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ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES

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Dear readers,

It's my pleasure and honor to welcome today the third issue of peer-reviewed journal *Entrepreneurship and Sustainability Issues*. At first, I want to congratulate the publisher of the journal – Entrepreneurship and Sustainability Center for this initiative. Despite comparatively young age of the journal it is already abstracted/indexed in numerous international databases, such as RePEC, ProQuest, EconBIZ, Lituanistika, Google Scholar and others, what itself witnesses about high scientific quality of papers the journal publishes. Quality is driver of progress, to be it science or lives of societies. Quality compliments and enhances sustainability and conditions security

Returning to the content of the journal, let me put an emphasis of especially contemporary and urgent scope the *Entrepreneurship and Sustainability Issues* tackles. Entrepreneurship and sustainability nowadays replaced topics, which practitioners, scientists and politicians were targeting a decade ago, i.e. economic growth, business management and public administration issues. Current concerns embrace more complex phenomena, hence interdisciplinary and convergence of various sciences is necessary as new emerging aspects of development have to be taken into account.

To add from my personal prospective and from point of view of my current responsibilities, I would like to bring your attention to entrepreneurship and sustainability issues related to sector development patterns. Agricultural sector has started to play a crucial role in economies of many countries due to a threat of global population growth, which might mean world resource exhaustion perspective. Alas, an increase in agricultural output does causes green gas emission, which, in its turn, is detrimental outcome of sustainable and secure development aim. This single contradiction illustrates of complicity and controversy of path to common wellbeing.

Hence, let us together with *Entrepreneurship and Sustainability Issues* immerse ourselves into problem-solving process in order through fruitful discussion reveal efficient ways to our affluent, secure and sustainable future.

Kind regards

ŽIVILĖ PINSKUVIENĖ
Vice-minister of the Ministry of Agriculture
of the Republic of Lithuania

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SUSTAINABLE ENTREPRENEURSHIP ALONG GREEN CORRIDORS

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Abstract. The research in this paper highlights the interaction and development of sustainable entrepreneurship activities in the environment of Green Transport Corridors. The objective is to show how the concept of Green Transport Corridors, initiated by the European Commission, comprises the framework for an entrepreneurial ecosystem bearing the potential to deploy sustainable entrepreneurship activities to the benefit of new start-ups as well as already existing small and medium sized companies (SMEs). The methods used are to analyse the existing green corridor initiatives together with their economic growth strategies and their impact on the surrounding entrepreneurial ecosystems. The results will be discussed in the context of network and cluster theories and evaluated by previously made studies and cases from SME sector in regard to logistics and networking. Additionally, with focus group meetings core requirements for green corridors together with a set of key performance indicators (KPI) are elaborated. The results are that Green Transport Corridors set the frame for sustainable development and foster a coherent entrepreneurial ecosystem especially for start-ups and existing SMEs in the logistics sector.

Keywords: sustainability, transport corridors, entrepreneurial ecosystem, logistics networks

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1. Introduction

Since the appearance of the first Transport White Paper (COM 2001: 370 final) of the European Commission in 2001 the necessity of shifting volumes of the dominant road traffic to other more efficient transport modes is being expressed constantly. The goal was linked to the preparation of an environmental friendly transport sector, and at the same time to provide safer and efficient transportation by reducing accidents, congestions and negative impacts through emissions, i.e. noise, light and pollution. After the revision of the EU Transport White paper (COM 2006: 314 final) in 2006, the concept of green corridors was introduced as an initiative of the European Commission in the Freight Transport Logistics Action Plan (FTLAP 2007). According to FTLAP, green corridors will "reflect an integrated transport concept where short sea shipping, rail, inland waterways and road complement each other to enable the choice of environmentally friendly transport". In recent years, on European and also on national level an increasing number of initiatives have been taken to speed up the shift towards greener and more efficient logistic solutions in Europe. Important steps on EU level in this development process have been the Green Paper on TEN-T from 2009, as well as the TEN-T Policy Review 2011 and the EC White Paper on "A Sustainable Future of Transport". The current situation shows that the main characteristics of a green corridor and conditions that make a transport corridor actually green are varying but it is already visible that there are also common topics, which are recognised by all green corridor initiatives. Most important common factors in all green corridor projects are

trans-nationality and co-modality, which enables the choice of environmentally friendly transport along a usually international transport route. Furthermore, all initiatives agree that for green transport adequate trans-shipment facilities, innovative transport technology, and advanced ITS applications are compulsory to achieve environmentally friendly transport solutions.

Beside these more technical oriented topics also a set of requirements and key performance indicators (KPI) for green corridors are developed in order to describe a framework for the corridor governance and to safeguard a sustainable corridor management. This framework influences the economic environment of the corridor and impacts the entrepreneurial ecosystem directly. The implementation of a green corridor concept lies still mainly on the involved stakeholders, but the corridor framework fosters a coherent guideline for sustainable entrepreneurial activities. This paper focuses on the benefits for entrepreneurial activities and especially small and medium sized enterprises (SME) as being part of a Green Transport Corridor. The research question is how and to which extend can SMEs benefit from being part of the Green Transport Corridor and how do the frame conditions of green corridors impact entrepreneurship and the business environment around corridors.

2. Theoretical frame

The theoretical frame describes Green Transport Corridors, their business environment and their impact on the entrepreneurial ecosystem and the integrated SME sector. SMEs are not necessarily responsible for supply chain management in the whole but are due to their size and specialized service they offer stakeholders of the supply chains of larger manufacturers and industry players. In the following the growing importance of the Green Transport Corridor concept is presented. Furthermore, the role of SME as stakeholders in this development is explained by allocating the corridor in the context of cluster and network theories.

2.1. Green Corridor initiatives

In the realisation of green corridor concept the Baltic Sea Region (BSR), being one of the most innovative and ecological oriented regions in Europe, enjoys a vanguard position in the development of green transport concepts. The authors took part in some important green transport corridor initiatives around the BSR e.g. the East-West-Transport-Corridor, linking Denmark and Sweden via the Baltic Sea and Lithuania with Belarus and Ukraine. In the follow some important initiatives together with their current status and their main results shall be highlighted. It should be mentioned that this list is not complete, since in the following years and also in upcoming periods more project initiatives will be established to promote green transportation.

- EWTC II – The East-West-Transport-Corridor II corridor links Denmark, Sweden, Northern Germany, Lithuania and Russia together in a network. The defined corridor runs from Esbjerg in the Western part of Denmark across the Great Belt bridge and from North Eastern part of Germany across the Baltic Sea further on to Karlshamn in Sweden, and from here on, via the Baltic Sea to Klaipėda in Lithuania and further on to Moscow or Belarus to Central Asia. The corridor is mainly land-based, based on intermodal train solutions and sea-based solutions (short sea shipping) across the Baltic Sea.
- Scandria – The Scandria corridor covers the area from the South Western part of Norway and South Eastern part of Finland via Sweden (Region Halland and Region Skåne) and further on via Zealand to Berlin/Brandenburg in Germany. At present, the corridor is mainly a road-based corridor supplemented with ferries/bridge when crossing the Øresund and Femern, but with a possibility of introducing more intermodal rail, especially on the German part.
- TransBaltic – The TransBaltic initiative has its focus on improving the transport system around the Baltic Sea and core partners from Norway, Sweden, Denmark, Germany, Poland, the Baltic States and Finland.
- NECL II – The North East Cargo Link II project tries to develop and promote a Midnordic Green Transport Corridor as a cost-effective and environmentally friendly transport route with partners from Norway, Sweden, Finland and Russia.

Meanwhile the BSR Transport Cluster Project for sustainable, multimodal and green transport corridors has been approved by the BSR Programme and launched in 2012 (BSR Transportcluster 2012). The BSR Transport Cluster includes among others all four previously described green transport initiatives and it acts as an umbrella platform

for the whole Baltic Sea Region by joining forces and knowledge of the BSR transport projects of the period 2007-2013. The main objective of the BSR Transport Cluster is to connect all transport modes and to strive towards a green BSR transport network in order to develop a coherent concept and a common standpoint for sustainable macro-regional transport and regional growth policies for the BSR on European level. In addition to the above mentioned BSR Programme cooperation projects, the research project SuperGreen was launched in the 7th Framework Programme and supported by the European Commission (DG-TREN).

- SuperGreen –The purpose of SuperGreen is to promote the development of European freight logistics in an environmentally friendly manner and evaluate a series of green corridors covering representative regions and main transport routes throughout Europe (SuperGreen 2010).

Finally, the Nordic green corridor initiative, launched in 2008 and managed by the Swedish Logistics Forum, has to be mentioned due to its strong impact on the BSR.

- Green Corridor – in the green corridor initiative of the Nordic States the government offices in Denmark, Finland and Norway, as well as the European Union's research consortium SuperGreen cooperate in order to define and implement green corridor concepts for Northern Europe. More than 30 local projects were identified as part of the Swedish initiative (Green Corridor 2010).

These goals and the overall strategy for a single European transport area are dominated by the implementation and development of environmentally friendly transportation, i.e. by reducing emissions, particularly greenhouse gases (GHG), developing intermodal transport systems with the exploitation of the individual benefits of each system (co-modality), and supporting innovative intelligent transport systems (ITS) for all transport modes (Hunke and Prause 2012). However, environmentally friendly transport is only one interesting aspect of green corridors. Due to the transnational character of a corridor network, the companies of different sizes and with different cultural and business background are working together to organise and realise the corridor services. The companies are embedded in transnational supply chains which are part of the corridor and they are contributing to the corridor performance. So the question arises how and with which principles the entrepreneurial activities within a corridor are organised and coordinated.

2.2. Frame requirements for Green Corridors

Starting point for all green corridor initiatives in the BSR was the logistics status after the EU enlargement in 2004 which was realised by the project "LogOn Baltic – Developing Regions through Spatial Planning and Logistics & ICT Competence" under the BSR Programme between 2006 and 2007. The empirical activities of LogOn Baltic showed that the landscape of inter-company logistics was dominated by larger production companies and logistics service providers together with their closed and company oriented ICT-systems in order to safeguard the control of their individual supply chains and to realise dedicated platforms for sourcing of transport services mainly from regional SME (Kersten *et al.* 2007; Kron and Prause 2008; Prause 2010a; Prause 2010b). The results lead the Swedish Logistics Forum to the formulation of six requirements on green corridors targeting to overcome the dominating hierarchical logistics landscape described in the LogOn Baltic project and to be able to implement environmentally friendly, efficient and sustainable logistics solutions (Green Corridor 2010):

- Sustainable logistics solutions with documented reductions of environmental and climate impact, high safety, high quality and strong efficiency,
- Integrated logistics concepts with optimal utilization of all transport modes, so called co-modality,
- Harmonized regulations with openness for all actors,
- A concentration of national and international freight traffic on relatively long transport routes,
- Efficient and strategically placed trans-shipment points, as well as an adapted, supportive infrastructure, and
- A platform for development and demonstration of innovative logistics solutions, including information systems, collaborative models and technology.

Of special importance for the SME sector is the demand of "openness and harmonisation for all actors" as well as "collaborative models ad technology" stressing a more balanced and cooperative work of all kind of suppliers, manufactures, forwarders, customers and disposal companies which are involved in the green corridor supply chain activities. However, the requirements of the Swedish Logistics Forum have to be completed by a quantitative

instrument to be able to evaluate the green supply chain management performance, i.e. to monitor and control the performance in the Green Transport Corridor development. In recent years, the EU forces the development of guidelines on specific criteria how to monitor and assess the overall green logistics actions. In the European funded project East-West-Transport-Corridor (EWTC) a "Green Corridor Manual" was developed for the first time. It tries to give a holistic and consistent monitoring concept for multi-modal sustainable transport (Fastén, Clemedtson 2012). The green corridor manual consists of a set of recommendations and guidelines on how to implement the green corridor concept according to the EU freight agenda and as promoted by the EU Baltic Sea Strategy.

2.3. Key performance indicators

The green corridor manual focusses on the definition of a set of Key Performance Indicators (KPI) and incentives and regulations for more efficient, high quality, safe, secure and environmentally friendly transport facilities and services. Such a manual can list indicators and measures with their potential impacts, together with a governance model for the development of a stepwise deployment of this concept. The manual can be read by all stakeholders of the corridor. This applies also for each SME in the network to evaluate their own potential and measure their own performance. It is also possible to look into and elaborate different options for the certification of green transports, which is of great economic interest for the single company who is awarded as well as the whole transport market.

There are different aspects which will influence the performance of each stakeholder in the transport corridor. One approach to evaluate the performance is by defining criteria. These criteria are separated into enabling and operational criteria. Enabling criteria describe the settings of the transport chain in regard to the hard infrastructure, meaning roads, railways, terminals, ports etc. The soft infrastructure includes the information and communication systems which support the transport logistics services offered along the defined transport route or a set of factors. Another aspect of enabling the performance of a transport chain are the different regional, national and international policies and regulations which apply to all stakeholders. Operational aspects describe the geographical settings as such, the transport and logistics solutions by involving new and innovative business models. The implementation of transport techniques will have also a direct impact on the performance of a transport corridor measured by given KPIs. The overall performance of a transport corridor is measured by summing up the performance of its stakeholders. This means for specific standards appearing in the KPIs that these standards have to be implemented especially on company level otherwise this standard cannot be realised on corridor level. Therefore, corridor standards represent minimum criteria for the corridor stakeholders. The following table gives an overview about the KPIs which were selected from the EWTC project and were also tested during the project duration.

Table 1. Performance areas of green supply chains

Performance areas	Operational indicators	Enabling indicators
Economic efficiency	Total cargo volumes On time delivery	Corridor capacity
Environmental efficiency	Total energy use Greenhouse gases, Co2e Engine standards ISO 9001 dangerous goods	Alternative fuels filling stations
Social efficiency	ISO 31 000 ISO 39 000	Safe truck parking Common safety rating Fenced terminals

Source: Fastén, Clemedtson (2012)

The KPIs are covering the economic, environmental and social aspects. Whereas the economic and environmental indicators are more focussing on physical and quantitative aspects, i.e. stressing efficiency and service quality, the referred standards about dangerous goods (ISO 9001 dangerous goods) as well as the ISO norms for risk management (ISO 31 000 and ISO 39 000) are laying emphasis on safety and road traffic security aspects. Another popular indicator for social performance measured the sick leave rates of companies, fluctuation by employee

turnover, the number of temporary employees and workers and the average salary level and salary differences between the stakeholders of the transport corridor. These indicators express how the sustainable performance is developed in the corridor and due to the composition of the corridor indicators as the amalgam of all corridor stakeholder indicators the KPIs together with other corridor requirements, stressing openness, collaboration and harmonisation, forming the entrepreneurial environment of the green corridor by supporting networking and sustainable development of the corridor stakeholders. First test results from the EWTC project show that more detailed aspects must be considered like age, gender, level of education, and experiences of the employees (Fastén, Clemedtson 2012). Finally, the enhanced corridor requirements together with the set of KPIs will act as a corridor mission formulating the framework for the sustainable corridor development and shaping the business environment for sustainable development.

2.3. Corridors, networks and entrepreneurship

The concept of a transport corridor consists of physical logistics flows connecting the main hubs in shape of a tubular transport system leading to the perception of a transport corridor as a tubular logistics cluster. Those systems realise a high complexity of interactions among their actors along the supply chains within the corridor so that a network perspective may better explain the emergence of collaborative practices and integrative behaviours in logistics in general and supply chain management from organisation's point of view (Lee 2005). Researchers have begun to suggest the need for a network-based view of supply chains, recognizing that the interactions between organisations in a supply chain are rarely as sequential as a chain structure would suggest (Bovel, Martha 2000). As a whole, studies acknowledge the importance of a network structure for the effective diffusion of supply chain-related practices (Roy *et al.* 2006), as well as for efficiency and flexibility of the responses of the supply chain to customer expectations (Wathne, Heide 2004). Due to natural reasons transport and logistics activities have often close relations to strategic alliances, cooperation and collaboration agreements which can result in cluster activities. Arising from the social network theory a transport corridor can be seen as a scale free network. It started from dyadic relationships between two stakeholders and grew to a broader network. Specific characteristics of scale-free networks vary with the theories and analytical tools used to create them, however, in general, scale-free networks have some common characteristics. One notable characteristic is the relative high number of nodes with relations to other nodes which greatly exceeds the average. The nodes with most of the relations are often called "hubs", and may serve specific purposes in their networks. Thus, hubs are both strength and weakness of scale-free networks. These properties have been studied analytically using percolation theory by Cohen *et al.* (2000) and by Callaway *et al.* (2000).

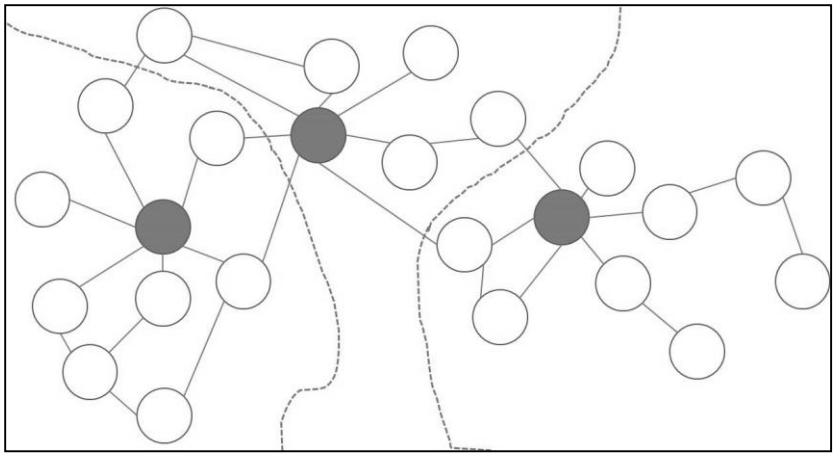

Fig.1. Transport corridor in social network theory

Source: developed by authors

By applying the network theory to the tested green corridor (EWTC) even more characteristic of this tubular logistics cluster are demonstrated. Due to the transnational dimension of the green transport corridor the hubs and

stakeholders along the corridor are artificially separated more than an absolute free network would allow (dotted lines). For each geographical region hubs can be defined, e.g. because of the location it might be sea ports which offer best places for co-modality and entry processes for cross-border transportation. These hubs are surrounded by other nodes which have a close relation and alliance to this specific hub but can also have other relations to any other smaller node originally located around another hub.

When it comes to the study or establishment of logistics cluster initiatives the Baltic Sea Region is one important area inside Europe. A study of the project "LogOn Baltic" revealed big differences in the level of the regional networking activities around the Baltic Sea Region. The development of cluster structures in the logistical sector were remarkably underdeveloped, especially in the regions located in the former UDSSR countries, so that there are no regional offers for logistics services in these regions (Kersten *et al.* 2007). This structural weakness is linked with a general lack in language skills and intercultural experience of the people working for the SMEs which was subsumed under a weakness of logistic service providers in "soft factors".
These observations have a direct impact on the development of green transport corridors because the majority of them are linking regions in Western and Eastern countries like EWTC or Scandria. Consequence of these lacks in soft factors in Eastern European regions, especially in relationship with networking and cluster building activities, have been discussed in several studies in the academic literature not only in the context of logistics (Wölf and Ragnitz 2001; Prause 2010a; Prause 2010b; Kron *et al.* 2007). The studies revealed that knowledge spill-over effects inside the cluster have been regarded as relatively unimportant by the managers of the cluster companies. The perception of the interviewed managers was more focused on operational topics like cheap labour and land prices than on strategic soft topics like innovation and networking. As a result the authors proposed that initiatives for establishing green corridors should rather concentrate on the development of logistics soft factors than on pure investments in infrastructure. Meaning, the underestimation of the soft dimensions is indicating a strategic weakness of the cluster and a threat for the future networking activities and cluster development (Prause 2010a).

A special importance for networking and cluster building plays trust. So, for example, in transaction costs theory a direct explanation is given how to understand the linkage between organisational structures stating that the lesser the trust in a socio-economic system, the more formal structures are required in organisation and cooperation. Also, game theory is leading to the conclusion that on the long run all parties' interests are best achieved by a social environment which is as transparent as possible and favours cooperation, reciprocity and trust (Katajamäki 2006).

3. Green Transport Corridors and the entrepreneurial environment

Previous theory analysis describes the concept of green transport corridor as a tubular logistics cluster. Furthermore, there is a large variety of possible factors influencing the performance of these clusters. Additionally, the performance of companies inside a cluster can only be understood when their integration is taken into account. The most complete measure for the performance of clusters is the value added generated in the cluster. The value added generated in the cluster is the sum of the value added generated by the members of the population. In practice, the measurement of the performance of clusters is a very complicated task because the necessary data for the analysis of the various variables influencing the performance of a cluster are not available. In his PhD thesis Peter de Langen (2004) developed a framework for the assessment of the performance of seaport clusters and considered a set of variables influencing the performance of a seaport cluster. He proposed four variables describing the cluster structure. As a consequence, he was able to provide a basis for an assessment of strengths and weaknesses of the structure of the considered seaport clusters and derived from their strengths and weaknesses recommendations for improving the performance of these clusters.

3.1. Case study: Rostock Seaport Cluster

Rostock is located in North – Eastern Germany and it was the largest port in GDR till 1990. Rostock seaport is still an important German port at Baltic Sea and it represents an important hub in the green corridor project Scandria. Like in all seaports also in Rostock all basic activities are related to handling and transfer functions of cargo and passenger. The generic work in a seaport cluster is based on logistics and service activities. A closer

view at the companies integrated in the Rostock seaport cluster reveals that nearly all of them belong to the logistics-related sector, outlining that the seaport cluster can be considered as a service cluster. All companies at Rostock seaport are part in at least one of the seven sectors of seaport handling, transportation, logistics, seaport administration, services of sea pilots and experts, and ferry companies. In a performance study, senior managers of the seaport cluster have been interviewed according to the underlying concept of De Langen (Prause 2010a). The relative low number of interviewees does not give a representative image of the situation inside the cluster but it indicates a trend which could be strengthened by results of other empiric activities.

A first result of the study revealed that the intensity of integration of the different service sectors into the seaport cluster differed heavily and those sectors which are related to passengers like travel agencies and cruise and ferry companies are not well integrated into the existing seaport cluster at all. Furthermore, more hardware-oriented services like repair and maintenance are sharing a similar situation. So as a first result it can be stated that the kernel of the Rostock seaport cluster is represented by cargo-related logistical service providers and navigation-related services.

In accordance with the analytical framework of De Langen, an analysis of the eight structural variables of the Rostock seaport cluster was realized, ordered in the two categories "cluster structure" and "cluster governance". Surprisingly, the study brought to light that knowledge spill-over effects inside the cluster have been regarded as relatively unimportant by the interviewees. This shows together with the weaknesses in the variety of goods and in the cluster population a strategic disadvantage in the area of innovations of the cluster. The high ranking of the available working power, the high transportation volumes and the low land prices are revealing an emphasis on operating topics in the perception of the cluster companies.

