Journal of
SECURITY AND SUSTAINABILITY ISSUES
International Entrepreneurial Perspectives and Innovative Outcomes

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2015, 4(4)
Dear readers,

Today I bring to your kind attention a new issue of periodical scientific peer-reviewed journal devoted to sustainability issues. The journal continues its steady journey towards scientists, practitioners, politicians and other interested members of international community.

In nowadays processes of multifaceted sustainable development appear to be very much dependent on security and safety of environment, in which societies function. On the other hand, pace of sustainability processes is conditioned by values, determination and behavioral patterns of primary actors – individuals and organizations. The journal sections our contemporary life, raises issues, which have to be tackled and invites for the further analysis and formulation of plausible solutions. It could be claimed that content of the journal reflect a genuine reality and, hence, is valuable from theoretical and practical prospective.

I invite all interested parties to continue supporting this international scientific discussion by providing interest to issues related to sustainable development of individuals, organizations, societies and countries. Let us and future generations enjoy secure, safe successive movement towards better and fulfilling future.

With best regards,

TAUTGINAS SANKAUSKAS
President of
Lithuanian National Association
of Forwarders and Logistics
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JOURNAL OF SECURITY AND SUSTAINABILITY ISSUES  
2015, 4(4)


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SEcurity Facets: Complex Dynamic Systems and Leadership in Military

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Received 10 March 2015; accepted 25 May 2015

Abstract. Present world has no clear balance between economic and political forces. Conflict initiators use all possible sanctions and unconventional means and ways and have no clear and permanent structure and allies. Traditional leadership and actions in conflict zones are not effective. Complex dynamic systems (CDS) paradigm allows understanding better the essence of chaotic processes in conflict zones and acting efficiently.

Keywords: security, complex dynamic systems, leadership, chaos, order, management, organization, members

Reference to this paper should be made as follows: Endrijaitis, R.; Alonderis, A. 2015. Security facets: complex dynamic systems and leadership in military, Journal of Security and Sustainability Issues 4(4): 299–309. DOI: http://dx.doi.org/10.9770/jssi.2015.4.4(0)

JEL Classifications: F60

1. Introduction

Today the world is multiple where the U.S. dominates and the opponents have chosen asymmetric confrontation. There is no clear set of conventional measures and balance as well as dominating powers influencing the world. Many players of different rank and interest form unions that are neither long-term nor durable. When traditional methods of extracting oils wavered, the role of powers’ leverage based on traditional methods of extracting oils changed as well (Bar-Yam et al., 2004; Endrijaitis, Alonderis 2015). The upcoming age brings tough challenges, perhaps even tougher than we had, i.e. ‘chaos, extremism and aggression’ around the world with ‘horrendous’ problems.’ We do not have much time to prepare for them and for what will drive global conflict (Jacobs, Clement 2007; Dyson 2015; Ward 2015).

The main players facing challenges and crises are the armed forces and the complex of interrelated conflict participants, i.e. mass media, politics and economics. If any of these elements is affected, the impact is felt all over. The cooperation of the military and media is apparent as the media influences the significance of victories and defeats of the battles that take place in social networks, television and media.

Ununiformed enemies of unknown origin, undefined and fast-changing missions, cultural vulnerability of servicemen and chaotic environment are characteristic of present and future battles. Military leadership was designed when an enemy was evident and predictable, the role of a leader was defined and no forbidden methods were applied. The international community has largely lost its capacity to prevent conflict and dissolve conflicts. This is a world where there is no effective leadership (Thomas 2009; Sambira 2015). Conflict zones
saw the emergence of soldiers having no citizenship, fighting foreign citizens, paramilitary units with no clear subordination and having temporary allies.

The U.S. Army commanders acknowledged that they fight with an enemy of a new type who learns, changes and adjusts to a new environment. When the U.S. servicemen reveal rebels’ strategy, it is changed to another one. A state incurs considerable expenses while protecting itself from terrorist attacks as protection means are developed in line with the latest attacks. Furthermore, judging from experience, terrorists actions are never recurrent. They do not have a center of gravity, leadership or hierarchy, thus, terrorists do not make up an organization, their manner of acting resembles that of a swarm. They adjusted a suitable structure ensuring durability to their needs. There is a tendency for coordinated uncontrolled actions and organizations without leaders that are more efficient in achieving aims (Wheatley 2007). They are united by a passion to act together in achieving a common goal. Although their attitudes may differ leading to a conflict in the future, it is not an obstacle for common activities.

Terrorists’ communication network originated from chaos and focused on emotions and importance instead of structure and chain of command. The beginning of its creation was different from that of a traditional mechanical system. Many current programmes started concentrating on an unstable, unclear and chaotic environment of military operations. The programme DoD trains leaders for long-term actions against radical formations without clear position, origin or attitude using information technologies, terrorist attacks, tactics and web communities, thus compensating the lack of military power. Present effective leaders created programmes focused on wide-ranging operations for conventional and unconventional environment. Dynamic leaders’ skills are necessary for such circumstances, whereas established programmes have to address such challenges (Wheatley 2007; Thomas 2009).

Ironically, the worldwide information technology and other companies were established in a similar way. Their establishment was inspired by ideas that seemed unreal, illogical and inadequate according to some, however, now they are brilliant founders of various companies. Terrorist organizations and leaders as well as investors are recognized and evaluated when they already have power.

The comparison of traditional information and communication network in the classic hierarchy organizations, such as corporations or military, and CDS in the rapidly changing environment revealed that the CDS communication network was more efficient. It is beneficial to encourage communication among employers for decision-making in the future. It is necessary to establish new working structures in the organizations as traditional institutions having classic hierarchy system use command and control method. Refusing hierarchy, adaptive and progressive organizational structure turns into hybrid network structure the potential of which is beneficial for all the organization, not only for hierarchy structure based on individual benefit. However, linear attitude analysis does not address social network complexity or multiple interactive systems. The military considers leadership as a sickle and a problem as a nail; consequently, it has to start looking for a new paradigm for transformation (Paparone 2004; Bar-Yam et al. 2004; Livingood 2014).

Commanders and their subordinates have to think about their organizations and operational environment in terms of complex dynamic systems (CDS) and paradigm. Operational environment requires commanders and their personnel to understand causal complexity (Livingood 2014).

W. Edwards Deming said: ‘If you can’t describe what you are doing as a process, you don’t know what you’re doing’ (Dorling Kindersley Publishing 2014).

However, when a process or an organization as a dynamic system is too simplified or trivialized, they are treated as primitive mechanical systems.

Mechanical thinking cannot fully review human and social systems that are complex and dynamic. When dynamic social systems are treated as simple mechanical ones, the opposite results are expected. If a person does not have a base in systems theory and causal logics, he or she will not go deep analyzing reasons affecting
interaction in a certain environment. Besides system theory, operation planners tend to use standard doctrine processes and means leading to planning routine and oversimplification of operations (Reed 2006; Livingood 2014).

Communication links of terrorist organizations are passionate and meaningful and not of traditional command leadership. It is a spider web without a spider becoming more innovative in the local level than leadership while being on the top. If individuals are free to invent their own ways to demonstrate support for their cause, they will invent even more destructive actions competing with each other for the most spectacular attack (Wheatley 2007).

We notice that when speaking about terrorism, the same terms are used as when speaking about business. The same laws are applied for all the CDS as well. If we change the word ‘business into ‘terrorism’ in a text, the same text might not alter much.

Mendelsohn (2015) writes about Al-Qaeda’s franchises that are used by terrorist organizations and assign responsibility and liability for the brand name.

Terrorism can be analyzed by applying the same tools as the ones used for business researches. Research tools are universal for all the CDS.

A tool for analyzing a firm’s position and competition is market mapping, including diagrams indicating market and product place in the market. Market mapping combined with SWOT analysis discover opportunities and decide whether the firm has the strengths to exploit one of those opportunities. Market map helps to inform the strategy and tactics that will help a firm to achieve that strategy goal. A challenge for management is to use the map and knowledge of internal strengths and weaknesses and plan appropriate strategic response. Both SWOT analysis and market mapping allow a firm to better understand itself, its market and competition (Dorling Kindersley Publishing 2014; Duncan, Coyne 2015; Jacobia et al. 2015).

Market vacuum is a business possibility for a new product, whereas political and state institution vacuum is a possibility for terrorist organizations.

A country has long been vulnerable; a vacuum created by a deepening political crisis and collapse of state institutions is an attractive arena for terrorist groups (Howard 2015; Ward 2015).

2. Security Facets: Leadership Style of Complex Dynamic Systems

Technology continuously develops and gains increasingly greater significance in many fields, including warfare. They generate data and shape a decision; however, they are approved and made by people without whom technology can function only according to some installed standard programmes.

Technology will likely compound the stress on battle decision-makers, and leadership far more than technology will determine who wins and who loses. What, then, is the role of leadership in complex organizations? If leaders cannot predict and control an organization’s future, what do leaders do? In any Army, in any time, the purpose of ‘leadership’ is to get the job done (Ulmer 1998; Plowman et al. 2007). Assessing the situation in accordance with the CDS theory, new or old technologies as well as operating methods are applied. However, the essential element, i.e. a leader, has to be aware of the situation and be able to act efficiently. There is no such technology that could compensate a decision maker’s shortcomings.

Leaders disrupt existing patterns of behavior, encourage novelty and make sense of emerging events for others. From a complexity view, leaders do not direct change or control future outcomes as traditional leadership research suggests. Leaders, as enablers, use the following mechanisms: disrupting existing patterns, encouraging novelty and making sense of the unfolding events for others (Plowman et al. 2007).
Table 1. The role of leaders as enablers in emergent self-organization.

<table>
<thead>
<tr>
<th>Mechanisms used by complex leaders</th>
<th>Actions taken by complex leaders</th>
<th>Propositions</th>
<th>Managerial implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disrupt existing patterns</td>
<td>• Create and highlight a conflict; • Acknowledge uncertainty;</td>
<td>Complex leaders enable emergent futures by disrupting patterns through the use of conflict and uncertainty, whereas traditional leaders create knowable futures by minimizing conflict and eliminating uncertainty.</td>
<td>• Leaders destabilize rather than stabilize organizations.</td>
</tr>
<tr>
<td>Encourage novelty</td>
<td>• Establish simple rules; • Encourage ‘swarm-like’ behaviors; • Promote non-linear interactions;</td>
<td>Complex leaders become enablers of emergent self-organization by encouraging innovation through simple rules, non-linear interactions, and swarm behaviors; whereas traditional leaders operate as controllers by leading through command and control.</td>
<td>• Leaders encourage innovation rather than innovate.</td>
</tr>
<tr>
<td>Act as sense-makers</td>
<td>• Create correlation through language; • Accept the role of ‘tag’;</td>
<td>Complex leaders become enablers of emergent self-organization by being sense-makers through correlation and becoming tags, whereas traditional leaders operate as controllers by directing order.</td>
<td>• Leaders interpret emerging events rather than direct events. • Leaders manage words rather than manage people.</td>
</tr>
</tbody>
</table>

Source: Plowman et al. 2007

By understanding the nature and importance of communication and practicing effective communication techniques, leaders will relate better to others and be able to translate goals into actions. Communication is essential to all other leadership competencies. Leaders have responsibility to establish and maintain positive expectations and attitudes that produce the setting for healthy relationships and effective work behaviors. Leaders are charged with improving an organization while accomplishing a mission. They should leave an organization better that it was when they arrived. Most Army service members continue to think of themselves as professionally communicating within a hierarchical chain of command. Despite the Army’s common narrative, Army service members engage with each other via networks of relationships that cross a variety of hierarchical echelons ((What an Army Leader Is) (LDP 2009; Livingood 2012).

Leaders rather destabilize than stabilize CDS organizations. While achieving a goal, they move organizations from a stable position to instability (even though a stable position is long-term), as only instability originates novelty and self-organization. Leaders encourage innovations; they do not develop them themselves. By promoting indirect relations, leaders foster to be innovative. They emphasize the process of change and identify changes, thus getting closer to the ones that employees speak. Leaders change an organization and explain them to employees. Learning to engage with the organization as if it is a living system is much more effective and sustainable than in our traditional way of trying to impose our will (Plowman et al. 2007; Knowles 2014).

Present conflicts change classic conflict rules and laws making it an advantage (or even a necessity) to leaders act despite CDS theory laws. For positive results, it is necessary to transform existing organizations so that they could operate despite the CDS laws.

Leadership is an ongoing process and only a few can purposefully engage the natural tendency to self-organize. The Joint and Army Doctrine implicitly reinforce the idea that leaders must understand systems theory via operational design, Army design methodology and definitions of leadership (Knowles 2006; Livingood 2012).

Lasting change requires organization people to fully participate in the process by communicating, creating and sharing knowledge. The actions of all the collective increases the possibility of successful military operation by cooperating through all the levels of command. The primary role of the leader is to make sure that the organization has a deep inner integrity. To get that clarity requires experimenting with different processes, bringing the whole system of the university together – having a conversation about who we are, what we serve, what we think is possible with the resources we have, who we could be (Wheatley 1997; Wenger 1998; Livingood 2012).
Conflicts will require decentralized leadership, the ability to build and lead a military and civilian network. This notion of connectedness suffuses all of the Army life. Commanders recognize that the professional relationships they maintain with other members of their organization change as they move between roles. Often seen as the “glue” of the military community, spouses link members of the military and local civilian community with each other and sometimes learn critical information regarding community faster than the commander. The point of this quote is that things spread through networks, across ties and a position in the network matters as much as the architecture of the network (Livingood 2012; Ward 2015). However strict organizational hierarchy, the CDS laws are to be ignored or used.

The perspectives are arranged around the circle in Figure 1 and the internal lines show the interconnectedness of the parts. A change in any part results in changes in all the other parts. The web of connections is like a nervous system with each perspective informing all the others. As in a nervous system, some connections are stronger than others; the connections need to function in a specific order (Knowles 2001). The impact on any part of the system might occur (but not necessarily) in any other part as all of them are more or less interrelated.

Fig 1. The domains of self-organization.

Source: Knowles 2001

In order to make organization members participate in changes instead of fighting against them, the members must be involved in them. The leaders who enact or initiate reforms should be able to step out of their comfort zone and balance on the threshold of chaos, thus mitigating the level of control (Kaminski 2000).

The transformational leader empowers subordinates to achieve the goals of the organization. They see developing and growing others as more important. Self-organizing occurred extensively as one person after another stepped up to take one of the multitude of tasks facing us. The organization became “leaderful” (Knowles 2001; Matthews 2014). Involving subordinates in active common activities to reach common aims is an essential prerequisite for an organization’s self-organization and adaptation. If it is not able to self-organize, it is not adaptive and it may be hit by crisis. Still, using available resources an organization has to be engaged in continuously reaching its aims and at the same time even devoting some energy for self-organization making it an aim as well.

In military settings, this is often bound up in charismatic leadership but does not depend on it. It depends more on a high degree of competence in interpersonal communications or emotional intelligence. Ideas are a fundamental output of the top-level leader who carefully selects influential ideas and communicates them to outsiders and insiders alike. Leaders inculcate these ideas in their public affairs offices and repeat them among the staff (Harstad 2004; Thomas 2009).

The Department of Defence is a large and complex social system with many interrelated parts. As any system of this type, when changes are made to one part, many others are affected in a cascading and often unpredictable manner. Organizational decisions are fraught with second- and third-order effects that result in unintended consequences. Extensive planning – combined with even best intentions – does not guarantee success. There
are so many interactions in complex systems that no individual can be expected to forecast the impact of even small changes that are amplified over time (Reed 2006).

The impact of the CDS elements on each other or general process is a peculiarity of the CDS. They influence each other not only with changes but also being passive or acting not at full capacity and top-quality level.

Concepts and approaches embedded in the systems thinking literature:

- focus on the purpose for which a system was created over the processes and procedures of the system.
- Simple cause-and-effect relationships are insufficient to understand or explain a complex social system. Patterns over time and feedback loops are a better way to think about the dynamics of complex systems.
- think in terms of synthesis over analysis; the whole over the parts. Busyness and excessive focus on short term gains interferes with ability to use systems approach.
- Leaders must see what is actually happening over what they want to see happen.
- Thinking about systems and their dynamics suggests alternative approaches and attunes leaders to important aspects of organizational behavior, especially in military organizations that value tradition and standardization (Reed 2006).

The war front requires leadership – inspiring a team, demonstrating commitment, sharing troubles and challenges, and engaging in complex problem-solving. The home front, conversely, is a setting for management, i.e. filling time, being sure to complete tasks, and exercising simple problem-solving. The leader must be well-trained and educated to make split-second decisions in ambiguous circumstances balancing the best tactical decisions with cultural and regional dynamics (Slocum 2013; Ward 2015). The actions taken by the organization have to be adaptive and adjusted to existing conditions and requirements; they can also be changed or made favourable.

Military leaders interact with civilians, non-government agencies and host other formal and informal groups to achieve their objectives. The military must work with civilian leaders and locals who are aware of the terrain and culture better than any foreign actor is; and lead the coordination between all parties working toward victory.

The art is to help such communities find resources and connections without overwhelming them with organizational meddling. This need for balance reflects the following paradox: no community can fully design the learning of another; but conversely no community can fully design its own learning (Wenger 1998; Matthews 2014; Ward 2015). In previous conflicts both sides fought over resources and natural resources in order to equip their troops. Now a crucial factor in conflicts is a support of local organizations, people and their participation on either side. We follow media and social networks for ongoing battles, thus expressing support. An event in the battlefield or a conflict between two sides is reported by the media in the light of the locals’ opinion presenting it for their own benefit by incorrectly interpreting or changing the facts. Locals, business companies and various organizations (previously – energy resources) play an important role in present conflicts.


The U.S. started changing its military forces to increase action accuracy for particular results that could have effect despite the CDS laws. The systems approach incorporates a new concept called Effects-Based Operations & Planning. It should help to define orders of effects and consequences of actions taken in handling asymmetric warfare. The U.S. military has decided to develop the capabilities to consciously affect a multitude of levels of effects. The national military strategy is shifting from preparing only to fight and win traditional wars focusing on preventing (shaping) and discouraging (deterring) armed conflict broadly defined to include war between nations and irregular war (Bar-Yam et al. 2004; Matthews 2014). Treating conflicts as the CDS revealed a necessity to act in accordance with the CDS laws; however, it changes response and operation methods. Changing conflicts change response and actions. To act efficiently, it is necessary to change command, communication principles and principles of organization members.
The goals of the Department of the Navy Objectives deploying innovative leaders in all the levels of command include combat capabilities of speed, agility and adaptability. The Army Leadership doctrine emphasizes the far-reaching consequences of a leader’s decisions. The Army Doctrine Reference Publication (ADRP) 6-22 indicates the use of systems and social systems theory as a baseline. It does not explain how a military leader should think about the terms ‘complexity’, ‘uncertainty’ ‘unintended consequences’ or ‘systems’ (Thomas 2009; Livingood 2012).

The effective capability can be realized through the integration of existing and future military systems of systems (SoS). The future of engineering systems will require their incorporation into increasingly integrated complex SoS. The Joint Doctrine and Field Manual (FM) 3-24 Counterinsurgency requires a commander and his staff to use systems thinking within operational design methodology. The FM 3-24 contains a definition of what the term ‘systems thinking’ means. Systems thinking involves developing an understanding of the relationships within the insurgency and the environment. It concerns the relationships of actions within the various logical lines of operations. That seeks to understand the interconnectedness, complexity, and wholeness of the elements of systems in relation to one another. While a contestable definition, it is the only attempt to define systems thinking, in any joint or army doctrine and is not included in any terms or definitions list. The U.S. military has begun to develop a more holistic approach to counter asymmetric competition in developing interoperable systems that can be used interdependently (Bar-Yam et al., 2004; Livingood 2012).

The traditional mechanical system will face or is even facing now problems caused by the CDS laws; therefore, a question arises if a mechanic-traditional military system is able to cope with the CDS problems without major self-organization.

Leaders fail to identify exactly how organizations and networks interconnect with each other. For example, in the field of intelligence, progress is being made by focusing not only on the paradigms of photos and maps but also by new techniques of influence diagramming, interactions between individuals, organizations, insurgent networks, criminal patronage networks, security effect networks, and governance building networks (Harstad 2004; Livingood 2012). It is necessary to perceive the whole with all its laws, not just how separate pieces compose a picture. Each service was built in response to its specific environment; each of them has systems within systems of specialization. This complexity within itself is driving each to look at its own SoS. This interoperability will generate interdependence (Bar-Yam et al. 2004). System parts have to be relatively autonomous and independent as separate systems; however, they must be able to act efficiently together as a system.

The Army commanders must build ‘horizontal relationships’ with both governmental and non-governmental organizations that have no equivalent rank structure. Commanders appreciate that strong connections both hierarchical and non-hierarchical are key to being an effective leader. A system is more likely to survive if it has many participants of varying size along with an assortment of contested issues. Complex systems as adapting to the absence or failure of a part. Army leadership points out the importance of building and maintaining relationships for strategic and tactical benefit (Harstad 2004; Livingood 2012). The fight is concentrated on destroying enemy’s system, i.e. cut off connections, destroy system parts, create vacuum and fill it in with sophisticated system. To destroy the enemy’s system, it is necessary to have a reserve of efficiently operating system parts and create new system parts together with the locals. This is the way a new, efficient and joint adaptive system is developed.

The mission was articulated in terms of a battlefield where commanders must balance time and resources between building unified partner networks and deconstructing enemies and their connections. Partners and subordinates were cautioned to carefully understand and apply behaviors, connections, interactions, and relationships to create positive outcomes and incorporate more people into legitimate systems. Knowing how to harness the power of social media, it can be used to reach out to the local population. The aim is to seek to understand complex operational environments filled with networks of actors and their connections (Livingood 2012; Matthews 2014).
Transcript text: the partnered team learned some significant lessons during those operations that they were able to apply in the summer and fall of 2010 in Kandahar City and its environs. Several of these lessons included the need for prior planning to prepare government activities in advance (Livingood 2012). Independent parts will be combined into a single CDS. No vacuum should be left so that a terrorist system could try to occupy it.
In Arghandab, a district just outside Kandahar City, a Taliban stronghold was built in July 2009. In a 18-month period, there were no government officials or police present except for the district center, which some of the Afghans described as a combat outpost. A significant change after the period was the government employees working with a new district governor. There was a new police chief who had police force out and about. Also, the people on a Friday afternoon, Afghan family time, were out picnicking in the Arghandab River Valley (Livingood 2012). An apparent difference was between former fragile system without regular relations, efficiently operating parts with lots of vacuum and the new one with good relations and no vacuum.

A successful military leader must be adroit at working with other governmental and non-governmental agencies to accomplish their mission. Interdependence has to prompt the evolution of multiple interdependent systems into a completely new overall system. There is a considerable interest in exploring the possibilities of going to an organization where interdependence is the rule, not the exception. Knowing how to leverage military power to achieve objectives is crucial to long-term strategic success (Bar-Yam et al. 2004; Matthews 2014). The creation of new and efficient system comprised of interrelated individual parts is the military leaders’ aim. The solution of present conflicts or fights is a creation of a new system.
Conclusions

- Present military leadership has to correspond to the chaotic origin of present conflicts.
- Boundaries between conflict and aggressive competition and the use of conventional and unconventional measures keep blurring.
- Present terrorist organizations have no usual hierarchical structure, it is chaotic; they do not have permanent leaders and are treated as dangerous too late.
- Mechanical thinking, organizations and leaders become inefficient or do not meet the CDS laws in chaotic processes.
- The CDS research tools are universal.
- Vacuum opens up a possibility for the CDS to emerge.
- A role of a leader in the CDS organization differs from the one in a mechanical organization.
- A formed critical mass of locals will accept and support its favorable system.
- A local CDS (population, companies, organizations, etc.) plays a decisive role in a conflict zone.
- Military units have to make up a full-fledged CDS to fight efficiently a terrorist CDS in a chaotic conflict.
- The CDSs fight against each other, thus filling up the vacuum.
- The creation of new CDS is a way to defeat terrorists in their occupied territories.

References


PUBLIC PERCEPTION OF ENERGY SECURITY IN LITHUANIA

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Received 20 February 2015; accepted 10 April 2015

Abstract. The relevance of this article is based on the aim to fulfill the lack of understanding of public perception on energy security. Despite the fact that energy security problems in Lithuania are analyzed on a regular basis, however, there is no comprehensive research on the very issue of the public perception of energy security. The results of the empirical survey (public poll carried out in 2013) are used to explain the public perception of energy security and its main aspects, and to show the existing difference of society opinion between different social groups in regard to gender, age, education, occupation, income and living area. The research showed that variety of different aspects are taken into account in public perception on energy security. The dominance of “The prices of energy resources” (mean – 4.35) and “Reliability of energy supply services” (mean – 4.25) was fixated throughout different social groups. The three most ambivalently ranked aspects were “Development of oil extraction” (mean – 3.50), “Development of nuclear energy” (mean – 3.30) and “Development of shale gas extraction” (mean – 3.08).

Keywords: energy security, public perception, social groups, price and reliability of supply

Reference to this paper should be made as follows: Leonavičius, V.; Genys, D.; Krikštolaitis, R. 2015. Public perception of energy security in Lithuania, Journal of Security and Sustainability Issues 4(4): 311–322. DOI: http://dx.doi.org/10.9770/jssi.2015.4.4(1)

JEL Classifications: L1, L90

1. Introduction

Lately, an effort to link energy and society is noticeable in conceptualization of energy security in academic discourse. Growing attention to sustainable development concept fosters discussions on how energy security affects society and what responsibilities fall upon society in the development of smooth energy security politics (Winzer 2012; Cherp, Jewel 2011; Sovacool, Mukherjee 2011; Sovacool et al. 2012; Augutis et al. 2012; Voslius et al. 2013; Streimikienė et al. 2007; Baublys et al. 2015). In most cases the discussions consider the political and economic consequences, which are or may affect the society, meanwhile the sustainable development is concern that all of the above mentioned consequences would have a positive impact on society. Noble intentions in relation to public interest can also be grasped in official discourse (The national energy independence strategy 2012). It seems that the interest of society is becoming the stimulus targeted by the politics of energy security.

The problem of energy security is indeed one of the most important (amongst others) in Lithuania (Balžekienė et al. 2009: 239). Needless to say its importance varies due to external and internal affairs, but people al-
ways understood the importance of energy security. However, until recent years there were no further elaborations on what it means “energy security” for society? We could find some qualitative data on experts (Genys, Aleksandravičius 2012) or politicians (Česnakas 2013) opinion, some attempts to explain social preconditions of public risk perception (Rimašė, Rinkevičius 2008) and some explanations on public view towards nuclear energy (Balžekienė 2006; Gaidys, Rinkevičius 2008). But there are no systematic attempts to explain public perception of energy security. Therefore, a detailed public poll was carried out in 2013 in order to understand how Lithuanian society interprets energy security, what aspects does it name as most important. The goal of the article is – to reveal public opinion towards the most important aspects of energy security and to identify existing differences of the attitude between different social groups (in regard to gender, age, education, occupation, income and living area).

2. Energy security, strategic interest and public perception

The evolution of energy security concept can be easily grasped when analyzing literature on energy security during the last few decades. As Cherp and Jewel have recently (2011) showed the concept has evolved from a narrow based interest in oil supply to the notions of integrated energy security theory on the global scale. The variety of actual definitions which cover different angles of energy security is scrutiny summarized by Winzer (2012), Kruyt et al. (2009), Ang et al. (2015). Even though the definition of energy security is variable and means something different for each country, it is possible to notice the growing emphasis on society’s interest in current literature. The official European Commission paper also provides comprehensive definition putting a strong emphasis on society’s interest (European Commission, Green Paper 2000).

The extent to which energy security is concerned may fundamentally differ in various countries. Rightly so, one thing is try to improve existing energy infrastructure and its efficiency, thinking about diversification of supply or trying to implement some new technologies. The different thing is to pursue it in totally different conditions than it was created in as if in Lithuanian case. Lithuania inherited infrastructure from Soviet times and now it has to restructure it according to the changed conditions and actual interests of the nation. Therefore one can also find the evolution of energy security concept (Augutis et al. 2013) which has been changing throughout the history aiming to answer to different aspects of the problem due to the interest of the small but evolving country. For example, the first breach in energy security Lithuania faced right after declaration of Independence (when Russia started raising prices on energy resources for Lithuania and impending them to the world prices and in 1990 introduced the oil embargo, until finally in 2006 closed down “Druzhba” oil pipeline that supplied raw materials to “Mažeikiai” oil refinery) accordingly the main priorities of energy security were emphasized due to the main threats. Only in recent years in the academic literature (Molis 2011; Leonavičius, Genys 2011; Tvaronavičienė 2012; Vosylius et al. 2013; Balitskiy et al. 2015) it is possible to grasp a more consistent approach to energy security which puts focus not only on energy system’s ability to provide energy for the consumers in acceptable prices but also its ability to withstand the threats of technical, environmental, economical, political and social kind.

The government’s desire to take care of the strategic projects is totaly justifiable because its primary duty is to strive for a long-term strategic objectives of the country. However it might be very hard (or hardly possible) to implement some strategic projects if they do not correspond with public interest and fail to properly respond not only to the strategic long-term, but also short-term interests of society as well as different social groups (as has happened in the case of shale gas extraction1). Given Lithuania’s geopolitical situation and Russian ambitions in relation to it, wealth inequality in society and the unequal burden of energy, the segmentation of interests in society and limited government capacity to respond it equally, the importance of public perception of energy security is increasing.

It is not easy to balance the state’s strategic objectives and interest of the society, especially if the public interest is little known. The opinion of the society arises as a key factor for the smooth energy politics. And on

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1 Some rallies (“Save Samogitia, pure water and land”) were held in Lithuania on May 9, 2013, which opened floor for the intense public discussion on the intentions of the LT Government to allow Chevron company exploring and extracting shale gas.
the contrary, if society lacks information on actual aspects of energy politics or the dominant understanding of energy security is reduced to some concrete aspects in public perception this might become an obstacle for the consistent energy politics. Even more it might open floor for propaganda and manipulations and the interest of society might remain unfulfilled.

3. Public perception of energy security and its aspects

Trying to identify the most important aspects of energy security for Lithuanian society, it was decided to provide the vast variety of different aspects of energy security (which were elaborated with experts assistance) and offer respondents to evaluate every each of them according to personal opinion. The aspects of energy security were formed in line with Lithuanian strategic interests and covered different angles of energy security: diversification (of energy suppliers as well as resources), reliability (of supply and infrastructure), independence (from foreign states (mainly Russia) as well as monopolistic practices), ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests, lastly – evaluation of strategic projects to be implemented in upcoming future (renewable energy, shale gas, nuclear energy).

