<td>0.44, 0.51, 0.51</td>
</tr>
<tr>
<td>37</td>
<td>Guinea</td>
<td>0.50, 0.53, 0.53</td>
<td>83</td>
<td>Tunisia</td>
<td>0.43, 0.46, 0.46</td>
</tr>
<tr>
<td>38</td>
<td>Greece</td>
<td>0.41, 0.46, 0.46</td>
<td>84</td>
<td>Turkey</td>
<td>0.42, 0.45, 0.45</td>
</tr>
<tr>
<td>39</td>
<td>Guatemala</td>
<td>0.49, 0.53, 0.53</td>
<td>85</td>
<td>Tanzania</td>
<td>0.51, 0.55, 0.55</td>
</tr>
<tr>
<td>40</td>
<td>Honduras</td>
<td>0.50, 0.51, 0.51</td>
<td>86</td>
<td>Uganda</td>
<td>0.53, 0.54, 0.54</td>
</tr>
<tr>
<td>41</td>
<td>Indonesia</td>
<td>0.41, 0.44, 0.44</td>
<td>87</td>
<td>Uruguay</td>
<td>0.48, 0.53, 0.53</td>
</tr>
<tr>
<td>42</td>
<td>India</td>
<td>0.37, 0.38, 0.38</td>
<td>88</td>
<td>USA</td>
<td>0.25, 0.25, 0.25</td>
</tr>
<tr>
<td>43</td>
<td>Ireland</td>
<td>0.42, 0.45, 0.45</td>
<td>89</td>
<td>Venezuela</td>
<td>0.57, 0.62, 0.62</td>
</tr>
<tr>
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<td>Israel</td>
<td>0.41, 0.45, 0.45</td>
<td>90</td>
<td>Vietnam</td>
<td>0.46, 0.49, 0.49</td>
</tr>
<tr>
<td>45</td>
<td>Italy</td>
<td>0.43, 0.47, 0.47</td>
<td>91</td>
<td>Zambia</td>
<td>0.58, 0.61, 0.61</td>
</tr>
<tr>
<td>46</td>
<td>Jamaica</td>
<td>0.47, 0.48, 0.48</td>
<td>92</td>
<td>Zimbabwe</td>
<td>0.45, 0.48, 0.48</td>
</tr>
</tbody>
</table>

Based on the calculated level of environmental security in selected countries of the world, their typology has been fulfilled. In advance five types of environmental security were identified at equal intervals: crisis, low, medium, high, favorable. The results of the grouping are presented in Table 6.

**Table 6.** Typology of countries according to the level of environmental security for 1998, 2008 and 2018

<table>
<thead>
<tr>
<th>Level</th>
<th>Distribution of the world countries by years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1998</td>
</tr>
<tr>
<td>of environmental security / the interval of measurement of the integral indicator</td>
<td></td>
</tr>
<tr>
<td>Crisis / [0.00; 0.20]</td>
<td>–</td>
</tr>
<tr>
<td>Low / [0.20; 0.40]</td>
<td>India, China, USA</td>
</tr>
<tr>
<td>Medium / [0.40; 0.60]</td>
<td>Australia, Luxembourg, Israel, Jordan, Indonesia, Greece, United Kingdom, Spain, Germany, Morocco, Netherlands, France, Turkey, Ireland, Algeria, Mexico, Belarus, Russia, Belgium, Portugal, Italy, Bangladesh, Japan, Republic of Korea, Dominican Republic, Comoros, Tunisia, Denmark, Bulgaria, Argentina, Thailand, Senegal, Pakistan, Finland, Sweden, Zimbabwe, Madagascar, Burkina-Faso, Japan, Vietnam, Jamaica, Sri Lanka, Nepal, Philippines, Poland, Canada, Uruguay, Romania, Mali, Nicaragua, Ghana, Switzerland, Bolivia, Brazil, Guatemala, Kenya, Greece, the Central African Republic, Honduras, Austria, Namibia, Tanzania, Laos, Panama, Mozambique, Peru, Norway, Côte d’Ivoire, Nigeria, Costa Rica, Chile, New Zealand, Togo, Uganda, Malaysia, Rwanda, Cameroon, Burundi, Ecuador, Colombia, Papua New Guinea, Fiji, Venezuela, Zambia, Gabon</td>
</tr>
<tr>
<td>Favorable / [0.60; 0.80]</td>
<td>Republic of the Congo, Kingdom of Bhutan, Suriname</td>
</tr>
<tr>
<td>High / [0.80; 1.00]</td>
<td>–</td>
</tr>
</tbody>
</table>

*Source: UNESCO Institute for Statistics. Sustainable Development Goal; United Nations Statistics Division; calculation authors*

As a result of constructing a typological grouping of countries in terms of environmental security, it was found that 2 out of 5 groups are not filled with observation objects, namely crisis and high level of environmental security.

The countries under study were divided into three groups with low, medium and favorable levels. The trends are as follows:

- India (0.38), China (0.26) and the United States (0.25) have a consistently low level of environmental security;
– Suriname (0.67), the Kingdom of Bhutan (0.68) and the Republic of the Congo (0.72) have a very favorable level of environmental security;
– most countries are characterized by a stable medium level of environmental security.

Thus, the typology of different methods does not contradict each other and makes it possible to make effective managerial decisions. It should be noted that in order to develop monitoring of environmental security in the countries under study, it is necessary to implement recommendations for the improvement of statistical observation, allowing a comprehensive assessment of the environmental state of the studied areas, as well as the harmonization of national systems of indicators with international ones.

Conclusions

On the basis of critical analysis, the system of statistical indicators of environmental security has been generalized and improved by harmonizing the systems used by domestic and international databases in order to assess the state of the environment and the environmental situation of differentiated territories in order to conduct interterritorial comparisons. The solution to this problem was based on the analysis by means of statistical observation. As a result, it has been proposed for intergovernmental organizations to perform ensuring the environmental security on the basis of three components:
– production and economic activity, which is found indirectly in the following blocks: renewable energy resources, lease payments and adjusted savings;
– environmental activities characterized by five blocks of indicators: water resources, atmospheric air protection, specially protected natural areas, climate, biodiversity;
– environmental innovations that are considered through a set of indicators characterizing innovations that provide increased environmental security both in the process of producing goods, works and services, and as a result of consumer use of innovative products, as well as special costs associated with environmental innovations;
– environmental activities based on the following blocks of indicators: atmospheric air protection, water resources status, production and consumption wastes, specially protected natural areas, forestry, climate, environmental costs;
– environmental innovations that are considered through a set of indicators, organizations characterizing a specific weight, made innovations that provide increased environmental security, both in the process of producing goods, works and services, and as a result of consumer use of innovative products, as well as special costs, associated with environmental innovations.

References


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