The stated strengths in the Rostock Seaport Cluster are focusing on freight forwarders and brokers who are generating and distributing the service tasks among the cluster companies. These intermediaries are competent and there is a high quality in problem solving inside the cluster. But again, these mentioned strengths are emphasising more the operative level of business activities. When it comes to the weaknesses inside the cluster, the existing level of trust is low revealing again a strategic problem for the future cluster development. Concerning the topic of trust it was assessed that the actually level of trust inside the cluster was very low and additionally the importance of trust for the cluster development was regarded as low. This weak perception for trust as an important cluster dimension is also expressed in the second weak point concerning the existence of central actors. Central actors like the port administration are acting as a moderator between the different cluster companies and laying the basis for common cluster activities. This leads to an increase in the trust level among the cluster population. As a result, the neglect of the soft dimensions is indicated as a strategic weakness of the cluster and a threat for the future cluster development.
In further interviews in the Rostock region with experts from public authorities, associations of enterprises, logistics service providers and trading companies it turned out that the actual situation in Rostock region can be characterised by a weak industrial density and a lack of skilled workers due to the migration to the economically more developed regions of Germany, especially to the Hamburg region (Prause 2010b). Most of the complaints about the weakness of region were related to soft factors. The experts are regarding the lack of a regional logistics strategy for Mecklenburg-Vorpommern as a strategic problem for the whole logistics sector. Additionally, the level of the regional networking activities and the development of cluster structures in the logistical sector are remarkably underdeveloped so that there are no regional offers for logistics services in Rostock region. This structural weakness of the region is linked with a general lack in language skill and intercultural experience of the companies and an underdeveloped educational sector for the field of logistics.

3.2. Case study: Logistics Networking in Hamburg

Hamburg is representing the German logistics capital with more than 5,000 classical logistics companies and approximately 150,000 employees in the logistics sector. By taking into account also the employees in the logistics service sector like consultation, IT services and transport assurances, the number of employees in the larger metropolitan region of Hamburg even exceeds the number of 230,000 employees. This phenomenon is heavily driven by the development of Hamburg seaport enjoying a growth rate despite recession years.

In order to strengthen the development of the logistics cluster in Hamburg region, the logistics initiative for Hamburg was founded in 2005 with the target to establish additional 14,000 new jobs in Hamburg and to generate an additional value added in Hamburg of approx. 6 billion Euro. The forecast for the effects of the activities of the logistics initiative was based on the Regionomica study (Regionomica 2005).
Three topics have been identified as main success factors for the further logistical development of Hamburg:

1. free land for logistical operations
2. technical innovation projects in logistics
3. education and qualification in logistics

As an important bottleneck for the further development in the logistics sector, the study identified a lack of educational capacity in the Hamburg region since the increasing need of skilled workers and employees in logistics was threatening the whole logistics sector in Hamburg. So the logistics initiative stressed heavily the expansion of logistical education and qualification in Hamburg. One important factor for the Hamburg region is the development of free land for logistical purposes since the high density in the Hamburg region leads to a permanent shortage of space. Under the precondition that the space problem will be solved in the next 10 years, the study is estimating the creation of approx. 700 new logistical jobs in the first year, and up to 8,500 new logistics jobs till 2015. With an average gross value added per employee in logistics of approx. 55,000 Euro for the next 10 years, the total additional value added from new jobs in logistics was calculated to approx. 3 billion Euro.

The indirect effects of the logistical initiative have been estimated to be 3 % considering the following three topics:

1. Effects from technology and innovation
   Estimated effect: 1 % per year
   New jobs: approx. 500

2. Effects from education and qualification
   Estimated effect: 0.5 % per year
   New jobs: approx. 500
   Additional value added: 80 million Euro

3. Effects from cooperation
   Estimated effect: 1.5 % per year
   New jobs: approx. 750
   Additional value added: 230 million Euro

The most interesting result of this analysis is the relative high value of 1.5 % due to cooperation yielding in the same total effect like innovation and education together. The study contained the important statement that the estimated effects of cooperation have been detected already empirically during the writing of the study. Altogether, the study estimated the total effect of the logistics initiative of Hamburg with 14,000 new jobs in direct and indirect logistical sectors and an additional value added for Hamburg of approx. 6 billion Euro.

Conclusions

The concept of Green Transport Corridor is highly ranked on the political agenda however the question still remains if and how the private business sector, mainly SMEs in logistic sector can benefit from these attempts. This research shows an approach to provide a framework for sustainable development by applying the Green Transport Corridor concept in the entrepreneurial environment. SMEs are seen as the main stakeholders and also the main beneficiaries in this process.

Former studies analysing the potential benefits for regions and private enterprises from being part in cluster structures demonstrated consentaneously that cooperation and network activities among cluster stakeholders are the way to achieve most efficient operations. To measure the cluster performance and to monitor the activities of the SMEs involved in the green corridors there are also theoretical and rather practical approaches described. From an EU funded project a so called “Green Corridor Manual” can be used as well as results and requirements

from other green corridor initiatives. According to that manual the performance of these tubular logistics clusters is influenced by enabling and operational factors, trying to represent and connect the hard and soft infrastructure as well as operational aspects.

The answer of the research question is that SME by their operational nature are heavily integrated in the development of green transport corridor concepts. SME cover the highest amount of logistic activities in a supply chain; this applies to traditional view as well as the green supply chain management. However, the green corridor approach emphasizes the integration of SME into green transport corridors by stressing the requirement of "harmonized regulations with openness for all actors" enhancing the position of SME sector as stakeholders in the green corridors. This will give a perfect frame condition for the development of SME performance and also the economy of regions and markets they operate in. Since the implementation of green corridor concepts is still in the test phase the final business structures are still unknown but in any case it is crucial to involve the SMEs into the process of the development right from the start and in further development.

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IF INDUSTRIAL SECTOR DEVELOPMENT IS SUSTAINABLE: LITHUANIA COMPARED TO THE EU

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Abstract. Discussions about development of economies' structure and impact of economies structures on patterns and rate of economic growth of countries comprise a separate research area in classic field of economics - economic growth economics, and in a reletively newer field of research – comparative economics. If discussion in classic economic growth theories tackled proportions between agriculture industry, later, with rapid industrialization of currently developed countries, discussion its focus gradually swiched. After industrilization reached its saturation in developed countries and percentage of value added generated by agricultural sector diminished, development economists' discussion turned field of efficiency of economic sectors, estimated by total factor productivity (TFP). The paper is devoted to analysis of tendencies of industrial sector development. Admitting that percentage of value added generated in industrial sector diminishes as county develops and value added generated by service sector increases, we claim, that industry does not loose its importance. In oposite, despit servise sector grow and obviously will rapidly develop in observable futire, industry remain the very important consumer of natural, energectical, capital resources and human resources. It is difficult to underestimate industries role in the process of sustainable development of counries development. This paper suggests a sequently devised glance at historical path of industry sector development in Lithuania. Selected indicators of other countries or the EU are used for comparison reasons having a purpose to shed a light on peculiarities – similiarities and differences – of Lithuanian industrial sector development. Insights generated in the result of simple economic comparative analysis of selected counties, we believe, would allow select methodology allowing gradual transforming of Lithuanian industry into more efficient, sustainable and competitive economic sector conditioning the faster economic growth of Lithuania and similar countries, which encounter similar issues and tackle similar economic and politic aims.

Keywords: structural changes, manufacturing, absolute structural change rate, intensity coefficient, dissimilarity index

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1. Introduction

Each country, let it be developed or developing, seeks to develop sustainably. An intense and rich discussion in this area has been progressed many dacades, and myriad of facets of better economic, social and environmental welbeing has been elaborated, ranked and agregated (Prakash 2013; Mačiulis, Tvaronavičienė 2013). Nevertheles, it is remains undisputble that way towards sustainable developmet lies through more efficient performance of counties' economies. Economies of countries are not homogenious, they are characterized by different economic structures and different their transformation patterns. Here we need to point out, that treatment of a concept "economic structure" can vary in scientific literature and an be used in unexpected contexts for an economist

sometimes (Lankauskienė, Tvaronavičienė 2013). Here we need to clarify that in this paper by "economic structure" of economy structure of GDP is being meant. In the context of considered issues agriculture, industry and services comprize economy of a country; their proportional value added is being understood as "economic structure" or "structure of economy" – concepts, which will be used as synonimous in this paper.

2. Countries' economic structurures and economic growth patterns: glance to theoretical genesis

Economic structures' analyzis, scientific questions of their transformation patterns and impact of those patterns on economic growth are attributed to the separate strand of economic growth literature. The most promiment predecessor of so called Stuctural-Change model is Nobel laureat W.Arthur Lewis, who formulated his ideas in the mid-1950s; later his ideas were further elabotared by John Fei and Gustav Ranis (Todaro, Smith 2009: 115). In order to present esence of the research in simplified way, Structural-Change model could be described in the following way. Hence, in the Lewis model the country's economy consists of two conditional sectors: low productivity agricultural sector and developed, much more productive industrial sector. Movement of labor force from agricultural sector to industrial triggers economic growth of the whole economy due to higher productivity achieved. Now observing transformations of economies' structures in various countries – developed and developing – we can just state, that countries indeed moved towards industrialization, with all consequences for development predicted by W.Arthur Lewis. Main criticism of Structure-Change model was about limitations of reserach coused by strong emphasis of labor force, which is supposed to transfer from agricultural to industrial sectors. The researches, which followed these, expanded rnage of driving forces of structural change. Hence, later developed Patterns-of-Development analysis model focused on wider set of factors implicating structural changes.

Strucural changes were perceived as broder concept, i.e. authors talk about economic, industrial and institutional structural changes. In contrast to the Lewis model, not movement of labour force, but incresed savings and investment are perceived by Patterns-of-Development analysts as necessary but not sufficient conditions for economic growth. In addition to the accumulation of capital, both physical and human, a setof interrelated changes in the economic structureare required for the transition to a modern economic system (Todaro, Smith 2009: 120). To comment from contemporary prospective, considerations of Patterns-of-Development analysts are hardly denyable, alas due to lack of focus, they do not provide a methodalogycal tool for further analysis. Here, in contrast to W.Arthurs Lewis, too broad scope of accecting factors are being discussed, what naturally, exist but approach itself is not sufficiently instrumental for analysist of contemporary economic structures (not even pointing out to too broad concept of economic structure used).

The research is being developed further and structural changes are analyzed by Harvard economist Hollis B.Chenery and his colleagues (Todaro, Smith 2009: 121). The scientists examined patterns of development of numerous countries during the postwar period. Their empirical studies, both cross-sectional and time-series of differenly developed countries led to the following insights. Development process can be characterized by shift from agriculture to industrial production, accumulation of physical and human capital, change of consumer demand from necessities to more sophisticated manufactured goods and services and change of other processes, which are more attributed to development (not to economic growth) economy; i.e. migration to towns, increase of population etc. What is interesting, that proponents of this school call for development specialist "let the facts speak for themselves" (Todaro, Smith 2009: 121).

We took a glance at theoretical approaches towards economic driving forces. To conclude, several consistent patterns could be distinguished: country development can be accelerated by diminishing share of agriculture and increasing industrial sector. This process in principle is finished in developed countries. After cetairn level of country development is achieved, service sector starts to growth more rapidly, what causes changes in economy sector. Share of value added in industry stops growing or even starts to decline (it does not mean absolute production volums decrease). The proceses of economic structure transformation are complex i.e. variety of factors affect that process. Trnasformation of economic structure should lead to higher efficiency of country's economy, what means higher total factor productivity (TFP). Despite all spectrum of theories of economic growth, main production factors are same: labor, capital (local or foreign origin) and technologies. Since countries differ by resource endowment, limited resources naturally impact economy structure of a country. After this short excursion

into field of economic structures transformation studies let us concentrate on industry development peculiarities and factors, afecting its economic performance.

2. Statistical view into industry sector of Lithuania and other countries

As it can be seen from overview of evolution of economic theories of economic restructuring, question about the most propriet structure of separately taken country, irrespective of its stage of development can not be answered directly; all suggestions have to very context sensitive and take into account availability and of productivity production factors (labor, capital, technology). As it was mentioned above, resource endowments are very important, especially in cases, when a country is resource dependent, as e.g. Lithuania, which is energy dependent.

In this paper we will tackle industrial sector of economy. Let us look in specific seequence at statistical data characterizing industry development and produce insights about further prospects. The method used is the simpliest clasical economic method – comapative analysis. Scientific novelty here lies not in a method used, but in sequence, in which the comparative analysis is being performed. Hence, the following data is to be extracted and compared:industry share in in economy of a country. The industry share will be expressed by value added (% of GDP) generated by industrial sector. Since countries (at least European) are cahracterized by mature industries, i.e., are already passed their intensive development periods, disparities would indicate limits withing which industrial sector varies in contemporary conditions:energy intensity of economy, estimated by GDP per unit of energy use.

The comparisson of countries would allow to estimate national "energy productivities", which depend on economic structure (Tianli *et al.* 2011; Wangjiraniran *et al.* 2011; Vosylius *et al.* 2013) (but not only, of course Lankauskienė, Tvaronavičienė 2012). Energy intensity, which is to be perceived as productivity of one of production factors (energy productivity) depends on behaviour of household (heating, refrigerating), transport mode, level of technology, institutions, incuding energy consumption culture etc. Anyway, industry is important consumer of energetic resources, hence disparities in countries, most likely will be replicated in all compounding consumers;

1) energy import, expressed in percentage terms has to be taken ito account. Reasoning behind this sequence of comparative analysis is following: country can allow a luxury ofbeing energetically inefficient if it has own energetic resources and does not depend on energy import. That context has to be taken into account while evaluating Lithuania's or any other country's propspects to develop sustainably and remain competitive in mid-range;
2) alternative and neuclear energy (percent of total energy use) has to follow already comparisons indicated above. The purpose of this step of comparative analysis is to clarify if tendencies in alternative energy fostering allow contribution of this kind of energy to sustainable and competitive development of industry in the future. If there is no tendency groth tendency, it means that alternative energy does not play propriate role in sustainable development;
3) high technology exports as % of manufactured goods, we believe, has to be observed. This characteristic of industry development would provide information, necesseary to induce tendencies of all considered indicators into one generalizing picture. In case country appeared not sufficiently energy efficient and additionally energy dependent, well developed high technology sector of industry could mitigate negative effects and condition rather high international competitiveness;
4) concluding remarks about current economic structure, industrial development ant plausible future trends are to be formulated.Let us start comparative analysis of economic structures by a glance at interactive industry map 2009-2013. Development of industry is estimated by industry value added, expressed in percent of GDP in the EU and neighbouring countries (snapshot of the EU and neigbouring countries is provided in Figure 1).

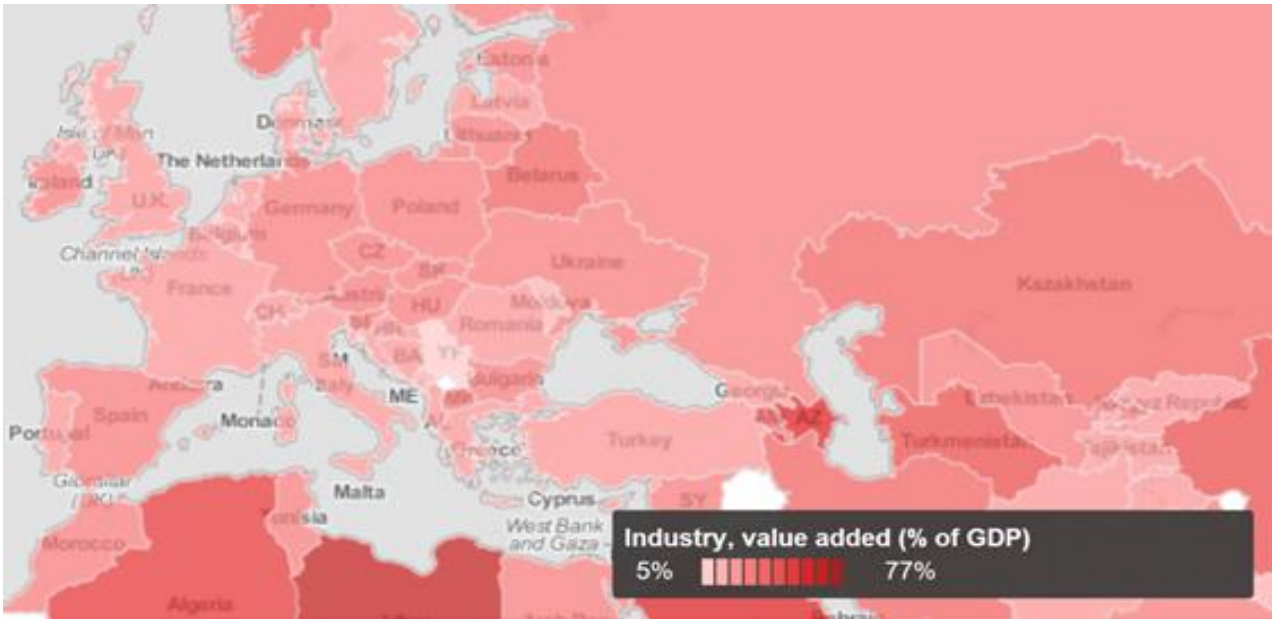

Fig.1. Industry development in the EU and neigbouring countries (year 2009-2010)

Source: The World bank http://data.worldbank.org/indicator/NV.IND.TOTL.ZS?display=map

The economic map lets provides a useful economic view of interested part of the world. It appears Lithuania, which is an object of our investigation is sufficiently industrialized and, in principle, and not particularly differs from other European countries: seems industrialized as Germany, but less as e.g. France. In order to reveal peculiarities a closer glance is needed. Let us choose data reflecting industrialization in the EU, Lithuania, Netherlands and Luxemburg. The explanation of choice logics is following: the EU average will serve as benchmark letting to orient for comparative economist how remote Lithuania is from statistical European Union average, Lithuania serves as object of investigation, the Netherlands is randomly chosen representative of European Union and Luxembourg stands for exceptionally well developed country. The latter country was chosen with purpose to indicate if considerable disparities among developed countries can be found. The change of value added generated in industry, expressed in percentage terms during 2004-2011 year period is presented in Figure 2.

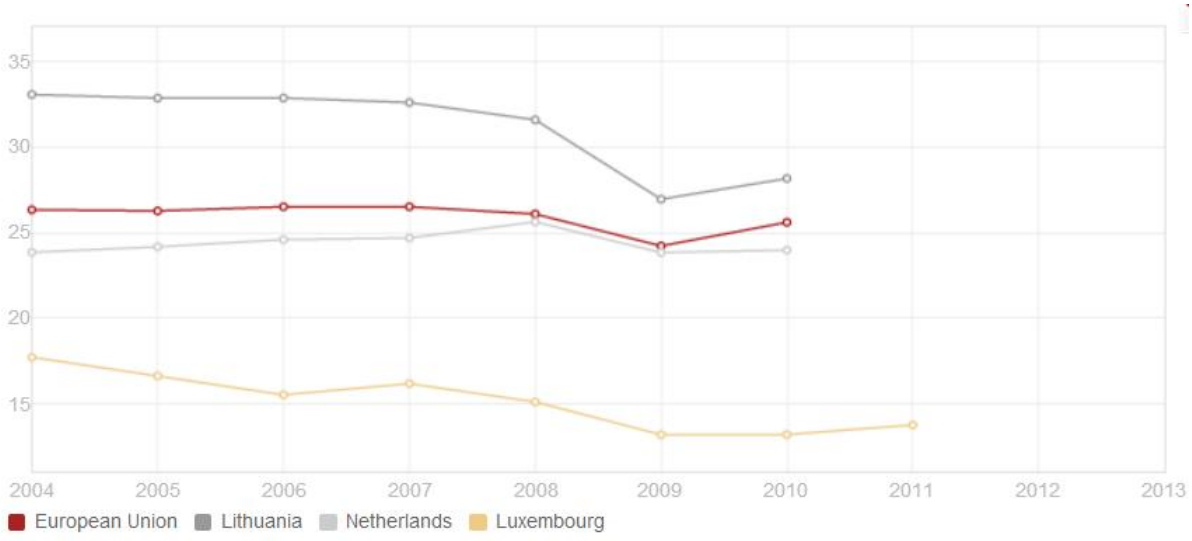

Fig. 2. Industry development in selected countries during period of 2004-2011 years (Value added of industry,% of GDP)

Source: The World bank, http://data.worldbank.org/indicator/NV.IND.TOTL.ZS/countries/EU-LT-NL-LU?display=graph

A closer look to selected countries reveals that Lithuania has a higher share of industry in its GDP if to compare it to the EU average. Selected representative of developed the EU country's – Netherlands – confirms the impression. Luxemburg as rich and especially well developed country just to does not rely on industry at all. The presented above Figure 2 provides additional information to the economic industry map (Fig.1). Industry mapping and graphs provide information of different level of abstraction, which enhances understanding of industry development patterns. Here, in this paper we do not go beyond, i.e. into industry composition and sub-sectorial change (Dudzevičiūtė 2013). For Lithuania we draw a conclusion, that according of industry share in GDP, it belongs to the mostly industrialized European Union countries.

By continuing juxtaposing Lithuania with other countries we will aim to find out if Lithuanian industry can be treated as sustainably developing and competitive. We will follow sequence of comparative analysis resented above and will present charts attributed to the second step, i.e. we will compare energy intensities in the world, the EU, Lithuania, Japan and China. Before commenting the graphs (Figure 3) depicting change of energy efficiency, expressed by GDP generated per unit of energy, let us stop on providing argumentation, why those specific regions and countries are to be compared. Our main aim is to provide relevant context for Lithuania, which serves as object of our investigation. Hence, selection of the EU is natural. We introduce world, in order to understand how bad Lithuanian performance is, since world average is far away from an excellence benchmark. We incorporate China into comparison deliberately as well. China, as we know is a very important world market player putting heavy emphasis on industrial export. China is energy dependent country (Zhang *et al*. 2013) hence, if comparison showed that it is less energy efficient than Lithuania, it might have led to serious conclusions about plausible inefficiency of Lithuanian industry. Japan is introduced as a country with the highest energy efficiency in the world (Vlado 2012) in order to observe if a gap between the EU and Japan exists. The comparison of selected regions and countries is displayed below (Figure 3).