Representative survey was conducted by public opinion research company “Vilmorus” in May and June 2013. Number of respondents: N = 2002; interviewed 18 years old and older residents of Lithuania. Method of survey: questioning respondents at home using pre-made questionnaires. Method of selection: multi-stage, probabilistic sampling. Selection of respondents was prepared so that each resident of Lithuania should have an equal chance of being questioned. The results reflect the opinion of the entire population of Lithuania and distribution by age, sex, place of residence, education, purchasing power. Error of survey results – 3% (probability – no less than 97%).

The survey revealed that energy security is perceived by the public rather broadly. Among the fourteen aspects presented to respondents for the assessment of its importance to Lithuanian energy security, certain trends were identified after evaluation.

<table>
<thead>
<tr>
<th>Evaluate the importance of the following aspects for Lithuanian energy security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not important at all</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>1. Reliability of energy infrastructure (pipelines, electric.</td>
</tr>
<tr>
<td>2. Energy independence from other states</td>
</tr>
<tr>
<td>3. Development of renewable energy</td>
</tr>
<tr>
<td>4. The prices of energy resources</td>
</tr>
<tr>
<td>5. Reliability of energy supply services</td>
</tr>
<tr>
<td>6. Independent energy generation</td>
</tr>
<tr>
<td>7. Development of nuclear energy</td>
</tr>
<tr>
<td>8. Development of oil extraction</td>
</tr>
<tr>
<td>9. Development of shale gas extraction</td>
</tr>
<tr>
<td>10. Diversification (diversity) of energy suppliers</td>
</tr>
<tr>
<td>11. Diversification (diversity) of energy resources</td>
</tr>
<tr>
<td>12. Integration into the common European Union energy...</td>
</tr>
<tr>
<td>13. Implementation of modern technologies in the energy..</td>
</tr>
<tr>
<td>14. The ability to take advantage of international political..</td>
</tr>
</tbody>
</table>

Fig.1. The importance of energy security aspects for Lithuania, the overall assessment of respondents

*Source: authors*
First, all the listed energy security aspects are important or very important to the respondents. As might have been expected, the most prominent are prices of energy resources (89.7% important or very important) and reliability of energy supply services (87.9% important or very important). Second, the study shows the continuing ambiguous evaluation of nuclear energy, when almost half say that this type of energy is important, almost a quarter (24.1%) of respondents answered that the “development of nuclear energy” was absolutely unimportant or unimportant for Lithuanian energy security, and a little more than a quarter (26.8%) have not decided on this issue. Third, evaluation of development of shale gas extraction is extremely ambiguous: a little less than one-third (28.6%) of respondents believe that it is an unimportant or absolutely unimportant aspect of Lithuanian energy security, and yet almost one-third (31.7%) have not decided on this issue; however, 39.7% believe that it is an important or a very important aspect. Fourth, despite certain evaluation trends indicated during the analysis, it is equally obvious that the public lacks information about certain aspects of Lithuanian energy security, which are less discussed in mass media or are more specific. For example, about a fifth of respondents have not decided about: development of oil extraction; diversification (diversity) of energy resources; diversification (diversity) of energy suppliers; integration into the common European Union energy market; the ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests. Thus during formation of the Lithuanian energy policy, it is necessary to take into account these provisions, because it is likely that a certain part of the society will take a negative position, which can disrupt certain projects² (see Figure 1).

4. The most important aspects of energy security in public view

The five point Likert scale was used for the data analysis and interpretation. Respondent disapproval of a particular issue was marked 1, indecisiveness / not knowing – 3 and approval - 5. Increased average of the responses (e.g., when responses average is approaching 5) means a higher importance of the particular aspect from the point of respondents opinion and conversely, lower average – lower importance (e.g., when responses average is approaching 1).

Table 1. The importance of energy security aspects. Summary of ratings (N 2002). 1 = Not important at all, 5 = Very important

<table>
<thead>
<tr>
<th>Evaluate the importance of the following aspects for Lithuanian energy security</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>The prices of energy resources</td>
<td>4.35</td>
<td>1</td>
<td>5</td>
<td>0.717</td>
</tr>
<tr>
<td>Reliability of energy supply services</td>
<td>4.25</td>
<td>1</td>
<td>5</td>
<td>0.715</td>
</tr>
<tr>
<td>Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)</td>
<td>4.12</td>
<td>1</td>
<td>5</td>
<td>0.730</td>
</tr>
<tr>
<td>Development of renewable energy</td>
<td>4.06</td>
<td>1</td>
<td>5</td>
<td>0.763</td>
</tr>
<tr>
<td>Implementation of modern technologies in the energy system</td>
<td>4.05</td>
<td>1</td>
<td>5</td>
<td>0.807</td>
</tr>
<tr>
<td>Energy independence from other states</td>
<td>4.02</td>
<td>1</td>
<td>5</td>
<td>0.838</td>
</tr>
<tr>
<td>The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests</td>
<td>4.01</td>
<td>1</td>
<td>5</td>
<td>0.817</td>
</tr>
<tr>
<td>Independent energy generation</td>
<td>4.00</td>
<td>1</td>
<td>5</td>
<td>0.811</td>
</tr>
<tr>
<td>Integration into the common European Union energy market</td>
<td>3.88</td>
<td>1</td>
<td>5</td>
<td>0.842</td>
</tr>
<tr>
<td>Diversification (diversity) of energy suppliers</td>
<td>3.81</td>
<td>1</td>
<td>5</td>
<td>0.866</td>
</tr>
<tr>
<td>Diversification (diversity) of energy resources</td>
<td>3.80</td>
<td>1</td>
<td>5</td>
<td>0.860</td>
</tr>
<tr>
<td>Development of oil extraction</td>
<td>3.50</td>
<td>1</td>
<td>5</td>
<td>1.016</td>
</tr>
<tr>
<td>Development of nuclear energy</td>
<td>3.30</td>
<td>1</td>
<td>5</td>
<td>1.101</td>
</tr>
<tr>
<td>Development of shale gas extraction</td>
<td>3.08</td>
<td>1</td>
<td>5</td>
<td>1.117</td>
</tr>
</tbody>
</table>

Source: authors

² A referendum of a consultative character on the construction of a new nuclear power plant in the Republic of Lithuania took place on October 14, 2012. Contrary to what the ruling majority aimed at, only 34.09% of the participants supported the construction of the nuclear power plant, while 62.68% opposed it. The referendum can be regarded as an example of unsuccessful governmentality.
Table 1 reveals the ratings of the most important aspects of energy security in Lithuania amongst respondents. The highest rank of 4.35 scored “The prices of energy resources”, while the lowest of 3.08 – “Development of shale gas extraction”. The aggregated average of responds is 3.874, which means that all provided aspects according to respondents are very close to be important (where 1 = Not important at all, and 5 = Very important). We can see that only three aspects were evaluated distinctly bellow the average: “Development of shale gas extraction” (3.08), “Development of nuclear energy” (3.30) and “Development of oil extraction” (3.50). While other three close to the average: “Integration into the common European Union energy market” (3.88), “Diversification (diversity) of energy suppliers” (3.81) and “Diversification (diversity) of energy resources” (3.80). All eight other were evaluated above the average (see Table 1).

5. Difference of public attitude amongst various social groups

Contemporary society is composed of different social groups which are usually fragmented to each other and often have different goals. Only part of them has sufficient social welfare to pursue their interest independently while many others have fewer opportunities and therefore are more dependent on the social welfare of the state and state politics in general. Trying to build solid and optimal policy of energy security is important to indentify existing difference of attitudes towards energy security between various social groups. Therefore the differences in regard to the following aspects: gender, age, education, occupation, income and living area were analyzed and is presented in the following parts. The assumptions for every analyzed group were based on theoretical insights (Knox-Hayes et al. 2013; Perlavičiūtė, Steg 2015) and other countries empirical discoveries (Demski et al. 2014; Strambo et al. 2015) and is presented separately in each paragraph as follows.

5.1. Gender.

The assumption made in the research expected women to prioritize environmental issues and renewable energy more than men. Meanwhile it was expected man to prioritize reliability and independent energy generation.

Despite the anticipatory assumption, the research showed that in Lithuania there are almost no differences of attitudes towards most important aspects of energy security between men and women. The only noticeable differences were grasped on the attitudes on the first and the twelfth aspects (i.e. “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)”; and “Integration into the common European Union energy market”) when the average of men responses at first reach 4.16 for men and for women 4.10, and at twelfth - reach 3.92 for men and for women – 3.85. As we can see even here the difference is only 0.07 meanwhile in the evaluation of other aspects differences haven’t reached more than 0.03.

5.2. Age.

The assumption made in the research expected elderly groups to be concern with energy prices and reliability of supply. While younger groups – with long term interest and strategic projects (e.g., renewable energy, implementation of modern technologies in the energy system, ability to take advantage of international political relations).

Table 2 shows how groups of different age ranks each of the aspect of energy security according to their importance and the mean of the responses.
Table 2. The importance of energy security aspects by different age groups

<table>
<thead>
<tr>
<th>Question/age</th>
<th>18 - 25</th>
<th>26 - 35</th>
<th>36 - 45</th>
<th>46 - 55</th>
<th>56 - 65</th>
<th>66 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
</tr>
<tr>
<td>Q 4</td>
<td>1</td>
<td>4.42</td>
<td>1</td>
<td>4.42</td>
<td>1</td>
<td>4.33</td>
</tr>
<tr>
<td>Q 5</td>
<td>2</td>
<td>4.26</td>
<td>2</td>
<td>4.31</td>
<td>2</td>
<td>4.20</td>
</tr>
<tr>
<td>Q 1</td>
<td>3</td>
<td>4.17</td>
<td>3</td>
<td>4.18</td>
<td>3</td>
<td>4.15</td>
</tr>
<tr>
<td>Q 14</td>
<td>4</td>
<td>4.16</td>
<td>5</td>
<td>4.16</td>
<td>8</td>
<td>3.94</td>
</tr>
<tr>
<td>Q 13</td>
<td>5</td>
<td>4.13</td>
<td>4</td>
<td>4.16</td>
<td>6</td>
<td>3.99</td>
</tr>
<tr>
<td>Q 3</td>
<td>6</td>
<td>4.08</td>
<td>6</td>
<td>4.14</td>
<td>4</td>
<td>4.08</td>
</tr>
<tr>
<td>Q 2</td>
<td>7</td>
<td>4.01</td>
<td>7</td>
<td>4.11</td>
<td>5</td>
<td>4.06</td>
</tr>
<tr>
<td>Q 6</td>
<td>8</td>
<td>3.96</td>
<td>8</td>
<td>4.07</td>
<td>7</td>
<td>3.98</td>
</tr>
<tr>
<td>Q 12</td>
<td>9</td>
<td>3.90</td>
<td>9</td>
<td>3.92</td>
<td>9</td>
<td>3.83</td>
</tr>
<tr>
<td>Q 11</td>
<td>10</td>
<td>3.88</td>
<td>10</td>
<td>3.91</td>
<td>10</td>
<td>3.79</td>
</tr>
<tr>
<td>Q 10</td>
<td>11</td>
<td>3.83</td>
<td>11</td>
<td>3.91</td>
<td>11</td>
<td>3.75</td>
</tr>
<tr>
<td>Q 8</td>
<td>12</td>
<td>3.57</td>
<td>12</td>
<td>3.60</td>
<td>12</td>
<td>3.57</td>
</tr>
<tr>
<td>Q 7</td>
<td>13</td>
<td>3.37</td>
<td>13</td>
<td>3.40</td>
<td>13</td>
<td>3.38</td>
</tr>
<tr>
<td>Q 9</td>
<td>14</td>
<td>3.22</td>
<td>14</td>
<td>3.19</td>
<td>14</td>
<td>3.11</td>
</tr>
</tbody>
</table>

Source: authors

The analysis showed that there are no differences in opinion on the most important aspects of energy security between groups of different age in Lithuania. The three most important aspects were named the same: “The prices of energy resources”, “Reliability of energy supply services” and “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)”. It corresponds with assumption made for elderly groups, however it seems that in relatively poor society the same aspects are actual to all age groups of society.

Meanwhile more noticeable differences emerge in the following aspects. As it was pointed in the assumption: younger groups (age 18-25 and 26-35) are indeed more concern with “Ability to take advantage of international political relations” (rank 4 and 5), “Implementation of modern technologies in the energy system” (rank 5 and 4) and “The development of renewable energy” (rank 6 for both groups). Interestingly enough for all the other groups “The development of renewable energy” also is important (ranked from 3 to 6 with very similar mean of responses). Unexpectedly the “Implementation of modern technologies in the energy system” was highly ranked (4) by the elderly groups (56-65 and 66 and more). The middle age groups (36-45 and 46-55) are those who concern with “Energy independence from other states” and “Independent energy generation” above all others (rank 5 and 7). Lastly the three most ambivalently ranked aspects were “Development of oil extraction”, “Development of nuclear energy” and “Development of shale gas extraction” – accordingly 12, 13 and 14 ranks for all age groups. The “Development of shale gas extraction” also scored the lowest mean of responses average. As it was mentioned before this might be related with information shortage on these relevant issues in society which hinders clear understanding of its importance to energy security.

5.3. Education.

The assumption made in the research expected those with higher education to be more concern with diversification (of resources as well as suppliers), independent energy generation and the implementation of modern technologies in energy system. While those who haven’t higher degree to be more concern with energy prices and reliability of supply.

Table 3 shows what are the most important aspects for groups of different education and what the differences amongst them are.
Table 3. The importance of energy security aspects by different education groups

<table>
<thead>
<tr>
<th>Question / education</th>
<th>Primary education</th>
<th>Secondary education</th>
<th>Vocational training</th>
<th>Further education</th>
<th>Unfinished higher education</th>
<th>Higher education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
</tr>
<tr>
<td>Q 4</td>
<td>1</td>
<td>4.06</td>
<td>1</td>
<td>4.32</td>
<td>1</td>
<td>4.34</td>
</tr>
<tr>
<td>Q 5</td>
<td>2</td>
<td>3.98</td>
<td>2</td>
<td>4.18</td>
<td>2</td>
<td>4.21</td>
</tr>
<tr>
<td>Q 1</td>
<td>3</td>
<td>3.90</td>
<td>3</td>
<td>4.08</td>
<td>4</td>
<td>4.05</td>
</tr>
<tr>
<td>Q 3</td>
<td>4</td>
<td>3.83</td>
<td>5</td>
<td>3.99</td>
<td>5</td>
<td>4.02</td>
</tr>
<tr>
<td>Q 2</td>
<td>5</td>
<td>3.79</td>
<td>6</td>
<td>3.98</td>
<td>8</td>
<td>3.92</td>
</tr>
<tr>
<td>Q 13</td>
<td>6</td>
<td>3.79</td>
<td>7</td>
<td>3.98</td>
<td>3</td>
<td>4.11</td>
</tr>
<tr>
<td>Q 6</td>
<td>7</td>
<td>3.79</td>
<td>8</td>
<td>3.96</td>
<td>9</td>
<td>3.92</td>
</tr>
<tr>
<td>Q 14</td>
<td>8</td>
<td>3.72</td>
<td>4</td>
<td>4.01</td>
<td>6</td>
<td>3.98</td>
</tr>
<tr>
<td>Q 12</td>
<td>9</td>
<td>3.70</td>
<td>9</td>
<td>3.80</td>
<td>7</td>
<td>3.95</td>
</tr>
<tr>
<td>Q 10</td>
<td>10</td>
<td>3.59</td>
<td>11</td>
<td>3.74</td>
<td>10</td>
<td>3.80</td>
</tr>
<tr>
<td>Q 11</td>
<td>11</td>
<td>3.57</td>
<td>10</td>
<td>3.74</td>
<td>11</td>
<td>3.80</td>
</tr>
<tr>
<td>Q 8</td>
<td>12</td>
<td>3.49</td>
<td>12</td>
<td>3.53</td>
<td>12</td>
<td>3.50</td>
</tr>
<tr>
<td>Q 7</td>
<td>13</td>
<td>3.32</td>
<td>13</td>
<td>3.30</td>
<td>13</td>
<td>3.31</td>
</tr>
<tr>
<td>Q 9</td>
<td>14</td>
<td>3.22</td>
<td>14</td>
<td>3.10</td>
<td>14</td>
<td>3.08</td>
</tr>
</tbody>
</table>

Source: authors

As it was in previous case the same most important aspects (“The prices of energy resources”, “Reliability of energy supply services” and “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)” emerged here and there are almost no differences (except that those with Vocational training and Unfinished high education, where the aspect of reliability of supply was ranked accordingly 4 and 6) between different education groups. Although it is worth mentioning that the means of the responses average between different groups are not as consistent as it was in previous case (see Table 3).

The high rank of aspects “Energy independence from other states” and “Development of renewable energy” between Primary and Secondary education groups comes with a little surprise. On the other hand this might be related with the popular demand for the cheap energy in society in general. The same aspect of “Development of renewable energy” was ranked in 2 place in case of Unfinished higher education.

The assumption for those with Higher education corresponds only in part. The aspects of diversification (of resources as well as suppliers) didn’t receive much approval and were ranked only in 11 and 9 places. Meanwhile the aspects of “Independent energy generation” and “Implementation of modern technologies in energy system” scored much higher means and were ranked in 5 and 4 places (this was also the case for those with Unfinished higher education). “Development of oil extraction”, “Development of nuclear energy” and “Development of shale gas extraction” were also evaluated as most irrelevant as in previous case. Even though they scored much less than aggregated average (3,87) the difference between these groups are quite noticeable (see Table 3).

5.4. Occupation.
The assumption made in the research expected those from private sector to prioritize market principles (diversification and independent generation). Meanwhile state enterprises employees to prioritize involvement of diplomacy (ability to take advantage of international political relations and energy independence), while those who retired and unemployed will be similar to the elderly groups (the importance of energy prices and reliability of supply).
Table 4. The importance of energy security aspects by different occupation groups

<table>
<thead>
<tr>
<th>Question / occupation</th>
<th>State enterprises employee</th>
<th>Private business owner</th>
<th>Private company employee</th>
<th>Student / Pupil</th>
<th>Unemployed</th>
<th>Retired</th>
<th>Other activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
</tr>
<tr>
<td>Q 4</td>
<td>1</td>
<td>4.40</td>
<td>1</td>
<td>4.35</td>
<td>1</td>
<td>4.44</td>
<td>1</td>
</tr>
<tr>
<td>Q 5</td>
<td>2</td>
<td>4.33</td>
<td>2</td>
<td>4.27</td>
<td>2</td>
<td>4.32</td>
<td>3</td>
</tr>
<tr>
<td>Q 1</td>
<td>3</td>
<td>4.18</td>
<td>3</td>
<td>4.23</td>
<td>3</td>
<td>4.19</td>
<td>4</td>
</tr>
<tr>
<td>Q 2</td>
<td>4</td>
<td>4.11</td>
<td>7</td>
<td>4.03</td>
<td>5</td>
<td>4.15</td>
<td>7</td>
</tr>
<tr>
<td>Q 3</td>
<td>5</td>
<td>4.08</td>
<td>4</td>
<td>4.16</td>
<td>4</td>
<td>4.17</td>
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<tr>
<td>Q 14</td>
<td>6</td>
<td>4.07</td>
<td>8</td>
<td>3.99</td>
<td>7</td>
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<td>4.06</td>
<td>5</td>
<td>4.15</td>
<td>8</td>
<td>4.05</td>
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</tr>
<tr>
<td>Q 13</td>
<td>8</td>
<td>4.05</td>
<td>6</td>
<td>4.13</td>
<td>6</td>
<td>4.15</td>
<td>5</td>
</tr>
<tr>
<td>Q 10</td>
<td>9</td>
<td>3.85</td>
<td>11</td>
<td>3.80</td>
<td>11</td>
<td>3.92</td>
<td>10</td>
</tr>
<tr>
<td>Q 11</td>
<td>10</td>
<td>3.84</td>
<td>9</td>
<td>3.87</td>
<td>10</td>
<td>3.96</td>
<td>11</td>
</tr>
<tr>
<td>Q 12</td>
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<td>3.83</td>
<td>10</td>
<td>3.85</td>
<td>9</td>
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<td>9</td>
</tr>
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<td>Q 8</td>
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<td>3.55</td>
<td>12</td>
<td>3.61</td>
<td>12</td>
<td>3.48</td>
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<td>Q 9</td>
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<td>2.95</td>
<td>14</td>
<td>3.04</td>
<td>14</td>
<td>3.15</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: authors

Table 4 once again stressed the importance of “The prices of energy resources”, “Reliability of energy supply services” and “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)” within Lithuanian society. They are also most popular aspects despite the differences between different occupation groups. The results confirmed the assumption in case of State enterprises employee: “Energy independence from other states” (4) was ranked as the most important aspects for energy security right after those three which importance are unquestioned in Lithuania. “The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests” took 6 place and in between of these two the aspect of “Development of renewable energy” intervened in group of State enterprises employee. The assumption for those from private sector was proved only in part. Differently than it was expected the aspects of diversification (of supply neither resources) did not attract much approval and were ranked in 11 and 9/10 places in Private business owners and Private company employee groups. Meanwhile the other aspect (Energy independence from other states) was ranked in 5 place by Private company employees and in 7 place by Private business owners. “Independent energy generation” was also important for both groups (accordingly 5 and 8). It is worth mentioning that “Development of renewable energy” scored high 4 rank in both groups. Some other mentionable aspects are: “The ability to take advantage of international political relations” which was ranked at 2 place in group of Students and Pupils; “Development of renewable energy” was ranked at 3 place in Unemployed and Other activity groups; “Implementation of modern technologies in the energy system” was ranked in 5 places in Students and Pupils and in 4 place in Unemployed and Retired groups.

5.5. Income.

The assumption made in the research obviously expected groups with lower income to be concern with energy price and reliability of supply. Meanwhile groups with higher income to be concern with development of renewable energy, independent energy generation and implementation of modern technologies. Table 5 shows what are the most important aspects for groups of different income and what are the most noticeable differences amongst them.
Table 5. The importance of energy security aspects by different income groups

<table>
<thead>
<tr>
<th>Question / income for one person</th>
<th>Under 300 Lt (86.89 Eur)</th>
<th>301-600 Lt (87.18 - 173.77 Eur)</th>
<th>601-900 Lt (174.06 - 260.66 Eur)</th>
<th>901-1200 Lt (260.95 - 347.54 Eur)</th>
<th>1201-1500 Lt (347.83 - 434.43 Eur)</th>
<th>1501-1800 Lt (434.72 - 521.32 Eur)</th>
<th>1801-2100 Lt (521.61 - 608.20 Eur)</th>
<th>2101 Lt and more (608.49 and more)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
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<tr>
<td>Q 4</td>
<td>1</td>
<td>4.11</td>
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<td>4.22</td>
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</tr>
<tr>
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<td>4.00</td>
<td>2</td>
<td>4.09</td>
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<td>4.26</td>
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<td>4.24</td>
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<tr>
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<td>4</td>
<td>3.87</td>
<td>6</td>
<td>3.94</td>
<td>7</td>
<td>3.97</td>
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<td>4.17</td>
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<td>Q 3</td>
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<td>3.85</td>
<td>4</td>
<td>3.99</td>
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<td>4.10</td>
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<tr>
<td>Q 14</td>
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<td>3.85</td>
<td>7</td>
<td>3.92</td>
<td>8</td>
<td>3.93</td>
<td>8</td>
<td>4.08</td>
</tr>
<tr>
<td>Q 6</td>
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<td>3.84</td>
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<td>3.90</td>
<td>6</td>
<td>4.00</td>
<td>6</td>
<td>4.09</td>
</tr>
<tr>
<td>Q 2</td>
<td>8</td>
<td>3.75</td>
<td>5</td>
<td>3.96</td>
<td>5</td>
<td>4.04</td>
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<td>4.20</td>
</tr>
<tr>
<td>Q 12</td>
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<td>3.72</td>
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<td>3.77</td>
<td>9</td>
<td>3.82</td>
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<td>3.97</td>
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<tr>
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<td>3.68</td>
<td>11</td>
<td>3.67</td>
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<td>3.76</td>
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<td>3.69</td>
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<td>3.90</td>
</tr>
<tr>
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<td>3.43</td>
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<td>3.52</td>
</tr>
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<td>3.21</td>
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<td>3.28</td>
</tr>
<tr>
<td>Q 9</td>
<td>14</td>
<td>2.95</td>
<td>14</td>
<td>3.15</td>
<td>14</td>
<td>2.99</td>
<td>14</td>
<td>3.06</td>
</tr>
</tbody>
</table>

Source: authors

This is the first time when at least one group broke the settled tendency of the most important aspects. The usual three aspects (“The prices of energy resources”, “Reliability of energy supply services” and “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)”) were common for most of the groups except one (those with income of 1501-1800) which “Implementation of modern technologies in the energy system” ranked as the most important aspect for energy security. The other not usual surprise was stated in the other settled tendency of the most irrelevant aspects where the group of those with 1801-2100 income aspect Q7 ranked over Q8.

The results in this case fully corresponded with assumptions. Groups with higher income (901-1200; 1201-1500; 1501-1800; 1801-2100; 2101 and more) gave priority (especially group 1501-1800) to “Implementation of modern technologies” (rank 1), “Development of renewable energy” (rank 5). The additional aspects (“The ability to take advantage of international political relations”) was also important (both ranked 4) for groups of 1501-1800 and 2101 and more. Meanwhile “Independent energy generation” was important for all groups except those with the lowest and those with the highest income. Both groups ranked it for 8 place but the mean of the response was quite different (accordingly 3.75 and 4.29).

5.6. Living area.
The assumption made in the research expected to reveal the main difference between those living in cities and those living out of cities. This opposition derives from objective living condition differences – those living in big cities expected to be concern more with renewable energy and modern technologies and those living in small towns to be concern with diversification of resources.

3 The public poll was carried out in 2013 when national currency Litas was still in use, therefore in further analysis in this article income in litas is used as a category. The analogue amount in Euros is provided in the brackets.
Table 6. The importance of energy security aspects by different living area groups

<table>
<thead>
<tr>
<th>Question / living area</th>
<th>Main Cities</th>
<th></th>
<th>District Centers</th>
<th></th>
<th>Small Towns</th>
<th></th>
<th>Rural Settlements and single farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
<td>Mean</td>
<td>Rank</td>
</tr>
<tr>
<td>Q 4</td>
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<td>1</td>
<td>4.12</td>
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<td>4.41</td>
<td>2</td>
<td>4.08</td>
<td>5</td>
<td>4.02</td>
<td>2</td>
</tr>
<tr>
<td>Q 1</td>
<td>3</td>
<td>4.27</td>
<td>7</td>
<td>3.97</td>
<td>7</td>
<td>3.97</td>
<td>3</td>
</tr>
<tr>
<td>Q 13</td>
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<td>4.18</td>
<td>5</td>
<td>3.97</td>
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<tr>
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<td>8</td>
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<tr>
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<td>4.13</td>
<td>8</td>
<td>3.91</td>
<td>2</td>
<td>4.13</td>
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<tr>
<td>Q 6</td>
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<td>11</td>
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<td>3.89</td>
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<td>Q 8</td>
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<tr>
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<td>3.18</td>
<td>12</td>
<td>3.67</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: authors

The analysis showed that “The prices of energy resources” remains as the most important aspect of energy security in Lithuanian throughout all different social groups. However, “Reliability of energy supply services” was ranked in 2 place for all groups except those living in Small towns (rank 5). The importance of the “Reliability of energy infrastructure” aspect divided into two groups depending on living area. It was equally important for those living in Main cities as well as in Rural districts (both ranked 3 place) and less important for those living District centers and Small towns (Table 6).

Another interesting difference between those living in District centers and Small towns was fixated towards “Independent energy generation” and “Energy independence from other states”. For the first mentioned group it was important (accordingly 4 and 3 rank), but for the second group somehow almost not important at all (accordingly 11 and 13 rank). The results confirmed the assumption: the aspects “Development of renewable energy” and “Implementation of modern technologies” were ranked accordingly at 4 and 5 places (right after the three that are most important for society in general) for Main cities group. Meanwhile the importance of “Diversification of energy resources” for those living in Small towns was ranked in 4 place. Lastly, “Development of oil extraction”, “Development of nuclear energy” and “Development of shale gas extraction” were also evaluated as most irrelevant aspects for most of the groups with an exception of Small town group (which as the most irrelevant ranked “Development of nuclear energy”) and “Development of oil extraction” was ranked a bit higher – in 10 place.

Conclusions

The research showed that variety of different aspects are taken into account in public perception on energy security. However there are two aspects which dominated throughout different social groups: “The prices of energy resources” (mean – 4.35) and “Reliability of energy supply services” (mean – 4.25). Another aspect “Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)” (mean – 4.12) is also very important in public opinion (but is not as dominating as previous two). The three most ambivalently ranked aspects were “Development of oil extraction” (mean – 3.50), “Development of nuclear energy” (mean – 3.30) and “Development of shale gas extraction” (mean – 3.08). This indicates that the developers of energy politics do not manage to successfully link these specific projects to the public interest.
An effective energy politics is based on the rationality of society and its trust in public interest. But if society believes that the developers of energy politics do not represent their interests it becomes difficult to guarantee the implementation of smooth politics. Great amount of those who are undecided / do not know (on such aspects as “Development of nuclear energy” (26.8%), “Development of oil extraction” (24.4%), “Development of shale gas extraction” (31.7%), “Diversification (diversity) of energy resources” (23%), “Diversification (diversity) of energy suppliers” (23.4%), “Integration into the common European Union energy market” (21.3%), “The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests” (19.8%)) points to the important issue - lack of public communication - in energy politics. This is important not only because of untapped potential for the energy security impact on sustainable development and social cohesion, but also due to the fact that undecided part of society might become an object for radical movements or even hostile foreign policy.

Despite the increasing academic debate on the sustainable development of energy security, the research showed that in Lithuania, the interests of different social groups are not aligned with each other, and the politics of energy security simply aims to correspond to the average of public opinion. It is important to recognize the interests and needs of each society groups, it is inevitable to ground the politics with tangible evidence and argue its value and compatibility with interests of each group (and public interest in general) if aiming to build effective and sustainable energy security politics. As it was mentioned before the empirical data of 2013 year was used in the study which indicates situation of that time, meanwhile in recent years the energy sector has undergone a number of significant changes that most likely will have an effect on public perception. On the one hand, this most probably will have a positive impact on public attitude, on the other hand, will have to wait until the benefit of realized projects will become visible and the actual effect of their impact on society will be possible to measure. However, if the public opinion will continue to be treated not as a subject but as an object, without further discussion of its demands, it may be that the amount of those who are undecided and do not know will remain high and it will serve as an obstacle for the implementation of energy politics.

References


More about main significant events in Lithuanian energy sector in 2014 year see: Augustis et al. 2015.


Nacionalinė energetinės nepriklausomybės strategija, patvirtinta Lietuvos Respublikos Seimo 2012 m. birželio 26 d. nutarimu Nr. XI-2133 [The national energy independence strategy, Seimas of the republic of Lithuania, 26 June 2012 No XI-2133].


PATH TO SUSTAINABILITY. TROUBLED GRADUALISM OF THE UNFINISHED COAL MINING REFORM IN UKRAINE

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Received 27 January 2015; accepted 15 May 2015

Abstract. This paper examines the reforming process in the coal mining industry in Ukraine and analyses reform outcomes which a gradualist approach adopted to recover the industry has delivered. Ukraine’s gradualist approach is addressed in the paper narrowly through the lens of rent seeking, established in the coal industry in Ukraine in the 1980s, which persisted and stretched across the highest tiers of the government after the country gained independence. By now, reform achievements turned to be much less fruitful than in other countries - proponents of gradualism, first of all CEE and FSU countries. Detailed analysis of strategic documents which define development of the coal mining sector, reveal inconsistencies all of which lead us to the conclusion that the recent reform attempts are not purposed, in fact, towards implementation unlike declared. Strategic documents are not timely consistent when it comes to defining stages of the coal mining reform and a clear implementation timeline, not speaking about agreement on all major reforming steps to be undertaken.

Keywords: coal mining industry, Ukraine, gradualism, rent-seeking, reforms

Reference to this paper should be made as follows: Borshchevska, Y. 2015. Path to sustainability. Troubled gradualism of the unfinished coal mining reform in Ukraine, Journal of Security and Sustainability Issues 4(4): 323–343. DOI: http://dx.doi.org/10.9770/jssi.2015.4.4(2)

JEL Classifications: L71, P28, Q4

1. Introduction

Ukraine is a country with long coal mining traditions going back to the pre-Soviet times. It was an essential backbone of Soviet industrialization which converted some eastern regions of the country into a powerful industrial hub of the Soviet Union with many key industrial enterprises relying upon coal consumption. Gradual switch to oil and gas in the Soviet time resulted in a neglect of the coal mining industry. After decades of depletion when this industry suffered under-investment and exhaustion of relatively easy-accessed coal deposits, Ukraine inherited a largely unreformed coal mining industry at the beginning of the 1990s.

Like other former Soviet Union (FSU) and Central and Eastern European (CEE) countries, Ukraine was challenged in the early 1990s to establish market economy, starting off economic and political transition. Significance of the coal mining industry as fuel supplier for decisive or “high profile” industries, - e.g. for a heavy industry, regarded in the Soviet Union as “more productive” in terms of added value generation, made a reform in this sector a critical but also an uneasy task. As of today, Ukraine lags far behind CEE and many FSU countries in reforming the coal mining sector.

Until recently, this sector in Ukraine has employed up to 248 thousand people what is more that the total num-
ber of the employees in the industry in all EU countries (DTEK 2012: 45). As a matter of comparison, the Polish coal sector employs 130 thousand people, demonstrating at the same time higher coal production results, whereas state-run mines in Ukraine alone give jobs to 156 thousand people. In terms of labour productivity, US miners are 58.7 times more productive than Ukrainian miners. While the UK produced 57.9 percent of the total output of coal mined in Ukraine, only 3.8 percent of the miners were enough to do the job (Van Zon 2003: A20). Without many additional details - be it drastic decline in production or quality of coal deposits in Ukraine, these examples are illustrative enough to describe the still heavily unreformed coal mining industry. This affects in particular thermal power plants which are important for electricity and heat production in the country. As such, unreformed coal mining sector poses a challenge for the national energy security.

At the beginning of the 1990s, the coal mining industry was in so bad condition in Ukraine that the World Bank has determined it as the source of macroeconomic instability and support of reforms of the international financial institutions (IFIs) was largely focused upon recovery of this industry. The World Bank indentified the UK as a successfull model for Ukraine in terms of the industry’s rationalization to emulate (Swain 2006: 217). However, collaboration between IFIs and the Ukrainian government did not lead to a positive result. This is mainly so because initially transition theory did not give enough consideration to interdependency between economic reforms and institutional setup which frames reforms. As a result, IFIs endorsed reforms however many institutions and patronage networks were preserved from the Soviet time.

Reform pace and reform outcomes within the coal mining industry have varied across FSU and CEE countries. Reasons of different reforming outcomes are manifold, and we may search for appropriate answers in transition strategies, these countries pursued. The answer varies depending upon whether those countries were more ardent proponents of either big-bang approach or shock therapy approach (see e.g. Sachs 1994; Dehejia 2003), or gradualism in reform matters.

Detailed analysis of why the gradualist approach was favoured in the case of Ukraine would require an in-depth investigation of determining factors, many of which are not a focal point of this paper, - be it informal institutions which persisted in the new political system and their compatibility with an established institutional setup; traditional economic behavioural patterns and so forth - aspects which we could broadly refer to as “cultural approach to economics” (Goldschmidt 2006; Goldschmidt et al. 2006).

Gradualist approach in the coal mining industry in Ukraine will be addressed narrowly through the lens of rent seeking issue which is one of explanations of a chronic reform delay. Methodologically this paper in handled in qualitative terms. It is based upon content analysis method focusing on sectoral state programs, energy strategies and legal acts. It is complimented by an analysis of secondary sources which include mainly energy reports and law review articles. Additionally, a process tracing method is utilized to evaluate the sequence of events, unfolded in the coal mining industry since the reform’s commencement and their causal interrelations in the scope necessarily to meet the research purpose.
Of course, to analyze a reform pace in a particular industry is not an easy undertaking if the general reforming context is disregarded. To this end, general reforming progress in Ukraine will be referred to only in the scope necessarily to explain the reform stages in the coal mining industry; or the situation will be contrasted with the nearest neighboring states - mainly Russia, which provides the most meaningful comparison, but also with e.g. China in order to make reforming achievements and failures in the Ukrainian coal sector more vivid.

To be noted, coal has been traditionally mined in Ukraine not only in its eastern part - the Donbas region. Also Lviv-Volyn coal basin in western Ukraine and Dniprovsky coal basin in the central and partly southern Ukraine take a stake in the coal industry, however a minor one. This paper focuses in many aspects more on Donbas region which supplies a lion share of the total coal output in Ukraine. The latest developments in the coal sector after the outbreak of an armed conflict in the Donbas region are not considered. Seized coal mines and disrupted rail infrastructure as well as ruined parts of energy infrastructure in the war-torn region have impacted the whole industry dramatically. As the situation deteriorates further, it is not possible to evaluate the overall effect at present. To be also noted, all names of coal mining enterprises are spelled in Ukrainian in this paper, despite many of them could be more often spotted in Russian or they are translated into English originally from Russian - as e.g. DTEK Pavlogradugol.

The paper starts with a brief analysis of gradualism and big bang approaches as two alternatives of economic transformation into market-oriented economy, summing up which factors determine a success or failure of each of these approaches and how rent-seeking practices hamper a transformation process. The following chapters consider the reform efforts in the 1990s and 2000s, marking up major cornerstones of the coal mining reform. As a separate matter analysis of the strategic documents which guideline the industry’s reform is conducted and anticipated reform steps are made clear and compared in terms of consistency. The last chapter concludes.

2. Transition paths and rent-seeking: gradualist vs. big-bang approaches

Despite the fact, CEE and FSU countries as well as many others from the different parts of the world, embarked on transition to market economy within the last decades; no universal recipe is existent as for the speed of adjustment and the optimal sequencing of reforms (Woo 1994). Transition strategies delivered mixed results in practice. Some countries turned to be more successful in pursuing reforms than others. China is usually modeled as an example of successful gradualist transformation while Poland is portrayed as a successful case of reforms according to a big-bang approach.

Under a big-bang approach macroeconomic stabilization and liberalization as well as institutional transformation are undertaken simultaneously whereas gradualism advocates a phased approach. Many scholars investigated the effects of the pace of reforms upon transitional economies - be it Fischer, Gelb (1991), Sachs (1996), or Popov (2007). Predominantly scholars focused on GDP growth; while others concentrated on studying of the productivity performance and other facets of sustainable and secure development (Deliktas, Balcilar 2005; (Lankauskienė 2014; Raudeliūnienė et al. 2014; Vasiliūnaitė 2014; Jefremov, Rubanovskis 2015; Balitskiy et al. 2014; Baublys et al. 2014; Vosylius et al. 2013; Miškinis et al. 2013; Čepėnaitė, Kavaliūnaitė 2013).

Irrespective of what kind of economic parameter is a focus of a research, it is commonly agreed that initial economic conditions matter greatly. Thus, China is seen as having a great advantage at the onset of reforms back in 1978 (Sachs and Woo 1994; Sachs et al. 1999) as the country was able to transfer labour to the industrial sector, while e.g. Russia and Ukraine were deprived of this potential at the beginning of the 1990s. Major labour force has been already employed in those post-Soviet countries in the industry on the eve of reforms; predominantly at state-owned enterprises, many of which were heavily subsidized.

Conventionally, gradualist approach is viewed as more sustainable in a sense it enables mid-course corrections which smooth out negative economic effects and prevent social tension. Big-bang model, instead, makes an

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1 For examples of different reform sequencing and reform outcomes see Woo’s “The three lessons of reform are wrong” (pp. 281-290) in “The Art of Reforming Centrally Planned Economies: Comparing China, Poland and Russia” where he analyses reform templates in China, Indonesia, Russia etc.
emphasis on economic benefits of the transformation process becoming sooner achievable, even knowing that an initial stage of reforms results in a significant reduction in living standards. In addition to economic benefits, big-bang approach claims as advantageous because rapid changes help overcome political resistance, which appears as soon as reform results prove to be not as prompt and beneficial as initially expected. Rapidness in reform undertaking enhances coordination between reforming authorities (Murphy et al. 1992); and increases credibility in the reform process (Funke 1993). In a similar fashion, gradualism provides equally strong argument to pursue phased reforming process, supported by ample empirical evidence. In particular, gradualist approach poses fewer threats to political sustainability of reform (Pei 2006: 22). This is so as the ultimate number of losers from a gradual reform is limited and the state is capable to accumulate means to compensate their losses.

Irrespective of what has been postulated by both approaches, transition experience of many countries has demonstrated a rather widespread practice to combine big-bang and gradualist aspects during the transition period. In view of this, scholars started looking for explanations beyond the reform matrix: radical and comprehensive transformation vs. gradualist approach with a possibility for mid-course adjustments. In short, we could only note that “aggregate uncertainty” as Roland (2000: 12) put it about reform outcomes always accompanies reforming process and is part of an answer of why such mixed results have been produced in practice. Transformation process always implies an amount of aggregate uncertainty about reform outcomes, coupled with, according to the latter, a question of complementarities between reforms, and political constrains.

It is understandable that constrains to reform efforts are many on the way of implementation; however what, to a greater degree, determines success of a reform is whether these efforts provide for structural integrity over time, - in other words, whether they are sustainable. Structural integrity reconfigures political dynamics and may, as a result, preserve rent-seeking interests from reasserting themselves (Patashnik 2008: 2-3). Exactly for these reason, unsustainable reform efforts often fail to upset existing power monopolies and at the end unravel.

No matter which of reform alternatives is more preferable in a particular context, the question of a period of time necessarily to accomplish reforms comes to the fore. Time span for reforms under the big bang approach is clearly short. The gradualist reforming path takes much longer. In some instances, necessarily reforms are delayed for uncertain period of time, increasing adjustment costs. This is one of the key factors which together with income distribution and political cohesion conditions reform realization (Alesina 1994: 49-50).

Scholars argue that economic transition can hardly be finished if constitutional rules do not undergo a major change simultaneously (Sachs et al. 1999). In this case, the risk is great that reforms will be stuck at the point when further reforming steps will clearly lead to reduction of rent seeking opportunities. However, empirical evidence demonstrates that this may not be the case if for example extracted rent is low before the reform commences. Nevertheless, this effect is obvious only in the short run and under certain circumstances. For example, Chen (2008) illustrates it with Chinese agricultural reform. Since agriculture was the poorest sector of the economy that provided little rent for the government, resistance to reform was insignificant because the anticipated loss of rent was small. Besides, reform undertaking was launched in poor provinces which also has its stake in explaining why resistance to the reform was low.

As often observed, in certain cases big bang approach may be more favorable if rent seeking traditions are strong in a particular country pursuing a reform agenda. In this case, big bang reforming model reduces political resistance because the speed of reforms gives little chance for reform opponents to get organized (Krueger 1993). Otherwise reform rollback is highly possible as resistance is growing. It is the reality in many FSU countries, not in the last turn because rent-seeking traditions are more deeply rooted there than in central or eastern Europe (for comparative analysis of rent-seeking practices see e.g. Åslund 1999).

As it is often the case, private actors get involved in rent-seeking relations with governments in countries where property rights are unsufficiently protected and law enforcement practice is low. In such a way, they try to reduce the risk of potential expropriation by governmental officials. In addition to avoidance of expropriation risks,
established political connections and rent-seeking ties provide an access for them to state subsidies and secure avoidance of discretionary charges (Chen et al. 2011: 240). As observed, incentives to engage in rent-seeking relations do not take place exceptionally in countries where encroachment of private property is a widespread occurrence. This is also attributed to the amount of existent checks and balances deemed to restrain power of local officials.

Besides country’s law enforcement capability, the level of political centralization is admitted as an important factor to regulate rent seeking relations. Despite of what some scholars claim (e.g. Khan, Sundaram 2000) that not all types of rents have negative effect upon economy, a kind of a referee is needed to counterbalance governmental agencies and limit an amount of rent which they extract. For this reason, political centralization is put in interrelation with success or failure of reform outcomes. Through these lens, Blanchard, Shleifer (2001) explained for example why China gained superiority in reform performance over Russia. Strong central Chinese authority was able to set rules by which local authorities had to abide and acted as a referee alleviating the externalities between governmental agencies. This helped limit utility of rent extracting mechanisms so that private enterprises did not fall below unprofitability level. This condition was lacking in the case of Ukraine, as Chen noted (2008: 177), noted and that is why the country delivered unccusseful reforming outcome.

3. Why a coal mining industry reform has stuck in the 1990s?

As already noted, aggregate uncertainty which accompanies transition, makes a road map in transition period, hardly feasible. Because of this fact, the pace of reform turns to be attributed substantially to a range of domestic factors. In the first half of the 1990s Ukraine was probably the only country in Europe among coal-producing countries which had not undertaken the slightest reforming effort. This occurred only in 1996 with a presidential decree “On Coal Industry Restructuring” which mandated the reforming process. That is because the mere fact of creating the Ministry of Coal Industry back in 1994 did not change the situation significantly. Before it happened in Ukraine, a start was given to the restructuring process in Russia, known as corporatization period of 1992-1994.

Like in other countries, institutional crisis precipitated the early stage of transition in Ukraine. Absent or only rudimentary developed institutions and lack of skilled bureaucracy were primary tasks to deal with while enabling transition to the market-oriented economy. Ukraine was hardly dealing with these challenges. As a final result, old bureaucracy persisted and establishment of new institutions was slow. The situation looked much better in Russia. What is equally important to note, Russian early experience in introducing radical reforms, termed as aborted big-bang (Havrylyshyn 2007: 6), was perceived as not appropriate for Ukraine; seen as “in-compatible with Ukrainian peacefulness and moderation” (Åslund, De Menil 2000: 7).

In an attempt to explain why e.g. Poland or the Czech Republic did not opt for the gradualist path of economic reforms, Woo (1994: 279) argued that strategically political elites in those countries saw their future in the united Europe. Thus, they were interested to benefit from the reforms as soon as possible, conducting them quickly. In contrast to them, divergence of views existed between Stalinists and the reformers in China as for the future shape of the country. Gradualist approach was a matter of compromise promising to bring prosperous future; while a strategic consensus was hoped to be reached later. This resembles the situation in Ukraine with the only difference that Ukraine has remained a politically crisis-ridden country where this strategic consensus has never been reached, and impetus to conduct reforms was largely absent. In view of this, sectoral reforms,

2 To illustrate the state of economic science, Åslund, De Menil (2000: 6) note that in Ukraine with a population of 52 million that time, there had been published only one economic journal. What is more, it was dominated by a communist doctrine
including the coal mining reform, were not a priority within 1991-1995.

3.1. Selecting priorities in the light of scarce funds: restructuring and privatization

Once the coal industry reform was launched, it targeted in the first instance closure of unprofitable mines en masse. Notably, as of 1990 there were altogether 268/6 mines/pits in Ukraine; whereas a decade later their number reduced to 197/3 (Griffiths 2000: 20). Closure of mines was a rather controversial issue. Instances were not rare when mines were closed only on paper while in reality coal was continually mined. Possibilities to do so were diverse - be it transfer of mines to local municipalities which were prone to subsidize production while extracting rents, or linking of underground facilities of several neighboring mines (Swain 2006: 220). For this reason, the issue with active mines was not transparent; and the number of active mines has never been absolutely clear. This is so as mining activities could be ceased but nevertheless those coal mines remain considered as active mines. That is why, often in Ukraine while analyzing statistical data it is indicated additionally whether mines are open and in operation or not. However to obtain these data is practically impossible.

Notwithstanding how simple it might seem to close unprofitable mines, this was not the case, as a great number of mines was unprofitable but with a potential to regain profitability. And the key question was how to stimulate recovery of profitability. Finally, coal mines were put into several categories according to the production output. Some authors admit that mines were allocated into four categories depending upon economic viability while some other speak about three categories (Lovei 1998). The difference in approaches depends upon whether mines which were subjected to close with an immediate effect be considered as a separate group of mines or be put together with those whose closure was decided to be due over a medium term.

Altogether, they were 76 profitable mines placed under the first category. They were all intended to privatization. Greater part of all mines (105 altogether) with a potential to regain profitability were labeled as mines of the second category with a given one year postponement to improve performance and to be ranked as mines of the first category. Others were mines subjected to closure. The only difference was in time schedule. Around 20 mines were subjected to immediate closure while other 75 mines were intended to closure within the 3-5 years (Lovei 1998: 3-4). These are the mines of the third category which could also absorb mines of the second category if failed profitability is regained.

The closure of badly performing mines was less controversial step unlike a dilemma with mines seen as potentially profitable. That was a cornerstone where the reforming effort was renegotiated and postponed, and finally produced a series of less consequent actions in the sector. Great number of loss making mines and a fear of massive social unrest were among reasons of why so much needed reforming measures were continually postponed. To overcome resistance or, in other words, to ensure ex ante acceptability of reforms - among reformers and the population, the practice of compensating transfers is usually seen as justifiable during the transformation period (Roland 2002: 32). What this viewpoint does not count with largely is that such transfers could be a huge burden for the state budget because economic imbalances can be so heavy and would have implied great number of recipients of transfers.

Because of these unacceptable high social costs of a coal sector reform and a big number of potential recipients of transfers in a form of social payments and subsidies, one might assume, gradualist approach was opted for by many countries, including Ukraine. Even twenty years after the proclaimed independence, Ukrainian mines have remained city-forming3 for 120 towns, as it has been admitted by the state (State target economic program “Ukrainian coal” for 2010-2015 (Draft) 2010), and thus still bear huge social burden.

Preliminary, the coal sector reform in Ukraine went in a direction of corporatization and creation of state-owned mining enterprises which absorbed coal mines. However, no relief came with creation of holding companies,

3 For more details see - Kryvoi, Y. (2008: 232). To be noted, the so called city-forming enterprises were not necessarily built in remote areas in the Soviet Union working for natural resources or defence industries, unlike Y. Kryvoi states. At least the coal mining sector in Ukraine reveals a bit different picture with a majority of mines located in the densely populated and industrially powerful regions in eastern Ukraine, producing thereby no mismatch between production and demand centres
started in 1996. The logic of creating holding companies was not always clear. Certain mines and supportive mining enterprises were not included into the holding companies. By doing so, coal mine building segment was facing a real threat of disintegration. Coal enrichment plants were incorporated into the holding companies in a way that their loading capacity turned to be not fully in use varying from 9 percent till 90 percent (Parliamentary meeting thirty five 1997). On the average they functioned at one third of their overall capacity, according to Tatarinov

Looking back, decision makers and experts provide different explanations of why the reform has been stuck. One of them is a failure to set up clear terms and procedures of privatization, according to, in particular, Leonid Baysarov, one of the former Chairmen of the Subcommittee for Sector Development Strategy and Investments

Privatization in Ukraine was based upon the dispersed ownership. Empirical evidence proved that for example in case of CEE countries enterprise restructuring has been more effective if rapid mass-privatization is taking place based upon the concentrated ownership (Pohl et al. 1997). Unlike it, privatization of dispersed ownership type produces the situation of state capture when those having access to insider information benefit from this kind of privatization and orchestrating privatization outcomes in their favor.

By the time the coal industry reform has been launched in Ukraine in 1996, Russia had gathered experience in conducting voucher auctions and later on the so called specialized cash auctions, which were preconditioned by a required market-based evaluation and defined floor price of coal assets (Artemiev, Haney 2002: 20). These preconditions were an obligatory requirement during privatization process of the coal industry. As a result, coal mining assets passed quickly to private hands in Russia. This process has taken up longer in Ukraine and privatization process was not prompted. As a matter of comparison, such mining companies as Krasnoyarskugol or Kuzbassrazrezugol with significant coal production output were privatized in 1997/98 and 2000 respectively, which together delivered up to 30 percent of the total coal output as of the end of 2001. To the contrast, one of the most productive mining companies Pavlogradvuhillya was privatized in Ukraine only in 2004 whereas two other mines with high output rate were given in concession in 2011. They are Rovenkyanthracite and Sverdlovanthracite.

While ownership restructuring occurred, however not in so prompt manner as in Russia, the laws laged behind failing to provide the legal framework which the post-privatization reality required. Major flaw of early privatization wave in Ukraine was absence of legislative basis to carry out appraisal of property. The respective law came into force only in 2001. For this reason, the price scale for purchase of coal mining enterprises was often much below their real market value in the 1990s. This gave, however not this factor alone, a free room to establishment of rent seeking mechanisms in the coal mining sector.

3.2. Rent-seeking practices: quickly established and deeply rooted

The question of why the reform was not advanced, at least at its initial stage, could only mistakenly be attributed to the turmoil occurred after dissolution of the Soviet Union and numerous challenges, inter alia of institutional character, which required a simultaneous and prompt response. Prior to it, in the 1980s a network of intermediate structures with many of them being semi-criminal was formed in the Ukrainian coal sector, prepared for rent-seeking (Melnyk 2003: 7). They appeared in the coal sector and in the adjacent industries - first of all in metallurgy and mining equipment industry.

4 Deputy Head of the Commission of the Verkhovna Rada of Ukraine for Fuel and Energy Complex, Transportation and Communication in the 1990s
5 Parliamentary Committee on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety
The realities of the early 1990s fostered persistence of those structures. As justly observed, relaxed reforming process creates opportunities for rent-seeking (Wei 1997: 1235). In other words, a slow pace of reforms under gradualist strategy gives time to old and new elite groups to mobilize and, if not strangle reforms, then at least to utilize reform efforts for their own ends. This reflects the reality of Ukraine where political decision making quickly became dominated by so called red directors - top managers of large-scale enterprises from industrially powerful eastern regions.

Leonid Kutchma as a representative of this group of highly ranked state officials was a prime minister in 1993-1994. Prior to his appointment he was a director of the largest Soviet missile plant “Yuzhmash”, located in Dnipropetrovsk. Notably during his time in office, governmental decrees acquired the force of law. The government was empowered to conduct legislative regulation in the sphere of ownership and tax issues, entrepreneurship, state customs policy, etc. (Law of Ukraine No. 2796-XII, 1992). In such a way Kutchma enjoyed much greater authority than any of succeeding prime ministers.

Hardly to believe that similar rent-seeking groups were not likewise rooted in the post-Soviet Russia as the government faced outright resistance from the side of regional state authorities, linked with lobby groups with a background in coal industry\(^7\). This notwithstanding, the government managed to push, step by step, the reform through, emphasizing a strong commitment to reform the industry. Ukraine has failed to remain strongly committed to the reform. Partly this is because resistance to early reform efforts of the coal industry was really strong among different interested groups tied with bureaucratic apparatus.

Cumbersome bureaucracy become another hindrance to the coal industry reform, administrated by the sector ministry. Besides, the persisted old-style bureaucratic logic or in other words “overabundance of contunuity in the Ukrainian establishment” (Åslund, De Menil 2000: 6) was a general characteristic of the country. Instead of pushing for a reform, the ministry was intended to keep operational authority over the sector and did not favor its shrinking. That’s why, to give reform leverage fully to the hands of the ministry, has been widely seen as a mistake (Lovei 1998: 7).

Every new step in reorganization of the coal industry was done with almost every new state official appointed on higher positions in the sector in order to ensure appointment of loyal management of mining companies. Compounded by this fact, the structure of coal mining enterprises was repeatedly reshuffled. As many experts admit, this has also helped cover up financial crimes easily. The fact they took place gets confirmed by the audit results of the Accounting Chamber of Ukraine embracing the years 1996-2002. According to the released audit report, the total amount of illegally spent budget funds in the coal sector equaled UAH 154.5 million, while additional UAH 157.7 million were declared as ineffective spending (Partach 2004: 6). This is a clear evidence of a deeply rooted rent seeking in the industry which with years has only exacerbated.

Starting with the 1990s, rent seeking practices stretched across the highest tiers of the government. To confirm this, one could mention at least the fact that Yukhym Zvyagilsky, one of the top managers in the coal sector from Donetsk region, was a vice prime minister in 1993 and an acting prime minister within September 1993-June 1994\(^8\). Afterwards he has been a member of the parliament of all convocations till presently. For many years already, he is known as an unofficial or shadow mine manager of Zasyadko coal mine which gives up to 30 percent of the total output of coking coal in Ukraine. What is more, Y. Zvyagilsky is considered to be one of the most influential and reputed persons of Donetsk region; one of the founders and informal leaders of the so called “Donetsk clan”.

Under unofficial or shadow management meant here is the established phenomenon of the so called “curators”, who de facto maintain control over state-owned coal mining enterprises and who are tied with top-level bu-

\(^7\) In connection to this, Artemiev and Haney provide an illustrative example of the creation of the company Vostsibugol back in 1992 which was planned to consolidate surface mines in several Russian regions (2002: 13). Irkutsk oblast administration, which was a stakeholder in one of the mines scheduled for consolidation, managed to delay the process until December 2000

\(^8\) In autumn 1994 he was accused of embezzling state funds. To avoid prosecution he had been living out of Ukraine until 1997
reacuracy or are themselves part of the bureaucratic apparatus. One of the most frequently cited example is Luganskvuhillya coal mining enterprise which for many years wins state tenders in a consortium with companies, affiliated with Olexander Efremov (Ryasnoy 2014), who started his political career in eastern Ukraine. He was Deputy Head of Donetsk Oblast governor in 1997-1998, and headed the Donetsk Oblast State Administration within 1998-2005. Such examples are plenty. All similar cases point to the fact that rent seeking has become deeply rooted in the coal sector in Ukraine. The way the situation with a reforming process developed brings us to a conclusion that many players on the coal market have been more interested to maintain the status quo rather than to conduct a reform striving for transparency in the coal sector.

In a situation like that, it was not an easy task to push the reform through with a multitude of highly influential interested parties backed up politically, eager to absorb attractive state assets, or at least profit from them, while they remain state property. Unsurprisingly, manageability of the coal sector was difficult. Donbas-based mine directors, trade union leaders and local authorities sided to resist the reform. These local networks were so strong that Regional Associations in the industry assumed the role of the planning and price regulation authority. They had the upper hand in controlling the industry while the Donetsk Oblast Administration had nothing else but to acquiesce (Swain 2006: 219).

Only partly synchronized action between state authorities empowered to conduct a reform jeopardized the situation in the coal industry further. As a final outcome of tough negotiation process between the government and the parliament, a drop in originally planned financing was not a rare occurrence. Reduced flow of state funds for closure of unprofitable mines exemplifies this statement vividly. One of estimates says Ukrainian coal sector required UAH 8.799 million in order to close down mines and pits in 1995-2002 but only UAH 3.188 million was disbursed (Partach 2004: 6).

This managerial approach has not evolved much with time, and the coal sector continued suffering from the chaotic fiscal policy. Output volumes and coal prices for power generating companies had been subject to strict state regulations. To somehow stabilize the situation, barter transactions were allowed and soon became a widespread practice in the coal industry. The share of barter operations in the coal sector alone was reported to reach 80 percent and within some mining companies - up to 90 percent (Parliamentary meeting thirty five 1997). This situation has been observed for years, however a major change occurred after the reform of the electricity sector in the early 2000s which was also suffering from the non-transparent barter deals. In what follows, we will analyze whether the 2000s have been more fruitful and consistent in terms of reform outcomes.

4. Stumbling reform attempts in the 2000s

Ongoing efforts to establish transparent and competitive environment in the coal sector were continuously taken in the early 2000s, articulated, first of all, in the State Program “Ukrainian Coal”. This program has set priorities for the industry up to 2010; nonetheless it has never been implemented or funded in the full scope. At least this was an attempt to provide a strategic vision and a consistent plan of action in terms of concrete measures to reform the industry. Later enacted legal acts introduced changes in the course and pace of the industry’s reforming, initially defined by this program. Generally seen, functioning of the coal sector has never been fully in line with the existing legislation which put into question law enforcement in the country.

For example, barter transactions were continuously spread at the beginning of the 2000s. As of 1999, barter transactions accounted for 46.8 percent whereas in 2003 they were reduced until 9.8 percent (Ministry of Energy and Coal Industry of Ukraine 2003). This notwithstanding, barter deals were used for a while even after they were abolished by law. Unlike expected, subsequent abolishment of barter transactions did not trigger development of the commodity exchange system in Ukraine in the 2000s (Figure 1); and the role of the commodity exchange remained modest.

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9 He has been a member of the parliament since 2006. After V. Yanukovych was elected president of Ukraine in 2010, O. Efremov has become the head of the Party of Region’s fraction in the parliament
Like in the 1990s, the 2000s delivered half-baked reform measures. In autumn 2000 Yushchenko-headed government tried to spread positive results of energy sector reforming over the coal mining sector, however, with very limited success. The Vice Prime Minister Yulia Tymoshchenko blamed “shadow clans” as a major resisting force to conduct a reform (Egorov 2003: A36). In a final outcome, reform measures were characterized by vague preparation and an unrealistic time schedule.