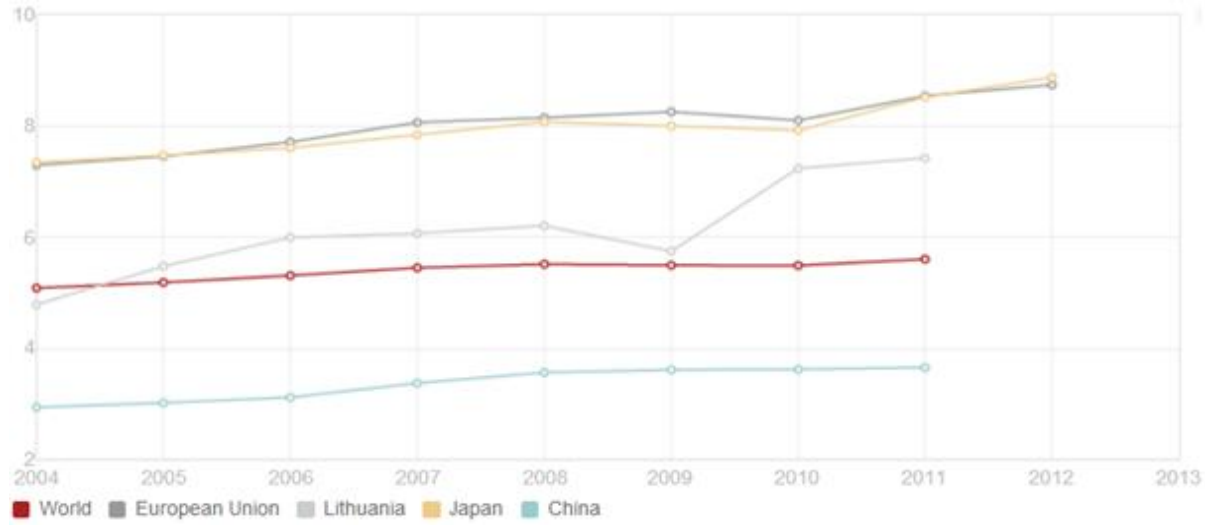

Fig.3. Change of energy intensity of economies in chosen regions and countries during period of 2004-2012 years (GDP per unit of energy use, constant PPP $ per kg of oil equivalent)*

Source: International Energy Agency http://www.iea.org/stats/index.asp; The World bank http://data.worldbank.org/indicator/EG.GDP.PUSE.KO.PP.KD/countries/1W-EU-LT-JP-CN?display=graph

*GDP per unit of energy use is the PPP GDP per kilogram of oil equivalent of energy use. PPP GDP is gross domestic product converted to 2005 constant international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as a U.S. dollar has in the United States

Concluding comments are as follows: China is big world market player with energetically inefficient and environment hostile industry (Zhang et *al.* 2013; Wu *at al.* 2013). Lithuania surpasses China and the average of the world but still remains rather energy inefficient country. It lags behind the EU average considerably. Japan is being considered as the most energy efficient country. Alas, technologies "has limit" as Japan's scientists claim

(Vlado 2012) and Japan appears near the EU average. It seems spillover of technologies between the EU and Japan has no obstacles in the contemporary globalized world; alas technological progress has not reached Lithuanian economy yet. Following a sequent logic of statistical data comparisons, let us juxtapose energy imports, expressed in percentage terms in the same deliberately chosen regions and countries, i.e. world, the EU, Lithuania, Japan and China. Argumentation of choosing the indicated set of countries remains the same. Hence, dependence of those countries on energy imports is provided below (Figure 4). Despite there a lot of energy security perceptions and respective indicators can be found (Tvaronavičienė 2012) high percentage of import of energy use, undoubtedly, is one of them.

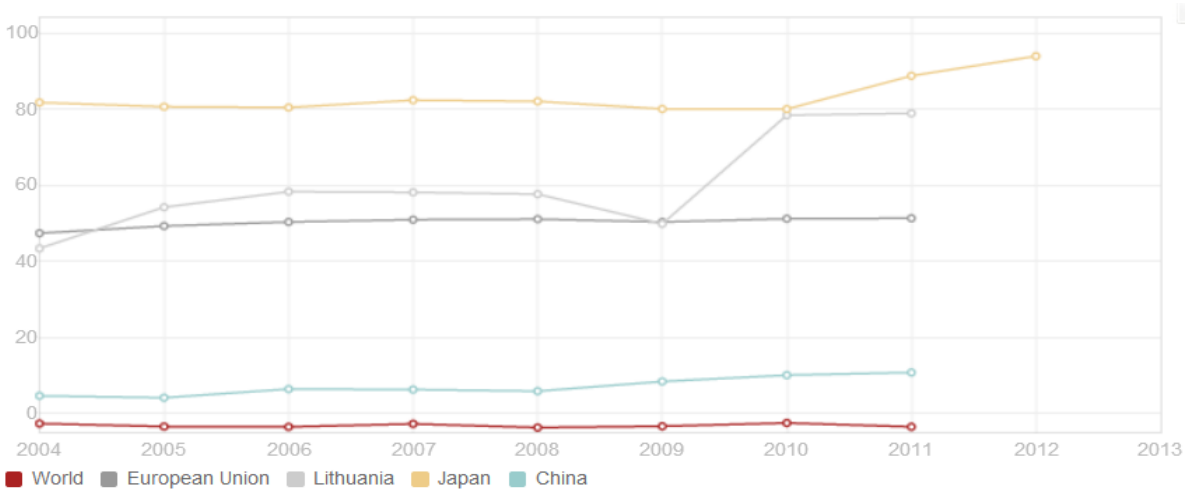

Fig.4. Energy dependence of selected countries during period of 2004-2012 years (Energy imports, net, % of energy use)*

Source: International Energy Agency http://www.iea.org/stats/index.asp, The World bank http://data.worldbank.org/indicator/EG.IMP.CONS.ZS/countries/1W-LT-EU?display=graph

*Net energy imports are estimated as energy use less production, both measured in oil equivalents. A negative value indicates that the country is a net exporter. Energy use refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.

In global context Lithuania's energy dependence is high. Only Japan, which is especially energy efficient, is dependent almost at the same level. Fukushima explosion increased its dependency even more and share of energy import surpassed Lithuanian share of energy import.

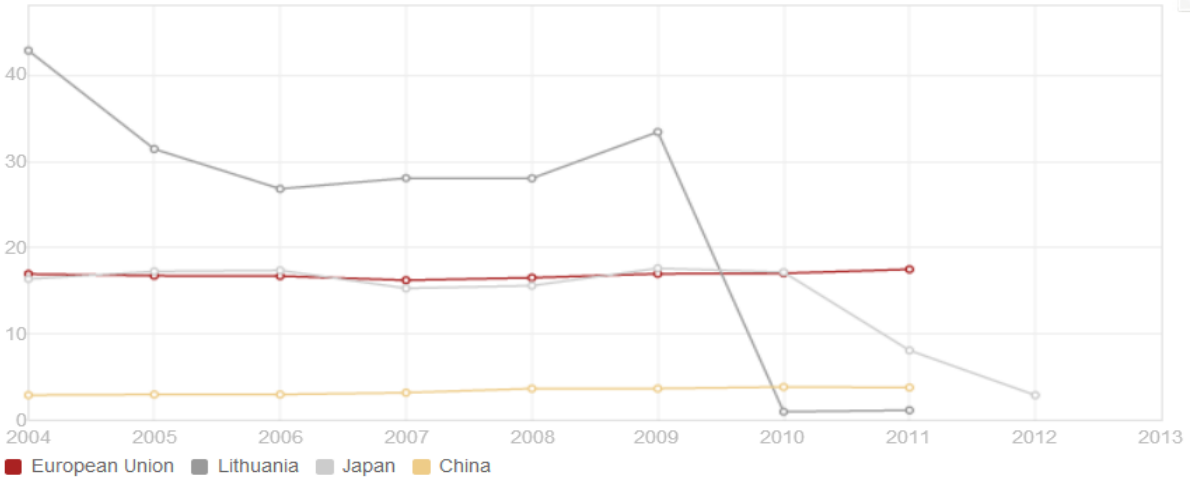

Fig.5. Impact of nuclear power stations functioning terminating in Lithuania and Japan (alternative and nuclear energy, % of total energy use)

Source: International Energy Agency http://www.iea.org/stats/index.asp, The World Bank http://data.worldbank.org/indicator/EG.USE.COMM.CL.ZS/countries/EU-LT-JP-CN?display=graph

Lithuania's energy dependency soared after closure of Ignalina nuclear energy plant in year 2009 (Miškinis *et al.* 2013). Sharp decline in alternative and nuclear energy, produced in Japan and Lithuania resulted in terminating of functioning nuclear power stations is reflected above in Figure 5. Share of alternative energy from renewable sources is that low (Miškinis *et al.* 2013) that does not affect general trends observed by comparison statistical data of interest.

In order to judge if the peculiarities of industry development threaten industry sector sustainable and competitive development let us, as devised in the sequence of analysis conducting provided above, let us examine high-tech industry export performance. Notable, that currently Lituania's export have not yet lost its international competitiveness (Smaliukienė *et al.* 2012). Returning to economic comparison we draw attention that this time we will take into account only Lithuania and neighboring Baltic countries – Latvia and Estonia. The target for comparison has been chosen due to the following reasons. Taking into account that well developed countries outperform Lithuania in our comparative analysis we strive to juxtapose countries of very similar history and economic capacity. Such approach, we believe, would allow estimating Lithuanian industry performance more objectively. Recall, that Lithuania is the biggest of those three small countries, second is Latvia and Estonia is the smallest one. High-tech industrial export of those countries, measured by absolute values, is presented below (Figure 6).

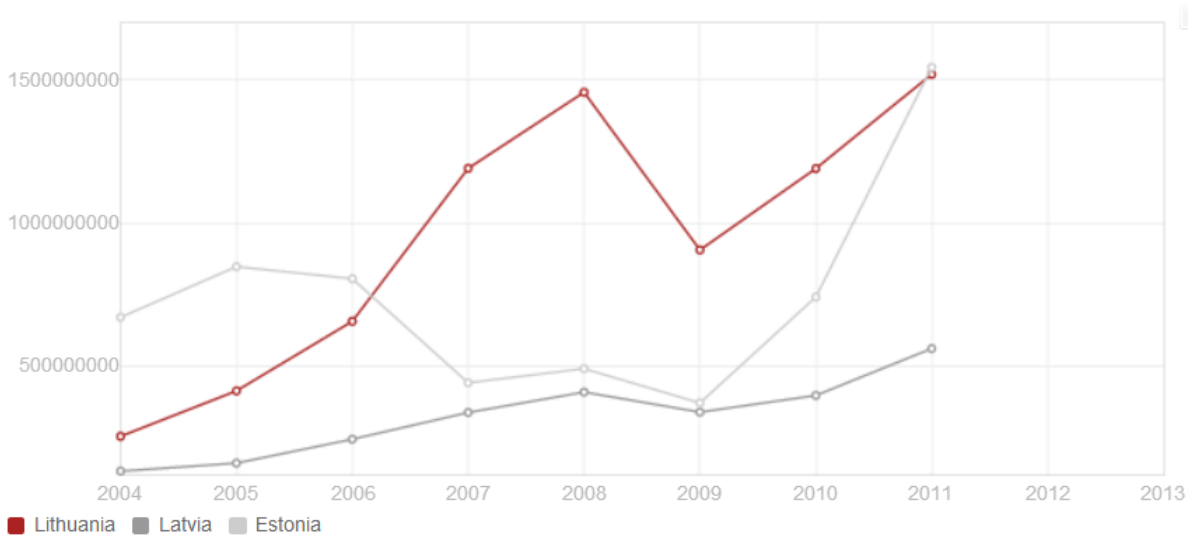

Fig.6. High-technology exports*, absolute volume in current US$

Source: World bank, http://data.worldbank.org/indicator/TX.VAL.TECH.CD/countries/LT-LV-EE?display=graph

* High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery

Comparison reveals that Estonia being twice smaller than Lithuania increased considerably high-tech industrial exports and reaches Lithuanian data. In order to formulate final insights let us compare the same indicator expressed in percentage terms for Lithuania, Latvia, Estonia, and the EU this time (Figure 7).

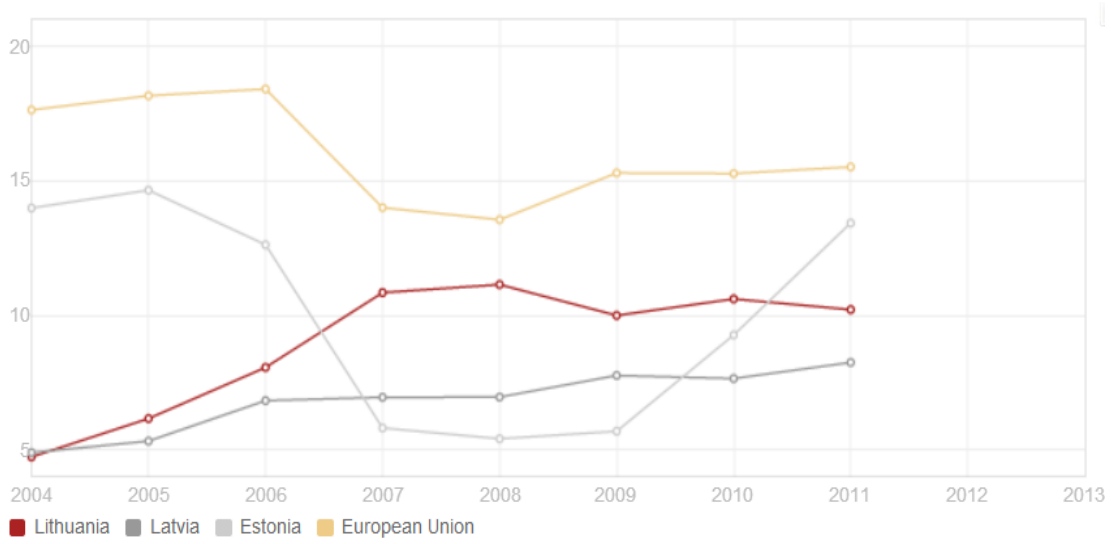

Fig.7. High-technology exports*, % of manufactured exports

Source: World bank, http://data.worldbank.org/indicator/TX.VAL.TECH.MF.ZS/countries/LT-LV-EE-EU?display=graph

Comparison displays that, despite Lithuania's high-technology exports in absolute monetary values are increasing; share of high-technology exports remain relatively unchanged. Estonia with very similar development level in that respect performs much better and moves towards the EU average. Lithuania has to take those indicators into account respond by relevant policy implications.

Concluding remarks

Industry share in Lithuania is comparatively high in the EU context. It could be bas well claimed that the share is high in the context of developed countries Lithuania is exceptionally energy dependent. Import dependency will persist in nearly observed future, and there is low probability that energy prices would decrease significantly. Lithuania has to restructure its industry. Share of high-tech industry is very low and has to be increased: the task is complicated followed by complex implementation. Another way, which is not alternative but rather complimentary, is to estimate energy intensity of each industrial subsector and foresee further trends of its development. Energy consumption has to be forecasted, energy intensities estimated. Industrial subsectors threatening continue increasing energy intensity has to be restricted, and more energy efficient ones supported. Such approach, together with stimulation of high-tech industries would allow following path towards sustainable and competitive industry development.

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EVALUATION OF FRAUDS IN PUBLIC SECTOR

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Abstract. Frauds greatly influence the performance of the enterprises and decisions made by users of accounting information. Therefore, fraud analysis is at high importance among the executives of state-owned enterprises and budgetary institutions. Probability of detecting a fraud is lower than finding errors, since fraudulent activities are deliberately hidden: they are usually pursued using complex and carefully planned schemes. The results of the empirical research have revealed that utmost importance in encouraging frauds can be attributed to the conditions where various individuals can commit frauds. Thorough analysis of scientific literature, accounting and audit regulations had allowed the authors to prepare the classification of principle conditions increasing fraud risk. This classification will aid public sector executives, accountants and auditors in detecting fraudulent activities, identifying their causes and location, objectively evaluating their effect on performance of the enterprise and foreseeing specific measures of prevention.

Keywords: public sector, frauds, classification of frauds, evaluation, analysis of frauds

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JEL Classifications: K40, M42, M48

1. Introduction

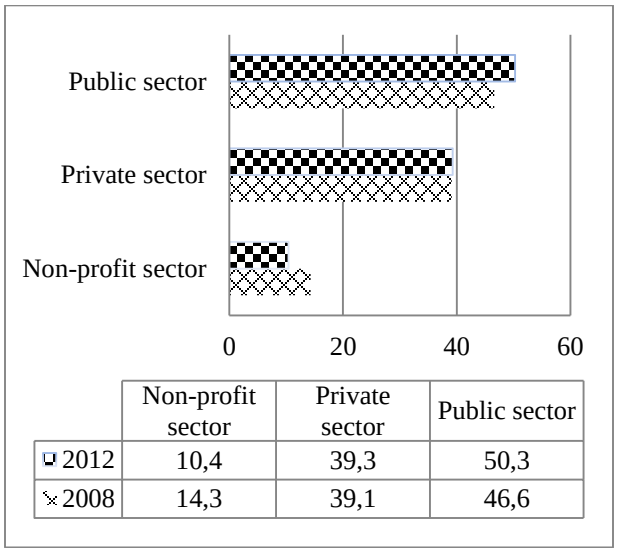
Changes originating from currently pursued public sector's accounting reform in Lithuania have determined the changing accounting policy in state-owned enterprises and budgetary institutions, due to this reason likelihood of frauds increases. Frauds not only distort enterprise's financial reports, but also can mislead internal information users, who based on misleading financial reporting can make unsuitable strategic or managerial decisions, forecasts and perspectives, and their unsuitable selection and management can in turn reduce enterprise's competitiveness. Frauds can also create extensive threats to external information users, since from the first glance minor fraudulent activity and its misleading financial information can cause losses for banks, investors, buyers and suppliers. Nevertheless, a rather large harm can be caused to the State as well, since document forging is often used not only to mask frauds but also to avoid taxes. The research object is the evaluation of frauds in Lithuania's public sector enterprises. The research aim is to classify and evaluate frauds committed in public sector's enterprises and budgetary institutions. The following objectives have been raised in order to achieve the above mentioned aim:

- To analyze the effects and specifics of frauds in public sector;
- To perform a classification analysis of frauds existing in public sector.

The authors of the article have analyzed the scientific literature, empirical studies and economic literature, used synthesis, information collection, comparison, specification and generalization methods together with practical study in respect to assessment of fraud expression in public sector.

2. Analysis of frauds specifics in public sector

Frauds are one of the most harmful social phenomena, which originated in ancient times and still persist. Fraudulent activities did not diminish in the age of democracy, high-technology and information systems, rather new types of frauds, and new ways of covering them up, emerged. Changes originating from recently pursued public sector's accounting reform have caused accounting policy to change in state-owned enterprises and budgetary institutions, due to this reason likelihood of frauds increased. According to performed statistical data analysis, the largest percentage of frauds committed can still be attributed to public, rather than private sector (see Figure 1).

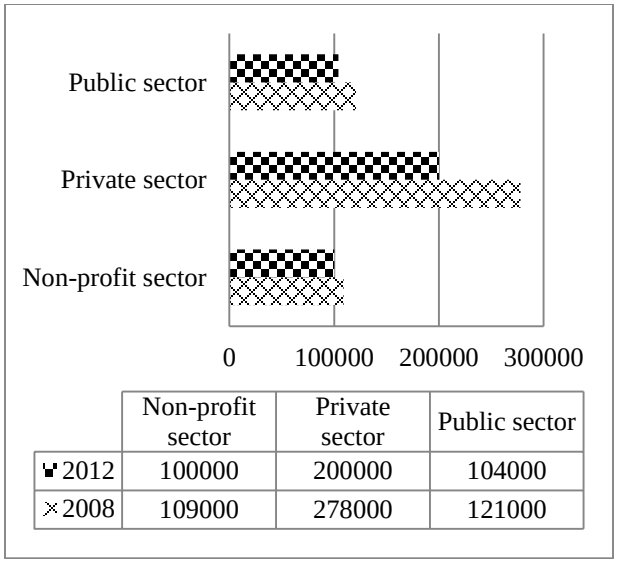


	Non-profit sector	Private sector	Public sector
2012	10,4	39,3	50,3
2008	14,3	39,1	46,6

Fig.1. Frauds by sector, in percentage, 2008-2012

Source: prepared by authors based on ACFE data (2008-2012)

From the figure above we can see that the percentage of frauds committed in public sector is much greater than in private sector. This can be explained by the fact that weaker internal control in public sector creates possibilities for larger number of frauds to be committed. Besides, audits are carried out regularly in private sector as opposed to public sector. Therefore, based on frauds' triangle or quadrilateral components we can claim that more frauds are committed in public sector due to favorable conditions. Based on the performed scientific literature analysis (Pranka 2012; Kim 2012; Black and Park 2012; Mackevičius and Kazlauskiene 2009), we can conclude that frauds happen while reflecting various accounting operations. According to Doig and Levi (2009), main distortions of financial information happen due to incorrect interpretation of economic operations or conscious distortions, which are the most harmful and public sector enterprises suffer most material harm from. This statement is also confirmed by the statistical data analysis (see Figure 2). From the figure 2 we can see the overall harm caused by frauds is greater in private sector than in public. Based on the statistical data analysis we can state, that despite the fact that more frauds are committed in public sector, greater harm is caused in private sector. Harm caused by frauds is usually not limited to one particular enterprise, but often it is also transmitted to all related entities – investors, suppliers, banks, insurance companies. Even though greatest attention in the scientific literature is given to frauds committed in the private sector, most modern and innovative frauds are more often committed in public sector, since one executive and one or a few employees as an organized crime unit is sufficient for this type of fraud.



	Non-profit sector	Private sector	Public sector
2012	100000	200000	104000
2008	109000	278000	121000

Fig.2. Average scope of losses subjective to frauds, in USD

Source: prepared by authors based on ACFE data (2008-2012)

According to Asare (2009) and Jones (1993), perpetrators of fraud in public sector often possess high motivation to commit it, have sufficient abilities and confidence. Frauds committed in public sector are usually more profitable than in private sector and the risk that it will be uncovered is much lower (Gee *et al.* 2010).

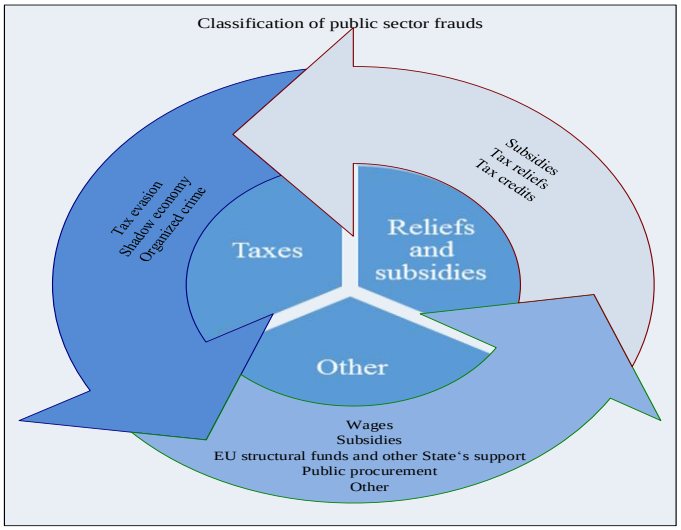


Fig.3. Structuration of frauds in public sector

Source: prepared by authors based on Hemmerechts *et al.* (2011); Brooks *et al.* (2009); Burgess *et al.* 2012.

Therefore, the interest of individuals ready to commit frauds is greater. Thus, we can conclude that different types of frauds exist in private and public sectors and they are influenced by different external factors (see Figure 3). Public sector is very attractive to perpetrators of fraud, who take advantage of tax system, reliefs and subsidies for personal enrichment. According to Gannon and Doig 2010, all institutions and public sector enterprises are subjects in valuating fraud risk, since fraud can be committed in daily operations, for instance, calculating wages, carrying out public procurements, etc. As seen from practice, frauds committed in budgetary institutions are often

uncovered when tax administrators quantitatively evaluate direct and indirect tax collection and discover a gap between planned and collected taxes. According to Mackevičius (2012), frauds in state-owned enterprises are often uncovered only during State audits or other checks caused by unforeseen circumstances. Nevertheless, even then they are hard to uncover, since they are planned carefully and in advance, and their effects are well hidden or destroyed. Therefore, it is essential to classify public sector frauds.

3. Classification frauds in public sector

Term fraud has a broad meaning, which must be defined before classifying public sector frauds. It can encompass various criminal actions:

- Organized fraud – such as VAT frauds "carousel", "boiler room fraud", stock manipulation, internal trade fraud, collateral fraud, payment card frauds;
- Frauds against several individuals – such as "Ponzi" scheme;
- Individual frauds – such as misappropriation of assets, which does not fulfill the criteria for organized crime, but is usually performed in a rather organized manner.