The idea to subgroup all mines into profitable and potentially profitable, which could be subject to further asset consolidation within coal mining enterprises, was revived. However, with corporatization be finished within 6 months or in other words, be over in early January 2005, one could argue, this plan has set unrealistic implementation terms anew (Presidential decree No. 752, 2004). Disregarding previous unsuccessful experience in terms of meeting deadlines, one may conclude, the decision concerning the future of loss making coal mining enterprises was hastily taken.

The same presidential decree prescribed closure of unprofitable coal mining enterprises is due within the following 2 years - by July 2006. Later on, closure of mines was accelerated (Resolution of the Cabinet of Ministers of Ukraine No. 1427, 2004), and a more unfeasible deadline was set - the end of 2005. In this way, scheduled closure was shifted for a number of mines 6 months earlier before the original timeline (Partach 2004: 8).

Not rarely taken decisions were controversial and were revoked, once the government was reshuffled. This was also not a rare ocassion that every new governmental reshuffling led to a new setup of central executive authoritatives. One more reorganization occurred in 2005, when the Ministry of Coal Mining Industry was created (Presidential Decree No. 1123, 2005), having been previously part of the Ministry of Fuel and Energy. Assumingly, one of the pursued purposes was to improve effectiveness of coal industry restructuring. Development and implementation of the Energy Strategy until 2030 (hereinafter, Energy Strategy) analyzed below, is the best illustration of how successful, if at all, this plan has become.

Frequent revoking of taken decisions signalizes clearly lack of political succession. Thus, for example, in 2001, Kinakh’s government introduced substantial changes to the program “Ukrainian Coal”. It was a lasting bargaining until the program was aproved. More than that, the new government stopped the program of auctions, proposed by the former prime minister V. Yushchenko. All these changes were closely linked with reshuffling
in the Ministry of Fuel and Energy. Thus, in particular, the position of the Donetsk clan was significantly strengthened after Mykhailo Krasko, director of Makievvuhillya coal mining company, was appointed the Head of the Coal Department of the Ministry (Egorov 2003: A37-A38).

More than that, for the last ten years reference to “predecessors” became a well established tradition in Ukraine, meaning refusal of top ranked politicians and top-level bureaucrats to take over responsibility and an intention to blame the previous political force in power of all ongoing hardships. This takes so hypertrophied forms as an articulated need to start reforming efforts (almost) from the scratch, declaring steps of the previous government as wrong or unhealthy for the economy.

Little change has been observed till presently. As one of the reputed media in Ukraine remarked while commenting on the forecast of economic and social development of Ukraine in the years to come, released by the government in the summer 2014: “In a course of time other people come to power and simultaneously genius heritage of “predecessors” is discarded. In a while the same people (and who else?) start preparing new programs and forecasts. Yatsenyuk-headed government demonstrates adherence to [these] long-lasting traditions” (Kalatchova, Lyamets 2014).

A rather fresh example from the coal industry of when political decisions are not a matter of consensus, but are guided by some other rationale, is the wholesale market operator “Coal of Ukraine”. In 2013, this state enterprise was announced for liquidation which was to be due by 2015. This decision was revoked in 2014, after the new government was appointed as a compromise of the enduring political crisis. Addressing the liquidation issue, it was explained as a step which would put coal mines deeper below the profitability level, if the decision is not revoked. This is so because some private companies “close to the previous political force in power” were claimed to have penetrated the coal market in a couple of last years thereby profiting immensely from coal deals buying coal at possibly low prices and reselling it to power generating companies (Obozrevatel 2014).

4.1. Ongoing privatization of coal mining assets

Ineffectiveness of the unreformed coal mining sector has been further increased during the 2000s. The coal output in the 2000s fluctuated (Figure 2). The output increased in the recent years after the downfall in 2009-2010, when economy was severely hit. As an illustration, the level of ineffectiveness of state-owned mines becomes more pronounced if compared with for example only mines owned or taken into concession by DTEK, one of the largest players in the post-Soviet coal market and the European anthracite market, which are 31 altogether. As of 2013, market share of DTEK in the coal mining sector in Ukraine was 47.8 percent and the coal output totalled 41.4 Mt (DTEK 2013: 11). As of 2012, the market share was slightly less - 46.1 percent while coal output equalled to 39.7 percent (DTEK 2012: 10). In other words, 31 mines produce almost the half of the total country’s coal output compared to over one hundred mines, owned by the state.

Independent evaluation of assets and privatization were continually required at the beginning of the 2000s as a systemic measure to progress with a reform. However, taken measures appeared not to be sustainable and privatization prompted criticism. Insufficiently advertising of tenders, suspicions for bias nomination of bidders and subsequent unfair selection of bidders did not play in favor of privatization process to be regarded as transparent. These were the concern raising issues not only in the first half of the 2000s. During the second half of the 2000s, at the time of premiership of Yulia Tymoshenko, a new tender procedure was introduced. Namely, tenders with one pre-selected participant become possible. This enabled the government to favor the preferred companies and distribute contracts to them. In 2008 alone, almost half of all tenders with a total amount of up to 10 USD billion were conducted under this procedure (Nayem, cited in Kudelia 2012: 425) with the Industrial Union of Donbas being one of major beneficiaries.

10 Written in Ukrainian but pronounced with wrong Russian accent - “paperedniki”. This is a kind of a mockery over Russian speaking Ukrainian politicians with poor command of Ukrainian
This is a matter of question, whether the interested parties struggle over who will be able to privatize coal mining assets or the purpose was to retain sent seeking while maintaining control over those assets until they remain state property. In many instances the second option is a more attractive scenario in view of imposing no obligations upon management or requiring no significant investments to upgrade the mines. Many coal mining enterprises in present-day Ukraine are state owned but this is only de jure. De facto they have been maintained for years by the so called “curators”, as already mentioned. Another prominent example, besides Luganskvuhillya mining company, is the state-owned coal mining company Lvivvuhillya which have not fully transparent relations with System Capital Management (SCM)\textsuperscript{11} - Ukraine’s largest diversified business group while supplying coal to thermal power plants owned by SCM. State-owned coal mining enterprise Makiyevvuhillya cooperates closely with the Donetsksteel Group, a major producer of high-rank coking coal concentrate, coke and metal products, of Viktor Nusenkis (Ryasnoy 2014).

Besides numerous cases of political tension during the 2000s when the coal sector was largely abandoned to its miserable fate despite some taken steps, another explaining factor might be non-crystallized interests of Ukrainian private energy companies by the mid 2000s to acquire coal mining assets in Ukraine. The example of SCM is more than illustrative. In order to secure a position on the metallurgical market, SCM Chief Executive Officer Oleg Popov articulated purchase of coal mining capacities abroad as a necessary step. Intended to do so, the company was not ready to report back in 2005, whether expansion plans will focus on Ukraine, Russia or far abroad - such as Australia. Mr. Popov openly admitted that as of 2005 the company’s coal market strategy was not finalized (Maskalevych 2005).

This, however, should not be interpreted as reluctance of domestic investors to privatize the most lucrative Ukrainian assets in the coal industry. The most profitable coal mining enterprises as Pavlohradvuhillya and Krasnodonvuhillya were privatized by companies of SCM. Pavlohradvuhillya (10 mines) is one of the biggest coal mining enterprises in Ukraine (thermal and coking coal). It was privatized by DTEK, SCM-owned company. In 2013 Pavlohradvuhillya mined 18 Mt of coal (DTEK 2013: 13). Krasnodonvuhillya which alone pro-

\textsuperscript{11} Business portfolio of SCM covers mining and metals, energy, finance, telecommunications, media, real estate and some other sectors of the economy. The group operates in Ukraine, Russia, USA, Italy, Great Britain, Switzerland and Bulgaria.
duces 25 percent of coking coal in Ukraine, was privatized by Metinvest\textsuperscript{12} - a subsidiary company of SCM. The fact of non-finalized coal market strategy as of 2005 had rather raised a question about the portion of foreign assets in the prioritized business model in order to secure the so called “backward integration”.

While analysing e.g. the Chinese steel sector, experts give an example of the backward integration in the former Soviet Union, which was a widely accepted practice there. Based upon the latest trends on the coal market in China, experts point out to an intention of steel companies to secure the backward integration relying upon secured supplies from abroad. Willing to have a free hand instead of being seen as just toll smelters, squeezed between customers and suppliers, Chinese companies strive to secure access to coking coal and iron ore abroad (International Council on Mining and Metals 2012: 12-13).

Pushed by the similar fear, Ukrainian steel companies favoured the same strategy, one could conclude, in particular Metinvest which acquired the United Coal Company (UCC)\textsuperscript{13} in 2009 located in the central Appalachian region of the U.S. Thereby, UCC provided Metinvest with an access to coking and thermal coal outside Ukraine. This, however, does not necessarily indicate little interest of domestic investors in coal mining assets in Ukraine. But rather it speaks of securing an access to high quality coal because the coal market in Ukraine is characterized by a deficit of less sulphur coking coal. Or better to say, coking coal of the kind which meets quality demands of metallurgical plants.

Low-pace of the coal sector reform and non-transparent conditions of privatization coupled with general uneasiness to do business in Ukraine, led to acquisition of huge coal assets by handful domestic market players. In Ukrainian realities, the biggest private companies owning coal mining assets are the same having metallurgical plants. When it comes to the electricity generation market, similar reasons produced a situation of a monopolistic position with a lion share of electricity generation capacities ended up in the same hands.

Owning metallurgical capacities, private investors are interested to acquire coking coal producing mines. They are equally interested to purchase electricity generation capacity in order to have control over electricity tariffs. Facts are more than illustrative. Six major energy generating companies represent the thermal coal sector. Jointly they account for 95 percent of the country’s total thermal electricity generation capacity. Five of them are owned by DTEK. They are Skhidenergo, Dniproenergo, Zakhidenergo, Kyivenergo, and Donbasenergo (DTEK 2013: 54). Privatization of Centrenergo, slated for 2013, was postponed.

4.2. State interventions: price regulation and quotas

The state dominates both the thermal and coking coal market through, in particular, price regulation. “Coal of Ukraine” - a state-owned trading company which acts as a a price regulator, and is in charge of purchase and subsequent distribution of thermal and coking coal from state-run mines to power generation plants. Price regulation results in subsidies to unprofitable mines at the expense of profitable ones. The key question remains how to expand profitability rate of mining companies in view of generally unfavorable geological conditions and needed extensive upgrade of technical equipment which most likely won’t keep prices low enough and avoid misalignment of coal prices and power tariffs.

In addition to price regulation, the government in Ukraine tries to improve financial standing of the state-owned mining companies while intervening on the coking coal market through introduction of import quotas. For instance, in 2013 Ukraine introduced import quotas for coking coal in the amount of 11.2 Mt. Similar initiative to limit coking coal imports in order to protect domestic producers was discussed for the year 2014, however quotas were not introduced in the final end. This measure was criticized as a potential trigger which might worsen trading relations with Russia, major importer of coking coal to Ukraine. Coking coal from Russia is more expensive for Ukrainian steel producers as Ukrainian coal is subsidized. A clear evidence of that is initi-

\textsuperscript{12} Metinvest is an international vertically integrated steel and mining company owning assets in Ukraine, Europe and USA

\textsuperscript{13} UCC is ranked the 6th among the leading producers of thermal coal in the United States, according SCM. Total production capacities of UCC amount to approximately 9.2 Mt per annum. For more information visit http://www.metinvestholding.com/en/activity/raw_iron
ated, upon request of Russian metallurgic companies, an anti-dumping investigation regarding supply of some steel products from Ukraine, launched by the Eurasian Economic Commission in 2013 (Remazhevska 2014).

Protectionism measures to improve financial standing of the state-owned mining companies are only one side of the coin. The other side is a coal quality issue. As noted, Ukrainian coal market is characterized by a deficit of coking coal. Metallurgic plants are the biggest consumer of coking coal and need around 30Mt of coking coal per annum, while domestic producers provide less than 20 Mt. Insufficient volume of coal supplied by Ukrainian mines is not the only problem for metallurgic industry in the country, but its quality. Ukrainian coking coal is high-sulphur and worsens steel quality, if used. Pulverized coal injection method, which has been recently installed at many steel plants, because of high gas prices, requires coking coal of better quality; otherwise steel products are less competitive on the global market. This puts steel plants in a deeper trouble after demand of steel products had decreased globally.

5. Strategic mismatch: official documents about the coal sector reform

Throughout the 2000s, the coal mining reform has not progressed much until adoption of the Energy Strategy of Ukraine until 2030 in 2006. This was a clear benchmark for the industry’s reforming. At least, in terms of setting priorities of the industry’s development and taking into account trends on the European and Russian coal markets what the state program “Ukrainian Coal” was deprived of. The conclusion that trends in the coal sector on the global or at least regional scale received not enough consideration with the government in Ukraine, is drawn based upon the general analysis of Ukraine’s policy making in the coal industry; but also it finds written confirmations in Ukrainian strategic documents. For example, a justification to update the Energy Strategy of Ukraine until 2030, originally developed in 2006 and revised in 2013, was given as a rather superficial approach towards developments on the global coal market and a failure “to consider them in the full scope” while drafting the Energy Strategy (2013: 4-5).

Before proceeding with an analysis, it should be noted that the process of enactment of the updated Energy Strategy is an attention calling issue. Despite the fact, public hearings were organized to discuss the draft; one might conclude the Energy Strategy was adopted hastily as it was approved by the governmental order instead of having been approved by the governmental decree or by the law, thus being submitted to the parliament. In contrast, for example the General State Program of Mineral Raw Material Development until 2030 was enacted by the law. Undeniably, the Energy Strategy is not less relevant.

What is also eye catching in relation to this, is the fact that external experts were involved to draft the Energy Strategy. They are experts of McKinsey&Company and experts of the Effective Management Foundation (EMF). This fact in itself might be regarded as a wish to gain better energy market expertise and thus it is nothing extraordinary but a common practice. This could be seen in this way; if not the fact that the role of EMF, established by Rinat Akhmetov, shareholder of SCM, was more ambitious while the foundation overtook supervision over the drafting process of the Energy Strategy, as the Energy Strategy itself reports (2013: 6). This is especially notable because Akhmetov’s company SCM has been a major beneficiary of the coal industry privatization process. Also, SCM is highly interested in acquiring energy generating assets, having a major stake on this market already.

This having said, we could consider it as a clear indication of incapable bureaucracy to undertake this task. Often blamed for being focused on the input rather than delivering results, we could conclude that to make an input is a kind of problematic for Ukrainian bureaucrats too, in a case of an ambitious assignment - such as drafting of the strategic document projecting developments of the key sectors of the economy for two decades ahead. In this regard it is also worth noting that the president Leonid Kuchma instructed to develop the Energy

14 Experts of this company were involved in drafting process as mentioned in the Energy Strategy. To be said, the same company partook in developing of the program of economic reforms for 2010-2014 “Wealthy society, competitive economy, effective state” of the Committee of economic reforms under the President of Ukraine

15 The Foundation was closed down in early 2014. It has developed other strategies and concepts of economic development of Ukraine. For more details visit http://news.liga.net/news/politics/959245-akhmetov_zakryl_fond_effektivnoe_upravlenie.htm
Strategy until 2030 back in 2001. It took 5 next years until the strategy was finalized in 2006. Whatever the reasons, this is a clear indication of the fact, energy security has not been a priority, if only declared one, of the Ukrainian state.

Also, the earlier version of the Energy Strategy was said to be outdated because a greater majority of programs of modernization and extension of power generating capacities, anticipated in 2006, were not realized (The Energy Strategy of Ukraine until 2030, 2013: 5), and required implementation dates be moved forward or priorities shifted. This concerns not only the Energy Strategy. The state program “Coal of Ukraine” anticipated in 2001 to diminish dependence upon imported coal and gas; increase total coal output to 110 Mt in 2010. As for imported coal, it was planned to stop imports as soon as in 2002, as Uryadovy Kurier reported (cited in Egorov 2003: A38), what did not happen as it was clearly a miscalculation, incoherent with the market situation. In view of this, one could hope not to come across miscalculations of this kind in the updated version of the Energy Strategy. This was not the case, however, starting even with the most general parameters.

In overall, Ukraine’s share of total world’s proved reserves is rather modest being not more than 4 percent. Its total proved coal reserves are estimated to be 33873 Mt or exactly 3.8 percent of total global proved reserves (BP Statistical Review of World Energy 2014: 30) at the end of 2013. Notably, only 6.1 Bt of coal are reserves of active mines (DTEK 2013: 42). It is of a note, the Energy Strategy treats figures in a somewhat different manner.

Instead of giving the amount of economically minable reserves, the Energy Strategy indicates only the total coal resources, estimated at 56 Bt which will be enough to last Ukraine for over 400 years at a current production rate (The Energy Strategy of Ukraine until 2030, 2013: 64). More than that, the Energy Strategy also includes the forecasted resources in the amount of 117.5 Bt, not being specific about what kind of resources are included into this estimation.

The Energy Strategy relies upon these figures in projecting development trends of the coal sector in the country for the coming almost 2 decades. This could be interpreted as nothing else but a refusal to face the reality. Not being objective enough even about proved reserves estimations might be a starting point for other miscalculations as for the perspectives of the Ukrainian coal sector under the given market conditions.

The Energy Strategy envisages three scenarios ranging from a pessimistic and baseline to a positive one. Optimistic scenario predicts 6.4 percent of GDP growth whereas baseline scenario counts with 5 percent and a pessimistic scenario - with 3.8 percent of annual GDP growth (The Energy Strategy of Ukraine until 2030, 2013: 7). At this point, it is clear that already now Ukraine performs even below the pessimistic forecast (Table 1).

Of course, on the one hand, GDP growth is important to be taken into consideration in order to project economy’s demand for energy resources. But on the other hand, it is equally important to take a look at restructuring measures because unreformed economy could dwindle down positive effect from any GDP growth and slow down this growth itself. As Martin Raiser, head of the World Bank mission to Ukraine, straightforward observed, while commenting on the comprehensive program of economic reforms, released in 2010 touching upon also the coal industry, “Targets such as GDP […] however, not directly controlled by the government, and are rarely used in Western European countries. It is important to look at operational targets which the government controls” (Stack 2010).

Operational targets in terms of overall coal output range between 86.2 Mt to 114.5 Mt in 2030, depending upon a scenario. Remarkably, output figures are the same for thermal coal and coking coal in baseline and optimistic scenarios (except for the output of thermal coal in 2020 and 2025) however they presuppose different rate of GDP growth. Besides, priority is given to development of coal-based technologies in view of high gas prices.

16 Of these reserves, 3.5 Bt are steam coal and 2.6 Bt coking coal.
At the same time it is noted, all the elaborated scenarios count with a positive effect from de-shadowing of economy. This is one more point which raises skepticism as similar targets have been announced many times already but having brought no visible results. Besides, seriousness of this intention might be called into question, because fighting of the illegal coal mining is neither articulated in the Energy Strategy as a goal to reach, nor there is any mentioning of this problem at all. But this problem is well known. Each year illegally mined is roughly 6.5 Mt (what makes about 10 percent of officially mined coal) and is available for sale in Ukraine (Cragg 2013). This topic is in the focus of many reputed Ukrainian and foreign media. Many industry experts comment on the coal-mining racket and illegal mining regularly (Cragg 2013). These notwithstanding, state authorities turn a blind eye on the problem.

Table 1. Forecasted coal output until 2030

<table>
<thead>
<tr>
<th>Balance sheet item</th>
<th>2010</th>
<th>Forecast (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2015</td>
</tr>
<tr>
<td><strong>Baseline scenario</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall coal output, including:</td>
<td>75</td>
<td>85.1</td>
</tr>
<tr>
<td>- Coking coal</td>
<td>24</td>
<td>27.3</td>
</tr>
<tr>
<td>- Thermal coal</td>
<td>51</td>
<td>57.8</td>
</tr>
<tr>
<td><strong>Pessimistic scenario</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall coal output, including:</td>
<td>75</td>
<td>81.1</td>
</tr>
<tr>
<td>- Coking coal коксування</td>
<td>24</td>
<td>24.4</td>
</tr>
<tr>
<td>- Thermal coal</td>
<td>51</td>
<td>56.7</td>
</tr>
<tr>
<td><strong>Optimistic scenario</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall coal output, including:</td>
<td>75</td>
<td>85.1</td>
</tr>
<tr>
<td>- Coking coal коксування</td>
<td>24</td>
<td>27.3</td>
</tr>
<tr>
<td>- Thermal coal</td>
<td>51</td>
<td>57.8</td>
</tr>
</tbody>
</table>

Source: Author’s compilation based upon the Energy Strategy of Ukraine until 2030 (pp. 18-19)

This hardly correlates with an intention to be consequent in order to attract investors. However, the need to provide potential investors with the full information about the general condition of the coal mining sector and particularly to inform them about geological and economic conditions of mining companies and well as their credit history is directly articulated in the Energy Strategy (2013: 68). Besides this, even such basic thing as the exact number of state-owned active mines in Ukraine is a matter of question. The Energy Strategy evades answering the question. Reliable statistical data is hardly available because many mines are under liquidation procedure or out of operation de facto. At least industry experts, e.g. head of the Independent Trade Union of Miners Mykhailo Volynets relies, according to him, upon the statement of the Head of the State Property Fund – Olexander Ryabcheno who admitted in 2013 that there are 113 state-run mines in Ukraine (Ganus 2012).

At the same time, privatization of mines is widely seen in the Energy Strategy as the only recovery measure for the industry. In view of this, the state is not able to ensure sufficient capital investments. As a matter of illustration, the total amount of investment into the industry was USD 53.8 million in 2013 (compared to USD 56 million in 2012); whereas capital investment into DTEK’s coal assets reached USD 527 million in 2013 (DTEK 2013: 23).

Despite privatization is seen as a major way out for the industry’s recovery, because, as already said, the state is not able to keep the existing mines operational as well as provide capital expenditure for new mining capacity, privatization is regarded differently in strategic documents. For example, the Energy Strategy anticipates restructuring of the coal sector and privatization of coal mines irrespective of their profitability level by the end of 2015 (2013: 73-74); while the program of economic reforms for 2010-2014 “Wealthy society, competitive economy, effective state” (hereinafter, the Program of Economic Reforms of 2010) outlined privatization
The process of potentially profitable mining companies to be completed by 2014 (2010: 64).

The same program plans restructuring of unprofitable coal mines, which have no chances to regain profitability, by 2016, unlike the Energy Strategy which stipulates this category of unprofitable mines to be closed by 2015 (2013: 73). At the same time, the Energy Strategy points out to the budget deficit while designating preparation period of no less than 5-7 years for the liquidation procedure and closure of loss making mines. Keeping in mind, that the Energy Strategy was approved by the government in 2013, restructured coal industry by 2015 seems to be a highly unrealistic objective.

Subsidies to the coal mining sector are one more controversial issue, differently addressed in strategic documents in terms of projected restructuring plans. Whereas the Energy Strategy envisages subsidies be reduced at least by 20 percent annually with no support from the state budget in 5 years (p. 69), the Program of Economic Reforms of 2010 predicts reduction of subsidies to the state coal mining enterprises by 80 percent until 2014 (2010: 64). Again, the Energy Strategy was enacted in 2013. Reduction of subsidies by 80 percent will take place in 2017, whereas the Program of Economic Reforms of 2010 has set the deadline for 2014.

Besides, inconsistencies between strategic documents in terms of the amount of gradual reduction of subsidies, the rules to qualify for state subsidies were a subject to a frequent change, favoring, as one could conclude, different rent seeking groups. What is striking, the procedure of spending state funds to cover losses of coal mining enterprises was many times revised even within the short period of time. Only during 2011 the aforementioned procedure was amended 7 times.\(^\text{17}\)

**Conclusions**

At the beginning of the 1990s Ukrainian coal mining sector was largely economically unviable sector with high social liabilities and decisive steps were urgently needed to reform the industry. This notwithstanding, they did not follow quickly. Partly the reason is that consequences of shock therapy measures in the neighboring Russia distracted Ukraine from quick transformations and found more supporters of the so called “go-slow” approach. As a result, Ukraine adopted a gradualist approach to the coal sector reform.

Certainly, some reforming steps were taken, but there has been no sustainability in the reform steps and as a result no breakthrough in terms of making the industry healthier, getting rid of the burden, - in many aspects inherited from the previous decades. This led to a further increase of the gap between Ukraine and other gradualist countries in the region in terms of reform achievements in the coal mining sector. Not in the last turn, it is proliferated rent-seeking which delivered rather modest reforming results. With rent seeking traditions having been traditionally strong in Ukraine, the gradualist approach to the coal mining reform resulted in this country in what scholars predicted (Krueger 1993) - rent seeking groups used a chance to get organized and start exercising political resistance to profound reforming effort in the coal sector.

The way the reform has unfolded, however having been far not finished, delivered more and more arguments which permit to regard Ukraine’s approach towards a coal mining reform, at least by now, as an unreformed status quo rather than to term it continuously a gradualist approach. As Roland (2000) advises, we should speak of “an appropriate period of time” which is enough to see reform results. More than two decades is plenty of time to witness certain reform outcomes, which however are by large not in place.

As an analysis of the industry related strategic documents reveals, stalemate is obvious not only in the realm of implementation, but also during the planning stage. Reforming process is cumbersome that is often marked with controversy; not being purposed towards removal of rent seeking opportunities in the industry. What has been originally planned becomes many times fine tuned and implementation dates have been frequently moved further. That is why the reforming process lacks so much needed predictability, demonstrating inconsistencies between set priorities and unrealistic targets. It concerns, for instance, lack of consistency between the Energy

\(^{17}\) Amendments to the parliamentary resolution (No. 153, 23 February 2011) which detail this procedure were introduced in March, April, July, September and 3 times in October within only 2011
Strategy, the Program of Economic Reforms of 2010, the state sectoral program “Coal of Ukraine” which anticipates privatization plans and in overall restructuring of the coal industry not coherently.

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Ministry of Energy and Coal Industry of Ukraine 2003. *Vuhilna haluz potchynaye posylyuvaty svoyu rol’ yak haranta energetychnoyi bezpeky derzhavy (Coal mining industry begins to increase its role as a guarantor of the state’s energy security,* trans. Borshehvska, Y. 21 August 2003. DOI: http://mpe.kmu.gov.ua/control/uk/publish/article%3bjsessionid=273FEE11887CC96A05DA822BC33321E7.vapp25:2?art_id=90614&cat_id=102587&search_param=%2525D0%2525B1%2525B5%2525B7%2525D0%2525B3%2525D0%2525B7&searchForum=1&searchPublishing=1


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MANAGEMENT OF PUBLIC PRIVATE PARTNERSHIP IN EDUCATION:
ASPECTS OF PUBLIC SECTOR TRAINING SUSTAINABILITY ISSUES

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Received 25 February 2015; accepted 30 March 2015

Abstract. The internationalization practice of private public cooperation has been intensively studied since the 1960s. Due to increase in public capital flows, direct investments and competition in private services at that time active development of public and private cooperation has begun. This publication emphasizes the importance of a military training system quality and ways how to gain the better performance for the sustainable improvement. However diminishing long term allocations for training suppose new perception for different kind of qualification anticipated in the National Defense System (NDS). There are several good experience countries in the world which changed their army training system qualification assessments and purchased training service from private companies. Market research data showed that public-private partnership in military training is a new kind of military sustainable support possibility. There was a novel model laid in this paper for better military training system and private partnership evaluation.

Keywords: public-private partnership, quality management, public administration, finance, competence, cooperation


JEL Classifications: M53

1. Introduction

The worldwide growing needs of expertise in various areas of service provision rise requirements for the quality of services provided. A demand for public sector quality services provision is not the exception also. The growing expectations and new requirements for the public sector public servants requires continuous improvement of the staff competence. In order to meet rationally and efficiently growing needs of the public sector it is forced to find new ways of services improvement (Čepėnaitė, Kavaliūnaitė 2013; Šimelytė, Antanavičienė 2013; Bakovs, Zariņš 2013; Girūnienė 2013; Bileišis 2014; Garškaitė-Milvydienė 2014; Figurska 2014; Lankauskiene 2014; Vasiliūnaitė 2014). Therefore public sector have to implement permanent reforms (Osborne 2008). During the global ongoing management reforms public institutions need to adopt a new planning, decision-making, implementation coordination, all kinds of resource management challenges. The continuing changes that are focusing on contemporary modern public administration requires revision of traditional normative orientations to overcome constantly emerging obstacles. Therefore public private partnerships become unavoidable to develop a wide range of good quality services.

A research problem is the challenging economic situation in the Central Eastern European Countries and par-
particularly in the Republic of Lithuania concerning expenditures on the defense requires to seek rational solutions; the distribution of public resources within the system, not only to maintain a high level of preparedness of the staff but to achieve better staff training results in the context of other NATO member countries.

This paper aims to analyze the organization of Lithuanian military training courses system. Moreover it evaluates purchasing some services from the private sector. This is related to an implementation of comparative analysis of the private sector services in organizing public sector courses at the national level. In addition, this work is important for the analysis of an experience from other countries in implementing the military and private sector partnerships.

Unspecific goals of this publication is to overview the public and private sector cooperation possible theoretical models, to analyze the literature and legislation dealing with public and private partnerships. Moreover an objective is to define the public and private sector partnership types and their application possibilities in military training especially in the case of Lithuania. To assess a quantitative research the NDS (National Defense System) soldiers deployed in military training courses were interviewed. That courses were organized by the private sector in the management environment of organizing similar courses in public sector.

Target-oriented research and practical development model in a hypothesis: the public and private sector partnership in the Lithuanian military training to improve the quality of education and training and enable more efficient use of human and financial resources for military training, as part of military training courses to organize the transfer to the private sector. The public-private partnership in the army training could improve the quality of education and training and enable more efficient use of human and financial resources for military training, as part of military training courses to organize the transfer to the private sector.

2. The Prospect of the Public Private Partnership

The public-private sector partnership probably have begun in the nineteen century. However it was evaluated very critically. Nevertheless this soon began to yield positive results in the public policy objectives. The rapidly growing partnership between the public and the private sector has attracted more and more researchers. Besides that public-private partnerships can have only short-term advantages and irresponsible development partnership for a long period of time can lead to negative consequences according to some scientific papers (Domarkas 2005).

Furthermore an interest in public-private partnership prospects was especially active during the last global economic recession in the first decade of the twenty first century. Despite many different opinions concerning usefulness of the public and private sectors cooperation the general trend shows that the search for new forms of partnership is growing (Zarco-Jasso 2005).

When exploring public-private partnerships it was noticed that the incorrect assessment of the conditions of partnership can change the course of implementation of the agreement. Therefore some benefits of the deal could be an extra responsibility without the planned profits. The public sector has a wide range of services that can be transferred to private companies. In addition it can improve the quality of services provided. Besides some studies have shown that not all areas of the public sector can become a successful partnership with the private business (Flinders 2005). It is argued that public-private partnerships can improve the public finance risk management in transferring responsibility of the private business to the public sector.

From a theoretical perspective it could be indisputable that private sector under pressure of market competition (sometimes with the assistance of various governmental incentives for businesses support) is managing risk with a smaller budget. However the same cannot be said with regard to the urgent or strategically sensitive services that require significant investment, provision, and economic returns may not be operational. Meanwhile that situation is well known in public transportation or medical services. Moreover it was observed that the involvement of the public sector not only creates a very complex organizational management structures but also
complicates the public and private sector negotiations.

However the private supply of public support services could influence the sustainable development of cross-sectoral partnerships. In addition political cycles in changing the national and municipal government quite often changing attitudes concerning the need for services provided by private partners. Moreover the newly elected government often is critical on the previous government decisions regardless of whether it is national or local government change. Usually the public sector is restricted by the service quality and the cost-effectiveness framework that makes to look for solutions to the problem in democratic countries. National governments are solving the question whether the state capable to delivery good quality and efficient public services. There is an assumption that state functions partly can be transferred to the private sector thus ensuring competitive quality services to the public (Trafford and Proctor 2006). Therefore public and private sector cooperation is increasingly becoming an object of the research in democratic countries. Meanwhile scientists are looking for new improvements of public-private partnership opportunities. Eventually it is agreed that the optimal results of that cooperation are possible only when the objectives can be achieved with the lowest operational costs (Masiulis 2004).

3. An Approach of the Public and Private Sector Partnership

However public-private partnership concept is not a new definition in scientific publications but the concept of the term shows that consensus on this definition is not broadly accepted. Probably the partnership can be described as a voluntary cooperation of two or more entities in order to get an agreement for mutual benefits (Akintoye et al. 2003). As it was discussed the public-private partnerships also could be defined as a form of cooperation. The private sector using technological achievements and special knowledge is taking the risk of business services. In the cooperation paradigm the public sector functions – that should be provided by the public sector itself – could be purchased in some degree from the private sector. According to some researchers the public-private partnership - is a collaboration between the public and private sector partnership comprising a plurality of forms and structures (Sardan 2004).

In order to define a public-private partnership concept it could be divided into some concepts (Hodge and Greve 2007):

• Public-private partnerships are cooperation between the public and private sectors, where they generally creating a product or service in proportion of the risks’ share;
• Public-private partnerships are long-term infrastructure contracts which set strict requirements for the performance;
• Public-private partnerships are public policy and management networks which emphasizes free players on the mutual relations;
• Public-private partnerships are developments of the civil society;
• Public-private partnerships are renewal of public institutions and economic development.

There are scientists who consider whether the public and private sector partnerships can be an independent public service and public infrastructure development form. These authors stress that it is just a variation of globalization related definitions describing all known service contracts or privatization form. Moreover some researchers agree that public-private partnerships are only the modified and sufficiently flexible form of privatization (Savas 2000). Moreover it is noted that the “privatization” term usage is a particularly sensitive for the public acceptance of its historical associations. This definition allows the modification of the public sector in maneuvering between the privatization of state assets and the contractual relationship. That also give some flexibility in choosing private capital organizations for transferring them some public service rights (Carroll and Steane 2000). However that partnership respectively must leave to the public sector the relevant tools for the control of private sector in the public service delivery. Therefore the state property is not completely transferred to the private sector and the time limit is set in giving the right to fully dispose of that state property.

On the other hand there are some different interpretations in characterizing the public and private sector con-
cept (Miraftab 2004):
• Partnership combines at least two participants one of which must necessarily represent the public sector;
• Partnership members are organizations with the power to make independent decisions on public-private partnerships in the implementation;
• Partnership requires parties to agree on a long-term relationship that is based on mutual trust and not self-interest;
• Each party must be able to invest in the partnership tangible and intangible resources that could strengthen the partnership;
• All partnership parties must share the responsibility for the final results.

Moreover the public-private partnership can be described as a new public management ideas based on public sector reform strategy. Therefore the cooperation becomes more important factor in reforming the public sector and transforming it according to the market-based principles (Rosenau 1999).

In addition there is some tendency that the public sector aims to establish cooperation agreements with the private companies. Probably it could be an indicator of the public sector initiative to attract private sector investment in public infrastructure improvement. Therefore this future private supply of public goods is a great opportunity to invest in the improvement of public services within the limits of the annual national budget.

4. Military and Private Sector Partnership Sustainable Training Opportunities: The Case of Lithuania

In order to analyze the public and private sector partnership opportunities a research study was applied. A study tried to assess the Lithuanian military training opportunities in the cooperation with the private sector through training in the National defense system. The research has been organized using the survey. Therefore the questionnaire was organized interviewing the national defense system soldiers and officers engaged in managerial positions. Moreover the selection criteria of respondents were following; respondent must be a soldier and the soldier is assigned to a position with a job description for lead for a group of soldiers (the structural group commanders). The research was supported by a questionnaire. Besides questions were prepared from the theoretical insights of public and private sector cooperation. Eventually questions presented in the questionnaire helped to collect data on the benefits of cooperation, its possibilities and opportunities. Nevertheless the sample determination and survey was carried out considering the fact about the number of solders engaged in managerial positions. Using the formula for the inclusion of variables the sample size of three hundred four respondents was obtained. Considering the fact that the expected return of questionnaires could be no more than eighty percent the three hundred eighty questionnaires was sent to soldiers serving in managing position. Eventually was received three hundred fourteen completely filled in questionnaires. During the research the all respondents were divided into four groups. The largest groups consisted of Army officers and non-commissioned officers. Moreover the part of respondents consisted of forty three percent of non-commissioned officers and fifty one percent of junior officers. According to National defense system’s functional management structure the largest part of management positions are occupied by the officers. Nevertheless the non-commissioned officers also represent a significant part in this management system. Non-commissioned officers group have the positions that are usually closest to ordinary soldiers, e.g., squad commanders, etc. The staff that participated in the research are experienced soldiers. Therefore the all answers referred are in conformity with the personal long time service experiences. The seventy nine percent of the all survey respondents have served for more than eleven years and only two percent of respondents have had their service experience less than five years. In addition the all respondents were/are in managerial positions where they are leading from a few to a few dozen soldier groups. Respondents by subordinate groups show that the largest proportion of participants led to a group of fifteen soldiers - eighty three percent of all answers. Therefore the survey data shows that the respondents have close experience in cooperation with their subordinates and they are capable enough to objectively assess the consequences of the military training. Objectivity of the research results could be stressed by the fact that all the respondents have participated in (or organized by themselves) National security system’s courses. Moreover one-fifth of the respondents had passed more than five courses. Lithuania’s defense system consists of eight military education units however belonging to different national security forces.
Several Lithuanian military units provide more than two hundred different training and teaching courses. In order to assess the Lithuanian army military training efficiency level respondents were asked - what are the factors most disturbing you subordinate military readiness. As the biggest problems that hinder the proper performance of daily tasks was identified financing problems, positive answered the sixty one percent of respondents. In the earlier part of this paper already was mentioned that one of the biggest challenges for the National defense system after country’s affiliation with to the NATO was financial arrangements that used to decline until the 2014th. Nevertheless one-third of respondents identified as a problem the insufficiency of soldiers qualifying preparation (the thirty one percent of answers). Moreover the lack of soldiers’ motivation was identified by eight percent of respondents. Even so the funding is a major problem (and the most of the National defense system’s staff identifies it as the main key of the all problems) but the research shows that military training system revealing problems in the defense system as well.

Sooner or later respondents answered about organized military training courses length mostly expressed dissatisfaction with the course duration. More than half of the soldiers involved in the research responded that the courses are too long. Even eighteen percent of respondents comment that the military training courses are too long and there is real impracticality of the course. In general course duration made unhappy forty one percent of respondents who assessed the current situation more softly saying they want the courses last for a shorter time. Duration of courses satisfied thirty eight percent of the respondents, and even three percent of respondents said that national defense system courses are too short in the duration. Therefore partially can be concluded that the duration of courses is organized not very efficiently. Evaluating the situation in military training respondents were also asked about the opinion of the quality of the courses organized. Unfortunately knowledgeable courses that have not good quality were identified by the thirty five percent of the respondents. The largest group of respondents involved in the training (forty one percent) confirm that courses were/are of the average quality (Table 1, Table 2).

### Table 1. Feedback on the National Defense System (NDS) Course Duration

<table>
<thead>
<tr>
<th>Duration of Courses</th>
<th>Responses in Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very long</td>
<td>18</td>
</tr>
<tr>
<td>Long</td>
<td>41</td>
</tr>
<tr>
<td>Normal</td>
<td>38</td>
</tr>
<tr>
<td>Short</td>
<td>3</td>
</tr>
<tr>
<td>Very short</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Calculated by authors*

### Table 2. Evaluation of the Quality of Courses

<table>
<thead>
<tr>
<th>Quality of Courses</th>
<th>Responses in Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>5</td>
</tr>
<tr>
<td>High</td>
<td>19</td>
</tr>
<tr>
<td>Normal</td>
<td>41</td>
</tr>
<tr>
<td>Low</td>
<td>33</td>
</tr>
<tr>
<td>Very low</td>
<td>2</td>
</tr>
</tbody>
</table>

*Source: Calculated by authors*

Public-private partnership in the National defense system is not a new phenomenon. Ministry of Defense started a partnership with the private sector for infrastructure, transport vehicles maintenance, food service already from the 2009th. However studies on the military training opportunities in prospects with the private sector cooperation could be started. The research respondents presented issues related to public and private sector cooperation characteristics in the second group of questions. In the second research phase’s the main question was to find out which areas of military training courses respondents would tend to change when courses are organized by the private sector. Besides respondents’ opinions in the quality of courses in different systems are
similar and clearly shows that the respondents not rely on military training qualification, if their soldiers sent to military training or physical training courses organized by the private sector. However many respondents would tend to send their subordinates to the management and computer maintenance, foreign languages and vehicle management courses organized by the private sector. Despite that scientists have showed many public and private sector partnership benefits - the biggest advantage according to the survey respondents is the private sector investment issues.

Furthermore the low ratings of remaining public and private sector partnership benefits can be associated with information about the potential drawbacks of such a partnership. Respondents were asked about the opinion of why the cooperation in the military training is not carried out with the private sector. The accepted results show that the respondents would like to see how qualified personnel can properly assess the public and private sector cooperation opportunities in the field of military training. Moreover they want to evaluate the introduction of the benefits in this private business partnership. One of the benefits in cooperation with the private sector, could be the specialization in one defined field thus creating a large area of the needs of capacity and mobilizing competitiveness in a specific area. Military education system must continually meet lower demand of the National security system that to be able the rationally exploit the higher training capability. According to respondents submitted data only twenty six percent of applicable soldiers were sent to designated courses organized by the National defense system. Eventually almost three-quarters of the all respondents reply that at least once has been the situation in their practice when delegated soldiers for planned courses were left outside because of the strict quotas in these courses.

Besides the additional research was performed to find out the efficiency of the military training capacity with some intentions to strengthen the survey research data. Therefore it was determined the capacity of the efficiency in the transport management courses (driver classes C and CE, i.e., drivers carrying dangerous loads). In order to evaluate the level of the army requirements, it was assessed the army demand for trained drivers and the opportunity for preparation (or the possible supply) of these disciplined drivers. For instance the military school in preparation for C level vehicle drivers training is given one hundred twelve hours of teaching. Drivers that are instructed to the CE level (that may carry dangerous loads) training are given one hundred twenty hours of training (of which thirty seven hours of training at the theoretical level training, twenty five hours of practical training and fifty eight hours for administration experience). On the other hand many private drivers’ training schools because of the competition make every effort to ensure that drivers are trained in the shorter terms. Therefore the figures show that the average civil drivers training centers, instruction time is almost twice less than the military school of similar driver categories training. Eventually it was observed that military demand for such a personnel is really large but the real opportunities and training possibilities are several times lower.

The survey respondents were asked whether they are satisfied with the system of military training courses. Moreover they were inquired concerning the duration and quality of organized courses by the private sector in the different fields. In addition the question about their subordinates’ qualification changes after the courses was involved. These questions allowed to evaluate not only the organized military training courses by the quality but also to set a minimum quality standard of military training in the system. Whenever possible the respondents were intended to send their subordinates to take courses organized by the private sector because they believe in their higher ability to invest in new educational infrastructures. The second factor consists of the view that the courses organized by the system of national defense could be lower in quality than similar courses arranged by the private sector. Therefore it is one of the most important elements on which the private sector have been gaining against the system of national defense courses.

Resuming of the research data allows to make some assumptions; that the system of military training courses are organized with low competing and training power because of some kind a monopolistic operating system, that tend to gradually lose quality when compared with the private sector, particularly concerning the quality of the non-strictly military oriented courses organized. Summing up the results of the survey it can be said that the initial concept is confirmed; the public-private partnership implementation in some military training courses transfer good practice from the private sector organizations and improve the human and financial resources.
Conclusions

In many cases the public sector and private business partnership approach in the scientific literature is treated interchangeably. Moreover attempts to define the concept of cooperation between the public sector and private companies is compounded by the fact that the partnership includes a wide variety of forms. A large range of public and private cooperation forms does not draw a clear difference between activities such as the privatization or the simply services and goods general procurement. However the National Defense functions require extremely precise legal activities’ regulation that ensuring the prevention of possible threats for the system especially in nowadays.

The details described in this publication lead to a conclusion that legal regulation is one of the biggest interfer-ences realizing the public - private partnership project sustainable growth. In any case the defense system does not perform systematic public and private sector cooperation in research, and this probably implies a small interest in benefits from the advantages of that cooperation.

In a survey on military training and private sector collaboration was revealed that a large part of courses are conducted probably only with partly acceptable involvement of economic and human resources. The vast majority of respondents said that military training courses taking place in the system takes too long and the qualification of soldiers prepared suggest that the course time has not been effectively used. Furthermore the research findings draw attention to military education system that is mainly acting in not competitive conditions. Eventually the organizational practice of training likely does not correspond to the private sector services.

The National defense system (NDS) chief military personnel are likely to arrange their subordinates training in such way that it could have the minor impact on direct duties. Moreover the military education system is not intended to focus on the overall improvement of the operational efficiency of the NDS. Therefore the organization of the courses is managed with the least impact on direct performance of duties. Nevertheless the National defense system organizational competence that is accessible to the public and private sector partnership is not essential cooperation hindrance for the sustainable growth of the various training. However it is important to note that the diversity of partners’ competence implies greater scope for cooperation with organizations from the private sector.

Eventually the initial model for an application of results on military training using the private sector is re-presented. Moreover the private aspect in the implementation of the military training also is over-viewed. Military training and private sector cooperation in the implementation of the model to develop greater efficiency was also presented with the principle of „value for money“ approach. This framework is developed on the principle that is described as - a relevant or irrelevant subject. The intention of generating this model is to establish cooperation evaluation algorithm that could allow systematic partnership eligibility for military training goals.

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SECURITY OF SOCIETY: NARCOTICS AND DRUG ADDICTION IN LATVIA AND LITHUANIA

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Received 15 March 2015; accepted 20 May 2015

Abstract. With the collapse of the Soviet Union the control over the production and sales of narcotic substances in Latvia and Lithuanian decreased significantly. In 1992 the law that stipulated compulsory treatment for drug addiction was abolished. At about the same time relationships among drug addicts underwent a drastic change. In the 70’s and the 80’s drug addicts acquired and produced narcotics themselves but in the 90’s with the start of economic growth, organised crime started to flood the market of our countries with cocaine, Ecstasy, LSD and amphetamines which took over the traditional homemade narcotic substances.

The recent illegal market trends are connected with the flow of new psychoactive substances also through internet resources. Consequently the states intensified its legislative initiative in this field. In addition there is a current trend related to the use of smuggled controlled substances and new psychoactive substances, illegal cultivation of marijuana as well as the involvement our countries citizens in the trafficking of narcotic substances.

The problem of drug addiction has become very topical as an ever increasing number of youth who are involved in narcotics could become a threat to each and every one of us and security of society as a whole when they become addicted to their daily dose as the crave for the dose is so strong that they are ready to commit the most meaningless and cruellest crimes to get their daily dose. Today the use of narcotics is a threat to every young person irrespective of whether he/she comes from a normal or socially disadvantaged family.

The aim of the paper is to analyse the latest trends and the current situation in Latvia and Lithuania with regards to the possibilities of resolving drug addiction issues and put forward various solutions based on the forecasts for the near future. Analytical methods, theoretical studies and specific legal research methods shall be primarily used and applied.

Keywords: narcotics, drug addiction, trends, prospects, laws, security of society


JEL Classifications: F52, I19, K14

1. Introduction

Security of society is one of preconditions and driving factors of sustainable development (Lankauskienė, Tvaronavičienė 2012; Zahars, Stivrenieks 2015; Stańczyk 2011). One of contemporary society insecurity factors is drug addiction. There was a special furore created in Latvia country with the uncontrolled production of new psychoactive substances and their sale at freely accessible outlets posing a very serious and dangerous problem.
for the country.

The sale of new psychoactive substances and measures taken by competent authorities for enhancing tools and mechanisms for the control of their sale has been the characteristic feature of illegal trade market in Latvia since 2013. In response to the speed of uncontrolled production of new psychoactive substances and the countless modifications in their formula, the scope of classification of substances was stipulated as of 14th February 2013 in accordance with the generic system (the basic principle of the generic system – simultaneous prohibition of several related substances) introduced in the List of controlled narcotic substances, psychotropic substances and precursors in Latvia as a result of which more than 200 new psychoactive substances were simultaneously prohibited (Amendments to the law “On entering...2013).

Within a year after the amendments to the law that envisaged the prohibition of more than 200 psychoactive substances in Latvia new psychoactive substances or “legal” drug sales outlets were fully eliminated; before these amendments the number of such legal sales outlets exceeded 40.

On the other hand as of 17th October 2013 temporary prohibitions on the sales of new psychoactive substances was introduced in the normative enactments on sales of controlled substances within the framework of which the centre for disease prevention and control can by its decision prohibit or restrict for a period of 12 months from the date of entering into force of the decision the production, purchase, storage, transportation, transfer or distribution/sales of such new psychoactive substances or such items containing these substances which are not included in the List but information regarding their acknowledgement as psychoactive substances has been received through the European early warning system or through forensic institutions (Amendments to the Law “On procedure for legal...2013).

The necessity for the amendments were dictated by the fact that the speed of uncontrolled production of new psychoactive substances and the countless modifications in their formula led to the failure in terms of the effectiveness of the existing regulatory framework of narcotic (psychotropic) substances and new psychoactive substances in circulation as well as failure of monitoring them using traditional methods. However starting from 9th April 2014 the Criminal law was appended with the section 248 on the unsanctioned production, purchase, storage, transportation, transfer or distribution/sales of new psychoactive substances or items containing these. The violation of this section foresees a penalty of deprivation of liberty for a term of two years or temporary deprivation of liberty, or community service, or a fine with probation for up to a term up to three years. In turn for offences that could lead to serious consequences the punishment foreseen is the deprivation of liberty for a term of five years or community service and probation for up to a term up to three years (Chemical precursors that are used...2014).

It should be noted that since the introduction of criminal liability in the law for the sales of these substances, no new derivatives of these substances have appeared in the market. However, trade in these substances has fully “gone underground” as is often the case with drug trafficking.

2. Results achieved by Law enforcement agencies of the Republic of Latvia in combating illegal trade in narcotic substances, psychotropic substances, new psychoactive substances and precursors in 2014

2995 criminal offences were registered in Latvia in 2014 related to the sales of narcotic substances, psychotropic substances, new psychoactive substances and precursors, which was 31.42% more than in 2013 and amounted to 5.92% of all registered criminal offences (50541) committed in the country (Report of Latvian State Police...2015).
The jump in statistical data for 2014 can be primarily explained by the increase in the number of registered criminal offences related to the illegal use of narcotic (psychotropic) substances committed by persons who had been previously warned regarding criminal liability for the purchase, storage and use of narcotic (psychotropic) substances.

Out of the total registered criminal offences:
- 25.8% – related to the illegal production, purchase, storage, transportation, or transfer of narcotics (psychotropic) substances without the intent of selling them;
- 21.1% – related to the illegal production, purchase, storage, transportation, or transfer of narcotics (psychotropic) substances with the intent of selling them and their illegal trading as well as the illegal sales of narcotics (psychotropic) substances in small amounts;
- 45.8% – related to the illegal purchase and storage of narcotics (psychotropic) substances in small amounts without the intent of selling them or the illegal use of narcotics (psychotropic) substances if such were committed by persons who had been previously warned regarding criminal liability for the purchase, storage and use of narcotic (psychotropic) substances as well as the illegal production, purchase, storage, transportation, or transfer of narcotics (psychotropic) substances in small amounts with the intent of selling them or the illegal sales of narcotic (psychotropic) substances in small amounts;
- 4.7% – related to the trafficking of narcotics (psychotropic) substances;
- 1.3% – related to the illegal production, purchase, storage, transportation, or transfer of new psychoactive substances with the intent of selling them or their sale as well as related to the illegal production, purchase, storage, transportation, or transfer of new psychoactive substances without the intent of selling them and their illegal use committed by persons who had been previously warned regarding criminal liability for illegal production, purchase, storage, transportation, transfer or illegal use of new psychoactive substances or items containing these substances whose trade has been prohibited or restricted.

3910 administrative violation charge sheets were registered in Latvia in 2014, which was 21.5% less when compared to 2013 (4982).
2.1. Description of persons called for administrative liability:

- by gender:
  - male – 3344 persons;
  - female – 514 persons.

- by age bracket:
  - under the age of 18 – 122 persons;
  - from 18 – 20 years – 317 persons;
  - from 21 – 30 years – 1547 persons;
  - from 31 – 40 years – 1507 persons;
  - from 41 – 50 years – 301 persons;
  - over 50 years of age – 36 persons.

1272 persons were subject to criminal liability in Latvia in 2014 for crimes committed related to the illegal sales of narcotic (psychotropic) substances which was 19.6% less than in 2013 (1582 personas).

2.2. Description of persons subject to criminal liability:

- by gender:
  - male – 1052;
  - female – 220.

- by age bracket:
  - under the age of 18 – 14 persons;
  - from 18 – 20 years – 59 persons;
  - from 21 – 30 years – 486 persons;
  - from 31 – 40 years – 530 persons;
  - from 41 – 50 years – 136 persons;
  - above 50 years – 47 persons.

1025 persons were convicted in 2014 for illegal activities related to narcotic (psychotropic) substances which was 13.6% more than in 2013 (886 persons).

2.3. The amount of illegal narcotic substances, psychotropic substances, new psychoactive substances confiscated by the state

The following amounts of illegal narcotic substances, psychotropic substances, new psychoactive substances and precursors were confiscated in Latvia in 2014: 423.6 kg, 5766 tablets, 2 capsules, 7355.5 ml, 181 brands, as well as 2 saturated papers containing 25C-NBOMe (Report of Latvian State Police...2015).
Table 1. The amount of narcotic substances, psychotropic substances, new psychoactive substances (individual samples) confiscated:

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methamphetamine g</td>
<td>11863.26</td>
<td>32271.09</td>
<td>7899.53</td>
<td>8264.4929</td>
<td>52200.22</td>
<td>20467.5</td>
<td>44332.09</td>
<td>8972.62</td>
</tr>
<tr>
<td>Amphetamine g</td>
<td>6162.15</td>
<td>5020.45</td>
<td>2390</td>
<td>185.78</td>
<td>107.54</td>
<td>9502.8</td>
<td>1698.01</td>
<td>7450.11</td>
</tr>
<tr>
<td>Marijuana g</td>
<td>52,340</td>
<td>199,759</td>
<td>52,154</td>
<td>60.7 (dried); 17 (not dried)</td>
<td>34.3 (dried), 496.7 (not dried)</td>
<td>73.9 (dried), 335 (not dried)</td>
<td>29.2 (dried), 344.4 (not dried)</td>
<td>26.8 (dried), 11.5 (not dried)</td>
</tr>
<tr>
<td>Hashish g</td>
<td>253.65</td>
<td>7005.46</td>
<td>1452.34</td>
<td>23833.1</td>
<td>364589.3</td>
<td>117295.4</td>
<td>105459.56</td>
<td>29502.59</td>
</tr>
<tr>
<td>Heroin g</td>
<td>1750.50</td>
<td>1715.56</td>
<td>2143.74</td>
<td>1128.27</td>
<td>444.1</td>
<td>1395.4</td>
<td>719.91</td>
<td>771.13</td>
</tr>
<tr>
<td>Cocaine g</td>
<td>11913.90</td>
<td>5159.16</td>
<td>439.32</td>
<td>286163</td>
<td>1319.9</td>
<td>1077.8</td>
<td>575.48</td>
<td>7863.43</td>
</tr>
</tbody>
</table>

New psychoactive substances total (g/tab.):
- - 130.7 g, 2985 tab. 25709.84 g, 684 tab. 27683.84 g, 127 tab. 8994.51 g, 310 tab. 10348.51 g, 21 tab., 245 brands 17596.26 g, 30 tab., 176 brands, 2 saturated papers, 2 capsules
- Ecstasy group substances g, tab. 102798 36668 1239 0.72 g, 35 tab. 3592 tab. MDMA containing substances – grams (210.27 g); MDMA containing substances (1023.52 g); MDMA containing substances (87 tab.) MDMA containing substances – 2.59 g, 22 tab. MDMA containing substances (12.06 g), MDMA containing tablets grams (331.01 g), MDMA containing substances (119 tab.)
- Drugs containing narcotic/psychotropic substances ml/g/tab. 982.2351 g, 18.5 ml, 4256.5 tab. 5109.33 g, 13 ml, 7858 tab. 3596.03 g, 9 ml, 4881 tab. 25543.602 g, 6518 tab. 2691.8 g, 7452 tab. 2554.5 g, 7894 tab. 2077.84 g, 6210 tab. 1262.66 g, 5352 tab., 498 ml

Source: compiled by the authors

3. Characteristic factors of Latvia’s illegal market of narcotic substances, psychotropic substances, new psychoactive substances and precursors

3.1. Trafficking

Trafficking of narcotic (psychotropic) substances is one of the characteristic features of the illegal narcotic (psychotropic) substances market in Latvia. Well-developed highways, air, rail and sea transport infrastructure in combination with internal and external factors confirm the fact that Latvia is basically used as a transit state for narcotic substances and substances for internal market come through the transit route.

Characteristic entry routes for narcotic (psychotropic) substances into Latvia in 2014:
- cocaine – imported from South America in transit through EU countries (Germany, France) by land and air traffic routes;
- heroin – from Central Asian countries through Russia;
- cannabis group of substances – from EU countries (Spain, Netherland, England, Czech Republic, Portugal, Germany, Hungary, Finland) by vehicles, postal service as well as air traffic;
- amphetamines, methamphetamine, MDMA – from EU countries (Lithuania, Netherland, Belgium, Germany) by vehicles as well as through postal services;
- new psychoactive substances – from China and EU countries using postal services and courier services as well as vehicles.
Latvia is used as a transit for:
- cocaine from South America to Russia;
- cannabis group of substances (hashish, marijuana) from Western Europe to Russia and Scandinavia;
- amphetamine group of substances from Western Europe to Russia and Scandinavia.

Trafficking techniques:
- the majority of narcotic (psychotropic) substances are hidden in travel bags, suitcases, person’s clothes (under the cloth lining, in socks, pockets) and personal items;
- in the case of trafficking by post it was found hidden in letters mainly greeting cards as well as in sweet packets, CD covers, electrical nodes;
- in the case of small mail packages or courier posts where narcotics (psychotropic) substances were found, the shipping documents categorised them as chemical substances, cleaning aids or samples of cosmetics generally of very low value;
- narcotics were also found hidden on the human body;
- in transport vehicles narcotics (psychotropic) substances were often hidden in such a way that it was possible to easily get rid of them (thrown away) in case of necessity or were hidden in vehicle under their decorative linings.

The actual risks have also been identified – the rapid increase in the trade of narcotics using internet resources through so called hidden online outlets where you can purchase any kind of narcotic substance delivered through couriers. There is also a rapid increase in trade through postal enterprise services as an intermediary (mainly from China and the Netherlands as well as Great Britain, France, Ireland, Belgium, Czech Republic etc.) which hinders the possibilities of identification of shipments of narcotic substances (Ivančiks 2014).

3.2. Marijuana cultivation trends

In 2014 a sharp increase in the number of cases of marijuana cultivation was discovered in Latvia. 29 cases of marijuana cultivation were discovered – 37.9% more than in 2013. (18 nurseries) (Gailāna 2015).

An analysis of the situation indicates that marijuana cultivation is done outside the premises in open air as well as inside. 15 cases of marijuana cultivation on the premises were discovered and in 10 cases special equipment was used. On the other hand 14 cases of cultivation in the open air were discovered: 6 cases of cultivation in open air without special equipment, 8 cases in green houses without the use of special equipment to help the growth process. In accordance with the data of Criminal department of the State police a total of 14.8 kg of dried marijuana as well as 10.8 kg of green marijuana were confiscated from these marijuana nurseries.

The increasing trend in marijuana cultivation is clearly determined by issues related to the decriminalisation of marijuana trade which is being popularised in the mass media and the worldwide trend regarding aspects of legalisation of marijuana as well as the accessibility to information on internet resources related to the cultivation of marijuana which potentially fosters the involvement of people not connected to the criminal environment, in particular the youth, in illegal activities related to cannabis group of products.

3.3. Trends in the distribution of new psychoactive substances

The involvement of persons in illegal activities related to the distribution of new psychoactive substances which is estimated to further develop in the near future is defined by the easy access to unrestricted purchase of new psychoactive substances through the internet and postal/courier services, free accessibility to trade outlets (pharmacies etc.) for purchasing basic components (Salvia, raspberry leaves, other herbal substances) required to produce herbal extracts containing new psychoactive substances, simplicity of the production processes without the necessity of investing huge monetary resources, using traditional trafficking channels and criminal connections or applying special knowledge as well as by opportunities available to make a significant profit (Latvian National development plan for 2014–2020).
3.4. Couriers

25 Latvian citizens were arrested abroad in 2014 for the illegal trafficking of narcotic (psychotropic) substances which was 26.5% less than in 2013. It should be mentioned in this context that despite the steady decrease in the number of Latvian narcotic couriers during the period 2011–2014: (65 Latvians arrested in 2011, 37 in 2012 and 34 persons in 2013), this illegal trade feature however remains topical taking into account the free mobility of Latvian citizens in the European Union area, socio economic instability that concerns certain layers of the society and the potential profit opportunities provided by illegal activities of the aforesaid nature.