Practice shows that there are various types of frauds. Often at the first glance innocent-looking errors can be well-organized and involve organized crime, which in turn can have effects on private and public sectors. Therefore, it is imperative to classify public sector frauds (see Figure 4).

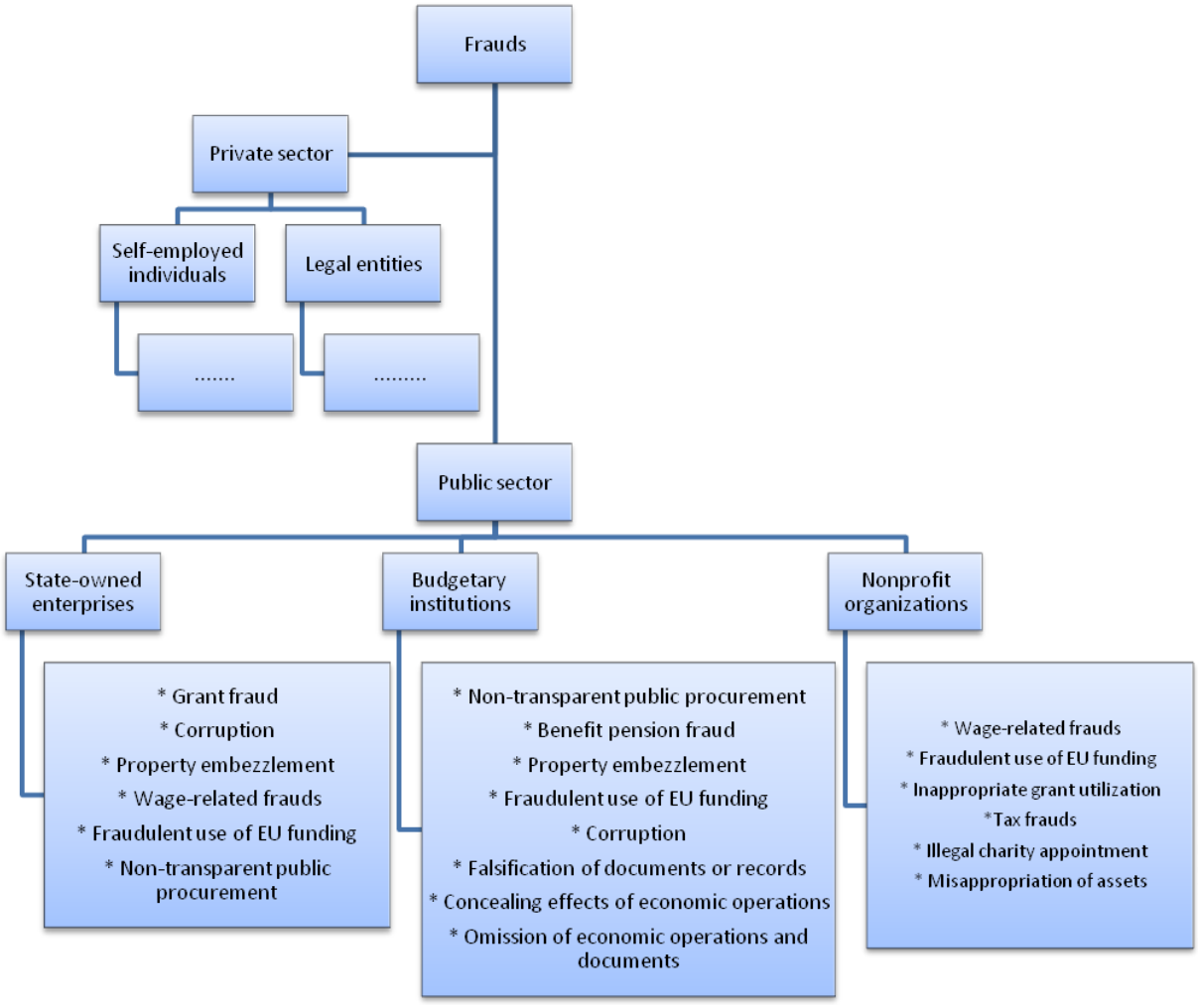


Fig.4. Classification of public sector frauds

Source: prepared by authors based on Kemp (2010) and Michael (2011)

Public sector frauds should be categorized based on their manifestation areas, since depending on their nature some of them might appear only in state-owned enterprises, whereas the others only in budgetary institutions. According to Brooks (2012), the oldest fraud in practice is misappropriation of assets, the development of which started from cash theft to stock theft. Majority of such frauds in state-owned enterprises are carried out using various fixed or current asset acquisition, production and recovery operations. Most common fixed asset frauds in the public sector, or to be more precise in state-owned enterprises, are:

- Repair or reconstruction of assets is undertaken and part of the funds allocated for it is misappropriated in the form of goods or services allocated for reconstruction;
- Asset value is not corrected, even though its book value differs from real value and sold to predefined individuals for a lower than market price;
- Asset is sold to predefined individuals for the residual value, which does not correspond to real market value of the asset;
- Purchased fixed assets are attributed to current assets, calculated as part of cost and later written off as unsuitable for use, and misappropriated by predetermined individuals.

State-owned enterprises, as all other organizations, are subjects for fraud risk. Daily operations can involve wage-related and public procurement frauds while purchasing goods and services. Therefore, we can conclude that fraud manifestation can be of an extremely broad spectrum. The following types of frauds are rapidly developing: revenues obtained from current assets written off as unsuitable for use and misappropriated by predetermined individuals; concealment of revenues obtained from leased assets; manipulations of tangible fixed assets' write offs; misappropriation for assets for personal use, etc. Besides the listed types of frauds, corruption is rather common in public sector, which according to Tambulasi (2009), is perceived as unlawful gain through professional duties (official position) and position in the society. Recently corruption extended from state-owned enterprises to budgetary institutions, where bribery, public procurement conflicts and extortions are wide spread. Nevertheless, most of the abuses of the official position occur during the organization of public procurements and auctions (Dwiputrianti and Lan 2011). Public sector is very attractive to perpetrators of fraud who abuse taxation system, reliefs and subsidies' systems for personal gain.

Frauds greatly influence business continuity and financial performance. Therefore, it is imperative to create a fraud prevention system. Great role here is played by auditing. Auditors performing fraud auditing firstly have to determine and evaluate what is the weakness of internal control system, enterprise's internal and external environment, history of uncovered frauds, illegal transactions made and who could have authorized them, perform analysis of complains, etc. When facing fraud, main steps of auditors, according to Mackevičius and Kazlauskienė (2009), should be these:

- Perform audit, in order to obtain valid proof of fraud;
- Expand the scope of audit;
- Determine whether fraud was significant;
- Determine how and why fraud took place;
- Keep proper professional caution in order to keep further investigation uncompromised;
- Announce the information about fraud (if allowed by law).

Depending on legal entities operating in public sector, organization of audit and fraud prevention process can differ from private sector (see Figure 5). It is difficult to foresee changes and crisis situations; therefore, it is important to apply various prevention measures that would determine the weaknesses of the entity and find conditions, which increase the likelihood of fraud. The executives of enterprises or budgetary institutions should define what managerial levels or departments are responsible for certain frauds or illegal actions. They should strive to direct attention of internal and external auditors towards fraud audit. It is proven that yearly audited entities with strong internal auditing have a much lower fraud risk.

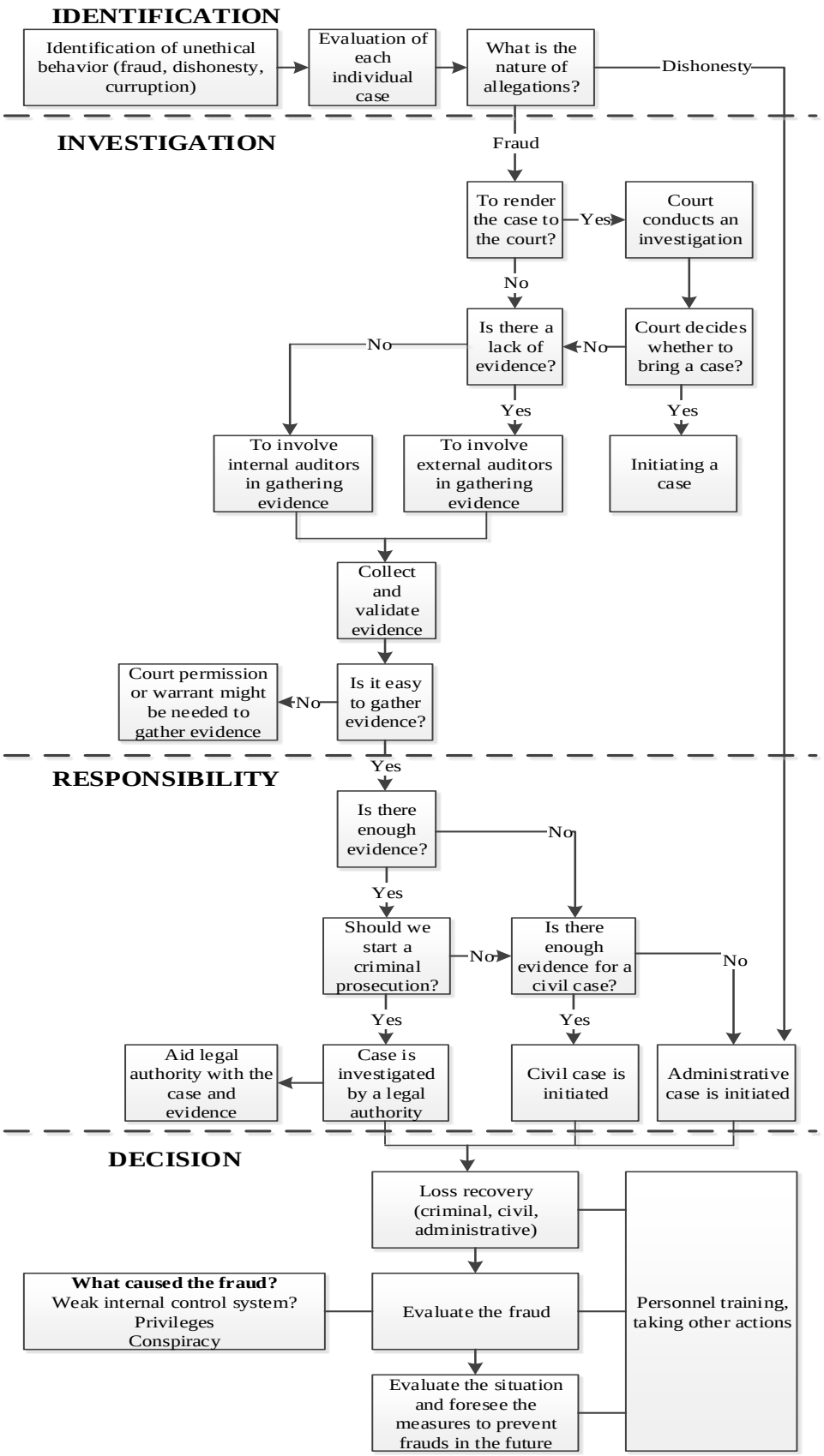


Fig.5. Fraud detection and prevention process

Source: prepared by authors based on Button *et al.* (2009); Magrane and Malthus (2010)

Therefore, auditors should first determine and evaluate: the weakness in internal control system; the internal and external environment of the entity and factors influencing it; previous uncovered frauds; possible deviations from regulated accounting system in the economic branch or entity; possible illegal transactions and who could authorize them; management techniques and measures used by the institution's management.

Concluding remarks

The performed statistical data analysis shows that, besides the fact that the overall losses caused by frauds in the public sector are lower than in the private sector, they are much more frequent. It is important to stress, that frauds are most often initiated by upper level management. They are carefully planned, committed consciously, so that they would be hard to track. Therefore, it is much harder to identify them than errors. In order to identify and eliminate public sector frauds it is necessary to explore and evaluate managerial techniques, control systems, to determine their suitability, effectiveness and whether they might encourage frauds. Nevertheless, it is also imperative to distinguish between different public sector frauds based on the area where they might occur, since certain types of frauds can be committed only in state-owned enterprises, others only in budgetary institutions. This in particular has an effect on organization of audit and identification of fraud prevention measures.

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PUBLIC SECTOR CONTROL AS A FACTOR IN ENTREPRENEURIAL POLICY: THE CASE OF LITHUANIA

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Abstract. The paper describes the development of the Lithuanian public sector control in an attempt to evaluate how its changes affect possibilities for entrepreneurship both in the public and private sectors. An analysis of change of functions, organization, and regulation over the period of past two decades is done to see how the philosophy of public sector control in Lithuania evolved and how this changed the practices of control. The data for analysis is derived from legal documents and relevant institutional reports. Controlling the public sector has usually been about democratic accountability. Currently this layer is supplemented by attempts to advance best practice in terms of efficiency. Over the past 20 years Lithuania has undergone a path similar to the one described above. As a result, however, Lithuanian public sector control system has grown in complexity and became more bureaucratized. Attempts at increasing entrepreneurship in the public sector are often matched by increased control. This paradox of increased control produces greater bureaucracy and this risks limiting entrepreneurship in both private and public sectors. And this needs to be taken to account when designing pro-entrepreneurial policies.

Keywords: public sector control, control institutions, Lithuania, public governance

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JEL Classifications: D02, H83

1. Introduction

Control is a term that has many definitions which vary considerably depending on the context/academic discipline it is used in. This article presents an overview of difficulties of conceptualizing public sector control, and also an analysis of challenges in the Lithuanian public sector control with regard to pro-entrepreneurial policy. It is proposed to define control in the public sector by analysing its relation to the underlying principle of organizing public sector – that of democratic mandate. There are several arguments why a normative theory of the state appears unwanted without an idea of democratic mandate. And even the worst types of totalitarian dictatorships attempt presenting themselves as democratic (e. g. North Koreas' official title is Democratic People's Republic of Korea). However, such examples also indicate that practice and rhetoric are not necessarily consistent in issues related to politics. The article identifies three interpretations of the state (within the framework of democratic mandate) which serve as a theoretical prism through which we can evaluate the development of public sector control mechanisms. In this article they're referred to as "budgetary", "national" and "field". The three interpretations are identified by their differences in how they would answer the questions of (i) whether the states ought to be treated as some sort of meta-organization, (ii) what are the measures of success in the public sector, and (iii) what are the purposes of the state?

One particular feature of the Lithuanian state is that it formed after a 50 year interruption caused by soviet occupation at a time when much of public governance research observed a substantial (some even went on to describe it as paradigm) shift in the way political elites and academic mainstream would've answered the above questions. On the other hand the revolution of 1990 did not dismantle the administrative apparatus created in the period of occupation. Thus the analysis of public sector development in this region is a complex question of post-communist transition, *interbellum* revivalism, and of the changing conception of role of the public sector. This complexity means that the development of the Lithuanian public sector control had to respond to multiple factors, many of which were driven by local considerations, at the same time increasing participation in the global economic order placed demands on the state from the outside.

The article presents the dynamic of control mechanisms in the Lithuanian public sector over the past two decades and identifies key factors driving changes in how public sector control is exercised. It is observed that changes in public sector control are often implemented by presenting them as part of "entrepreneurship friendly" policy, but their outcomes do not necessarily that. Several factors can be identified that must always be considered such as agency autonomy, performance evaluation/appraisal, and historically contingent organizational and legal complexity.

2. Analytical framework: subjectivizing control of public sector organizations

There are several events that are usually debated under the rubric "globalization" throughout the social sciences. M. Castells (2006) goes on to suggest that the technology induced changes in the way we go about business and politics have brought the Soviet system down as part of the greater trend of globalization. His idea revolves around the fact that as the economy becomes ever more based on knowledge sharing across borders. And totalitarian systems such as the Soviet Union could not keep up. Opening the channels of knowledge sharing communication had not only an economic, but also an emancipatory political effect. Lithuania being a part of the post-communist Europe over fifteen years since its collapse has managed to fully integrate into the western economic and political order. This period has seen an unprecedented institutional change. But this also was not a clear cut process. First, a plethora of institutions has survived the revolution and adapted to the new political and economic regime. This, however, also meant that many of the soviet-period organizational and government practices also persisted. Second, the globalization process is often claimed to have changed the role of the state itself. Thus, Lithuanians having regained their state after a 50-year break could not rely on their prior statecraft experience. This caused a lot of political friction among the political forces shaping the new state as it became apparent that the republic cannot be what it once was and as new visions began to arise of what it ought to be. Third, over the period since 1945 international organizations (especially in Europe) became a powerful factor in domestic politics, far beyond of what they were in the 1930's. Organizations that aided the restored republic such as the International Monetary Fund, World Bank, Organization of Economic Cooperation and Development and organizations Lithuania wanted to be part of such as the United Nations (and its subsidiaries); European Union (EU) and North Atlantic Treaty Organization had their say in how the countries government was shaped.

The analysis presented below revolves around three interpretations of state. All of these can be used as rhetoric tools when constructing arguments in favour of one or the other policy by politicians and other public officials. And they can also serve as an analytical prism when describing the development of the state. The three are referred to as: "budgetary", "national" and "field". Before presenting the three interpretations in detail two ideas need to be discussed: democratic mandate and control in the public sector. Both of these ideas are understood differently in every of the interpretations described in this article. The first, democratic mandate is inseparable from what we define as the modern state in the context of western academia[1]. Democratic mandate can be traced the great early modern revolution in France and United States (U.S.) whose ideals were based on secular values. The democratic mandate being one of the core social ideas of the Enlightenment was constructed in opposition to the divine mandate (*divine right of kings*), a theory whereby the right to rule was granted by the supernatural. In a situation

[1] The economic rise of China does lead some to speculate whether economic prosperity and democracy are inseparable, but democracy remains an uncontested value in the context of political and social science, often seen as the major achievement and distinctive feature of the Western civilization (for a discussion on China see Tsai (2007).

where we cannot prove the existence of a supernatural the will of the people seems second best thing. But in practice identifying who "the People" are, what is their "will: and how do we select government is difficult and makes the democratic mandate a very complex idea. At the core of democratic mandate lies the idea of control. Without it democratic mandate becomes impossible. At its most abstract the ideas of periodical elections and division of powers are what serve to control the government so it acts within its mandate (Eagle 2008). Periodic elections ensure that the government accounts to the populace directly, while the division of powers artificially, through constitutionals provisions, creates tension (in the context of e.g. U.S. constitution referred to as "*checks and balances*") among the branches of government so that there is no single institution which could monopolize the state power and do away with fair and free elections (and other civic rights). Beginning with to define "the People" we will use the Lithuanian legal framework of how individuals who are in some sort of relation towards the state of Lithuania are defined. We can identify three groups of persons: Members of the Nation, Members of Local Communities and Residents. There are two criterions which allow identifying a person as belonging to one, two or all of these groups: fact of residency in Lithuania and possession of citizenship (see Table 1).

Table 1. Belonging to legal categories of persons depending on the citizenship and place of residence

	Citizen living in Lithuania	Citizen not living in Lithuania	Non-citizen resident (After EU accession in 2004)	Non-citizen resident (Pre-EU accession)
Member of the Nation	Yes	Yes	No	No
Member of Local Community	Yes	No	Yes	No
Resident	Yes	No	Yes	Yes

Source: developed by author

From the position of constitutional regulation the possession of citizenship gives the right to participate in the democratic mandate, i.e. it is the citizens that are the primary participants in the democratic process and the ones that in the Lithuanian context can be referred to as "the People". Lithuania, being a small unitary state has only one other form of democratic government institution – the local self-government. The national and local levels are constitutionally separate; the national parliament only regulates by law the exact delimitation of the spheres of responsibility of the two. Although most individuals in the country are simultaneously members of all three legal categories, in practice there are people who pay taxes, but have no direct say in the way the country is run (on the national level). From the purely theoretical point of view this means that in the constitutional context the state transcends the economy and consequently policy makers are allowed or even expected to make decisions by having different considerations in mind.

As far as the idea of democratic mandate goes, "the People" (in the case of Lithuania: the Nation or the Local Community) are the ultimate principles of public sector control, meaning that the entire institutional, legal and organizational setup ought to, in principle, serve the purpose to inform the populace in a way that it could make best decisions on what policies are worth pursuing. However, here we run into a problem that the concept of control in the public sector is contingent on the way we interpret what the state is.

3. Analytical framework: three interpretations of the state

As a starting point for conceptualizing control within the public sector we can borrow from the classic (Fayolian) definition of management, where control is part of the management cycle among other managerial functions of planning, organizing, staffing and motivating (Rao and Kumar 2010). Within such a framework the purpose of control is one of feedback, whereby information is gathered about the processes taking place in the organization and it is measured against the desired situation. In this situation, the control ought to be conducted only in cases when there is an organizational plan and a definition of what is desired. And it is precisely here that we see a

distinction between control in the private sector and the public sector. The public sector cannot be reduced to profit seeking, and in the context of democracy, where we have competing political ideas and government institutions, it is hard to claim that the state has a plan for itself against which it would be possible to control its performance. Also the subjects of control, "the People", are seldom aware of the multitude of plans generated by independent or semi-independent government agencies, while these agencies themselves seldom manage to plan in a way that is complimentary not contradictory to other public sector planning.

As we saw above the Lithuanian state is organized around the idea of the Nation and by its ideology we can suggest that it conforms to what we call a "national" interpretation of the state. This is characterized by ideas, that the People, i.e. the Nation, share a culture which implies certain collective aspirations and values which ought to govern their collective existence. And the purpose of the democratic process is to articulate and help implement these aspirations and values. This romantic conception is an underlying premise of most democratic constitutions, but it is neither the only nor a dominating interpretation of what a state may be. Despite there being a wild variety of ideas about the state we will present two alternatives which we consider to be sufficient for our analytical framework. Going back to the narrative of "globalisation", the ideology that drove economic policies which were seen as "speeding up" globalization such as greater liberalization of trade, deregulation, etc. is usually defined as neoliberalism. Neoliberalism saw its political rise in the 80's, most notably in the U.S. during the terms of President R. Reagan and in the United Kingdom during the premiership of M. Thatcher[2]. Similar policies were advocated by western powers elsewhere through became known as "Washington consensus" (Petrovic 2013). One of the primary premises of neoliberalism is that the state is less efficient in terms of both economic activity itself and in terms of supervision of the economy. This implied that state owned corporations ought to be privatized, and the market ought to be deregulated (because it self-regulates better that the state ever could). Moreover, the state bureaucracy ought to be run in ways similar to those of the private companies. This last idea by 1991 began to be referred to as New Public Management (or NPM) (Hood 1991). As a result a shift towards conceptualizing the state in economic terms began. This shift required reducing the transcendental aspirations and values of nations to the individual profit motive. Within NPM we see a utilitarian discussion about the purpose of the government. One such attempt was Lane's (2001). By identifying different types of goods he constructed a theory, by which policy makers could determine which elements of production should be private and which should be public. Such a reduction allows for quantification of government output and a comparison with the private sector. Within the Western context we can see NPM beginning a pro-entrepreneurial trend not only towards the private sector, but also within the public sector by increasing organizational autonomy and creating motivation based on customer satisfaction.