In accordance with the information at the disposal of law enforcement agencies the recruitment of narcotic couriers generally takes place overseas. The classical narcotic courier route is from South American countries to Europe (by air) with the narcotics being distributed in European countries. At the same time it should be mentioned that factual figures maybe higher as information is only available about those arrested couriers who agree to have information officially published (Report of Latvian State Police...2015).

4. Amendments to the normative enactments in 2014

4.1. Amendments in Criminal law

- the section 248.1 of the Criminal law was appended as of 3rd April 2014, which foresees criminal liability for the illegal production, purchase, storage, transportation or transfer for sales or the sale of new psychoactive substances or items containing these substances, whose distribution is restricted or prohibited;
- amendments in the sections 251 and 252 as of 15th May 2014 applying the sections also to new psychoactive substances thereby foreseeing criminal liability for inciting persons to use new psychoactive substances or items containing these substances whose distribution is restricted or prohibited, for renting premises for the use of these substances as well as administering to other persons or attaching other persons against their will or without their knowledge to systems or equipment foreseen for the use of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited;
- the section 248.2 of the Criminal law was appended as of 25th September 2014, which foresees criminal liability for the illegal purchase, storage, transportation, or transfer without the intent of selling of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited or for the use of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited by persons who have been warned about criminal liability for the illegal purchase, storage, transportation, transfer and use of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited as well as for the illegal production without the intent of sale of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited (Amendments to the Criminal Law 2014).

4.2. Amendments in the Latvian Administrative Violations Code

- the section 45.4 of the Latvian Administrative Violations Code was appended as of 5th June 2014, stipulating administrative liability for allowing the use of immovable or movable property which is in their possession for the illegal production, storage, transportation or sales of new psychoactive substances or items containing these substances, if the violation was carried out within a period of one year after the person has been informed in written about the fact that illegal production, storage, transportation or sales of new psychoactive substances or items containing these substances was fixed on the aforesaid property;
- the wording of the section 46. of the Latvian Administrative Violations Code was amended as of 30th October 2014 thereby envisaging administrative liability for the illegal purchase, storage, transportation, or transfer without the intent of selling of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited or for the illegal use of new psychoactive substances or items containing these substances whose distribution is restricted or prohibited at the same time warning the persons in written regarding criminal liability if they repeatedly within a year of imposition of administrative penalty purchase, store,
transport, transfer or use new psychoactive substances or items containing these substances whose distribution is restricted or prohibited (Amendments to the Latvian Administrative Violations Code 2014).

5. Actualities of activities of narcotics control and legal responsibility in Lithuania

The issues of the drug control and responsibility have always been highly ideology-driven and politicized. This is due to different approaches to the drug problem and to the role of the government in its solutions. Thus, the formation of policies is not always related to some reasonable scientific argumentation, but is often driven by a conscientious objection, emotions or an intention to please the electorate. This often finds expression in introducing harsher penalties for drug use or distribution without going into details about the consequences that could affect the health of society and public security. As laid down in the Law on the Basics of National Security of the Republic of Lithuania (Republic of Lithuania Law on the Basics...1997), the determined and effective fight against crime, in particular organised crime, underground economy, corruption and drug addiction is an important direction of the public security policy of the Republic of Lithuania. Preventing addiction (drug addiction, alcohol abuse, addiction to toxic substances, etc.) is designated as one of the most important public health policies. In the National Security Strategy (Lithuanian Seimas decision “Due to Lithuanian...2012), “international organised crime and other cross-border crimes – human trafficking, smuggling, illicit trade in drugs, arms, dual-use items, money laundering, illegal immigration, cybercrime and other criminal acts” are identified as one of the main external risk factors, dangers and threats that may have a significant impact on the national security, and “deterioration of the public health condition – spreading of dangerous diseases (including AIDS), alcohol abuse, addiction to toxic substances, drug addiction” is mentioned as one of the main internal risk factors, dangers and threats, having a significant impact on the national security.

By identifying objectives and priorities of the enforcement of internal security, as well as by maintaining and reinforcing public security, it is decided to focus on the eradication of the economic basis of drug and arm trafficking, money laundering, smuggling and criminal gangs; to develop cooperation with the EU Member States and other countries and to ensure the security of the EU external frontier and the protection of public health – to prevent addiction (alcohol abuse, drug and psychotropic substances addiction).

It is noted that drug control issues are crucial for criminological policy in general, therefore, countries where harsh punishments prevail are tend to severely punish for drug-related offences. Lithuania is no exception in this respect.

The objectives of Lithuanian national policy on drug control are set in the National Drug Control and Drug Addiction Prevention Programme 2010–2016 (Lithuanian Seimas decision “Due to national drug...2010). As stated in Paragraph 31, the goal of the Programme is: “to impede and reduce illicit supply and demand of drugs and psychotropic substances and their precursors, the spread of drug addiction through the strengthening of individual and public education, health and safety”. The Programme’s priorities laid down in Paragraph 32 are as follows:
1) supply reduction;
2) demand reduction, among children and youth in particular;
3) strengthening of international and national cooperation and coordination among public and local government institutions and organisations, associations, business entities, the civic society in the area of drug control and prevention of drug addiction;
4) Development of information systems and scientific research.

As may be seen, the main goals are impeding and reducing illicit supply and demand of drugs. The measures provided in the programme address those issues.

As regards the assessment of the prevalence of drug use, Lithuania does not stand out from other European countries. For instance, the number of drug related deaths amounts to 15, 3 million inhabitants in the population
as a whole. In comparison with other countries, this number is much lower in the Netherlands – 5.7; France – 5.6; the Czech Republic – 5.2; Portugal – 4.9; Latvia – 3.1. On the other hand, the figures are much higher in such countries as Estonia (in 2013 in this country the highest number of such deaths was fixed – 75.4), in Norway – 58.7; Ireland – 45.4; Denmark – 40.1; the United Kingdom – 37.6 (Table DRD – 5...2010). According to the evaluation of drug use prevalence among the population, the figures are also low. Based on the 2012 data, 11.9% of inhabitants have tried cannabis, 0.5% – cocaine, 1.6% – amphetamines at least once in their lives. As a comparison: in Denmark, France, Spain, Italy, the United Kingdom and Czech Republic more than 30% of inhabitants were abusing cannabis, while in the liberal Netherlands in 2012 there were 25.7%, and in Portugal, where drug use was decriminalized, similarly as in Lithuania, 11.7%. Cocaine consumption indicators in the Western European countries are higher than in Lithuania, in Spain the figure for 2012 was 10.2%, in the United Kingdom – 7.7%, Italy – 7.0%, Ireland – 6.8%, the Netherlands – 5.2% (Table GPS – 1...2010). According to the evaluation of the statistical data, in Lithuania the drugs problem is not as big as in other countries, particularly in relation to Western Europe, consumption level is not high. Although, the average number of drug related deaths is a little higher than in most countries.

According to the chosen legal regulation of drug control in the context of the European model, Lithuania is not unique and is attributable to the countries applying combined drug control model as the drug distribution is severely punished, and the users are viewed more leniently, if they dispose a small amount of drugs for their own use, they are not threatened with imprisonment. The interesting point is that the use of drugs for personal use generally is not decriminalized in Lithuania. Drug users, depending on the circumstances, are administratively or criminally responsible. More lenient legal regime also does not provide use of cannabis in case of personal use or cultivation.

5.1. Issues of legal regulation of Criminal responsibility

Depending on the nature of the offenses for drug disposal, Lithuanian law establishes criminal or administrative liability. Chapter XXXVII “Crimes and Misdemeanours Relating to Possession of Narcotic or Psychotropic, Toxic or Highly Active Substances“ of the Criminal Code (CC) (Criminal Code of the Republic of Lithuania 2010) contains provisions on criminal liability for offenses related to narcotic drugs and psychotropic substances. The following activities are distinguished:

- Unlawful possession of narcotic or psychotropic substances for the purpose other than distribution (Article 259);
- Unlawful possession of narcotic or psychotropic substances for the purpose of distribution thereof or unlawful possession of a large quantity of narcotic or psychotropic substances (Article 260);
- Distribution of narcotic or psychotropic substances among minors (Article 261);
- Production of installations for the production of narcotic or psychotropic substances or development of technologies or specifications for the production of narcotic or psychotropic substances (Article 262);
- Theft, extortion or other unlawful taking possession of narcotic or psychotropic substances (Article 263);
- Inducing the use of narcotic or psychotropic substances (Article 264);
- Illegal cultivation of poppies or hemp (Article 265);
- Unlawful possession of category I precursors of narcotic or psychotropic substances (Article 266);
- Unlawful possession of highly active or toxic substances (Article 267);
- Violation of the regulations governing lawful possession of psychotropic, highly active or toxic substances (Article 268).

Liability for toxic, highly active, narcotic or psychotropic substances or precursors of narcotic or psychotropic substances (precursors) smuggling is established separately (Article 199 (2)). The Criminal Code does not specifically denotes what is considered to be narcotic or psychotropic substances, though Article 269 (1) of the Criminal Code contains a reference to the lists of narcotic and psychotropic substances approved by the Ministry of Health of the Republic of Lithuania. The 2nd part of the same Article points out that the quantity of narcotic or psychotropic substances to be considered as small, large and very large shall be determined based on the recommendations approved by the Ministry of Health of the Republic of Lithuania.
As stated by Article 2 (1) of the Law on the Control of Narcotic and Psychotropic Substances (Republic of Lithuania Law on the Control of Narcotic...1998): “narco tic and psychotropic substances means the biological and synthetic substances included in the lists of controlled substances, approved by the Ministry of Health, the harmful effects or misuse whereof, give rise to serious deterioration of human health, marked by mental and physical dependence on them, or pose danger to human health”. In Article 4 such principles for classification of substances are provided: – according to their harmful effect upon human health, when they are misused, and according to the fact whether they can be used for health care purposes. The law also states that based upon Republic of Lithuania international agreements, the Ministry of Health shall classify and include narcotic and psychotropic substances in the three lists according to the control regime applied to them (The Law of Minister of Health...2000).

The I list is comprised of narcotic and psychotropic substances the use whereof is prohibited in health care, II consists of narcotic and psychotropic substances, used for health care purposes, and III includes psychotropic substances used for health care purposes. Most of the listed substances are transferred from the United Nations Conventions (The 1961 UN Single Convention on Narcotic Drugs, The 1971 UN Convention on Psychotropic Substances and the commentaries on these conventions). Lithuanian legal regulation feature is that belonging to the I list narcotic and psychotropic substances the use whereof is prohibited in health care are not divided according to their harmfulness, therefore, both cannabis and heroin are included into the list, although the dangers and damage to health of these drugs and certainly different.

Criminal liability is differentiated depending on the disposable type of drug, whereas, according to Health Minister approved recommendations on determination drugs or psychotropic substances in large or very large quantities (The Law of Minister of Health...2003) that designates what precisely is meant by small, large and very large quantities. For instance, the corresponding figures of disposition of heroin are less than 0.02 g, more than 2 g and more than 10 g;

- hemp (or its parts) – less than 5 g, more than 500 g and more than 2500 g;
- amphetamine – less than 0,2 g, more than 20 g and more than 100 g;
- LSD – less than 0,0005 g, more than 0,05 g and more than 0,25 g;
- Cocaine – less than 0,2g, more than 20 g and more than 100 g.

As can be seen, ratios of less dangerous materials are larger than those of more dangerous. It should be noted that a “small quantity” is defined in the lists as a certain quantity, and “high” or “very high” quantity is defined as a quantity that exceeds the set points. Attention is drawn to the fact that the Ministry of Health lists are recommendatory in nature and the court case by case basis, having regard to the circumstances, have the power to decide whether the limits established in the lists were exceeded.

Criminal liability is differentiated depending on the quantity of drugs, and it depends on the type of drug what quantity is considered to be not large, large or small. Such system of classification and responsibility is not unique in the European context. Lithuania does not qualify for the countries with a liberal drug policy, thus providing a distribution system like one in the Netherlands (acceptable risk and unacceptable risk substances) is not justified as it would require a whole change of drug control policy.

The penalties provided are quite severe, except for Article 259 (2) of the CC, according to which unlawful producing, processing, acquiring, storing, transporting or forwarding of narcotic substances shall be considered to have committed a misdemeanour and shall be punished by community service or by restriction of liberty or by a fine or by arrest. According to Article 259 (1) of the CC, for analogous offenses, when drug quantity exceeds not large, crime is alleged and stronger sanctions like fine, arrest or imprisonment for a term of up to two years are provided. However, in the 3 part of the same Article there is an exclusion, when a person shall be released from criminal liability for these conducts, in case when a person voluntarily applies to a health care establishment for medical aid or addresses a state institution in order to submit the narcotic or psychotropic substances which have been unlawfully produced, acquired, stored for the purpose other than distribution.
The other rule of the CC, Article 260 (1) provides for a penalty (imprisonment from 2 to 8 years old) for drug distribution. It should be noted that it does not matter what amount of the drug was distributed (if distributed in a large quantity, then Article 260 (2) shall be applied). It also does not provide for alternative sanctions, and on the basis of Article 75 (1) of the CC, suspending the sentence is not possible as long as offense provided in Article 260 (1) is serious (according to Article 11 (5) of the CC).

According to Article 199 (2) of the CC, smuggling of drugs or psychotropic substances or precursors of narcotic or psychotropic substances provides for the punishment of imprisonment for a term of three up to 8 years. In this case, it does not matter what quantity and what kind of prohibited substances a person transported through the border of the Republic of Lithuania. In all cases, it is considered to be a serious crime and alleged execution cannot be delayed, although in individual cases it can be clearly disproportionate and in conflict with the principle of justice.

5.2. Some issues of legal regulatory of Administrative responsibility

Certain confusion in the legal regulation lugs the fact that the responsibility for the disposal of narcotic and psychotropic substances in Lithuania is also provided in the Code of Administrative Offences (CAO) (The Code of the Republic of Lithuania of Administrative Offences 1985). Article 44 (1) of the Code 1 provides that: “illicit drugs or psychotropic substances acquisition or possession in small quantities without the purpose of selling or otherwise distributing incurs a penalty of up to one thousand litas along with psychotropic drugs or narcotics confiscation or administrative arrest up to thirty days along with narcotic drugs or psychotropic substances confiscation”. Comparing the disposition if this Article with Article 259 (2) of the CC, it can be seen that they are virtually identical. They share the same purpose (without a purpose of selling or otherwise distributing) and the quantity of drugs (not large). However, the CC covers wider possible circle of action, it mentions production, processing, transportation or sending, when the CAO refers only to acquisition and storage. It follows that there is a conflict between Article 259 (2) of the CC and Article 44 (1) of the CAO to the extent that the liability for acquisition and storage of narcotic and psychotropic substances in small quantities. Bearing in mind that, according to recommendations of the Ministry of Health only an upper limit of a small quantity is identified, it is clear that the court’s review of the circumstances could decide what kind of liability shall be applied. Nevertheless, there may be cases in the case law when persons may be treated differently in identical circumstances, ones may be sanctioned administratively and others prosecuted. This casts doubts on the conformity of equality of all persons before the law and the principle of legal certainty.

After analysing the liability of sanctions, it can be seen that in practice, criminal liability for possession of narcotic substances without the purpose of distribution is applied much more frequently than administrative. According to the Police Department under the Ministry of information, according to Article 259 of the CC, the number of qualified offenses per 2009 was 965, in 2010 – 1042, 2011 – 1313, 2012 – 1318, 2013 – 1240 (2014 National Report to the EMCDDA...). Meanwhile, Article 44 (1) of the CAO was rarely applied: in 2009. 144 administrative offenses were explored, in 2010 – 101, 2011 – no data, 2012 – 86 and in 2013 – 54. It should be noted that individuals are more often prosecuted by the administrative procedure under Article 44 (2) of the CAO, i.e. for drugs or psychotropic substances without a doctor’s appointment or persons detained for administrative offenses (except for offenses under Article 126 of the Code, fourth and sixth paragraphs and Article 129) and suspected of being influenced by drugs or psychotropic substances or avoiding the intoxication check. In 2009 there were investigated 1,661 of such infringements, 2010 – 1098, 2011 – no data, 2012 – 4590 and 2013 – 2860 (2014 National Report to the EMCDDA...). As can be seen, administrative responsibility is more frequently applied in the administrative procedure for drug consumption (CAO, Art. 44 (2)) than for acquisition or possession (CAO, Art. 44 (1)). In the latter case, offense is normally classified according to Article 259 of the Criminal Code. In addition, according to the Article 9 (2) of the CAO, administrative responsibility for offenses occurs in this Code if these violations in nature do not incur criminal liability by applicable law.
5.3. Some possible steps in improving the legal regulation

In order to avoid confusion in the application of these standards and ensuring legal certainty, the legal regulation shall be improved. As the change of regulation is related not only with a specific legal solution of the problem, but also to drug control policy in general, the method chosen depends on what are the objectives pursued. For example, if the purpose is to strengthen the responsibility for drug use, conflict can be destroyed by eliminating administrative responsibility for acquisition and storage of narcotic and psychotropic substances and by disposal of CAO Article 44 (1) (thereby these offenses would be classified only according to the Criminal Code 259 Article (2)). This regulatory model is proposed in the new Code of Administrative Violations Code (CAV) project (The Code of the Republic of Lithuania of Administrative Offences project 2012), where Article 61 provides for administrative liability for narcotic and psychotropic substances without a doctor’s appointment (expected sanction – a fine from 30 to 145 Euro), while this type of liability is removed for the disposition of a small quantity for individual needs, leaving only the criminal responsibility. It is not clear on what basis legal regulation is changed, since the explanatory notes of the amendment do not specify the reasons. In this context, it is pointed out that criminal responsibility is a coercive measure of the state that should be used and weighed up very carefully because it leads to quite serious consequences to persons for whom it is customizable. There is no reason to say that strengthening of responsibility will give any tangible results because the rigor or gentleness of legal regulation has only limited influence on the extent of drug use and mitigation of liability could have positive effects from the point of view of those consuming drugs. It is also noted that the offense is not directed against a specific person (i.e. so-called crime without a victim), thus harsh punishment is not justified by a reward ambition. Another possible solution to the problem – the destruction of criminal responsibility for a small quantity of narcotic or psychotropic substances, acquisition or possession, however, leaving it for the production, processing, transportation or shipping of those substances, thus for the first two offenses offenders would respond administratively. However, it is also not the most appropriate option, since acquisition, possession, production, processing, transportation, sending, selling aimlessly or otherwise distribution of small quantities of narcotic or psychotropic substances are considered similar in relation of hazards. In this case, it comes to a small amount of drugs for using them for individual needs, thus it is not clear why the acquisition or possession should be considered as more or less dangerous than other offenses provided in Article 259 of the CC. If such legal regulation would be chosen when the acquisition and possession would face only administrative responsibility, and for the production, processing, transporting or sending – criminal responsibility, there should appear the basis, according to which offenses could be differentiated.

Compromise solution is also possible, for instance, to eliminate criminal liability (or set only administrative) only for some, less dangerous and harmful to health, narcotic or psychotropic substances in the acquisition, possession, manufacture, processing, transportation or shipping.

Such legal regulation would help to differentiate the responsibility depending not only on existing quantities of drugs, as it is at present, but also depending on their type. However, to achieve this, it is necessary to create the appropriate drugs and psychotropic substances classification and categorization system. Pečkaitis (2003) has proposed such a system:

1) Extremely strong narcotic or psychotropic substances that pose a risk to human life (cocaine, opium, LSD and others);
2) Narcotic or psychotropic substances, dangerous to human life and health (hemp and parts thereof, amphetamine and others);
3) Narcotic or psychotropic substances detrimental to human health – the so-called soft drugs (marijuana, some of morphine derivatives, etc.).

Thus, the system proposed is largely similar to the British used three classes (A, B, C) system. Without calling into question about the criteria according to which the drugs are divided into the following categories, there is the whole issue of different approach to the “light” and “heavy” drug users, since in that case the person who causes much more harm to his own health, would be even more severely punished for it. It should be noted that in the case of distribution such differentiation would be logical, since the distribution of dangerous drugs causes
more harm to the society. On the other hand, it is difficult to say whether it should be of practical significance, since the usual distributors engaged in a variety of drugs, both light and heavy, distribution. Therefore, such a regulatory change must be rejected as difficult to implement in practice and vacuous.

Previously discussed ways to solve the existing conflict are not the best. In one case, the responsibility would be unduly strengthened without any compelling reason, in the other case the newly established regulation would not be enough equivalent and systematically consistent, and in the third case, there arouses the problem with the practical implementation and the creation of a new classification system. It is therefore considered a fourth option - to delete Article 259 (2) of the CC and Article 44 of the CAO (or the relevant articles of the ANC project draft) and to establish, in addition, the administrative responsibility for production, processing, transport and shipping of small quantity of narcotic or psychotropic substances. This would help to avoid criminal and administrative responsibility for similar offenses towards duplication and consumers who mitigated the responsibility, the former would be treated humanely, focusing mainly on drug dealers. By discussing the first, related to the tightening of responsibilities, alternative, there appears a partial reply to the question on what basis the responsibility would be mitigated. It should be noted that this regulatory amendment is consistent with the CAO Article 44 (2), which provides for administrative liability for drug use without a doctor’s appointment. Article 44 of the CAO would combine less dangerous drug-related offenses, from the use, acquisition and possession located there now, to other, currently provided in 259 Article (2) activities. All of them share the same ultimate goal (individual consumption) and low availability of prohibited substances. This is consistent with criminal law, as an *ultima ratio* measure, function in general, since the Criminal Code should not include acts that do not cause significant risk to the person or to the public. Moreover, this would reduce law enforcement and judicial costs and would make it possible to direct resources to other, more serious crimes.

Conclusions

With respect to the trends in sale of new psychoactive substances it should be mentioned that the legislative initiatives in the sphere of enhancement of controlling mechanisms against the circulation were one of the characteristic features of combating illegal trade of narcotics (psychotropic) substances in Latvia in the period 2013–2014.

The specifics of Latvian geopolitical situation will continue to be exploited by Latvian and international crime organisations interested in the trafficking of narcotic (psychotropic) substances as well as new psychoactive substances and also by persons not connected to organised crime but who see a stable source of profit in performing the above mentioned illegal activity.

Information at the disposal of State law enforcement agencies clearly indicate that the global computer network system is used for the circulation of new psychoactive substances through post and courier post by organised groups as well as by persons not connected to criminal groups.

The popularisation of new psychoactive substances in mass media is dangerous and definitely causes heightened interest including about methods/techniques of their use among the youth. The easy accessibility of psychoactive raw materials, simplicity production and sale of herbal mixtures and the potential profits can further the involvement of Latvian inhabitants in the production and distribution of mixtures containing new psychoactive substances in the illegal market.

Heightened interest must be paid to the fact that the socio economic situation of the society is still under the impact of the consequences of the global financial crisis and prompts people to turn to trafficking of narcotic (psychotropic) substances opting to become narcotic couriers and potential stability is forecasted in the above mentioned trend also in the future.

Attention should be paid to the distribution of “laughing gas” (*nitrous oxide*) in the country that was observed at
the end of 2014. The novelty of the event denies any credible forecasts regarding the stability of the new trend but definitely indicates the continuous changing nature of the market for intoxicating substances in reaction to measures carried out by the relevant authorities responsible for the control of dangerous substances by finding and offering more and more alternatives for supply and demand in order to achieve one’s goals.

The spread of drug use in Lithuania is nothing special in the European context. There are doubts on the state of scientific validity of drugs classification system in Lithuania, because it is not clear what scientific studies and methodologies are in the basis of the detection of the relevant quantities of drugs and how reasonable is the current size table in the light of the latest scientific achievements, individual drug-induced damage to the physical health, the potential of causing addiction, social consequences and other criteria. Bearing in mind that the severity of the sanctions depends on these values, the list should be based on clearly defined in the legislation criteria and the results of the latest research on the effect of particular drugs on the human body.

Lithuanian legal regulation is not exclusive, drug dealers are punished quite severely and the liability is softer in respect of consumers. Depending on the availability of the quantity of drugs, the consumers may be brought to civil or criminal liability. In small consumption cases, criminal liability is considered to be too strict, a measure of questionable efficiency and, in some cases, the penalty imposed can be clearly disproportionate. In this case, it might be considered to provide for appropriate reservations and alternatives in order to avoid strict punishment for relatively minor offenses.

References


ILLEGAL TRAFFICKING AND UNSUSTAINABLE WASTE MANAGEMENT IN ITALY: EVIDENCE AT THE REGIONAL LEVEL

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Received 10 February 2015; accepted 18 April 2015

Abstract. The presence of organized crime strongly affects sustainable waste management in Italy. In particular, illegal trafficking of waste has become one of the fastest growing areas of crime and one of the most lucrative industries among organized criminal activities, which has now infiltrated both the Italian urban and hazardous waste management cycle. In this study, we aim to investigate the determinants of the illegal trafficking of waste using waste, economic, and enforcement data in a panel analysis over the period 2002-2013. The topic is particularly relevant, given the high heterogeneity across Italian regions which also relates, and eventually leads, to different environmental performances. Our main findings reveal that, in most Italian regions, enforcement activities do not exert a significant deterrence on criminal behaviors; a negative relationship between enforcement and illegal trafficking of waste can be identified only for very high levels of enforcement efforts. Moreover, we find that the major determinants influencing the rate of illegal trafficking of waste differ between northern-central and southern regions, confirming the existence of a regional dualism. In particular, while in the northern-central area the crime rate is positively related to the level of education and negatively to the adoption of environmentally sound policies, in southern regions the organized activities for illegal trafficking are negatively related to the degree of education attainment and positively to the endowment of waste management plants.

Keywords: illegal trafficking, waste, law enforcement, organized crime, waste management, sustainability

Reference to this paper should be made as follows: Germani A.R.; Pergolizzi A.; Reganati F. 2015. Illegal trafficking and unsustainable waste management in Italy: evidence at the regional level, Journal of Security and Sustainability Issues 4(4): 369–389.
DOI: http://dx.doi.org/10.9770/jssi.2015.4.4(5)

JEL Classifications: F12, F23, F61

1. Introduction

The illegal trafficking of waste has become one of the fastest growing areas of crime and is one of the most important environmental problems worldwide, attracting the growing interest of unscrupulous brokers as well as criminal networks. As recently highlighted by UNEP and Interpol1, environmental crimes can potentially affect a variety of sectors in any society and are often linked with the exploitation of disadvantaged communities, human rights abuses, money laundering and corruption (Zahars, Stivrenieks 2015). The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) suggests that as much as 85% of the non-hazardous waste exported from the EU is shipped illegally or in non-compliance with regulations. Globally, the annual turnover in the illegal trade of environmentally sensitive commodities is estimated at around $21.33 billion. In Italy, the Legambiente Report (2014) argued that the economic returns from the illegal

trafficking of hazardous waste in 2010 were approximately €3.1 billion. According to the Italian Financial Police (Guardia di Finanza), economic motivation is one of the most important factors inducing firms to illegally dispose of waste: a European company pays about €60 000 to legally dispose a container full of 15 000 tons of hazardous waste, while the same amount of waste can be illegally disposed for only €5 000 in Eastern Europe or Asia. In Italy, in addition to the diffusely high levels of corruption, there is often the problem of a weak or inadequate enforcement system on account of two main reasons: i) the lack of economic resources devoted to crime prevention and control and ii) the strong interaction and collusion between political parties and industrial lobbies that affects the criminal environmental legislation and its effective enforcement. These circumstances have created the prevalence of a system that allows generating private profits while environmental costs are social. The illegal trafficking of waste is an emblematic example of such a system, which is in turn encouraged by a weak degree of social perception, given that eco-crimes are usually defined as “crimes without victims”, since the victims are not immediately identifiable.

Following the economics of crime literature (Becker 1968; Ehrlich 1973; Levitt 1999; Polinsky and Shavell 2000; Stańczyk 2011; Lankauskiene, Tvaronavičienė 2012; Šileika, Bekerytė 2013; Račkauskas, Liesionis 2013; Tunčikienė, Drejeris 2015; Giriūnas, Mackevičius 2014; Giriūnienė 2013), it is well known that people will commit a crime if the gain exceeds their (opportunity) costs. In our case, the illegal trafficking of waste arises when higher profits are expected compared to legal options of recycling or disposal, combined with regulatory or enforcement failure. As far as the illegal discarding of waste is concerned, in 2013, the law enforcement authorities in Italy acknowledged 5744 offences, with 6971 people accused, 90 arrests carried out and 2318 seizures (Legambiente 2014). The three regions most affected by the illegal activities were, in order, Campania, Calabria and Apulia: This data confirms the incidence of these phenomena in territories traditionally characterized by the presence of Mafia. Prevalence can also be seen in Lombardy, Latium, Tuscany, Sardinia and, at eighth position, Sicily.

In the Italian legal system, the criminal protection of the environment is almost entirely limited to a series of misdemeanors, which fall outside the Penal Code. As far as the illegal trafficking of waste is concerned, it was firstly introduced in Article 259 of the Environmental Code (D.Lgs. 152/2006) on the “Illegal shipment of waste”, which punishes “whoever carries out a shipment of waste constituting illicit traffic according to Article 26 of the Regulation (European Economic Community) 1 February 1993, no. 259 or carries out a shipment of waste listed in the Annex II of the above-mentioned Regulation in violation of article 1, par. 3, a), b), c) and d), of the Regulation itself shall be punished with a fine from €1550 to €26000 and with arrest of up to two years. The penalty is increased in case of shipment of dangerous waste”.

Amongst the few cases that do include the felony, there is the case of organized activities for the illegal trafficking of waste. Firstly introduced in 2001 when art. 22 of the Law 93/2001 implemented the art. 53-bis of the d.lgs. 22/1997 (the so-called decreto Ronchi), in 2006 organized activities for the illegal trafficking of waste became a definitive part of the Environmental Code. In particular, art. 260 of the Environmental Code punishes by imprisonment from one to six years any person who, in order to gain unfair profit through operations and preparation of means and organized continuing activities, sells, receives, transports, exports, imports or otherwise improperly handles large quantities of waste. If the waste is highly radioactive, the sanction is harsher, punishing violators with imprisonment from three to eight years. It should be noted that before the approval of this law, nobody had been seriously punished for the crime of illegal trafficking of waste. Since then, criminal enforcement has made an important step forward and has enabled disbanding some of the most active national and transnational criminal organizations.

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2 This estimation was simply obtained from the difference between the amount of generated and managed waste (14.3 million tons) multiplied by an average cost for waste management (220 Euro per ton). Using a different methodology, Transcrime estimates revenues between 326 and 522 million Euro.

3 For example, the Art. 256 of the Environmental Code punishes “whoever carries out an activity of collection, transport, recovery, disposal, trade and brokerage of waste without the permit, registration or communication based on Articles 208, 209, 210, 211, 212, 214, 215 and 216 shall be punished by: a) arrest from three months to one year or fined from 2 600 to 26 000 Euro for non-dangerous waste; b) arrest from six months to two years and a fine from 2 600 to 26 000 Euro for dangerous waste”. It is an abstract endangerment offence punishing the exercise of activity out of the preventive control of the public administration. In particular, it is a misdemeanor and can be committed intentionally or negligently.

4 A recent law (Law 6/ 2014) was introduced into the Environmental Code Article 256 bis on the “Illegal burning of waste,” which punishes with imprisonment from two to five years whoever sets fire to waste abandoned or deposited in an uncontrolled manner in unauthorized areas.
Studying the effectiveness of the enforcement of environmental laws is an important research question for several reasons. There is, in fact, an ongoing policy debate, especially at the European level, whether to further strengthen criminal enforcement in the context of environmental law or not (Faure 2004). However, given the mixed and heterogeneous empirical findings, neither proponents nor opponents of stiffer sanctions are able to base their arguments on strong empirical grounds.

Therefore, in this work we attempt to answer the following research questions: i) what were the main determinants of organized illegal trafficking of waste in Italy over the period 2002-2013 and ii) to what extent is the existing enforcement system effective in deterring it? The present paper contributes to the existing literature on environmental crime in several ways. First, it explicitly analyzes a specific type of environmental crime, which presents the higher degree of sanctioning regime in the Italian environmental legislation. Second, Italy represents a quite important country study because of the strong presence of mafia clans and organized crime systems in the illegal market. Finally, our empirical analysis is based on a unique dataset that covers the total number of reported investigations related to the organized activities for the illegal trafficking of waste (art. 260 of the Environmental Code) over the considered period.

The remainder of the paper proceeds as follows. Section 2 outlines the main characteristics of the organized illegal trafficking of waste in Italy. Section 3 reviews the main theoretical and empirical literature and points out the main hypothesis to be tested. Section 4 describes the dataset and the empirical model, while the results are illustrated in Section 5. Finally, Section 6 summarizes and concludes the paper.

2. The organized illegal trafficking of waste in Italy

2.1. Economic and institutional drivers

Illegal trafficking of waste arises when higher profits are expected compared to legal options of recycling or disposal, combined with institutional or enforcement failure. From an economic point of view, this environmental crime is mainly motivated by cost-saving decisions driven by the attempt: i) to reduce the relatively high costs of treatment and disposal of waste and ii) to take advantage of regional differences in environmental taxation (i.e., landfill and incineration taxes). A recent work of D’Amato et al. (2014) found that in Italy a stricter environmental taxation measured by the move from TARSU to TIA exerted a positive effect on illegal disposal and trafficking. However, it should be possible that higher environmental taxes could provide an economic incentive to maximize recycling; for example, Mazzanti and Montini (2014) found that more diffuse incentive based policy instruments, such as waste tariffs, might positively correlate to better waste management.

Another economic factor that can induce the illegal shipment of waste is the potential economic returns of waste as an export. In fact, several waste streams are shipped to countries outside the EU as ‘second-hand goods’ (i.e., primarily waste electrical and electronic equipment, end-of-life vehicles, but also car tires and other types of waste). The wide difference in prices between used and new products in these countries is one of the most important factors encouraging illegal shipments.

The illegal trafficking of waste may also be driven by other factors that have an institutional nature and are concerned with regulatory or enforcement failures. Firstly, in Italy, waste treatment and disposal plants are insufficient and are somewhat unevenly distributed at regional level. In Italy, every year the total production of waste amounts to almost 164 million tons with a treatment capacity of just over 150 million tons: specifically, there are 32.5 tons of municipal waste produced, 79.4 tons of nonhazardous waste, 41.9 tons of construction and demolition waste, and 9.6 tons of hazardous waste (Fise Assoambiente 2009). The geographical distribution of the waste treatment and disposal plants is concentrated in some areas of the country (mainly in the northern regions) with the consequence that there are territories (in the southern regions) where mafia clans and criminal organizations are the only actors able to manage waste disposal. For example, if we take into consideration the

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5 Overall, there are 6,404 waste recycling plants with a treatment capacity of 150,800 tons and 403 waste disposal plants with a capacity of 20,500 tons. To these numbers, must be added 686 landfills with a residual total disposal capacity of approximately 122,600 tons.
composting sector, there are 146 plants in the north, 52 plants in the south and only 42 plants in the center. Such a situation encourages the legal (and illegal) trafficking of waste often making the international transport less expensive than a long-distance treatment at home and paving the way for eco-criminal infiltrations.

Second, a national waste reduction policy as well as a systemic vision concerning both urban and hazardous waste are still missing in Italy. The urban waste management is under public local municipalities, which follow their own policies, however hazardous waste management is completely left to free market rules. Using a spatial analysis, Mazzanti and Montini (2014) have shown that the heterogeneous waste management and disposal performances inside Italy depend not only on the existence of a North-South divide, but also on the quality of waste policy and idiosyncratic socio-economic factors. The absence of a waste management policy based on political and administrative planning at the national level and coherent with a long-running industrial strategy, feeds institutional and regulatory uncertainty, which furthers the illegal trafficking of waste.

Finally, the implementation of an effective system of control in Italy is sometimes quite difficult for several reasons. First, the waste management cycle is characterized by many steps whose traceability is ensured by self-certifications (the so-called formulary Fir), and so it is easily eluded and counterfeited. Second, since monitoring and inspection activities are officially delegated to some regional environmental agencies (ARPA) without a sufficient financial budget and often lacking the necessary technical equipment, the challenge is therefore entirely left to the police force that, however, may investigate only when in possession of a notitia criminis. In addition, multiple police forces enact law enforcement at, both, national (Arma dei Carabinieri, Polizia di Stato, Guardia di Finanza, Corpo Forestale dello Stato) and local levels (Polizia Provinciale and Polizie Municipal), which quite often do not communicate and cooperate among each other. There is no doubt that the cooperation among all law enforcement authorities and prosecutors is the best weapon to fight illegal waste trafficking. In fact, as shown by the investigation named “Demeter” (which led to 49 000 tons of hazardous waste seized in 64 countries), inter-force inquiries are the most effective strategy to uncover complex criminal organization. As a matter of fact, in the last few years this investigative cooperation has increased. For example, the Italian Customs Agency has stipulated some protocols to better coordinate its investigations with other police forces. Nowadays, such a cooperation also involves some waste Consortia (such as Polieco and Ecopneus), which in Italy are established by law and are responsible for waste collection and recycling. On the other hand, the challenge that Italian enforcers and prosecutors have to undertake, is frustrated by complex and ever-changing laws and wrong (or absent) political enactments.

### 2.2. How does the illegal trafficking of waste work?

The most common method used for evading controls and dumping hazardous waste with impunity in unsuitable areas or even recycling them into the production system is the so-called “giro bolla” (“invoice switch”) system. In this scheme, waste materials are taken from the producer and transferred to either a storage center or intermediate stockpiling area, which then becomes the new producer of the waste materials. Here, documents accompanying the shipment are falsely modified and the waste materials declassified from hazardous to non-hazardous without undergoing any treatment. The documents are falsified by either using fake certificates or old certificates with a new date but the same code, which identifies the waste as non-hazardous. In other cases, this passage from the producer to a storage center is not even necessary, since the false documentation is delivered directly to the truck drivers (usually in parking areas along the highways) who transport the waste to the final disposal site. Falsifying these documents is obviously a crucial stage in the process and can be done in various ways: e.g., a false analysis provided by cooperative laboratories, forgery of loading/unloading records, improper use of identifying codes assigned to the waste materials, and so on. For example, a toxic solvent, which should be addressed to a landfill for hazardous waste, can be easily “transformed” into a harmless urban waste. Because of this counterfeit, the toxic solvent is, at best, addressed to a landfill for municipal waste or, at worst, it is thrown into an illegal landfill or recovered as compost to be used in farmlands.

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6 Illegal shipment may take many forms such as: i) the transport without notifying the authorities of source and destination when such a notification is necessary; ii) the falsification of any documentation regarding waste loads or the not declaration of waste; iii) the mixing of certain types of waste; iv) the classification of hazardous waste as nonhazardous (‘green-listed’); v) the shipping whilst falsely claiming that it comprises second-hand goods and it is therefore not subject to waste regulations.
In Italy (but also in other EU countries) industrial waste represents 80% of the total amount of waste produced each year and it is also the most trafficked, both nationally and internationally. One of the key problems in the management of waste is that usually the processing and final disposal sites are too far from those of production. It is easy to predict that the further waste must transit, the easier it will be for traffickers to divert the waste into an illegal network. The most common technique used by the “merchants of poison” is the systematic falsification of the documents accompanying the waste (the so-called “giro-bolla”) that converts, at least on paper, special and often dangerous waste into harmless waste (such as raw materials or simple agricultural fertilizers). Very often the “downgrading” of waste’s hazardous status is implemented by mediators (such as owners of processing, storage or composting plants), chemical laboratories, public servants, etc. In fact, to improve the recycling and the energy recovery, the Italian law requires appropriate plants to process and recover the materials with chemical and physical treatments. Very often these treatment plants are used as a front for the illegal “downgrading” of waste, simulating the processing operations. In such a case, the waste enters into the plant with a code and comes out with another code, without being subjected to any real industrial treatment. Additionally, it is also an enormous cost saving for the waste producers, a huge profit for the illegal traffickers and a big public economic loss. In fact, the waste, both urban and special, should be considered as a raw material with its own intrinsic value. Letting these raw materials move into the illegal network implies, namely, a direct economic loss for the recycling industries (which lose waste to treat) and indirectly, the manufactures (which lose cheaper secondary raw materials for their own production). This is particularly true for a country like Italy, which has a long history in the field of recycling that, nowadays, is seriously endangered by the waste traffickers.

Recently, many inquiries have shown that a new way to manage waste illegally is emerging in Italy. In fact, some entrepreneurs have taken advantage of the so-called “simplified procedure” in waste disposal (art. 214 and D.Lgs.152/2006). Notwithstanding the current regulations, this procedure was introduced for some specific activities, which must be authorized by the local institution (i.e., provincia) and requires less bureaucratic fulfillments and controls. Born as an exception, this simplified procedure has quickly become the rule, evolving into an unintended subsidy for the illegal waste trafficking vendors. As a matter of fact, there are more and more plants operating under this administrative regime and many of them are accused of illegal waste trafficking.

Illegal waste trafficking is continuously changing. Nowadays, the falsification of documents is also used to commit tax frauds. The modus operandi is straightforward and effective: a waste management plant creates a new company with the specific goal to invoice false operations and to pay less tax. These companies (called “cartiere”) usually disappear when law enforcers begin investigations. Generally, waste management firms involved in illegal trafficking act also on the legal market. Most of them are duly registered in the Chamber of Commerce and have the quality environmental certifications (in Italy, ISO 14001: 2004, EMAS, eco-label). Registration with the Association of Environmental Managers (Albo Gestori Ambientali) and the provision of a VAT code, often allow business operators to mask their illegal activities. At the same time, being without any criminal record allows a company to participate in all public procurement activities, including those for the management of municipal waste.

Although, in the public’s opinion, mafia clans are the most important subjects involved in illegal waste trafficking, several inquiries have shown the fundamental role played in this field by the so called “white collars”: businessmen, lawyers, politicians and public servants. Corruption is the crucial element that connects all these actors and this is particularly true in the waste sector, characterized by the grant of public licenses and authorizations. Moreover, this sector needs large economic investments and has to face a huge bureaucratic machine, which makes the environment even more susceptible to corruption. All these conditions hamper the competition and facilitate the formation of oligopolistic forces, where the strength of mafia intimidation is particularly effective. This could be a key element to understanding why in the south of Italy there are less treatment and recycling plants. As stated by investigators and by the Bank of Italy (2014), the opening of a waste management company can also hide money-laundering activity. Inquiries made by Italian Customs reveal that the illicit cross-border movements of waste are intertwined and follow the movement of legal goods. Consequently, it is
important to follow the legal route to discover the illegal ones.

2.3. Some descriptive facts about the organized illegal trafficking of waste in Italy

Organized illegal trafficking of waste in Italy can be suitably illustrated with descriptive statistics. The number of yearly reported cases of organized illegal trafficking of waste is shown in Figure 1. The number of crimes sharply increased up to 2010 and reduce in the following years. It is worth noting that, in 2010, investigations of organized illegal trafficking activities of waste moved under the responsibility of the DNA (Direzione Nazionale Antimafia)\(^7\).

![Fig.1. The total number of reported cases of organized illegal trafficking of waste by year](source)

Source: authors’s elaborations on Legambiente database

The shift of responsibility of the investigations to the DDA (Direzioni Distrettuali Antimafia) and the reduction in the number of violations can be explained by the stronger cooperation between investigators, which has strengthened the exchange of knowledge and information, however this has also generated some structural and organizational delays that have slowed down the investigation and enforcement process (Figure 2).

![Fig.2. The total number of reported cases of organized illegal trafficking of waste by region (2002-2013)](source)

Source: authors’s elaborations on Legambiente database

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\(^7\) The DNA comprehends twenty-six Direzioni Distrettuali Antimafia (DDA), who are in charge of mafia investigations.
Reducing the total number of investigations at the regional level according to the location of the investigation office (Procura Distrettuale), reveals that this spike is driven by a small number of regions including Campania, Apulia, Lombardy and Sicily. These four regions, which cover 44.6% of the total number of investigations, are also the regions where most environmental violations in the entire waste cycle have been detected. However, only half of the investigations involve only one region (113 out of 224). Looking at the degree of regional involvement of the investigations (Figure 3), we see that 23.7% of the reported cases refer up to three regions, 19.2% up to six regions and the remaining 7.6% involve between seven and ten regions. These figures show how the concentration of illegal activity is only apparent in a few regions; the organized activities for illegal trafficking of waste is a crime that spills beyond the region where the investigation starts, spreading throughout a large part of the national territory. In particular, the organized illegal trafficking of waste is a crime with a long “production chain” that requires several criminal professional skills linked by a network structure not limited to within a specific territory.

<table>
<thead>
<tr>
<th>Number of regions</th>
<th>Number of investigations</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>111</td>
<td>49.6</td>
</tr>
<tr>
<td>Two</td>
<td>28</td>
<td>12.5</td>
</tr>
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<td>Three</td>
<td>25</td>
<td>11.2</td>
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<td>Four</td>
<td>26</td>
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<td>Five</td>
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<td>Seven</td>
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</tr>
<tr>
<td>Eight</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>Nine</td>
<td>2</td>
<td>0.9</td>
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<tr>
<td>Ten</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>224</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Fig.3. The number of regions involved in the investigations (2002-2013)

Source: authors’ elaborations on Legambiente database

As the development of crime usually depends on several factors including the stringency of enforcement of the executive, it is of special interest to analyze the success of police in enforcing environmental criminal law in detail. Figure 4 shows the development of the number of offenders charged and the number of offenders arrested for the organized activity in illegal trafficking of waste. Similar to the number of reported crimes shown in Figure 1, we can see that the number of offenders arrested peaked in 2010 and reduced afterwards. Even in this case, a possible explanation can be given by the shift of the investigation responsibility to the DNA. The two curves demonstrate different trends over time: while the curve indicating the number of charges is quite erratic, the curve illustrating arrests is more regular, which could be attributed to the fact that these arrested offenders represent the hard core of the criminal organizations, who, in order to promote their criminal design, need only a minimal informal support structure. The average number of offenders arrested for each investigation varies between 4 and 6, which is consistent with what investigators consider sufficient to set up an organization of illegal trafficking of waste.

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8 In particular, Campania is all along the region with the highest number (953 only in 2013) of detected environmental crime in the waste cycle (Legambiente 2014).

9 It is worth noting that, in order to conduct organized activity for the illegal trafficking of waste, their needs to be at least one entrepreneur operating in the waste sector, a transportation company, a chemical laboratory, and one broker.
Figure 5 shows the evolution of reported cases of organized activity in illegal trafficking of waste by the nature (national or international) of the investigation. In the recent past, illegal waste trafficking has grown to a global scale. This is particularly true for specific kinds of waste (plastic, paper, metals, old tires, etc.), which are considered as raw materials and so draw big quotations in the Stoke Exchange. As a consequence, the Italian Customs Agency and other law enforcement authorities have improved controls and intelligence activity, gaining good results. The example of the year 2010, which saw the highest number of investigations and marked important outcomes also in terms of detections, clearly indicates this. The decrease in the number of inquiries, which can be seen in following years, must be read as a natural consequence of traffickers’ reactions. In fact, to protect their business and escape the strict controls at Italian harbors, the traffickers shifted their route to other countries, such as Slovenia and Albania.

Our figures on the illegal export of waste slightly differ from the statistics collected by the Italian Customs
Authority. If we consider not only the investigations for the organized activities for the illegal trafficking (art. 260 of the Environmental code), but also those for the illegal shipment of waste (art. 259 of the Environmental code), in the last three years Italian Customs seized more than 32 thousand tons of hazardous waste, of which 13,600 ton was during 2012. The main ports of departures were: Genova, Venezia, Napoli, Gioia Tauro and Taranto. However, it should be stressed that such figures are just “the tip of the iceberg”, since Italian ports ship yearly almost 4,400,000 containers, of which 750,000 go to China. Far East countries seem to be the more important destinations for the Italian illegal shipments of hazardous waste. In 2012, 32.2% of the total amount of seized waste was directed to China, 23.3% to India and 22.3% to South Korea. Behind the increase in the volume of waste shipment, there is the international demand for recovered materials from the rapid growth and industrialization of the major Asian economies (Figure 6). China is the dominant player, but India and Indonesia are also sourcing material from the EU to fuel domestic industries. In recent years, waste has increasingly been seen as a secondary raw material with economic value and with a significant role in supporting the decoupling of resource use from economic growth.

The European Commission (2011) estimated that, in 2008, the eco-industry of the EU 27 had a turnover of EUR 319 billion, 2.5% of EU GDP, and employed 3.4 million people. Some waste streams have a surprising economic value. For example, the platinum embedded in catalytic converters of scrapped cars exported from Germany to Africa amounts to about a third of annual platinum use in Germany. A cost-benefit analysis shows that, not only the environment, but also the economy would strongly benefit from improvement legislation implementation across the EU. A study of the European Commission (2012) compares two scenarios for the period 2008-2020, one involving no progress in waste management and the other involving full implementation of eight pieces of EU waste legislation, and concludes that full implementation would mean cost savings of € 72 billion per year. In addition, the study concludes that, by raising the level of the EU waste management sector to full compliance, the turnover of waste management and recycling would increase by € 42 billion per year and over 400,000 jobs would be created.

![Fig.6. The number of international reported cases of organized illegal trafficking of waste by country (2002-2013)](image)

*Source: authors’s elaborations on Legambiente database*

Legambiente’s report (2014) argues that, based on available data, 1.6 million tons of waste was seized in the last three years. To ship such a quantity of poisonous substances it would require more than 65 thousand trucks covering the same distance between Rome and Zurich (886 km). Since 2002, the total amount of seized waste was 15 million tons, almost equal to 525 thousand trucks covering a distance of more than 8,000 km. Figures 7 and 8 show the waste seized by business sector in both the national and international investigations. At the international level, we find that the illegal trafficking of waste seems to be concentrated in a few business sectors. Looking at Figure 7, it is possible to see that the highest share of illegal waste seized in the Italian ports is mainly composed by waste plastic (19.4%), scrap metal (19.4%), industrial studs and muds (12.9%), textiles (9.7%) and waste electrical and electronic equipment (WEEE) (9.7%).
The waste seized in national investigations belongs to different business sectors. Figure 8 shows that they are concentrated on industrial wastes and muds (26.7%), metal waste (11.1%) and animal and vegetal waste (10.4%).

Another important feature indicates the degree of organized crime’s involvement in the illegal trafficking of wastes. Looking at Figure 9, we see that mafia clans only had a marginal role: in the period between 2002 and 2013 only 6.7% of reported cases registered the involvement of mafia clans. This figure is similar to that provided by the DNA: between July 2012 and June 2013 only 4 cases out of 123 refer to Mafia. The low degree of organized crime’s involvement might be explained by the strong corporate nature of this type of crime that sees
the involvement of entrepreneurs, transporters, and brokers, all of whom aim to meet the demand and supply of waste. In other words, there are some waste producers eager to dispose of their waste at low costs, and other firms are ready to earn money illegally disposing of all types of waste.

Fig. 9. The presence of Mafia organization in the organized trafficking of waste

Source: authors’s elaborations on Legambiente database

Mafia clans indeed are just one of the actors involved, but not the only one. As the data derived from our earlier investigations confirm, the most important role is played by entrepreneurs or, in general, economic players, who have captured the great and easy economic opportunity offered by the illegal waste management. This economic sector in fact was left to private improvisation by the Italian authorities, without any industrial point of view. Among all the Italian mafias, the Camorra syndicate was, and still is, the most involved.

3. Theoretical background and hypotheses

The most recent theoretical and empirical literature related to waste management and disposal and to criminal enforcement is based on work by Almer and Goeschl (2010), in which they found evidence that criminal sanctions can play a relevant role in deterring environmental offences, and on the works by D’Amato et al. (2011) and by D’Amato and Zoli (2012), in which a public enforcement model is studied where risk neutral agents choose their compliance strategy according to the comparison between the expected benefits and the expected costs from illegal behavior. A number of papers, such as Sullivan (1987) and Fullerton and Kinnaman (1995) focus on illegal waste disposal, and some others, such as Shinkuma (2003) address costly enforcement and transaction costs, respectively.

To develop testable hypotheses that guide the empirical analysis in section 4, a range of determinants have been considered. This includes socio-economic, environmental and policy variables that might influence illegal behavior in general (Ehrlich 1973; Cornwell and Trumbull 1994) and environmental offences in particular (Hamilton 1996; Helland 1998; Stafford 2002; Eckert 2004). As it is well known (Becker 1968; Stigler 1970; Polinsky and Shavell 2000), the basic result of deterrence theory is that potential violators behave according to both the probability of detection and the severity of the sanction; thus, deterrence may be improved either by raising the sanction, or by increasing expenditures on enforcement to raise the likelihood that the violator will be captured, or again by changing the legal rules to increase the probability of detection. Thus, based on the so-called deterrence hypothesis, potential offenders’ illegal behaviors depend, inter alia, on risks and benefits of crime (Garoupa 1997). Assuming that potential criminals are cynical profit-maximizers who base their decisions on whether to commit a crime or not on an expected utility calculation, then they will comply with the

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In particular, the Casalesi, a clan which took its name from a small town near Caserta, Casal di Principe. This clan is mostly responsible for the environmental disaster caused by the illegal waste dumped in the agricultural fields near the provinces of Caserta and Napoli (“Terra dei fuochi”). Last year, Domenico Bidognetti, the former chief of the Casalesi, was the first boss to be convicted for environmental disaster. For this eco-crime he was sentenced to 20 years in prison.

In Becker’s model, the efficient level of crime is observable when the marginal cost of enforcement is equal to the marginal social benefit of crime reduced per unit of enforcement.
law as long as their benefits outweigh their costs of compliance. As such, polluters are expected to comply with environmental regulations if the probability of being apprehended and sanctioned, coupled with the penalty imposed, is sufficiently high.

Therefore, with all of the above considerations, we might derive the following research hypotheses to be tested empirically:

**Hypothesis 1:** An increase in the enforcement effort results in, ceteris paribus, a lower number of violations; in other words, enforcement improves deterrence.

This hypothesis postulates that increasing enforcement efforts (i.e., judicial investigations, arrests) will lead to increased deterrence. Empirical studies have shown that a generally high level of enforcement implies a high level of deterrence. This is also the core of the prediction of Becker’s model: increasing the expected costs of crime due to an increase in the probability of inspections, leads to lower rates of non-compliance (Gray and Deily 1996).

**Hypothesis 2:** An increase in economic activity leads, ceteris paribus, to a higher number of illegal waste trafficking violations.

The level of economic activity might influence illegal trafficking of waste in two ways (Almer and Goeschl 2010): in relation to scale and in relation to income. The former might be observable, since a greater production of waste corresponds with a higher level of economic activity and, in turn, this might lead to a higher degree of illegal trafficking (Eckert 2004; Stafford 2002). The latter effect might be observable since regions with higher incomes may care more about the environment and thus have a greater inclination to report misdeeds than regions with lower incomes. Both mechanisms predict a higher number of violations for higher levels of economic activity.

**Hypothesis 3:** An increase in the legal opportunities of the population leads, ceteris paribus, to less (more) illegal waste trafficking violations.

The literature on the economics of crime has largely stressed the role of legal income opportunities in affecting the benefits and costs of crime. Theoretically, the relationship between the level and growth of income and crime is ambiguous. On the one hand, higher income opportunities may increase the chances for employment in the legal sector and, therefore, reduce the crime rate; on the other hand, higher income opportunities that improve the level of transferable assets in the community may potentially raise the revenues from crime. The rate of unemployment has also been considered as an indirect measure of the opportunity cost from crime. If legal income opportunities are less lucrative than potential gains from criminal activity, individuals will be more prone to engage in crime. Since unemployment may reduce expected legal earnings, it could generate a supplementary effect that induces individuals to commit more crime.

**Hypothesis 4:** An increase in the education level leads, ceteris paribus, to less (more) illegal waste trafficking violations.

Another economic factor that may affect the decision to engage in criminal activities is education. Primarily, higher levels of educational attainment, being associated with higher returns in the labor market, may increase the opportunity cost of criminal behavior. In addition, education may alter personal preferences in a way that affects decisions to engage in crime, bringing about a sort of “civilization” effect. In particular, Fajnzylber et al. (2002) suggest that education may increase the individual’s moral stance, and then affect the individual’s perception of crime. On the other hand, a higher level of education may reduce the cost of committing a crime or may raise the revenues of crime. Hence, the net effect of education attainment on criminal behavior is, a priori, ambiguous.

**Hypothesis 5:** An increase in the costs of treatment and disposal of waste lead, ceteris paribus, to more illegal waste trafficking violations.
Illegal trafficking of waste arises when higher profits are expected compared to legal options of recycling or disposal, combined with regulatory or enforcement failure. The criminal behavior is driven, therefore, by an attempt to reduce the relatively high costs of legal treatment of waste, of legal disposal (i.e., landfill tax) and of transportation costs. D’Amato et al. (2014) found that higher costs paid on legal disposal of waste have a positive effect on illegal disposal.

Hypothesis 5: A more environmentally sound policy and an integrated system of waste management and disposal reduces, ceteris paribus, the incentive to illegally traffic waste.

The lack of adequate (and effectively enforced) waste management policies generates institutional and regulatory uncertainty, which fosters the illegal trafficking of waste. Mazzanti and Montini (2014) have shown that the heterogeneous waste management and disposal performances in Italy depend not only on the existence of a north-south divide, but also on the quality of waste policy and idiosyncratic socio-economic factors. A more effective waste management policy should require national political and administrative planning, in coordination with a long-term industrial strategy.

4. Data description and empirical strategy

4.1 Data description

Data on the organized illegal trafficking of waste were provided by the Osservatorio Ambiente e Legalità of Legambiente. Since the application of ex art 53 bis Decreto Ronchi (actually, art. 260 D.Lgs. 152/01), Legambiente started collecting information on the total number of investigations related to the organized activities of illegal waste trafficking (art. 260 of the Environmental Code). In particular, for each investigation, Legambiente’s dataset contains information on the number of offenders detected, the number of offenders arrested, the number of firms involved in the investigation, the location of public prosecutors’ offices, the type and the amount of seized waste and the type of investigation (national or international). From a methodological point of view, it is worth noting that the collection of data refers to the total number of investigations that were collected by the investigation authority and transferred to the prosecutor authority. Our dataset also considers all the investigations conducted by the entire set of investigation forces in charge of environmental crime. Given the nature of the data, they can be grouped at, both, province and region levels. However, in order to build a balanced panel, we have confined our analysis to annual observations of regional aggregations for the 20 Italian regions (NUTS2) over the period 2002 to 2013.

4.2 Variables definition

The dependent variable is the rate of crime, which is measured by the number of investigations related to organized illegal waste trafficking activities (art. 260 of the Environmental Code) per 100,000 resident population in each region-year. In our empirical analysis, we use a set of explanatory variables divided into three groups: deterrence variables, waste market-related and socioeconomic variables. To address the deterrent effect on criminal behavior, we use two variables such as the charge rate and the arrest rate. The former is measured by the ratio of the number of offenders charged to the total number of offenders recorded and reflects the portion of offenders that are identified by legal authorities. The latter is defined as the ratio of the total number of offenders arrested to the total number of offenders recorded. These variables indicate the portion of offenders who have already received some kind of punishment, but do not reveal the certainty of their conviction. For both the deterrence variables, we have also considered their squared terms in order to control for a possible non-monotonic relation.

To account for waste related variables, we use the number of waste treatment plants in each region and the per capita recycling (or recovery) rate. The first variable is a proxy for the cost of treatment and disposal of waste, while the second proxies the adoption of environmentally sound management policies at regional level. Finally, we complete our dataset by including a set of socioeconomic variables that reflect the legal income opportuni-
ties of potential criminals. In particular, we insert into our model the Gross Domestic Product per capita at 2005 constant prices, the rate of growth of the real GDP at 2005 constant prices, the male unemployment rate and the share of population that has enrolled in secondary school\textsuperscript{12}. A detailed description of the variables, their definition, as well as the source of data is provided in Table 1.

4.3 Econometric methodology

In this section we implement a simple model of environmental crime, which posits a relationship between annual reported crime in each region and region-level enforcement variables, plus some other control variables. The estimation equation takes the following form:

\[
\text{Incrime}_t = a_0 + \beta \text{Incrime}_{t-1} + X_t \gamma + \mu_i + \text{year}_t + \epsilon_t
\]

where the subscripts \(i\) and \(t\) represent region and time period, respectively. The dependent variable (Incrime) is the crime rate, while the explanatory variables are the lagged crime rate and a set (X) of socioeconomic and waste specific variables characterizing the crime. The lagged crime rate in the previous year was inserted into the model in order to identify a possible dynamics in crime. As a matter of fact, the economic crime literature has identified the possibility of criminal hysteresis or inertia (Fajnzylber \textit{et al.} 2002); in other words, higher crime today is associated with higher crime tomorrow. Past crime may affect current criminal behavior for several reasons. First, criminals can learn by doing, acquiring some level of adequate criminal know-how, which allows them to reduce their expected cost of carrying out criminal acts. Moreover, convicted criminals are likely to have less legal job opportunities, thus reducing their personal cost of participating in criminal activity and making the commission of crime more attractive. Variable \(\mu_i\) is a region fixed effect to control for some time-invariant regional characteristics that were omitted in the model but had an impact on crime rates over years; \(\text{year}_t\) is a time effect that captures the common variations in crime rates across regions and removes the correlation amongst regions; Finally, \(\epsilon_t\) stands for a well-behaved error term distributed IID (0, \(\sigma^2\)).