NPM does not necessarily coincide with what we call the "budgetary" interpretation of the state. The concept of society as a purely economic structure can be traced to as far as K. Marx``s economic determinism (Morrison 2006). We choose to call the second interpretation as "budgetary" because the main feature of policy within the economic conception of the state is that state policy is financed through budgets making it impossible to trace budget allocation to taxes paid. And that, following Lane (2001), in certain situations can be economically more efficient than market mechanisms. So far we can see that the "budgetary" interpretation within the ideology of NPM provides the basis of pro-entrepreneurial state policy. But the "national" interpretation does not necessarily is opposite to that. Simply it requires the populace to be supportive of such policies. As the writings of M. Weber (Kim 2004) suggest north-western European and North American protestant dominated countries had populaces which supported private endeavour. As NPM spread into the Lithuanian academe and as during much of the early 90's Lithuania received aid and support from international non-governmental organizations a "budgetary" reasoning became a permanent feature of policy design.

As we will see later within the Lithuanian context the above two interpretations of the state are difficult to reconcile. But the most serious hurdle to such reconciliation can be illuminated by a third interpretation of the state, one we refer here to as the "field" interpretation. We chose the term "field" following the writings of P. Bordieu (Grenfell 2008) and insights of New Institutionalism (Bileišis 2012a). One particular premise that unites the "national" and "budgetary" interpretations of the state is the idea that the state is a meta-organization serving

[2] Both of these individuals had their neoliberal economic policies named after them: Raegonomics and Thacherism.

a single ultimate goal. But already at the level of constitutional separation of powers we seem to intentionally weaken the state in such a way that it becomes almost impossible to identify it as an organization. Furthermore civic participation in public matters means that the state-society division is also not as clear cut as may appear. Consequently we could describe the state as a "field" where various institutions juggle for power within a framework of rules. These rules allow institutions to compete at some levels and to cooperate at others. For example, we can define the family as an institution. However, identifying agents who would defend the interests of such an institution is rather difficult. That is because there are certain historically contingent rules which allow the institution of family to persist. These rules may be expressly regulated by law or maybe implicit in cultural practices. However, if there are attempts to redefine what family means, individuals who feel they have a stake in this institutions would associate themselves in either defence of the "traditional" family, or support of the "modernization" of family (e.g. gay marriage, polygamy, ect.). In such an interpretation the state can be seen as an institution at one level, at which it gives legitimacy to a multitude of government organizations while at the same time individual public organizations can be seen as competing institutions. For example, police and social services may compete for the same funds when allocating budget by claiming that their respective institution have greater impact on public safety. Thus, the "field" interpretation allows us to see a level of complexity when talking about public organization control that the other two cannot.

Table 2. Three interpretations of the state

	Bugetary	***National***	***Field***
Is state an organization?	Yes	Yes	No
What is the measure of states success?	State creates added value and contributes to the growth of the economy	Sence of (and satisfaction with) national identity in the society	Success is relative. There are "winners" and "loosers"
What is the purpose of the state?	Economic efficiency	Defence (and articulation) of national/public interest	Survival and power

Source: developed by author

In the field interpretation control becomes separated from legal category of citizen, member of community, or resident. Rather an individual can be a representative of a multitude of institutions, which can be conflicting amongst themselves. And in this interpretation each institution tries to create both internal and external control mechanisms to keep descent within and competition without at bay. This, when talking about the state institutions, means that stated policy aims may quickly be hijacked by narrower institutional interest. The presentation of the Lithuanian case bellow allows us to hypothesize that not only the reconciliation of "national" and "budgetary" narratives is needed for a cohesive, sustainable and successful pro-entrepreneurial policies are needed. Also there needs to be a greater understanding of the intricate mechanisms of control which limit how successful a given policy may be (see Table 2 for a comparison of the three interpretations).

4. Conceptualizing public sector control: the Lithuanian case

There are two institutions that are referred to as "control" in the Lithuanian Constitution. One is the National Audit Office of Lithuania, which in Lithuanian is called "State Control" (*lith. Valstybės kontrolė*). This office initially was an organization which supervised budget expenditures of the executive for the benefit of the parliament. Only in the late 90's Offices' main mode of functioning was changed from financial review to financial audit, in early 2000's this was complimented by performance audit. These changes occurred both as a result of Offices' participation in INTOSAI/EUROSAI[3] and EU community law requirements during the Lithuanian accession process. The original function of the National Audit Office (which remains its core function) is to present information to the parliament about the way the executive uses budgetary funds so that the parliament can take

[3] INTOSAI stands for International Organization of Supreme Audit Institutions. EUROSAI is its regional European subdivision.

rational decisions regarding regulation. Also if the Office identifies possible illicit activities by government agencies it can refer the information to the Prosecutor's Office. The second control institutions are the two Ombudsman's Offices (in the Lithuanian Constitution called Parliamentary Control Officers, *lith. Seimo kontrolieriai*), one charged with citizen complains about bureaucratism[4] in the municipalities, the other – at the national government level.

By adding the two institutions to what we described above when talking about the idea of democratic mandate present in the Lithuanian constitution, we get a basic scheme of how the public control is institutionalized in Lithuania at the national level (See Figure 1). At the local level there is a more complex control system. On the one hand municipalities themselves have audit offices and a dedicated Ombudsman, on the other the National Audit Office and the executive (Government of Lithuania/Cabinet of Ministers[5]) add another layer of municipal supervision. There are 10 insititutions (dedicated to groups of municipalities organized into counties) of Government Representatives Offices which oversee that national regulation is adhered to at the local government level (See Figure 2).

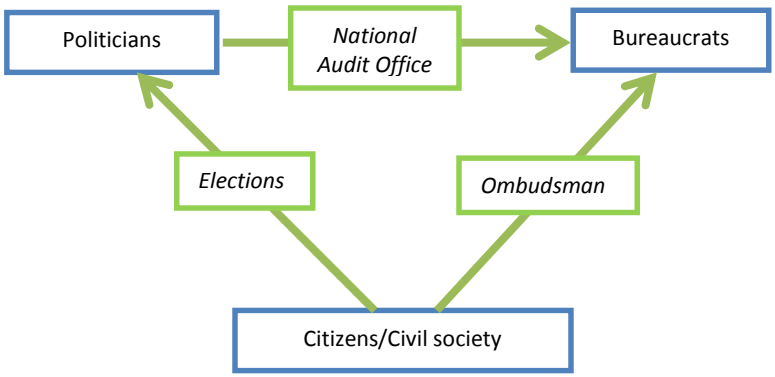

Fig.1. Basic constitutional scheme of public sector control at the national level

Source: developed by author

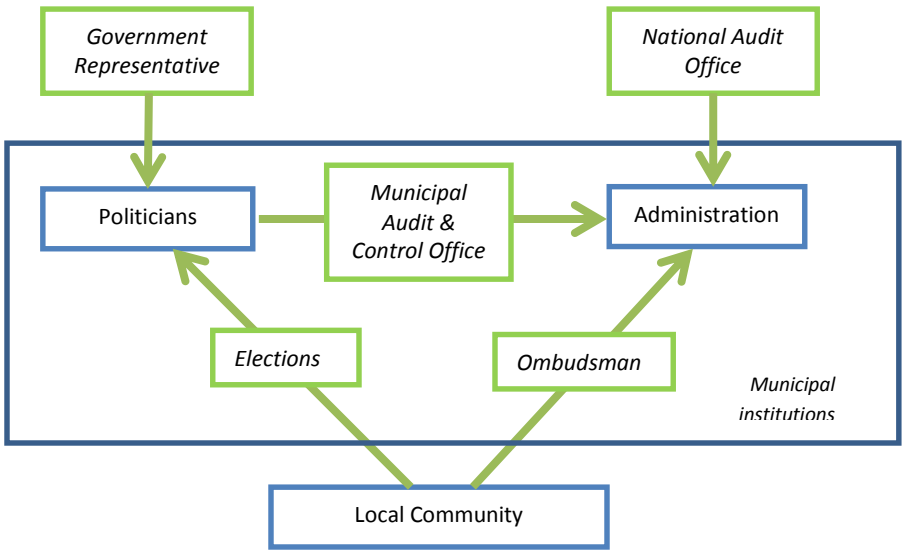

Fig.2. Basic constitutional scheme of public sector control at the municipal level

Source: developed by author

[4] Lithuanian Law of Ombudsmen (Parliamentary Control Officers) defines a term bureaucratism (*lith. biurokratizmas*), which is understood as a perversion of the public office by abusing administrative discretion to stall or impede administrative process.
[5] Please note that in the Lithuanian Constitution the Govenrment and the Cabinet of Ministers are one and the same thing. Whereas to describe the entire system of state institutions Lithuanians use a hard-to-translate word *valdžia.* This double use of the term government when talking in English may be confusing.

The mechanisms we have described had its basic form at the National level since the adoption of the current Constitution in 1992 and the Government Representative's institutions were created when the county system was setup in 1995. The one feature of the control mechanisms described here is that they mostly are concerned with ensuring that state institutions are responsive and accountable to "the People" and to each other, which is needed for the "checks and balances system" to function properly. That is if we for the time being accept the state-society division (for a detailed discussion see Midgal 2001) than this is the control mechanism that is organized to attempt to ensure societies overview and the overview of top political institutions (Parliament and the Ministers office as well as Municipal Councils) over public bureaucracies.
But the main body of control in the public sector goes the other way. It is the public bureaucracy institutions tasked to supervise the social and economic activity that make up the majority of public sector control functions. We still lack an integrated list of these organizations in Lithuania and this paper does not attempt to fill this gap[6]. Nonetheless within regulation we can identify a variety of principles that guide control. In the public sector and these principles can be evaluated against management theories that conceptualize control.

Before starting our overview of the Lithuanian public sector control system we need to spell out the implications of what is said above. We can see that there is multiple feedback loops in the public sector to all of which we can be referring to as control. The public control the legislative, it controls the policies of the executive, and the executive controls its agencies and municipalities. On top of that there is a layer of control institutions, which have a varying degree of autonomy from either the executive or the legislative and are tasked to perform control over each other and the broader society. One observation that arises is that no one person/institution can evaluate whether the entire state machinery works in unison and whether it is fulfilling its goals. There are two mechanisms in the Lithuanian regulation which are supposed to aid in dealing with this problem. First, it is the idea of *rule of law* which demands adherence to due process, proportionality and adherence to regulation at all times in all public activities (Palombella 2010). But going by the principle of the rule of law alone raises a demand to expressly identify what the public/state interest is and that admittedly is hard to come by. Lithuania does not have an express definition of the public interest and leaves it to the practice of the courts to incrementally figure out. In practice this means that the democratic ideal is side-lined. Going back to our interpretations of the state, the idea of the *rule of law* with its implied possibility to create and amend the content of laws through the democratic process is clearly closest to what we could call the "national" interpretation with the national interest being what we above called nations values and aspirations. The second mechanism is being developed since 1999 and is based on the introduction of strategic planning. However, the document regulating the hierarchy of strategic plans does not have the status of law; it is only a government regulation (Bileišis 2012b). Furthermore, there are no mechanisms that would hold agencies accountable for not attaining strategic goals. The only thing usually being accounted for is the use of finances. By this time Lithuanian public sector does have a strategic planning based budgeting system, but it is easily overwritten by political considerations due to the fact that strategic planning is seen as antagonistic to the principle of the rule of law.

A review of the laws providing a definition of control with relation to the public sector (budget law, internal control and audit (applied to public entities) law, insurance law, and national audit authority law[7]) allows us to identify the following aims of control from the perspective of the rule of law:

- legality;
- economy;
- efficiency;
- results;
- transparency;
- implementation of plans;
- protection of property;

[6] It is worth noting that since 1999 Lithuania had a "Dusk Commission" (*lith. Saulėlydžio komisija*) which analyses the institutional setup of the national bureaucracy and pus forwards suggestions to reform their organization. Their latest report presents and overview of public organizations. But by no means it is complete.
[7] **NOTE:** Laws and regulations mentioned here and elsewhere in the paper are not presented in the refferences list. They and their various editions can be found in the official registry of legal acts at: http://tar.tic.lt/.

- reliability and Comprehensiveness of information and accounts;
- abidance to commitments;
- risk management.

The long list from Lithuanian regulation comes close to a more concise academic list or purposes of organizational control:

- efficiency and effectiveness;
- trustworthiness of accounts;
- legality (Leitch 2008).

We can claim that the similarity of Lithuanian prescriptions to persons and agencies that exercise some form of control to Leitch's (2008) take on things seem to reconcile the "national" and "budgetary" interpretation of the state. But this we can claim has the potential to lead to even greater complexity of control, where all processes in the public sector end up being controlled times over from different perspectives. Even without such a consideration individual public sector organizations face more outside control that those in the private sector. And the problem is aggravated by the fact that these may follow different philosophies of what constitutes the proper functioning of organization (See Figure 3).

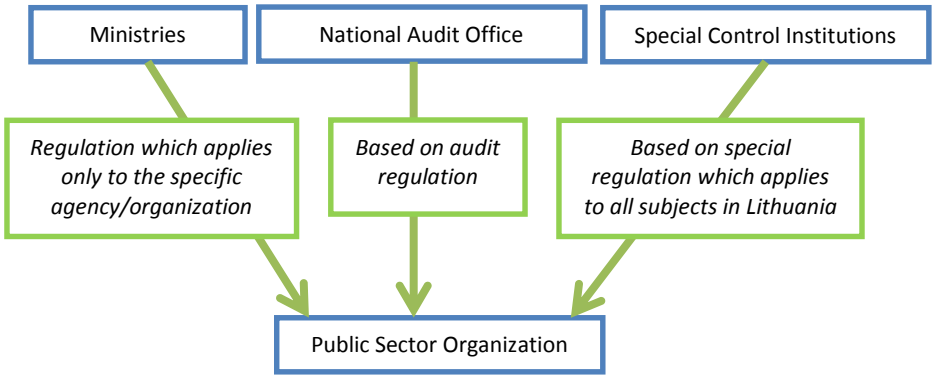

Fig.3. External control of public sector organizations

Source: developed by author

There is controversy whether it is possible to reconcile control mechanisms implicit in different management philosophies. Leitch (2008) suggests there is a fundamental contradiction between quality management and internal control philosophies. The first aims to minimize the impact of the human factor by continuously increasing and updating standardization, whereas the other identifies humans as the core of the organization and tries to minimize abuse, while not punishing for mistakes which are seen as an engine of growth (Leitch 2008). But in the Lithuanian public sector we can observe attempts to follow multiple control philosophies simultaneously. Notably, this is done by different agencies and managed as projects. Since 2005 Ministry of Internal Affairs has been implementing a monitoring system for organizations which have adopter the Common Assessment Framework (CAF), which is recommended by EUPAN. The CAF is closely related to quality management and the Ministry has a dedicated unit to conduct the monitoring. On the other hand since 2009 the right-wing coalition in government has approved the VORT[8] project in an attempt to create a results-based governance model. This was implemented by the Prime Minister Office. However this project seems to be stagnating since the election brought center-left parties to power in 2012.

To add to the above in terms of internal control the entire burden of responsibility lies on directors of when trying to achieve all of the aims of control. This includes avoidance of illegality (law of internal control and audit) and evaluation civil servants performance (Government regulation on civil servants performance evaluation) meaning that managers in public organizations face a bureaucratic mechanism which makes entrepreneurship within the public sector difficult to promote. Also Lithuania remains a recipient of EU structural and cohesion support, which

[8] VORT in Lithuanian stands for Development of Results-based Governance (*lith.Valdymo, orientuoto į rezultatus, tobulinimas*).

is often administered by various agencies and the process of accountability for this support; once the project goes ahead are very rigid (for an overview see Molle 2007).
Given all that is said we can attempt to describe the concept and major features of the Lithuanian public sector control:

- hierarchy within public agencies where the director has the ultimate power in terms of management and responsibility in terms of control;
- in term of intra-organizational control only internal audit and financial accountability are expressly prescribed, otherwise agency directors have broad discretion about what control mechanisms they instated;
- external audits (performed by non-state auditors) in the public sector are mandatory only in cases where EU funds are involved;
- National Audit Office duplicates the work of municipality auditors;
- there is no expressly defined concept of control in Lithuania regulation leading to apparent arbitrariness of setting control agency accountability to one or the other branch of government. There is a tendency, however, to make agencies responsible for protecting citizens' rights accountable to the parliament or the President, while agencies responsible for supervision that the public and businesses follow specialized laws, rules and regulations accountable to the government (usually at the ministry level);
- there are three types of control agencies: services, inspections, and commissions. Their naming does influence their legal status, usually these organizations are regulated by special laws. Their financial autonomy varies significantly;
- the court system ought to be considered a control subsystem in Lithuania, especially in light of it discretionary powers to determine the content of the public interest;
- the function of National Audit Office is primarily budget supervision. Performance audit is usually seen as consultative (Tumėnas 2010).
- MP's have a constitutional right to directly exercise control over the Cabinet through a mechanism of parliamentary supervision (Kalinauskas 2011).

5. The implications for pro-entrepreneurial policy

Bureaucracy as M. Weber put it is the "Iron Cage" of modernity (Kim 2004). In the Lithuanian experience since late 1990's where we can trace two political narratives of how to create the public sector control mechanism seems to illustrate that this conclusion is still relevant. Of the three interpretations of the state we presented, two are in wide use when advocating policy. And in the development of the Lithuanian public sector control mechanism it had an effect of increasing levels of bureaucracy, because the two control mechanisms require agencies that are being controlled to adhere to both and thus using up more recourses and experiencing legal uncertainties. The fact that internal organizational management depends highly on the discretion of agency directors in such a climate acts to increase bureaucratic behaviour, not the contrary. The underlying reason for this that in the Lithuania political decisions of the parliament always trump strategic planning documents, making them impossible to use as tools for the improvement of governance, at best they ease data collection for monitoring organizations. Yet, Lithuanian state control towards businesses is far less inflexible. Lithuanian governments over the past two decades have embarrassed the Reagan-Thatcher style of economic policy irrespective of their ideology creating a dynamic economy (Norkus 2008). This arguably is rather favourable to entrepreneurship. The question we need to address now is this: would a more consorted effort to increase entrepreneurship within the public sector be beneficial to private entrepreneurship. Lithuania has so far failed to run its agencies as businesses and to some extent it is worth asking whether that is at all possible (see e. g. Drechsler 2005). But if it is, it also begs to ask whether that is desirable. Maybe instead of increasing entrepreneurship in society we will risk crowding out the genuine entrepreneurs with bureaucrats who have the option of falling back on the states' recourses which would give them a competitive advantage. Answering this is a difficult task. If we embrace the views of Lane (2001) and the "budgetary" interpretation of the state entrepreneurship in the public sector is a positive thing. But if we view it from the perspective of the "field" it appears that promoting entrepreneurship in the public sector is bound to add another layer of complexity to the workings of the public sector. And for things to go along we simply would end up creating another niche for middle-men between the state and the entrepreneur. And this, history tells us, is not sustainable.

Conclusions

Lithuanian regulation defines control on multiple levels. These can be separated into two groups. Intra-organizational control and Extra-organizational control. At intra-organizational level the organizations management has broad discretion to setup control mechanisms. However, at the extra-organizational level a complex and often contradictory control mechanism limit the utility of such autonomy. The extra-organizational control can be further subdivided into control mechanisms which by their ethos serve society/parliament and their function is to safeguard democracy. These include the ombudsman, national audit office and law enforcement agencies. The other group of control institutions are usually considered part of the executive and are tasked with controlling "society" based on special regulation.

To make better sense of how Lithuania ended up having such a control mechanism we presented three interpretations of the state. Lithuanian Constitution gives primacy to one of them – "national". However, during the process of post-communist transition Lithuanian institutions increasingly adopted a "budgetary" interpretation of the state. The result was that public sector organizations now need to account at both level. This means, paradoxically, that by attempting to reform the way motivation and control is conducted in the public sector bureaucracy becomes more entrenched. This paradox is explained by the "field" interpretation of the state, which suggests, that creating new institutions does not automatically undermine the old ones.

We can conclude that Lithuanian government without a consensus (this includes the political opposition as well) cannot hope to create a cohesive control mechanism in the public sector which would promote entrepreneurship at the same time minimizing the possibilities for abuse. The current complex system of public sector control nonetheless, does not necessarily mean that this translates into difficulties to the private sector, unless future reforms of control continue increasing in their complexity.

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PROCESSES OF ECONOMIC DEVELOPMENT: CASE OF LITHUANIAN REAL ESTATE SECTOR

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Abstract. The enlargement of the EU has impacted development of housing market in Lithuania as well as in other Central and Eastern countries. The country was significantly influenced by favorable landing and expansion of private sector credit. Hence, Lithuania experienced the period of the financial and asset price boom, which was followed by economic downturn, and consequently, the burst of price bubble. This paper aims to reveal relationships among demand and supply side determinants and housing prices. Hence, the question is being raised if fundamental determinants affect housing prices. The growing dependence of Lithuania on energy resources leads us towards another research question. We will test if housing prices are linked to energy prices. Regression analysis tool, we believe, allows revealing if fundamental determinants are equally important.

Keywords: fundamental determinants, house prices, energy prices, growth, Lithuania

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JEL Classifications: M20, M21

1. Introduction

The enlargement of the EU has impacted development of housing markets in all Central and Eastern countries. The market was significantly influenced by expansion of private sector credit and favorable landing in the region. Hence, the growth of housing prices has been observed in 2004-2007 in almost all countries. Lithuania, as well as other countries experienced the period of the financial and asset price boom that was followed by economic downturn and consequently the burst of price bubble. Analysis of determinants of housing prices requires careful examination.

This paper aims to reveal relationships among demand and supply side determinants and housing prices. In order to reveal if and how demand and supply side determinants impact housing prices in Lithuania we will raise and test a set of hypotheses. The first group of hypotheses is focused on relationships between house prices and fundamental supply and demand side factors. The second group of hypotheses is focused on relationships between house prices and energy prices. The remainder of the paper is organized as follows. In section 2 the overview of relevant literature is analyzed. In section 3 the overview of determinants impacting housing prices in Lithuania are discussed. In section 4 the methodology and results are presented and final part concludes.

2. Overview of the literature

The researches linked to the determinants of housing prices are seen as vast and growing trend in the scientific literature. Prevailing literature suggests that in industrialized economies house prices are related to a set of macroeconomic variables, market specific conditions and financing characteristics (Glindro *et al.* 2011), consistent patterns of economic development as well have to be taken into account (Dudzevičiūtė 2013; Laužikas, Krasauskas 2013; Vosylius *et al.* 2013; Mačiulis, Tvaronavičienė 2013; Tvaronavičienė 2014). Notably, demand and supply factors, that have longer-term and shorter-term influence, are distinguished (Tsatsaronis, Zhu 2004). The main demand-side factors include the growth in household disposable income, the average level of interest rates, gradual shifts in demographics and permanent shifts of the tax system.

According to scholars, disposable income and interest rates are seen as key factors determining housing prices (Hilbers *et al.* 2008). The rise of income has led to the increase of housing prices in different countries. Hence, scholars argue that demand for housing is impacted by real household income and wealth (Sutton 2002). On the other hand, the role of interest rates is dual: mortgage rate determines financing costs, while the risk-free interest rate services as an indicator of opportunity costs. Notably, a lot of attempts were made in order to investigate the causal relationship between macroeconomic variables, financing characteristics and house prices. One stream of scholars has investigated the link in one direction. The explorations carried out by Borio *et al.* (1994) conclude that there is a relatively close link between the ratios of private credit to GDP and asset price movements. Some scholars argue that causality is not that straightforward (Dubauskas 2011; Šimelytė, Antanavičienė 2013). Some authors e.g., Goodhart and Hofmann (2008,) claim that "the effect of property prices on credit appears to be stronger than the effect of credit on property prices".

Discussions in the prevailing literature distinguish the obvious importance of demographics for the demand of housing. The main underlying premise adopted by scholars is that high rates of the net migration and increases in population shares impact housing demand (Cerny *et al.* 2005; Balkytė, Tvaronavičienė 2011; Radović Marković 2011). Koetter and Poghasyan (2010) confirm that "increasing demand due to population and income growth increases equilibrium real estate prices". Notably, population in the 25-44 years age range is seen as the measure more explicitly reflecting the migration effect (Stecenson 2008, Radović Marković 2011; Šileika, Bekerytė 2013). Meanwhile, Maennig and Dust (2008) state, that "growth in population numbers has no significant price effects, whereas declining population numbers lead to significant negative effect". The observations reveal that in some countries like Japan and Germany, house prices decline due to a low share of households of individuals in their thirties (Girouard *et al.* 2006).

Glaeser *et al.* (2005) note that too often scholars attempt to understand housing prices only by focusing on demand-side factors, while ignoring supply-side factors. Hence, supply-side factors have to be taken into consideration. The main supply-side factors include the availability and cost of land, the cost of construction and investments in the improvement of the existing housing stock. Accessibility of financial capital and indebtedness of business companies have their own implications (Baikovs; Zariņš 2013). Besides that, tough rules and building regulations as well as slow administrative procedures are seen as constrains of supply (Girouard *et al.* 2006). Discussions in the prevailing literature emphasize that house prices are seen as local phenomenon (Himmelber *et al.* 2005). The study carried out by Egert and Mihaljek (2007) has indicated factors specific to Central and Eastern Europe (CEE). According to scholars, development of housing market institutions, in particular banking sector, has led to the development of housing markets and housing environments. A main underlying premise adopted by authors is that the EU accession process has impacted demand which has led to the growth of the housing prices. Hence, house prices in CEE are determined by fundamental factors such as, GDP per capita, real interest rates, housing credit, demographic factors as well as transition specific factors.

3. The determinants of housing prices in Lithuania

To see how development of economy impacted real estate market, we overview key trends shaping different patterns. Lithuania became an independent state in 1990, what has led to radical political, social and economic changes. On the other hand, Lithuania's accession to the EU in 2004 has impacted liberalization of trade due to a

number of unilateral decisions and treaties. Notably, in 2004-2008 Lithuania as well as other Baltic States enjoyed very strong economic growth. A close look at Figure 1 allows observing, that from 2003 to 2007 GDP grew on average by almost 7% and was higher than the EU average. Statistical data on GDP allows concluding that the growth of Lithuania's economy in 2003-2007 was interrupted by global financial crisis, what has led to the sharp cumulative output decline in all Baltic States.

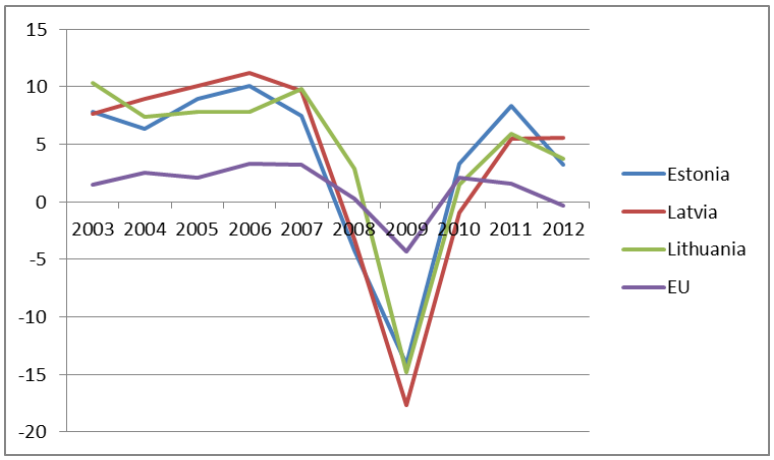

Fig.1. GDP growth rate (%)

Source: Eurostat

Economy growth of Lithuania in 2003-2007 impacted changes in labor market. For instance, unemployment rate decreased significantly (Figure 2). In 2007 unemployment rate was the lowest and reached 3.8% (Šileika, Bekerytė 2013). Hence, in the period of economy growth, wage growth and income tax reduction boosted household disposable income.

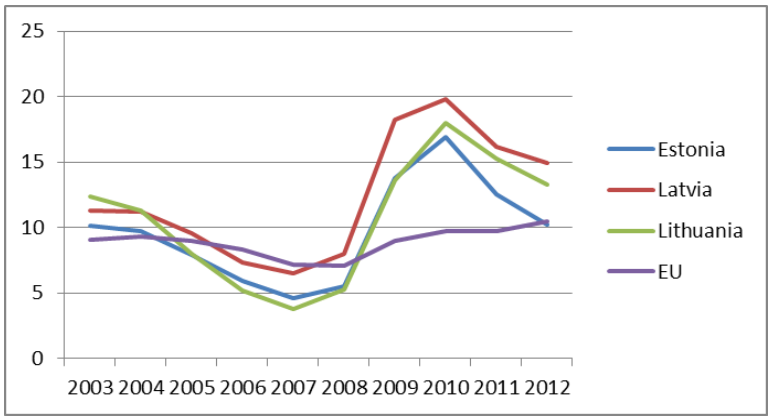

Fig.2. Unemployment rate (%)

Source: Eurostat

The Baltic countries responded to economic crisis through internal adjustment of prices and wages. Consequently, unemployment rose sharply in Lithuania and in 2010 reached the highest rate – 17.9%. It is noticeable, that unemployment rate grew significantly in all Baltic States and was higher than the EU average (Figure 2). Taking into considerations recent surveys, unemployment in Lithuania is still only approaching the natural unemployment rate (Bank of Lithuania 2013). On the other hand, unemployment rate of young population and increasing outward migration are seen as the major issues.

Different studies conclude that low real interest rates and favorable lending standards impacted the growth of demand for housing in all Baltic States (Bukeviciute, Kosicki 2012; Purfield, Rosenberg 2010; Kuodis, Ramanauskas 2009; Dubauskas 2011; Tvaronavičiene *et al.* 2013). Notably, bank landing and a corresponding acceleration of domestic demand were distinguished as the key drivers of growth (Purfield, Rosenberg 2010; Dubauskas 2011). To generalize, we can conclude that, investment and employment increased in non-tradable sectors, in particular in real estate, construction, retail and financial services. On the other hand economic crisis has triggered decline of wages and diminished private consumption.

Notably, the growth and decline of country's economy has been shaping real estate market. According to Ivanauskas *et al.* (2008) development of real estate market in Lithuania can be described by different patterns. For instance, the first stage of development (1992-2002) is described as the rise of commercial real estate market. Notably, acceleration of real estate market was impacted by privatization processes, which have led to the development of service sectors. The growth of demand for residential real estate is seen as a common feature for the second stage of development (2002-2005). The scholars conclude that by the third stage of development (2005-2006) the housing market had reached its summit. As it was indicated above, the development was triggered by variety of factors, including low interest rates and favorable landing, globalization patterns (Dubauskas 2011; Šimelytė, Antanavičienė 2013; Tvaronavičienė *et al*. 2013; Vosylius *et al*. 2013).

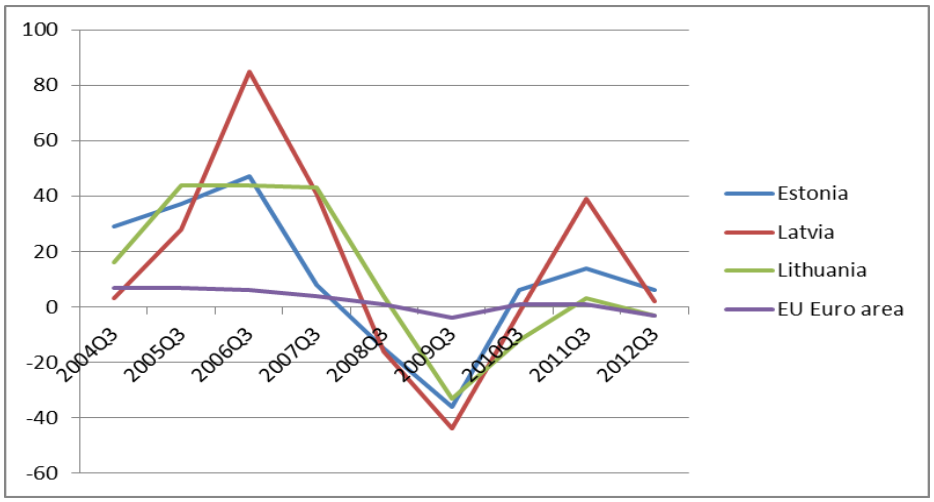

Fig.3. Changes of residential property price indicators

Source: European Central Bank

Analysis of data, indicating changes of residential property prices in Baltic States, allows concluding that in 2003-2008 prices grew higher than in the EU Euro area. The observation of recent surveys indicate that strong correction of house prices started in 2007-2008 and was particularly pronounced from mid-2008 to mid-2010 (Bukeviciute, Kosicki 2012).

4. Methodology and results

The above discussions lead to the conclusion that different demand and supply side factors determine housing prices. In our research we will focus on such: interest rates, disposable income, unemployment, inflation, GDP per capita, population and construction cost index. Additionally, our research will focus on energy prices. Before verifying the hypotheses formulated below, let us explain why energy prices are taken into consideration. Notably, all Baltic States have a high level of import dependency on such energy resources like gas and oil, which are imported exclusively from Russia (Karnitis 2011). Taking into consideration recent trends, we can conclude, that Lithuania's energy dependence has increased significantly. For instance, in 2000 it was 59.82% and in 2010 it was 81.92% (Eurostat). In comparison to other Baltic States, the increase of energy dependence in Lithuania was the highest (Karnitis 2011; Miškinis *et al.* 2013). Starting in 2010 Lithuania imports a significant amount of electricity

due to decommissioning of Ignalina nuclear power plant and fluctuations in domestic supply and prices. We need to point, that recent scientific surveys confirm that energy security issues affect development of key economic sectors of any country (Janeliunas 2008; Karnitis 2011; Tvaronavičienė 2012, Lankauskienė, Tvaronavičienė 2012; Vosylius *el al.* 2013, Dudzevičiūtė 2013; Miškinis *et al.* 2013, Tvaronavičienė 2014). A close look at Figure 4 and Figure 5 confirms that growth of gas and electricity prices for household consumers was higher in Lithuania in 2003-2008. Hence, the increase of energy prices significantly affects disposable income of households. In that context, association arises about interrelationships of energy prices and real estate prices.

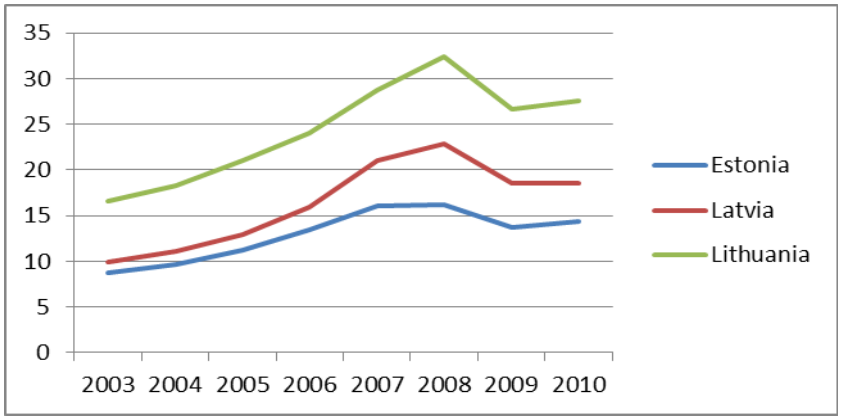

Fig.4. Gas prices for household consumers (EUR/Gigajoule)

Source: Eurostat

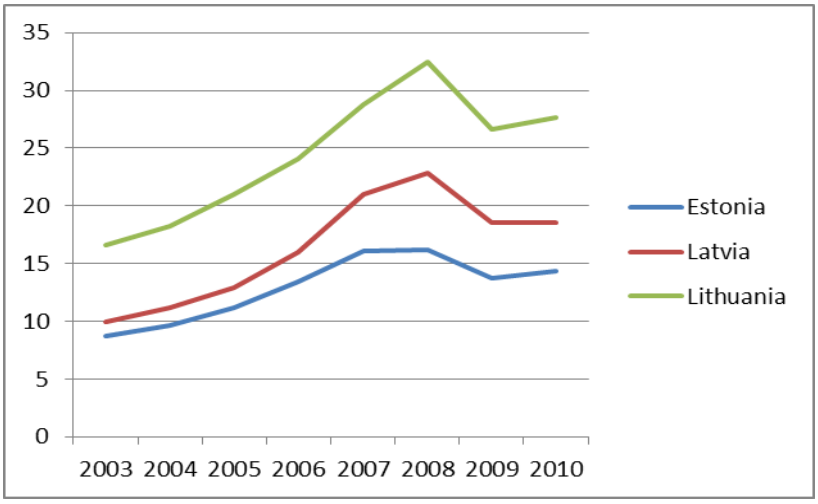

Fig.5. Electricity prices for household consumers (EUR/kWh)

Source: Eurostat

Our empirical analysis is based on a regression model, which tests hypotheses raised. The relationship between independent variable Y (housing price) and X (indicated in the hypotheses) can be estimated by application of simple linear regression model:

$$\overline{y_x} = b_0 + b_1 x \,, \qquad (1)$$

here:

b_0 ir b_1 – regression coefficients.

In our research house price is calculated as one square meter price of average 55 m2 flat in the Old Town of Vilnius provided by www.ntspekuliantai.lt. Notably, real estate prices in Vilnius attracted considerable attention of various

researchers. For instance, Burinskienė *et al*. (2011) investigated effects of quality of life on the price of real estate. In particular scholars aimed to reveal why differences of the quality of life exist. The research took into consideration such factors as home, work, leisure, safety and health, center and aesthetics. Accordingly, different research methods, i.e. survey of residents and examination of socio-economic factors were applied. Obtained results and insights allowed scholars concluding that the price of real estate was mostly affected by the prestige of Vilnius district (Burinskienė *et al.* 2011). Hence, prices in the Old Town remain 2.5 times higher than in other districts. The survey carried out by Raslanas *et al.* (2006) aimed to compare housing prices in the South East London and Vilnius. The scholars took into considerations a set of factors impacting prices: flat size, flat conditions, and construction type. Meanwhile, Ambrasas and Stankevicius (2007) investigated peculiarities and various factors, impacting housing market in Vilnius. On the other hand, not going deep into elaborate discussions regarding non-fundamental determinants, influencing housing prices, the authors of this paper will focus on demand and supply-side fundamental determinants. Firstly, the analysis of scientific literature allows us to formulate the following hypotheses, regarding fundamental determinants:

Hypothesis 1: The decrease of interest rates will be positively associated with the growth of real estate prices.
Hypothesis 2: The growth of disposable income will be positively associated with the growth of real estate prices.
Hypothesis 3: The decrease of unemployment rate will be positively associated with the growth of real estate prices.
Hypothesis 4: The growth of inflation rate will be positively associated with the growth of real estate prices.
Hypothesis 5: The growth of GDP per capita will be positively associated with the growth of real estate prices.
Hypothesis 6: The growth of population will be positively associated with the growth of real estate prices.
Hypothesis 7: The growth of construction costs will be positively associated with the growth of real estate prices.

The hypotheses were tested taking into consideration country level data for the period of 2003- 2011, which are provided by the European Commission and the Lithuanian Department of Statistics. Table 1 provides obtained data for associations between house prices and selected variables.

Table 1. Results of correlation – regression analysis

	r	P-value	R^2	t_{st}	t_{kr}	b_0	b_1
Interest rates	-0,583468	0,0464	0,340435	-2,27189	2,2621571	2388,08	-146,943
Disposable income	0,727724	0,0073	0,529582	3,276704	2,2621571	166,87	4,51
Unemployment rate	-0,74822	0,0051	0,559833	-3,56632	2,2621571	3092,41	-115,232
Inflation rate	0,765511	0,0027	0,586007	3,762319	2,2621571	1194,99	176,67
GDP per capita	0,849718	0,0005	0,722021	5,096463	2,2621571	-158,226	1,14031
Population	-0,7064911	0,1401	0,499129	-3,15677	2,2621571	12964,96	-3,41
Construction costs	0,3750681	0,2941	0,140676	1,279474	2,2621571	-2287,68	38,81

Source: Authors' calculations

The first hypothesis about interrelations of interest rates and real estate prices was tested taking into consideration Central bank interest rates annual data and house prices. The obtained results allow us to provide the following interpretations. First, the magnitude of the correlation coefficient indicate, that the associations between house prices and interest rates are slightly above average. On the other hand the direction of correlation coefficient implies that house prices are increasing while interest rates are decreasing. Notably, the obtained P value (0.0464) is lower than 0.05 and allow us to interpret, that the relationship between house prices and interest rates is statistically significant. Meanwhile, the coefficient of determination (0.340435) implies that thirty four percent of price changes can be explained by changes of interest rates. The linear regression model:

$$Housing\ price = 2388.08 - 146.943 \times interest\ rates$$

It implies that the decrease of iterest rates by 1% will increase the price of one squere meter by 146.943 EUR. Hence, the conclusion we can draw is that the hypothesis was verified.

The second hypothesis about interrelations of average disposable income amounts and real estate prices was verified. A closer look at the correlation coefficient allow us conclude that the associations between house prices and disposable average income are strong. Hence, large values of the house prices tend to be associated with the large values of average disposable income and imply that house prices are increasing while average disposable income rates are increasing. The obtained P value (0.0073) is lower than 0.05 and allow us to confirm, that the relationship between house prices and disposable average income is statistically significant. Meanwhile, the coefficient of determination (0.529582) implies that fifty two percent of price changes can be explained by changes of average disposable income. The linear regression model:

$$Housing\ price = 166.87 + 4.51 \times disposable\ income$$

It implies that the increase of disposable income by 1 EUR will increase the price of one squere meter by 4.51 EUR.

The third hypothesis about interrelations of unemployment rate and real estate prices allows us to interpret the following. The first, the magnitude of the correlation coefficient allow us conclude that the associations between house prices and unemployment rates are strong. The second, the direction of correlation coefficient implies that house prices are increasing while unemployment rates are decreasing. Hence, the obtained P value (0.0051) is lower than 0.05 and allow us to confirm, that the relationship between house prices and unemployment rate is statistically significant. Meanwhile, the coefficient of determination (0.559833) implies that fifty five percent of price changes can be explained by changes of unemployment rate. The linear regression model:

$$Housing\ price = 3092{,}41 - 115{,}232 \times unemplyment\ rate$$

It implies that the decrease of unemplyment rate by 1% will increase the price of one squere meter by 115.232 EUR. Hence, the conclusion we can draw is that the third hypothesis was verified.

The fourth hypothesis about interrelations of inflation rate and real estate prices was verified. Taking into consideration, the magnitude and direction of the correlation coefficient we can conclude that the associations between house prices and inflation rate are strong. Hence, large values of the house prices tend to be associated with the large values of inflation rate and imply that house prices are increasing while inflation rates are increasing. Meanwhile, the obtained P value (0.0027) is lower than 0.05 and allow us to interpret, that the relationship between house prices and inflation rates are statistically significant. On the other hand, the coefficient of determination (0.586007) implies that fifty eight percent of price changes can be explained by changes of inflation rate. The linear regression model:

$$Housing\ price = 1194{,}99 + 176{,}67 \times inflation\ rate$$

It implies that the increase of inflation rate by 1% will increase the price of one squere meter by 176,67 EUR.

The fifth hypothesis tested interrelations of GDP per capita rate and real estate prices. Notably, the magnitude and direction of the correlation coefficient allow us conclude that the associations between house prices and GDP per capita rates are strong. Hence, large values of the house prices tend to be associated with the large values of GDP per capita rates and imply that house prices are increasing while GDP per capita rates are increasing. The obtained P value (0.0005) is lower than 0.05 and allow us to interpret, that the relationship between house prices and GDP per capita rates are statistically significant. Meanwhile, the coefficient of determination (0.722021) implies that seventy two percent of price changes can be explained by changes of GDP per capita rate. The linear regression model:

$$Housing\ price = -158{,}226 + 1{,}14031 \times GDP\ per\ capita$$

It implies that the increase of GDP per capita rate by 1 EUR will increase the price of one squere meter by 1,14031 EUR EUR. Hence, the conclusion we can draw is that hypothesis was verified.

The sixth hypothesis aimed to verify interrelations between the growth of population rate and real estate prices. The magnitude and direction of the correlation coefficient allow us conclude that the associations between house prices and population rates are weak and negative. The obtained P value (0.1401) is higher than 0.05 and allow us to interpret, that the relationship between house prices and population rate is statistically non-significant. Meanwhile, the coefficient of determination (0.499129) implies that forty nine percent of price changes can be explained by changes of population. The linear regression model:

$$Housing\ price=12964{,}96-3{,}41 \times population\ rate$$

It implies that the decrease of population rate by 1 person will increase the price of one squere meter by 3,41 EUR. Hence, the conclusion we can draw is that hypothesis was not verified. To generalize, the increase of house prices in 2000-2011 was not necessary driven by decrease of population in Lithuania due to high emigration rate.

The seventh hypothesis aimed to test interrelationship of supply-side variable, in particular construction costs, and housing prices. In our research we used construction costs index provided by the Lithuanian Department of Statistics. The magnitude and direction of the correlation coefficient allow us conclude that the associations between house prices and construction costs are weak and positive. The obtained P value (0.2941) is higher than 0.05 and allow us to interpret, that the relationship between house prices and construction costs is statistically non-significant. Meanwhile, the coefficient of determination (0.140676) implies that fourteen percent of price changes can be explained by changes of construction costs. The linear regression model:

$$Housing\ price=-2287{,}68+38{,}81 \times construction\ costs$$

It implies that the increase of construction costs will increase the price of one squere meter by 38,81 EUR. Hence, the conclusion we can draw is that hypothesis was not verified. To generalize, the increase of house prices in 2000-2011 was not necessary driven by increase of construction costs. Energy prices are seen as important determinants of production, impacting its volume, growth rates and quality. To generalize, the growth of energy prices lead to the growth of prices of other goods and services. On the other hand, as it was indicated above, growth of electricity and gas prices negatively affect disposable income of households. Hence, the assumptions about interrelationships of reals estate prices and energy prices allow us to formulate the following hypotheses:

Hypothesis 8: The growth of oil prices will be positively associated with the decrease of real estate prices.
Hypothesis 9: The growth of electricity prices will be positively associated with the decrease of real estate prices.
Hypothesis 10: The growth of gas prices will be positively associated with the decrease of real estate prices.
The first hypothesis was tested taking into consideration statistical data from 2000 to 2011. We use data, which are provided by the European Central Bank Table 2 provides obtained data for associations between oil prices and real estate prices. Taking into consideration presented data, we can interpret the following. The magnitude and the direction of the correlation coefficient allow us to confirm that the associations between house prices and oil prices are strong. The obtained P value (0.0051) is lower than 0.05 and allow us to interpret, that the relationship between house prices and oil prices is statistically significant.

Table 2. Results of correlation – regression analysis

	R	P-value	R^2	t_{st}	t_{kr}	b_0	b_1
Oil prices	0,7490575	0,0051	0,5610871	2,769502	2,262157	310,22	31,32
Electricity prices	-0,159565	0,7059	0,025461	-0,395926	2,446911	2470,55	-4178,32
Gas prices	-0,148456	0,7260	0,022039	-0,367716	2,446911	2368,22	-28,97

Source: Authors' calculations

Meanwhile, the coefficient of determination (0.5610871) implies that fifty six percent of price changes can be explained by changes of oil price. The linear regression model:

$$Housing\ price=310.22+31.32 \times oil\ price$$

It implies that the increase of oil price by 1 EUR will increase the price of one squere meter by 31.32 EUR. Hence, the conclusion we can draw is that the hypothesis was not verified. To generalize, the increase of house prices in 2000-2011 was driven by increase of oil prices, what has led to increase of prices of other goods and services.

The second hypothesis was tested taking into consideration statistical data from 2004 to 2011 provided by the European Commission. Table 2 provides correlation coefficients for associations between electricity prices and real estate prices. The obtained results (Table 2) about associations between electricity prices for household consumers and real estate prices allow us to provide the following interpretations. Notably, the magnitude of the correlation coefficient allow us conclude that the associations between house prices and electricity prices are weak. The obtained P value (0.07059) is higher than 0.05 and allow us to interpret, that the relationship between house prices and electricity prices is statistically non-significant. Meanwhile, the coefficient of determination (0.025461) implies that two percent of price changes can be explained by changes of electricity price. The linear regression model:

$$Housing\ price = 2470{,}55 - 4178{,}32 \times electricity\ price$$

It implies, that the increase of electricity price by 1 EUR will decrease the price of one squere meter by 4178,32 EUR. Hence, the conclusion we can draw is that the hypothesis was not verified.

The third hypothesis was tested taking into consideration statistical data from 2004 to 2011. We use data, which are provided by the European Commission Table 2 provides correlation coefficients for associations between gas prices and real estate prices. The obtained results about associations between gas prices for household consumers and real estate prices allow us to provide the following. First, the magnitude of the correlation coefficient allow us conclude that the associations between house prices and gas prices are weak. The obtained P value (0.7260) is higher than 0.05 and allow us to interpret, that the relationship between house prices and gas prices is statistically non-significant. Meanwhile, the coefficient of determination (0.022039) implies that two percent of price changes can be explained by changes of gas price. The linear regression model:

$$Housing\ price = 2368{,}22 - 28{,}27 \times gas\ price$$

It implies, that the increase of gas price by 1 EUR will decrease the price of one squere meter by 28,27 Euros. Hence, the conclusion we can draw is that the hypothesis was not verified.

Conclusions

The research was based on prevailed scientific literature and analyzed the relationships among supply and demand side determinants and house prices using data from Lithuania for the period of 2000-2011. We tested if and how supply and demand side determinants impact house prices. Our study established strong and positive relationships between house prices and GDP per capita, disposable income and inflation rate. On the other hand, we found that relationships between house prices and such determinants as, construction costs and population rates are weak. Taking into consideration the growth of Lithuania's dependence on energy resources, we analysed the relationships between house prices and energy prices such as gas prices, electricity prices and oil prices. We established strong relationship between house prices and oil prices, what has led to increase of prices of other goods and services. On the other hand, we found that relationships between house prices and energy prices such as, gas prices and electricity prices for household consumers are week and negative. Hence, the conclusion we can draw is, that the growth of house prices is not driven by electricity and gas prices for houshold consumers. The limitations of the presented research were related with the scope: the situation of only one country was observed. Nevertheless, we could shed some light on the question if and how fundamental determinants and energy prices are linked to house prices.

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PENSION SYSTEM DEVELOPMENT AND THE SUSTAINABILITY OF THE PRINCIPLE OF GENERATION SOLIDARITY

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Abstract. The problem of pensions is one of the social topical issues because a complicated demographic situation makes it difficult to observe the principle of generation solidarity in long-term formation of the pension funds. The phenomenon of pension in its evolutionary development has been investigated with an attempt to assess its social significance and efficiency. The given article describes the results of the conducted research in which various pension schemes are compared from the point of view of their social worthiness. The suggested assessment of various systematized public old age pension schemes arranged chronologically, became the basis that allowed creating a short and the most popular assessment of the systematized public old-age pension scheme. It shows that the public old age pension system of this country is based on the principle of solidarity between generations and that this principle has started to use up its positive potential. It will also be the final conclusion. The article examines first forms of old age security; explores some features of systematized pension systems; describes a socially responsible approach to the problem of pension provision by the state; and assesses the principle of generation solidarity as a basis of pension capital formation, the consequences of this principle application, its sustainability and reliability.

Keywords: pension development, social responsibility, principle of solidarity, old age security, potential

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1. Introduction

The current financial crisis has led to a number of serious consequences, which retarded secure and sustainable development due to numerous consequences (Balkytė, Tvaronavičienė 2011; Tvaronavičienė, Grybaitė 2012; Lankauskienė, Tvaronavičienė 2012. Vosylius *et al.* 2013; Tvaronavičienė *et al.* 2013; Tvaronavičienė, Grybaitė 2013; Mačiulis, Tvaronavičienė 2013.) Some of those consequence concern retirement. This raised much controversy in social perceptions of the nature of pension and of its role today. Normally any pension scheme involves employees and employers (both as contributors to pension funds), and existing pensioners (as pension receivers or pension fund spenders). Therefore it is necessary to examine the evolution of pension, to evaluate the sustainability of various pension schemes and to identify their major future developments. This study operates with the concepts of social security and social insurance. Both are the forms of social assistance. Social insurance is different from social security in forms of social recompense procedures and organization. Social security as it is completely excludes the participation of a worker and an employer in the formation of the pension fund or in making any corresponding contributions to the state budget. Social insurance can be considered as a part of the social security system. The main focus of the article is concentrated on pensions among all other social security

forms because pension benefits are significant and their payment can seriously affect the situation in the national economy. Pension systems and their operational principles in economically developed countries have developed worldwide. Therefore, their development and improvement, as well as the development of new principles are not easily determined locally in a single country. The presented guidelines for the pension system based on the principle of generation solidarity should certainly be pilot tested in at least a group of countries. Then they may contribute to the social welfare and provide sustainable solutions to the issue of pensions.
Object: pension systems. **Subject:** the principle of generation solidarity. **Goal:** to determine the potential of the principle of generation solidarity. **Objectives:** to review the first attempts to solve the problem of old age insurance and the impact on subsequent processes; to explore systematized pension systems; to describe a socially responsible approach to the state pension issues; to evaluate the role of the principle of generation solidarity in pension capital formation and to assess the outcomes of this principle application.

2. The earliest perceptions of the social security at the old age

Perceptions of the socially secured old age have changed over time. In the ancient times old, vulnerable and incapable people were mainly provided by their families (clans, tribes, communes, etc.) and communities that developed later (guilds, associations, unions and other social formations) (Achinger 1953). However, according to the ancient folklore, for example, in the East, the chiefs of clans would often order to kill old people so that not to feed them. (Many Native American tribes destroyed their elderly women, be-cause they could not bear children any more and so could not increase the number of the members of the tribe - interviewee: Wyatt Dulaney (37), the grandson of a woman belonging to Appalachian Cherokee Indian tribe (USA) and a Scott (interview on 15.08.2012.: Dulaney). Similar attitude is reflected in Latvian folklore – in winter old people used to be taken to the forest on a sleigh and left there to die. But later Latvian folklore tales suggest that old people were respected and valued, for example, in the "The Tale of the three loaves" - the head of the family would bake three loaves of bread, which were divided as follows: one loaf was lent, i.e., his children were fed by it, the second was for himself and his wife, and the third loaf was paid back as a debt, i.e., his parents ate it (Smits 1925). Examples of irregular and unsystematic forms of security in the old age in rare cases can be found in some ancient civilizations. Basically, it was a chief's or lord's gratitude for faithful service or some outstanding deed, such as the life saving of the chief himself or of people important to him. This gratitude could be manifested as granting of a position, or an estate without the right of inheritance; later a title, e.g. Earl (Latvian phrasebook-dictionary, VI volume), Baron (Latvian phrasebook-dictionary, 1 volume), etc., initially without but later with the property and the rights of the inheritance. Such cases could be defined as a kind of benefaction (Dictionary of Foreign Words 2008; The Hutchinson Dictionary of Ideas 1995). Nowadays aristocratic titles are awarded to:
1) Those who are entitled to them, e.g., to the members of the Royal Family, e.g. Diana Frances Spencer having married Prince Charles became the titles Princes of Wales, Duchess of Cornwall, Duchess of Rothesay, Countess of Chester and Baroness of Renfrew.
2) Those who have performed special services or merits may be knighted or awarded titles. This has always been the way in which the sovereigns express their gratitude. For example, British Prime Minister Margaret Thatcher in 1992 was granted the title of Baroness and she became the title of Baroness Thatcher of Kesteven. On 12 March 1997 the famous musician James Paul McCartney was knighted for his contribution to the development of the British popular music, and he became the title Sir. Until today special particles in front of a family name remain in use, such as "von" in Austria, "de" in France, "van" in the Netherlands, "di" in Portugal, etc., which indicate that the person descended from the landed gentry. The titles of landed gentry in these countries are inherited. The first forms of one's welfare self-protection also in the old age emerged and started to develop due to personal effort and personal initiative, and might be described as forms of self-help. The oldest forms of welfare, their formation and consolidation, including old age provision, appeared and existed owing to personal effort and personal initiative. Those forms could be called self and mutual aid funds, whereto its members made annual contributions. Then the accumulated capital of those mutual aid funds covered the costs of medical treatment and funeral expenses of their contributors. The principles of self-help may be found already in the Roman law, and they were also mentioned in the 19th century legislation. These principles were gradually taken over by wider groups of the society - craft guilds, and later by free craftsmen associations and fraternities. Self-help saving funds used to be established, and their members made annual contributions thereto. Initially, the money from these saving funds covered the funeral expenses and medical treatment of their participants. Later, those funds supported financially

the members who were injured at work, on case of death their widows and children. However, the benefits were not paid permanently and on a regular basis, but during some set period of time only. However, those self-help saving funds cannot yet be perceived as some form of an old age security, or a pension. They were not pension funds yet. In the late 19th and early 20th century it became clear that because of certain social conditions some groups of the population were unable to protect themselves even by applying the principles of self-help, because those principles did not have a solid foundation. Therefore, the state had to intervene, and certain laws had to be issued for the protection of the vulnerable population. In Latvia at the beginning of the 19th century the parish poor were kept by the rich landlords in their estates for periods from one to three months. This maintenance of the poor was even somewhat honorable; as the landlords who could afford such assistance were recognized as prosperous. Later special houses for the poor were founded, where the parish poor and old people were given shelter, bed and food. The expenses of the poor houses were covered by a special parish duty paid by all capable landlords. The church also supported this cause. This approach is already seen in the first rudimentary forms of societal social responsibility. These examples may be described as first forms of social security in the old age. Today's attitude and practice of the provision of old people are the result of gradual development over thousands of years. Main types of first forms of old age provision are summarized in Figure 1.

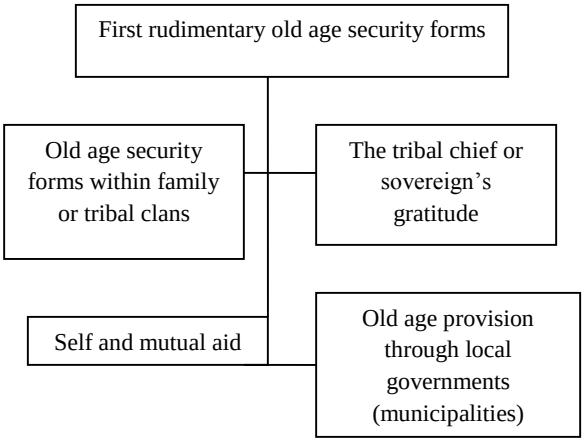

Fig.1. First forms of old age provision

Source: author

These forms could be described as primary forms of old age security.

3. Pension systems development before Bismarck's social reform

Pension (from Latin. *pensio* - payment) is the money benefit paid regularly to the people of a certain old age, as well as to people who have lost the capacity to work completely or partially due to various reasons. Usually pensions start to be paid when one of the specified conditions has qualified. Early indications in the history of regular financial provision in the old age are traced back to Ancient Rome - 13 BC, when the first Roman emperor Gaius Julius Caesar August Oktavianus (August) (65 B.C. – 14 A.C.) pensioned his troops of legionnaires which had served him at least 20 years. The size of the pension benefit was from 2/3 to ¾ of the earlier regular income. Those benefits were perceived as manifestations of the Caesar's gratitude to his legionnaires. The system existed for 27 years, but after Julius Caesar's death was forgotten or to be precise, eliminated. (Rulers had other ways to thank their soldiers for their faithful service. For example, later in the modern time, 18th century, the oldest representative of the monarchic family, the last East Georgian ruler Irakli II, granted land to his 300 faithful bodyguards-highlanders after the termination of their service, and this land gave rise to two villages.) Similar money benefits (people started to call them "pensions" in the 17th century) were paid in some European countries in the 16th century, since the professional armies were established, which used to be commanded by the retired military officers. Those pensions were granted after officially stated period of service. In Russia it was Tsar Peter I who introduced pension benefits to the retired military officers (Pensions: from royal favor to natural right). Military officers of high ranks were awarded landed gentry titles, large plots of land and high military ranks. For example, Field Marshal, Earl of Boris Sheremetyev (1652-1719) (Latvian phrasebook-dictionary, XXI volume),

who was widely known for his report to Peter I on the bloody and terrible ravages of Vidzeme "... there is nothing to take in Vidzeme any more ...". (Vidzeme had been devastated and burned, all the population had been practically destroyed or taken "captive"). For the first time people working in the public sec-tor started to receive pension benefits in England in 1684. Their beneficiaries were the London Port Authority officials. The size of the pension benefit was one half of the retiree's previous salary, and this sum was paid to him by the person who started working in his place (Latvian phrasebook-dictionary, XVI volume). Thus, the state and the royal treasury did not have to pay a single penny for this form of old age security. This example shows that in London the public sector employees themselves became socially responsible and created the necessary funds, to which they themselves contributed. The state did not participate in either creation or contributing to those funds. The origin of the pension system as such, protected by the corresponding laws and as it is understood nowadays, can be attributed to the Great French Revolution. On August 22, 1790 the National Assembly passed a radical pension law, which was based on three principles:

- The nation's civic duty was to award their citizens for their work on behalf of the national well being according to the significance and the length of their service;
- The pension rights were to be awarded to all public sector employees;
- Labor in general was recognized to be socially meaningful and revered.

According to that law, pensions corresponding to the three principles described above were the state pensions paid from the state budget. Unfortunately they asked for too much money from the state. Soon it became clear that France could not observe its own law and failed to cover pension costs from the state budget as it did not have the necessary means. In the first half of the 19th century France, almost at the same time with other Western countries, maybe a little earlier, started to found pension saving funds, which financial assets consisted of contributions made by its members. (Similar pension saving fund had been organized in Riga in 1879; in 1921 its activity was renewed.) Quite soon it became clear that those saving funds were unable to fully implement their commitments and the state treasuries had to support them financially (Bernard Yves and Collie Jean-Claude, 1994). In the middle of the 19th century most Western countries sought to ensure the public employees retirement days, considering pension as a salary continuation. In 1831 France issued the Pension Act for the military and in 1853 for the civil servants. England adopted the Pensions Act in 1834, which applied only to certain groups of public servants, but the pension laws accepted in 1859 and 1887 already applied to all public servants. Prussia adopted the Pensions Act in 1872, which applied only to the employees of the public sector (Latvian phrasebook-dictionary, XVI volume).

4. Bismarck pension system: its emergence and development

The need for social security or pension provision in the old age for the private sector employees gradually started to be recognized. Therefore, at the end of the 19th century and at the beginning of the 20th, laws on disability, death, accident and old-age social insurance with a corresponding pension provision were accepted in a number of countries. Many countries accepted the system when pensions were provided by the state or from local government budgets. Corresponding laws on the social insurance in old-age were accepted in Denmark in 1891, in New Zealand in 1898, on old-age and disability in France in 1905, on old-age in Australia in 1908, on old-age, disability, and death, in Uruguay in 1919, and on old-age in South Africa in 1928 (The history of pensions). At the time of World War I some countries suspended their pension systems. Later social security systems in such countries were transformed into the systems of state benefits, e.g. in Australia and New Zealand, where this is their principal form of social security even now. A rudimentary forms of a general pension system for old-age first appeared in Germany in1889. It provided for elderly representatives of working population with very low incomes, and did not include people working in agriculture. These first forms of pension schemes are associated with the name of German Chancellor Otto Edward Leopold, Prince von Bismarck (Bismarck - 1815-1898) (Encyclopaedic dictionary, 1 volume, 1991), the so called Bismarck social insurance program. The principles of Bismarck pension system were subsequently accepted by some other Western countries. The system included social insurance against accidents at work, illness, disability and old-age. In the period from 1891 to 1894 workers of the tobacco and textile industries were also included in-to groups of socially secured people. Social security payments were made by both employers and employees. In 1889 a statutory old age security was introduced, which provided for the groups of industrial workers with a very low income, but excluded agricultural workers. Those groups of workers reaching the age of 65 and on condition that they had been paying the corresponding taxes became eligible to

receiving a pension. (Average life expectancy in Germany of that time was only 45 years). Social security payments were made by both employers and employees (The handbook of economy knowledge B.d.7., 1988). Bismarck pension system principles were subsequently taken over by other Western states - Bismarck social insurance system was gradually introduced in the period from 1883 to 1889. It included insurance against accidents at work, illness, disability and finally - old age security in the form of a retirement pension benefit. Bismarck pension system was the first evidence of emerging employer's social responsibility, which expressed itself in the form of contributions to the social insurance funds. Bismarck social insurance institute changed such previously applied concepts as "assistance" and "responsibility" into "official" and "mandatory" benefits. These benefits were me-ant to compensate for the complete loss or reduced income in the case, for example, of the employee's injury at work (The Hutchinson Dictionary of Ideas. 1995). Although many principles of Bismarck pension system were accepted by a number or Western countries in the late 19th century, national pension systems developed unevenly. For example, France introduced social security against accidents in 1898, but social insurance in cases of childbirth, disability, old age and bread-winner death only in 1928 – 1930. Family benefits were introduced in 1932 (The Hutchinson Dictionary of Ideas. 1995). In the late fifties of the last century a situation had established when the periods of time during which social security contributions were made by the employees in the public and private sectors were different. That created privileges for the public sector workers – their period of social security payments was significantly shorter than that of the workers in the private sector. These imbalances are now eliminated. In Anglo-Saxon countries, the introduction of Bismarck pension system developed in its own way. There are authors who use the term German pension system for Bismarck pension system, and American pension system for Anglo-Saxon. Anglo-Saxon or American pension system was aimed at poverty reduction, but Bismarck or German pension system was generally directed to assist working people in maintaining their social status and quality of life after the loss of working capacity due to old age. Anglo-Saxon system was focused on the principles of liberalism, when the state intervened with providing care only to those individuals who were unable to take care of themselves, such as the disabled, or supporting with benefits the poorest layers of population. Mostly this system relied on the population self-sufficiency and mutual support institutions (The history of pensions). In the second half of the previous century, these two systems gradually converged. Nowadays, there is a following change in the trend of pension funds formation: the number of people willing to be employed is increasing, but the number of employers is decreasing. Today, the main trend in the development of social security systems is to pro-vide for a wider range of people who need to be socially protected, including those people who are not salaried.

5. Market economy countries approaches to pension systems

In the market economy countries three types of applied social security systems may be distinguished: social insurance, state benefits, and general pension system. Social insurance is the most widely applied system. It is based on mandatory insurance payments as a percent of earnings to the social security budget. These payments give right to receive a pension and other related benefits if the social insurance payment record and age correspond to regulations and other conditions are observed. The size of a granted pension or benefits does not depend on the financial situation of other members of the beneficiary's family. State benefits are paid entirely from the state budget. But these benefits are granted selectively, not only to those who are not capable to work due to disability, but also after the assessment of their family's income and financial state. Then the authorities concerned decide whether to recognize the person officially as having no means of subsistence. Many countries use the system of benefits as auxiliary means, when social security system does not provide a sufficient level of subsistence. However, in some countries, such as Australia, New Zealand etc. it is a principal social security system arrangement. In Australia retirement pensions are one of the state social assistance instruments. They are given to those people whose wealth and annual income do not exceed a certain threshold of the general living standard (Pensions in foreign countries – the truth and myths). The general pension system recognizes the right to receive a pension by all citizens who have reached the retirement age, become disabled or lost their breadwinner. According to this system a pension is paid monthly as a fixed payment. Pension funds are formed from a social security tax paid by all working population from their first day to the day of retirement, i.e., the principle of generation solidarity is respected. This pension scheme is accepted in all Nordic countries and in some other states. Many market economy countries take a socially responsible approach in their attitude to pension provision. Socially responsible countries are not only those that pay pensions from the state budget. Historical records show that the law of the state responsibility regarding pensions, adopted by French National Assembly in 1790, failed

because of the lack of money in the national budget. Today socially responsible countries are those that developed a system providing its residents with social security guaranteed by the state. Such systems include corresponding social funds, or treasuries that are formed from payments made by employees, employers, and by the state. Some recognized socially responsible countries are the Scandinavian countries, Germany, Great Britain, etc. These countries even allow receiving several pensions, e.g. in the United States, when the appropriate criteria are observed. These may be social pensions, the retired military ranks may receive a military pension, or a pension for fighting in the Vietnam War, company employees may receive corporate retirement pension, etc.

In the USA it makes the difference whether a person worked in the state (national) sector, in a state (local, of a separate US state) sector or in the private sector. In the first case retirement pensions are quite substantial and are paid from the national social security budget. Governmental and municipal employees (except military) retirement pensions are divided into:

- The federal government pensions (paid from the federal funds).
- Separate state and local government pensions (paid correspondingly from a state and from local municipalities' funds).
- Social pension, which size is dependent on deductions from wages and salaries, and in some cases also on employer's contributions. Social pensions in the USA are recognized as rather small in comparison to the existing living standard.

Retirement pensions in the private sector depend on how much employees were able to save in the private pension fund during their working life without the employer's contributions. However, in the USA, instead of guaranteed payments to private pension funds companies prefer various retirement plans when payments are deposited in the private pension fund, but are invested in stock exchange. If employees thinks that the employer's contributions are too small (typically 3.0% -5.0% of salary), they may themselves add the desired extra (Kenins-Kings G., interview on 10.09.2009.). People working in the public sector can also save in private pension funds. Social security system in the USA is considered to be a socially fair system, because it provides also for the part of population, which have not made any significant social security contributions. Employees do not make any contributions for a retirement pension, state pension or occupational pension. In addition, these pensions are granted without regard to age qualifications, but only according to the retirement pension criteria such as the required length of service, or the period of teaching at universities for the academic staff, etc. (Interview on 10.09.2009.: Kenins Kings Gundars Julians (born in 1926) (Encyclopaedic dictionary, 1 volume, 1991)), the U.S. Dr. phil. (Doctor of Philosophy), Latvian Dr. habil. oec. (Habilitated Doctor of Economics), a foreign member of the Latvian Science Academy (Kenins 2004). In the UK two pension systems are accepted: one is provided from the state budget, the other from private funds. The size of a state pension depends on each individual's contributions to the social security fund (*National Insurance Contribution*), which are accumulated during at least 30 years. The sum of about 50% from the state pension is also paid to a spouse if contributions to the national insurance fund have been not made on their behalf. The state pensions are rather small according to the living standard recognized in Great Britain. Therefore, certain people are entitled to receive special benefits, e.g. for the payment of rent. Private pensions are paid out to those who made respective contributions to the private pension funds. The period of time during which such contributions may be made is not limited. The sums of such contributions are larger than the national insurance contributions, so private pensions are usually higher than the social security pensions. Pensioners living in the UK and receiving a basic pension from the state have their pensions increased (positively indexed) every year. Similarly, these pensions are indexed for British pensioners living in other countries, where a corresponding social security agreement has been signed. All market economy countries, especially socially responsible ones, accept the pension system based on the generation solidarity principle, i.e. the combination of all current taxpayers' attitude and working activity, when all currently employed working people in a state voluntarily support and pay their social security tax and other payments in order to provide their compatriot retirees with pensions. This means that current retirees' pensions are provided by currently employed people paying corresponding taxes. However, the principle of intergeneration solidarity has the following major disadvantage: it is working beneficially for the society only when the population reproduction rate is high (i.e. the birth rate exceeds the mortality rate). The population of the developed market economy countries has already been ageing for a long period of time (i.e. the birth rate has been lower than the mortality rate). This social phenomenon has created a situation when the number of people paying the social security tax is decreasing. In addition, the life expectancy has in-creased, which consequently increased the period during which people receive pensions. All that together has led to specific challenges, mainly related to the retirement age, and to the expansion of the labor market in

order to provide people of pre-retirement age with employment. The principle of intergeneration solidarity, when the existing taxpayers provide the state and local government pension recipients with pensions, resembles the notorious financial investment pyramids. In both cases the higher layers of the pyramid live at the expense of the lower layers. The process when financial pyramids start experiencing the lack of investors (payers) goes much faster, because the number of investors (payers) is much lower than the number of social tax payers in a state. The financial investment pyramid can exist as long as the number of investors (payers) grows.

6. State Pension Systems in Western Europe, Far East, Africa and Asia

In the countries of Western Europe the main problem of the state pension system based on the principle of generation solidarity is explained by a negative demographic situation affecting the number of population who today pay pensions to existing pensioners. Some solutions of the state pension system problems in the EU leading countries are explained below. The industrially developed countries of the Far East, such as Japan, South Korea, Singapore, etc. are notable for relatively low contributions to pension funds (hence small pension benefits), but other countries do not form pension funds at all, so there are no retirement pensions whatsoever.

Great Britain. The current pension system in the UK has the following disadvantages:

- About 7 million of economically active population do not make any contributions into the social security funds.
- A younger working population will have to pay off the current debt.

To improve the situation, it is proposed that from 2020 men and women should retire at the age of 66, and gradually the age of retirement should be prolonged to 68 years. Currently the British government is considering a unified pension system. The main beneficiaries of such pension system would be women, low-paid workers and self-employed, as well as those who are currently entitled to a pension, but for some reasons postpone to retire and receive it. Some experts have calculated that women in the UK receive on average about two thousand pounds a year less pension money than men. This phenomenon has a number of objective reasons, e.g. women take care of children and may work less than men or not work at all (The pension system of Great Britain).

France. A new pension law in France has reduced the privileges of workers in the public sector by increasing the number of years during which contributions should be made to the state social security fund. This new law is more consistent with the demographic situation in the state and with the economic reality. The length of time during which contributions are to be made to the pension fund has become at least 41 years from 2012, and will be 42 years from 2020. Besides that, on October 26, 2010, the French Parliament passed a law that increased the age of retirement from 60 to 62 years (On the pension system of France).

Germany. At present Germany have the following kinds of pension:

1. disability pension;
2. company (occupational) pension if a person has worked at least 10 years at a certain company, so there may be several such pensions;
3. State old-age pension, which the German citizens living in Germany receive in full 100% volume, but those who live abroad get 70%.

These pensions are awarded if certain requirements are met. German pensioners get other social benefits, such as covered surgeries and associated costs, medicines and medical prescriptions, the cost of dentures and other medical devices, e.g. orthopedic shoes, crutches, canes, etc. These expenses are also covered to those German citizens who do not reside in Germany (Interviewee on 08.04.2013.: Kalējs Jānis (born 1925)), a citizen of Germany, living in Latvia in his family real estate and receiving all three indicated kinds of pensions with compensations for surgery covered by the German social security; interviewed the day before his endoprosthetic surgery (Kalejs). At the moment a range of structural reforms in the systems of retirement, pensions and health care, similar to those accepted in France, are being considered in Germany (The pension system of Germany).

Italy. The retirement age in Italy is 61 years in 2013 and it may be gradually increased up to 66 years (The pension system of Italy).

Sweden. Today the retirement pension guaranteed by the state is paid from age 65, which in Sweden is usually understood as the age of retirement. The pension system in Sweden is based on the following approach: the size of a particular pension depends on the individuals' income during their working life and the total number of years that have been served in work. Primary pensions or pensions based on contributions made from the worker's income during the whole length of service are paid from the independent pension fund, which is completely

separated from the state treasury (budget) while the minimally guaranteed pension is paid from the state budget. However, these pensions are essentially dependent on the current working population contributions which begin to decrease. The Swedish government considers that their pension scheme needs to be reformed, and the work environment should be reformed too. The goal is to reduce the load not only for workers who perform hard physical labor, but also for others, especially pre-retirement and retirement age workers. There-fore, much attention has been paid to provision of the workers of this age group with opportunities to raise their level of education and improve their skills. In Sweden in general the level of education is given a significant consideration. Today it is increasingly difficult to find a job for people with uncompleted secondary school education or lower. The Swedish government is also considering raising the retirement age qualification, but they are going to approach this issue with differentiation: the general retirement age and the retirement age for heavy physical work performers will be different. Currently the following point of view prevails: people performing heavy physical labor can not easily perform such work when they are older than 61. The increase of the retirement age qualification leads to the increase of the number of people active in the labor market. It also affects the involvement of young people and people with special needs into the labor market, which is a current challenge also in the EU. The problem of "people with special needs and their involvement in the labor market" is approached in the best way in Germany, where attempts are undertaken to interest the employers in offering jobs to such people. Sweden is trying to prevent situations when employees of pre-retirement and retirement age are discriminated and to deprive employers of reasons to fire such employees by way of providing these groups of workers with opportunities to retrain, to increase their level of education, and to improve their skills. In overall, the increase of the labor force available at the labor market asks for the increase of the national economic activity, which expands the total volume of production and provision of services in the country (The pension system of Sweden). Many Far East countries, e.g. Japan, Korea, China, etc. do not have any developed social security systems for old age and retirement. Traditionally there is a general attitude that retirees and their provision in old age is a liability of their families. Existing pensions are small, especially in China. The same attitude characterizes many African and Asian countries, where pension systems do not exist at all. Elderly people when they are not able to work at all become a liability of their families, but governments do not form any social security funds from which their elderly population may be sup-ported. Maybe there are some people in Latvia who believe, like a micro surgeon Martin Kapickis does, that people in those countries are socially very responsible and themselves take care of their elderly, when they can, and when they cannot, their elderly relatives may just go out and beg, as this increasingly happens in India. Should such social security system be adopted as a paragon? The state having such a "system" is not socially responsible.

7. Pension system in the Soviet Union

Many people believe that they should be grateful for the pension system to the Soviet Union, where it was developed according to the Leninist principles. Latvian SSR, as well as all other Soviet republics, did not have its own pension system, so we cannot speak about "the pension system during Latvian SSR" or use any other similar definitions. If one wishes to link the Soviet pension system with a particular personality, then in no way can it be linked with the name of V. Ulyanov - Lenin. Neither K. H. Markss nor F. Engels together with V. Lenin had written anything on the issue of pensions that would be worth mentioning. Consequently, there are no any Leninist principles in the Soviet pension system. Rather the creation of the Soviet pension system could be associated with N. Khrushchev's initiatives. Also during his time, namely since March 1956, the collective farmers (agricultural workers) started to be paid monthly and not annually. So the development of the pension system in the Soviet Union in 1956 and 1964 should be attributed to the personality of N. Khrushchev because he had taken active steps not only in the process of desalinization, but also cared for the well-being of the Soviet people, including securing them with a stable retirement income. According to the Leninist principles as applied to pensions, they may conditionally be attributed to the idea that workers had to be insured against all cases of earnings losses, without any kind of the workers' participation in contributing to corresponding funds. Here it can be seen that V.Lenin somehow considered and took into account the needs of the working class (although those principles had neither been applied nor taken into account before or after 1956), and nothing had ever been done for people working on collective farms. Moreover, each spring till 1957 collective farmers were made to buy public bonds of domestic borrowing from the government. Even the poorest collective farms were granted advance payments with prescription to purchase the bonds, even though many collective farmers still owed to their collective farms and

could not receive their earnings even once a year. Those advance payments automatically became debts and increased the debts of the previous years. Many collective farmers had not been able to get out of debt bondage for years. Such were "Leninist principles". The founders of Marxism-Leninism and the Soviet Union cannot be attributed to the establishment of a modern pension system. In the former USSR the common pension law was passed only in 1956, but it did not provide for all working people, but only for workers and employees, including collective farm specialists. Since 1956 old age pension was provided for men from 60 years and women from 55 years old. The pension law providing for agricultural workers of collective farms was started to develop only in 1964. The years spend in agricultural work at collective farms were started to be included into the general working period or length of service entitling people to the retirement pension only in the 1970s. Generally the size of the retirement pension was 120 rubles in 1970-80s. If the length of service was uninterrupted during 25 years, the size was 10% bigger, 132 rubles. There were also special so-called nomenclature pensions for party executives, military ranks, etc, which were much bigger than 132 rubles. For example the retired highest members of the Communist party politburo received 500 rubles of monthly pension money. These pensions together with many other benefits were provided from the state budget (Oxford English-Russian and definition dictionary of business terms 1995). In the period from 1956 until 1967, when there were separate pension provisions for collective farmers and industrial workers, there were people receiving neither a pension of an industrial worker, nor a pension of a collective farm worker, because of changing jobs and not accumulating the prescribed years of uninterrupted length of service. In order to provide collective farmers with retirement pensions, a single centralized Soviet Union collective farmer social security fund was established in 1964. It was made up of deductions from the collective farms income and was also financed from the USSR state budget. State enterprises paid social security tax to the state budget (Great Soviet Encyclopedia 24. Book 1, 1976). The length of service then started to include also the time spent working on the collective farms and all collected social security taxes were included into the state social security budget. After determination of the whole length of service (it included also years of work on the collective farms), the fund was retained and included in the total social budget. In the Soviet Union, the source for state pension benefits payment was the state social insurance budget, which major component consisted of the pension funds formed by the deductions from the profit of companies, institutions and organizations that went to the state budget without direct deductions from wages and social security contributions of workers. Although the Soviet ideologists emphasized that the Soviet pension funds were formed without affecting the wage bill, such groups as collective farmers and related workers, as well as the enterprise workers who were "paid, depending on the yield", were making contributions to those funds, which reduced their income. The deducted sums could have been used for material stimulation or generally for the increase of their wages. It is impossible to agree with the Ministry of Welfare Deputy Minister Maija Porshnova view that "young eastern republics made good contributions (to the social fund – the author's note), and "older republics such as Estonia, Latvia and Lithuania got advantage of being able to pay from them" („them" – social funds – the author's note) . Such an opinion could be somewhat justified if it were expressed by demographers, but the detailed analysis of the economic situation produces a different picture. As stated in the previous paragraph, pension funds were formed by the contributions of organizations and enterprises, plus social security contributions. However, the economically strongest contributors were industrially and agriculturally developed regions, to which Estonia, Latvia and Lithuania may be attributed in their own right. In per capita terms, those areas gave a greater contribution to pension funds than "younger" eastern republics, where there was even hidden unemployment (which could not be eliminated even by the repressive measures of the Criminal Code "for vagrancy" because there were no vacancies and no job places). In these republics employment was problematic especially among women.

8. Soviet ideological propaganda against Western pension systems

The Soviet ideologically biased scientific publications wrote that:

- the provision of the population of the capitalist countries with pensions was limited (Soviet social security law 1982);
- it was typical for the capitalist countries to compulsory deduct from workers' wages (Oxford English-Russian and definition dictionary of business terms 1995); (Great Soviet Encyclopedia. 24. Book 1 1976).

Such opinions circulated even in the 1980s, i.e., at the time of M. Gorbachov's transition period known as "perestroika". Similar views were held by V. Andreyev, G. Simonenko, V. Usenins, etc. In order to ascertain the truth of these allegations, let us not analyze the Nordic countries experience in provision of their population with

pensions, where this provision is the highest, but concentrate instead on the related experience of more conservative countries, e.g. Great Britain (Bernard Yves and Collie Jean-Claude, 1994). The following pension schemes are applied there:

Retirement pensions are usually paid by the state (65, 60 years), and it is received by a person independently of the fact, whether or not this person was fully employed prior the age of statutory retirement.

Non-contributory pensions are awarded unconditionally without any kind of person's previous contributions, when social security payments are made by the state or a company.

Earnings-related pension - the state pension pro-gram that focuses on:

- Balancing pensions with inflation, i.e. that the indexation of pensions;
- Women's and men's income equalization.

Pension funds – the public sector or private sector corporate contributions (membership fees). Usually, these funds are managed by individual organizations.

As follows from these four examples, workers do not participate in any of these pension schemes.

Executive pension plan (EPP) - the pension fund for senior executive managers and company directors, when a company or a corporation makes payments (membership fees) into a special pension fund. Companies and corporations may have other independent pension funds and their contributions thereto are tax-free.

As it can be seen, in this case, contributions to a pension fund are made by the employer.

Contributory pension – pension benefits are pay-able from the pension funds to which contributions have been made by both the employees and employers.

All these pension schemes may be supplemented at any time by private pension funds sourced by the participants' own contributions which ultimately will significantly improve their financial provision in retirement.

In the UK because of the significant national sup-port of the country's pension system, a situation has formed when the number of capable persons of working age has increased, who do not invest in the system of social security, namely the system of pensions. At the beginning of 2011, there were about 7 million of such people.

9. Overview of pension schemes

Overview of pension schemes can be seen summarized in Table 1.

Table 1. Summarized overview of pension schemes

N	Systems	The features of the system	Results (outcomes)
1.	The pension system of the French First Republic	Workers of the public sector receive retirement pension from the state budget	Finally was not implemented because of lack of budget funds
2.	The population self-formations (self support groups, sickness funds, etc.).	According to the goals of the formation, it partially performed for its members some social insurance functions	Failure to provide a general social security
3.	Bismarck pension sys-tem, gradually split into two systems:	At the beginning it provided for elderly representatives of working population with very low in-comes	System was the first evidence of emerging employer's social responsibility.
	a) German pension system	The system was more based on the principles of a socially responsible state	It was generally directed to assist working people in maintaining their social status and quality of life after the loss of working capacity due to old age
	b) Anglo-Saxon pension system	Public, i.e. state and municipal sector, provide its workers with sufficient pensions. Workers of the private sector receive their pensions from the retirement funds formed from contributions of employees and employers. Each country has its own system of benefits	The state intervened with providing care only to those individuals who we-re unable to take care of themselves, such as the disabled, or supporting with benefits the poorest layers of population.
4.	Pension system in the Soviet Union	The source from which pensions were paid was the State Social Security Fund, which was comprised of the public pension funds	The system was aimed to ensure a retirement per-son corresponding to a minimal standard living of a soviet citizen
5.	State Pension Systems in Far East, Africa and Asia	Most countries provide for elderly people even when they have families, but more often nor the state nor the family provided for them	To provide a minimal standard of living from the state, or the issues of social security will not be addressed at all

*Source***:** author's construction

10. Brief assessment of the systematized state pension system

From the time of the first systematized pension systems, each subsequent variant covered ever wider range of population, and that served as the basis for further amendments to the pension system – de-fining the next exit points, i.e. including the assessment of the previous pension system potential. For example, population self-help groups partially sup-ported just a narrow range of their members. This system was unable to provide a high level of social security, including the required level of old-age pensions, not to mention the general social security. This system did not have any signs of social responsibility. The Bismarckian social reform had already had signs of social responsibility. Bismarckian public pension system and its variants created the pension intergeneration solidarity principle and contributed to its development. Pension systems based on this principle provided state pensions, which were covered by tax payments of the working population. In Bismarck's Germany it was ensured by the demographic situation, including also such a factor as low average life expectancy of the population.

Essentially the elements of the principle of intergeneration solidarity were put into the basis of the French First Republic pension system, which ultimately was not applied, because the state budget could not provide for it. Also the united pension system of the Soviet Union, introduced in 1967 was based on this principle, and the united pension fund was formed by contributions from the state budget, from the Centralized Soviet Collective farmers' Union social security fund, i.e. the deductions from the collective farmers' income, alongside with tax payments of businesses, organizations and institutions. In general, the intergeneration solidarity principle laid at the basis of the pension system pre-vented to introduce a united pension system in the USSR earlier due to the lack of budget funds as other sources had not been sufficiently developed yet.

The principle of intergeneration solidarity as the basis of a pension systems has both positive and negative features. Its major positive feature is provision of a certain level of social security as manifestation of the social responsibility of a state. Its major negative features are the following:

1. It opposes retirees as partial consumers of the social tax and working population as tax payers, which opposition may create the social tension in the society e.g., in Latvia and Lithuania.
2. This principle functions successfully if a country has a positive demographic situation, i.e. when the birth rate outnumbers the death rate and GDP has a positive growth rate. These two conditions should be present simultaneously, and the total effect of their functioning should be sufficiently positive. Otherwise, working people may develop a perception that they will not have pensions in their due time because the-re will be no sufficient number of tax-payers. So they may conclude it is not worth to be legally employed and pay taxes, but better be employed not legally, i.e. in the "black" or "gray" sector of economy, and get more income (salary plus unpaid taxes) as instant gratification.

Even employers in socially responsible countries make advantage from the influx of migrant workers and a high rate of unemployment, and use such instruments of "gray" and "black" economy as "envelope wages", which cover partially and sometimes entirely everything that a migrant worker earns. No taxes are paid from such earnings. Basically "payment in envelopes" is not an invention of postsoviet countries, but an improvement thereto it may well be. In Latvia the notorious practice of "wages in envelopes" started with the appearance of Norwegian supermarket network *Rimi* at the Latvian market. Regarding the issue of secured retirement, employees in that case chose or agreed to a completely disadvantageous solution. Such a decision will adversely affect a secured and sustainable long term perspective of the old age.

Employees are indirectly encouraged to avoid paying social tax entirely or partially because of the "enterprise agreement" commonly applied in Latvia. Entering into this agreement, an employee becomes "a job performer" like "an enterprise", al-though working conditions and job responsibilities are the same as before for "the employee'. The necessary taxes have to be paid by the enterprise – in this case by a job performer (oftentimes the actual employer does not notify "the enterprise" about this obligation). Frequently, such employees, treated as an enterprise, do not pay any social tax or pay just a minimum social tax rate. Therefore, they do not develop their pension capital sustainably, i.e., their pension capital does not grow.

Summing up positive and negative features of the intergeneration solidarity principle, it can be concluded that it starts losing its potential. Therefore, the economic thought should develop the concept of new pensions systems,

which will motivate a working person to save for his own retirement from the first day of his employment. This would also strengthen the sector of legal or 'white' economy. As can be seen from the economic experience of developed countries and the pattern of social trends, the principle of generation solidarity as the basis of a pension system is beginning to exhaust its positive potential.

Conclusions

First rudimentary forms of old age security and some features of un-systematized pension systems became the beginnings of modern pension systems development.

The origin of the pension system as such, protected by the corresponding laws and as it is understood nowadays, can be attributed to the Great French Revolution. On August 22, 1790 the National Assembly passed a radical pension law, which was based on three principles: The nation's civic duty was to award their citizens for their work on behalf of the national well being according to the significance and the length of their service; the pension rights were to be awarded to all public sector employees.

Labor in general was recognized to be socially meaningful and revered. According to that law, pensions corresponding to the three principles described above were the state pensions paid from the state budget.

A rudimentary forms of a general pension system for old-age first appeared in Germany in 1889. These first forms of pension schemes are associated with the name of German Chancellor Bismarck, the so called Bismarck social insurance program. The principles of Bismarck pension system were subsequently accepted by some other Western countries.

Bismarckian pension system demonstrates the social responsibility of the employer. The principles of Bismarck pension system at the end of the 19 century and the beginning of the 20 were accepted by many industrially developed countries, and as a result two types of pension systems consolidated: German (Bismarckian) pension system and the Anglo-Saxon pension system.

Anglo-Saxon (American) pension system is focused on poverty reduction. This system is based on the principles of liberalism, when the state intervenes only to take care of those individuals who are unable to take care of themselves, and to support the absolute poor part of population through the system of special benefits.

Bismarck (German) pension system as a whole assists the individual in maintaining their social status and quality of life also after the loss of working capacity due to aging.

In the second half of the previous century, these two systems gradually converged. It proved to be impossible to introduce a pension system paid fully from the state budget, according to the experience of France after the Great French Revolution, because the state budget lacked the necessary funds. Also in the Soviet Union after accepting the system of calculation of the complete length of service in 1967 the social budget fund failed to provide the necessary means. Therefore, the Centralized social security fund of soviet collective farms was preserved and integrated in the total social budget. Socially responsible countries today are those that apply systems providing its residents with the state social security.

Today the employee's social security tax, which forms the pension capital fund, is increasing, but the employer's share is decreasing. The obvious tendency in developed Western countries is the increase of age qualification for the recipients of state pensions.

Bismarckian pension scheme may operate on the principle of generation solidarity. The pension scheme based on the principle of generation solidarity presupposes raising the retirement age qualification.

Raising the retirement age qualification causes a number of problems for the labor market: the length of service of working people increases which in general aggravates the problem of employment for the young and reduces

the involvement of individuals with special needs (the disabled) in the labor market. The national economic activity should be encouraged in all ways, and at least should correspond to the labor market demand and to the current growth of labor productivity.
In order to make the increase of the retirement age qualification beneficial for the society it is necessary to perform a number of actions, among which the most important would be:

- provision of widely available opportunities for people of pre-retirement and retirement age in raising their level of education, retraining and improving their skills;
- encouraging initiatives in the national legislation which will motivate employers to employ people of vulnerable age groups, rather than dispose of them; as a result the age bias in the labor market will be eliminated;
- the national economic activity should be encouraged in all ways, and at least should correspond to the labor market demand and to the current growth of labor productivity.

The existing national pension systems based on the principle of intergeneration solidarity, al-though in many economically developed countries it shows a high level of social responsibility, has begun to exhaust its potential and is beginning to slow down the economic development, contributing to the "gray" or "black" sector of national economy.

As can be seen from the economic experience of developed countries and the pattern of social trends, the principle of generation solidarity as the basis of a pension system is beginning to exhaust its positive potential. Therefore, a new approach to pension schemes should be created, which will provide them with secure and sustainable development. According to the economic features, the principle of generation solidarity laid in the basis of a pension system is somewhat reminiscent of the notorious multilevel pyramid operation. In both cases, the "pyramid" higher layers (in our case "pension beneficiaries") exist at the expense of the lower layers (in our case "the tax-payers"). They both can exist only while the number of payers is increasing. Therefore, a new approach to the pension sys-tem should be developed, which will motivate a working person to take care of his own retirement from the first day of his employment, and will provide him with confidence that he will have a proper pension in due time.

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