The dependent variables and all explanatory variables, except for the number of incinerators, were natural logged to alleviate the problem caused by the skewed distributions of some variables. Another advantage of doing this was to simplify the calculation of the percentage change of crime rates for a one percent change in each explanatory variable (elasticity). The number of incinerators was not logged as the time series contained a substantial amount of zeros. We estimate our model using the first-differenced GMM procedure (Arellano and Bond 1991; Arellano and Bover, 1995). This estimator allows controlling for (weak) endogeneity by using the instrumental variables, which consist of appropriate lagged values of the explanatory variables. The consistency of the GMM estimator crucially depends on the validity of the instruments. We address this issue by considering two specification tests suggested by Arellano and Bond (1991). The first is the Sargan test of over identifying restrictions, which tests the null hypothesis of the overall validity of the instruments used. Failure to reject this null hypothesis gives support to the model. The second test examines the hypothesis that the error term is not serially correlated. We test the null hypothesis that the differenced error term is first and second order serially correlated. Failure to reject the null hypothesis of no second-order serial correlation implies that the original error term is serially uncorrelated and the moment conditions are correctly specified.

4.4. Results

Table 3 provides the GMM estimates obtained using the Arellano–Bond methodology. Three test statistics are reported: (i) Sargan test of over identifying restrictions; (ii) first order serial correlation test and (iii) second order serial correlation test. In Columns (i) and (iv) of table 2, the reported results do not control for socioeconomic and waste specific variables. In particular, estimates show that there is no crime persistence, with the coefficient of the lagged dependent variable being negatively and statistically significant. Both charge and arrest rates are positive and statistically significant. This result is quite unexpected and different with respect to

\textsuperscript{12} As there is great support in the general crime literature that different socioeconomic variables play an important role in explaining the amount of crime, we additionally tested the following list of variables: population density, value added of manufacturing sector, number of manufacturing firms, rate of irregular workers and income inequality. However, none of these seem to have a significant influence on environmental crime.
the majority of the existing literature, because the cost of breaking the law, as measured by the charge to arrest ratio, should reduce the crime rate. However, the negative and significant coefficients of both squared terms reveal the existence of a hump shaped relation between organized illegal trafficking of waste and law enforcement efforts. In line with D’Amato et al. (2014), our result indicates that the influence of law enforcement on the organized illegal trafficking of waste can only affect criminal activities up to a certain threshold and a deterrence effect on criminal behavior can only be achieved to such a level.

Columns (ii) and (v) report the results obtained when the economic-specific covariates are inserted into the model. Now, we find that the lagged crime rate is negative and significant, meaning that there isn’t a persistence of this type of crime over time in Italian regions. Also, the share of population that has enrolled in secondary school appears to be significantly and positively correlated with the crime rate. Similar to the results of other previous studies (Buonanno 2006), the positive effect of this variable may be attributed to the fact that a higher level of education may reduce the cost of committing a crime or may raise the revenues of crime. However, in this specific case, the positive relationship between levels of education and illegal trafficking of waste can be explained by the nature of the crime. Being a typical economic crime, it seems to be a prerogative of subjects with higher levels of education, since the covert illegal mechanisms require high skills and resourcefulness. The coefficients on GDP per capita, GDP growth rate and male unemployment rate are not statistically significant.

Finally, columns (iii) and (vi) of Table 2 present regressions that include two different indicators of waste management activities. As we can see, results are qualitatively similar to those presented above and, once again, suggest that the only significant determinants of organized illegal waste trafficking are the deterrence variables, the degree of educational attained, and the lagged crime rate.

Table 2. Determinants of organized illegal waste trafficking

<table>
<thead>
<tr>
<th></th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime rate lagged</td>
<td>-0.0685</td>
<td>-0.184***</td>
<td>-0.170***</td>
<td>-0.0600</td>
<td>-0.164***</td>
<td>-0.152***</td>
</tr>
<tr>
<td></td>
<td>(-1.57)</td>
<td>(-7.13)</td>
<td>(-6.15)</td>
<td>(-1.58)</td>
<td>(-4.63)</td>
<td>(-3.96)</td>
</tr>
<tr>
<td>Charge rate</td>
<td>0.873***</td>
<td>0.654***</td>
<td>0.680***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.42)</td>
<td>(4.41)</td>
<td>(4.76)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge rate²</td>
<td>-2.138**</td>
<td>-1.511*</td>
<td>-1.585**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.90)</td>
<td>(-2.44)</td>
<td>(-2.69)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrest rate</td>
<td>1.015***</td>
<td>1.042***</td>
<td>1.072***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.21)</td>
<td>(3.83)</td>
<td>(3.83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrest rate²</td>
<td>-2.232**</td>
<td>-3.119**</td>
<td>-3.236**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.22)</td>
<td>(-3.14)</td>
<td>(-3.20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>-4.787</td>
<td>-5.511</td>
<td>-4.584</td>
<td>-5.421</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.67)</td>
<td>(-0.69)</td>
<td>(-0.69)</td>
<td>(-0.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average income</td>
<td>-0.0400</td>
<td>-0.0169</td>
<td>-0.0394</td>
<td>-0.0316</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.40)</td>
<td>(-0.15)</td>
<td>(-0.37)</td>
<td>(-0.27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education attainment</td>
<td>0.540***</td>
<td>0.533***</td>
<td>0.400***</td>
<td>0.412***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.67)</td>
<td>(5.10)</td>
<td>(4.06)</td>
<td>(3.56)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male unemployment rate</td>
<td>-0.00557</td>
<td>0.00278</td>
<td>0.00829</td>
<td>0.0154</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.32)</td>
<td>(0.13)</td>
<td>(0.50)</td>
<td>(0.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling rate</td>
<td>-0.0359</td>
<td></td>
<td></td>
<td></td>
<td>-0.0377</td>
<td></td>
</tr>
</tbody>
</table>

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With regards to the GMM specification tests, all regression models are supported by the Sargan test, which confirms the validity of the instruments used (i.e. the instruments are not correlated with the error terms). As expected, there is evidence for first-order serial correlation, while there is no evidence of second-order serial correlation.

4.5. Territorial heterogeneity

In order to account for the structural and relevant differences between the north-center and the south of Italy we estimate the crime equation for each of these territorial aggregations. Namely, we estimate a crime equation using a panel dataset for the 11 regions belonging to the north-center and a crime equation using a panel dataset for the remaining 8 regions belonging to the south of Italy. Table 3 displays coefficient estimates for northern regions.

**Table 3. Determinants of organized illegal waste trafficking in the north-center of Italy**

<table>
<thead>
<tr>
<th></th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime rate lagged</td>
<td>-0.157**</td>
<td>-0.236***</td>
<td>-0.242**</td>
<td>-0.124</td>
<td>-0.144**</td>
<td>-0.152**</td>
</tr>
<tr>
<td></td>
<td>(-2.21)</td>
<td>(-3.34)</td>
<td>(-2.61)</td>
<td>(-1.73)</td>
<td>(-2.59)</td>
<td>(-2.61)</td>
</tr>
<tr>
<td>Charge rate</td>
<td></td>
<td>0.467**</td>
<td>0.360*</td>
<td>0.426**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.76)</td>
<td>(2.33)</td>
<td>(3.27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge rate²</td>
<td>-0.607</td>
<td>-0.295</td>
<td>-0.437</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.77)</td>
<td>(-0.34)</td>
<td>(-0.64)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrest rate</td>
<td></td>
<td></td>
<td></td>
<td>0.821**</td>
<td>1.152**</td>
<td>1.109**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(2.74)</td>
<td>(3.12)</td>
<td>(3.12)</td>
</tr>
<tr>
<td>Arrest rate²</td>
<td></td>
<td></td>
<td></td>
<td>-2.180</td>
<td>-4.666**</td>
<td>-4.432**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-1.56)</td>
<td>(-2.82)</td>
<td>(-2.83)</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>1.461</td>
<td>1.420</td>
<td>1.605</td>
<td>1.437</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.24)</td>
<td>(0.24)</td>
<td>(0.22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average income</td>
<td>-0.0931</td>
<td>-0.0244</td>
<td>-0.125**</td>
<td>-0.100*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.80)</td>
<td>(-0.36)</td>
<td>(-3.22)</td>
<td>(-2.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education attainment</td>
<td>0.561***</td>
<td>0.460***</td>
<td>0.375***</td>
<td>0.352***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Time dummies were included but omitted here. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: authors
With the exception of the model in column (iv), the lagged crime rate has a significantly negative effect in all models, indicating the absence of any persistence in crime, but past crime seems to reduce current criminal behavior. Furthermore, the results for both the charge rate and the arrest rate are uniformly positive and significant: an increase in both law deterrence variables would increase crime rate. Only the squared term of the arrest rate is negative and significant. Our findings indicate that law enforcement variables do not, in general, affect a significant deterrence on criminal behavior. Education attainment exhibits a positive and a significant effect on crime rate, indicating that, as previously found, the incidence of crime is greater, the greater the share of population that has enrolled in secondary school. It is worth noting that our findings show that an average income exhibits a negative and significant coefficient (columns v and vi). This means that, in the north-center, improvements in the overall economic condition increase the chances for employment in the legal sector and, thus reduce crime rates.

The results show that the crime rate in the north-center area is also driven by the per capita recycling and recovery rate. In the northern regions, recycling and recovery policies seem to be the best instruments to prevent crime, because they drastically reduce the use of both landfills and extensive commutes around the country; two action areas conducive to enabling organized crime. Empirical evidence shows that in those regions where waste management policy is more virtuous (i.e., Trentino, Friuli V. G. and Marche), the propensity to commit this type of crime is much lower. For example, in 2013 the above-quoted regions registered the lowest number of reported environmental crimes (Legambiente 2014).

The picture slightly changes when we consider empirical results for southern regions, as displayed in Table 4. First, lagged crime rate is not always statistically significant. In addition, as for the deterrence variables, we find that in the southern regions of Italy law enforcement measures related to the organized trafficking of waste do not exert significant deterrence on the criminal behavior. In particular, both the charge rate and the arrest rate are always positive and significant while their squared terms exert a negative and statistically significant effect on crime rates. In addition, in models (v) and (vi) the coefficient for education attainment is negative and significant indicating that more educated people have a higher moral stance or less time available to participate in illegal criminal activities, thus resulting in fewer perpetrated crimes.
Finally, our proxy for the cost of waste disposal exhibits a positive and significant effect on crime rate, indicating that the incidence of crime rises, the higher the plant endowment in the region is. In those regions where the presence of organized crime is higher and where waste management policy is much more influenced by corruption, waste treatment plants are used to intercept waste demand and to channel it mainly towards illegal outlets. As is also often shown by police investigations, landfills and waste treatment plants are means used to mask illegal operations of waste management.

Table 4. Determinants of organized illegal waste trafficking in the south of Italy

<table>
<thead>
<tr>
<th></th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime rate lagged</td>
<td>-0.0839***</td>
<td>-0.0943***</td>
<td>-0.195*</td>
<td>-0.194*</td>
<td>-0.138</td>
<td>-0.117</td>
</tr>
<tr>
<td></td>
<td>(-3.65)</td>
<td>(-3.98)</td>
<td>(-2.10)</td>
<td>(-2.18)</td>
<td>(-1.81)</td>
<td>(-1.92)</td>
</tr>
<tr>
<td>Charge rate</td>
<td>1.205**</td>
<td>0.822**</td>
<td>0.782**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.19)</td>
<td>(2.80)</td>
<td>(2.87)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge rate²</td>
<td>-3.347*</td>
<td>-2.054*</td>
<td>-1.782*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.48)</td>
<td>(-2.05)</td>
<td>(-2.32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrest rate</td>
<td>1.460***</td>
<td>1.350***</td>
<td>1.348**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.71)</td>
<td>(3.50)</td>
<td>(3.23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrest rate²</td>
<td>-3.041***</td>
<td>-3.308***</td>
<td>-3.347***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.36)</td>
<td>(-3.57)</td>
<td>(-3.43)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>11.99</td>
<td>13.80</td>
<td>8.038</td>
<td>8.177</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.43)</td>
<td>(1.59)</td>
<td>(0.97)</td>
<td>(1.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average income</td>
<td>-0.696</td>
<td>-0.831</td>
<td>-0.204</td>
<td>-0.204</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.83)</td>
<td>(-1.06)</td>
<td>(-0.27)</td>
<td>(-0.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education attainment</td>
<td>-0.525</td>
<td>-0.403</td>
<td>-1.111*</td>
<td>-1.101*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.66)</td>
<td>(-0.57)</td>
<td>(-2.60)</td>
<td>(-2.46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male unemployment rate</td>
<td>0.00247</td>
<td>0.00378</td>
<td>-0.00728</td>
<td>-0.000636</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.13)</td>
<td>(-0.27)</td>
<td>(-0.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.0317</td>
<td>-0.0326</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>(-1.33)</td>
<td>(-0.85)</td>
</tr>
<tr>
<td>Number of plants</td>
<td>0.0146*</td>
<td>0.00564</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.10)</td>
<td>(0.79)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.000688</td>
<td>0.00430***</td>
<td>0.0176</td>
<td>0.00685</td>
<td>0.0163</td>
<td>0.0166</td>
</tr>
<tr>
<td></td>
<td>(0.90)</td>
<td>(3.35)</td>
<td>(1.44)</td>
<td>(0.56)</td>
<td>(1.55)</td>
<td>(1.02)</td>
</tr>
<tr>
<td>Observations</td>
<td>80</td>
<td>80</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Specification tests(p-values)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Sargan test</td>
<td>0.137</td>
<td>0.061</td>
<td>0.327</td>
<td>0.205</td>
<td>0.188</td>
<td>0.267</td>
</tr>
<tr>
<td>ii) Serial correlation</td>
<td>0.0455</td>
<td>0.0812</td>
<td>0.0772</td>
<td>0.0258</td>
<td>0.0897</td>
<td>0.0772</td>
</tr>
<tr>
<td>First order</td>
<td>0.1609</td>
<td>0.2274</td>
<td>0.2119</td>
<td>0.1439</td>
<td>0.1093</td>
<td>0.2119</td>
</tr>
</tbody>
</table>

Note: Time dummies were included but omitted here. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: authors
Conclusions

The present paper contributes to a better understanding of the possible determinants relative to a still empirically unexplored type of environmental crime, i.e. the organized activities for the illegal trafficking of waste (art. 260, d.lgs. 152/2006). This is one of the most dangerous eco-crimes that poses not only a serious threat to the environment and human health, but has also become one of the causes for social and economic instability. The obtained results reveal that, in most Italian regions, enforcement activities do not exert significant deterrence on criminal behaviors. A negative relationship between enforcement and illegal trafficking of waste can be identified only for very high levels of enforcement efforts. Moreover, the outcomes show that the major determinants of illegal trafficking of waste rate differ between northern-central and southern regions, confirming the existence of a regional dualism. In particular, while in the north-center area the crime rate is positively related to level of education and negatively to the adoption of environmentally sound policies, in southern regions the organized activities for illegal trafficking are negatively related to the education attainment and positively to the endowment of waste management plants.

If in the north of Italy, the best plant equipment is linked to a better management of the entire waste cycle, as shown by the higher standards of recycling rate, in the south, the stubborn presence of various mafias and organized crime systems are able to move the waste management plants more towards personal interests and illegal practices. Therefore, we can argue that the presence of an adequate plant facility is important but not sufficient without both an effective policy aimed to prevent and contrast organized crime and strong social control processes at local level.

Also, in the north the positive relationship between levels of education and illegal trafficking of waste can be easily explained by the nature of the crime. Being a typical economic crime, it seems to attract subjects with higher levels of education, since the covert illegal mechanisms require high skills and resourcefulness. Unlike other forms of illegal trafficking, in order to operate effectively, operators must know the legal market and its dynamics, the complex legislation, and the weaknesses of the control systems. Almost all the investigations completed so far (since 2002) show that the falsification of, both, documentation (the so-called formulari) and chemical-physical analysis is a constant practice. In addition, other sophisticated types of crimes, such as, corruption in the public procurement system, fraud in public procurements, and money laundering activities are emerging, supporting the fact that these are all crimes that require high skills and well-defined professional abilities.

Finally, in terms of policy suggestions, the evidence obtained allows us to support the hypothesis that, in Italy, a better integrated system of waste management and disposal in coordination with a long-term industrial strategy, should be urgently implemented in order to restrict the flows of illegal trafficking of waste. The challenges at stake are certainly serious. Creating an environment for the successful management of the situation requires an integrated approach linking economic, legal, and institutional factors. The need for a more sustainable waste management policy in Italy is driving pressure on institutions, policy makers and governments to further cooperate toward a more circular economy, where waste can be eliminated and resources can be used in a more efficient and sustainable way.

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Abstract. The paper aims at distinguishing the assumptions and component parts of financial system sustainability formation. Partly, sustainability of financial system can be expressed through the functions of financial system. Three financial subsystems are distinguished in the research: public finance, business finance and personal finance. The sustainable and efficient operation of each subsystem contributes to the sustainability of financial system as a whole. Also, sustainability of each of the subsystem can be measured by different indicators. In order to determine the strength of impact of various financial functions to the financial system such indicators as capital investments into financial and insurance activities, financial and insurance activities’ value added, as well as value of production and purchase of goods and services by the financial companies is analysed. Finally, the scheme of financial system sustainability is presented. The key conclusion of the research states that the synergistic effect of sustainable development of three fields of finance influences the sustainable development of the whole financial system and even can spread its impact beyond the limits of financial system.

Keywords: sustainability, financial system, public finance, business finance, personal finance, fiscal sustainability

JEL classification: G2, E6

1. Introduction

Current economic development uses resources of all types more quickly than natural processes can recover them (Getnet et al. 2014). Global economic systems while depleting resources do not pay their full reproduction cost (Mercure, Salas 2012), social and economic gap between rich and poor is widening, and health and poverty problems become even more burning on the whole planet. These are only several biggest global problems that have raised a concern of scientific and academic community. In order to solve these problems, it is quite topical to discuss sustainability, sustainable development, universal sustainability and sustainability strategies of various sectors of economy. These strategies are implementen on different levels: on company level, on business sector level, in municipalities, on country and global levels (Volkery et al. 2006; Mačiulis, Tvaronavičienė 2013; Raudeliūnienė et al. 2014; Tvarovaničienė 2014; Vasiliiūnaitė 2014).

In the last two decades, the concept of sustainable development has made a steep career as a political and ethical guideline for dealing with the planet’s ecological and social crisis. The concept, globally inaugurated in 1987 by the World Commission on Environment and Development (so-called Brundtland Commission) is, however, not a brain-child of the modern environmental movement (World Commission ... 1987). As a matter of fact, ‘sustainable development’ entered the global stage during the 1992 ‘Earth Summit’ in Rio de Janeiro. The
United Nations presented it as their strategic concept for sharing – and indeed saving – the future of the ‘blue planet’. It promised to become the key-word for describing a new balance between the use and the preservation of nature’s potentials and resources (Grober 2007).

Sustainable development is indeed a very broad field. Scientific researches related to it are broad, as well. Moreover, this topic is not new, however, probably, it is not enough developed and filled with real content, even with regard to scientific researches. But it is clear that further the concept of sustainable development becomes more topical not only theoretically, but also practically, no matter how difficult it would be to implement it. Sustainable development is like a process containing public and private actions in various fields, but not a closed phenomena. Thus it is rather difficult to speak about scientific researches on sustainable development in general as about general paradigm, as opposed to the separate fields, especially if we want to measure or compare something.

Also, researches appear stating that it is not advisable to limit to the three components of sustainable development – social, ecologic and economical sustainability, and that it is necessary to broaden this concept including other components (Rutkauskas 2012; Rutkauskas, Stasytytė 2012; Rutkauskas et al. 2014) or fill the present components with new uncommon systems (Ashford, Hall 2011; Tunčikienė et al. 2013;).

This paper analyses one non-traditional component of sustainability – the financial sustainability, and it will be investigated from the point of view of financial system. Analysis of financial sustainability is often limited to public finance sustainability, and sometimes also financial sustainability on a company level is distinguished. Further, public finance sustainability is frequently substituted with the term fiscal sustainability, describing the latter as the possibility of a government (country) to retain the current level of expenditure and taxes in long enough period at the same time not raising the increase in government liabilities, the threat for solvency of the planned expenditures and avoiding bankruptcy. The term of solvency is often stressed in defining fiscal sustainability. More particularly, sustainability of financial policy can be defined as a possibility of government to perform and continue the current policy not changing the provision of public services, taxation and avoiding the continuous increase of public debt to GDP ratio. There is no doubt that the issues discovered in a state-level perception of financial sustainability are of high importance. However, the perception of this term should not be limited only to public finance sustainability. A holistic point of view is needed where financial sustainability would be perceived as a power of financial system allowing to supply financial resources to three parts of financial system: the business, the public sector and individuals. Only the mentioned proposition allows to speak about efficient operation of a country as a whole and make relevant solutions with regard to the interests of all economic subjects.

The aim of this paper is on the basis of scientific researches on sustainability and financial sustainability to determine the contents and structure of financial system sustainability, tightly linking financial sustainability to the implementation of functions of country financial and insurance activity. The object of research is country financial system. While performing the research such methods as critical analysis of scientific literature, generalization, systemic analysis and graphical presentation of data have been used.

2. Importance of finance functions on financial sustainability

The function of country financial system is to guarantee effective functioning of country financial market with regard to the adjustment of economic interest of all subjects. This function is more or less supplemented all economic activities in the field of finance and insurance. The viable insurance market, efficient system of pension funds, profitable activities of holding companies – all contributes to the efficient financial market of a country. However, key fields probably are the central banking and other monetary intermediation, because central bank and efficient network of commercial banks are the main elements of sustainable financial system activity.

The function of business finance subsystem is to reveal for the business the possibilities of using the human and material resources, possessed by the country, by creating maximum profit and conforming to legal acts and regulations. By analysing business finance and distinguishing their functions one can make an assumption that
activities, tasks and processes, taking place in an organization and related to finance, are the business finance functions. Each of the finance activities originate from organizational activities and focus on the production and use of information to meet the following purposes:

1. Accounting: to record the financial consequences of organisational activities.
2. Compliance: to meet the requirements of governmental and other regulatory bodies.
3. Management and control: to produce and use financial and related information to inform, monitor and instigate operational actions to meet organisational objectives.
4. Strategy and risk: to inform and influence from a financial perspective the development and implementation of strategy, and to manage risk.
5. Funding: to inform and engage with investors and funders, both current and potential, to obtain and maintain the necessary financial resources for the organisation.

These five interdependent activities constitute the finance function in an organisation (ICEW 2011).

By analysing the impact of financial activities on business finance function it is worth noting that as in a case of the whole country financial system functions’, every field influences to a certain extent the efficiency of business finance function. Commercial banks, providing many services for business, provide a technical possibility for the business to use the financial resources possessed by the country. They do this by providing leasing, factoring, insurance and other services.

The function of public finance subsystem is to implement the measures stated in the country legal acts and government resolutions applying the fiscal policy. Here the biggest role is given to the central banking. In turn, decisions made by the central bank influence the activity of commercial banks, and commercial banks incorporate various changes and regulations into their services and products. This is why many financial activities also include the element of public finances.

The individual finance subsystem is like an institution to retain and develop human capital. It requires responsibility and intelligence of every individual or household. Here such fields of finance are participating as insurance, accumulation of pension funds, leasing and other monetary intermediation – all that is important for the individual users of financial resources. However, the efficiency of these activities’ application depends on the implementation of the functions pertaining to country financial system in a broader sense.

3. The concept and types of financial sustainability

In scientific literature financial sustainability most often is used separately in the context of public finance or business finance, not searching for their interrelationship. Personal (individual) finance sustainability is getting insufficient attention, even though the representatives of this field of finance are the users of many financial products and services. Public finance sustainability is often identified with fiscal sustainability (Kia 2008; Byrne et al. 2011; Doi et al. 2011; Chen 2014; Miyazaki 2014). Further several definitions of fiscal sustainability will be presented.

**Fiscal sustainability** is an ability of a government (country) to retain the current level of expenses and taxes in a long-term period not increasing the government liabilities, not raising the threat of solvency of the planned expenses and avoiding bankruptcy. The concept of financial (fiscal) sustainability is related with the concept of solvency. **Solvency** is an ability of government to repay its debt liabilities not getting into the insolvency (bankruptcy) status (Burnside 2003). Fiscal sustainability can also be defined as an ability of the government to perform a set of the planned strategies retaining solvency for an unlimited time period (Burnside 2003).

**Sustainable fiscal policy** is a policy that can be employed by the government for a long time without interfering the models of taxation and expenses (Krejdl 2006). A stable level of taxes is an important condition for financial sustainability (Ballasone, Franco 2000). Sustainable fiscal policy is also a policy ensuring that debt to GDP ratio reverts to the initial level or at least does not increase (Blanchard et al. 1990).
Sustainability of fiscal policy is an ability of the government to perform and continue in the future the current policy without changing the provision of public services and avoiding the continuous increase in debt to GDP ratio (Fiscal Sustainability Report 2012).

Indicators of fiscal (public finance) sustainability (according Fiscal Sustainability Report 2012 and Public Finance Sustainability):

- S0 – “early detection of fiscal stress”, intended to assess short-term fiscal challenges;
- S1 – “debt compliance risk”, intended to assess medium-term fiscal challenges;
- S2 – “ageing-induced fiscal risks”, intended to assess long-term fiscal challenges.

S0, the short-term sustainability indicator, reveals the shorter-term (one-year horizon) risks for fiscal stress stemming from the fiscal as well as the macro-financial and competitiveness sides of the economy.

Components of S0 indicator – fiscal indicators (balance, % of GDP; gross debt, % of GDP; change in gross debt, % of GDP; short-term government debt, % of GDP, etc.) and macro-financial as well as competitiveness indicators (net savings of households, % of GDP; private sector debt, % of GDP; construction, % value added; current account, % of GDP; real GDP growth, etc.) (Figure 1).

Graph 3: S0 indicator

![Graph 3: S0 indicator](image)

**Source:** Commission services.

S1, the medium-term sustainability indicator, shows the extent of the required budget corrections in order to continuously adjust the structural primary balance until 2020, to retain it during the decade and to bring the debt-to-GDP ratio to 60% of GDP by 2030.

- If $S1 < 0$, then country risk is treated as low;
- If $0 < S1 < 3$, then country risk is treated as medium, the requirement for balance adjustment – up to 0.5 p.p. of GDP per year until 2020.
- If $S1 > 3$, then country risk is treated as high, the requirement for balance adjustment – more than 0.5 p.p. of GDP per year until 2020.
S2, the long-term sustainability ratio, shows the required extent for balance adjustment ensuring that the debt-to-GDP ratio is not on an ever-increasing path. The indicator covers the issues of projected revenues and taxes gap, related with pension, healthcare and other age-related expenditure (Figure 2, Figure 3).

**Graph 4.1:  The S1 indicator**

**Fig.2. S1 indicator of European countries**

*Source: Public Finance Sustainability (http://ec.europa.eu/europe2020/pdf/themes/03_public_finance_sustainability.pdf)*

**Graph 4.2:  The S2 indicator**

**Fig.3. S2 indicator of European countries**

*Source: Public Finance Sustainability (http://ec.europa.eu/europe2020/pdf/themes/03_public_finance_sustainability.pdf)*
Considering the business finance sustainability, Patricia Leon (2001) distinguishes three types of indicators of corporate finance sustainability which, in turn, are composed of the more detailed component indicators:
1. Indicators of strategic vision and leadership (strategic planning, board effectiveness, strategic financial planning).
2. Indicators of income-generating capability (fundraising and development plan, diversification and funding sources, generation of unrestricted income).
3. Indicators of financial administration capability (indirect cost recovery rate, accounting systems, external financial reporting, internal financial reporting, external oversight (audits), cash flows).

Sustainability of financial system can be expressed through the efficient and timely implementation with lowest cost to public functions of financial system as distinguished by Robert Merton and Zvi Bodie (1995):
1. To provide ways of clearing and settling payments to facilitate trade.
2. To provide a mechanism for the pooling of resources and for the subdividing of shares in various enterprises.
3. To provide ways to transfer economic resources through time, across borders, and among industries.
4. To provide ways of managing risk.
5. To provide price information to help coordinate decentralized decision-making in various sectors of the economy.
6. To provide ways of dealing with the incentive problems created when one party to a transaction has information that the other party does not or when one party acts as an agent of another.

Summarizing the above thoughts, it can be stated that sustainability of financial system is the power of country financial system enabling with desired guarantee to supply the business, public sector and citizens with financial resources under functioning market conditions and guarantee financial resources required to implement the international liabilities. Also, necessarily three types of financial sustainability can be distinguished: business, public and household, as well as the fourth – the sustainability of country financial system, – which is mainly related with adequate operation of economy based on efficiently allocated financial flows. In turn, for the economy to act efficiently the proper implementation of functions of the three distinguished financial subsystems is needed that should be oriented towards sustainability. Thus sustainability of country financial system in a certain sense covers the sustainability objectives of the three financial subsystems.

Further, in pursuance of the above presented ideology, the functions of sustainable financial system (Rutkauskas, Navickas 2013) according every field of finance will be revealed:
1. To guarantee the efficient functioning of country market with regard to coordination of economic interests of all subjects (sustainability of country financial system).
2. To reveal for the business the possibilities to use the possessed human, material and financial resources while creating the maximum value added (sustainability of business finance subsystem).
3. To create an efficient mechanism for reallocation of purchasing power while implementing the country fiscal policy and other legal instruments (sustainability of public finance subsystem).
4. To rehabilitate and develop the human capital, as well as strengthen responsibility and intelligence of every individual or household through the more efficient management of personal finance (sustainability of personal finance subsystem).

The following measurement indicators of sustainable development of financial system can be applied:
- The integral index of financial sustainability;
- The index of fiscal policy sustainability;
- The index of business finance competitiveness;
- The index of social welfare differentiation (Rutkauskas, Navickas 2013).

Every index is attributed to the respective subsystem in the financial system. Determination of their component parts should be performed using the classification of financial and insurance activity, as well as by processing the statistical information about the created value added, production value, consumed goods and services in the field of financial and insurance activity, as well about the material investment into this field.
4. Analysis of general statistical data of financial system

In order to determine what financial activities mostly influence the financial activity of business, public and individuals, it is worth analysing the general statistics of financial system that is systematized according to the classes of financial and insurance activity from the Statistical Classification of Economic Activities (EVRK 2). The statistics will cover the capital investments into financial and insurance activities, financial and insurance activities’ value added, as well as value of production and purchase of goods and services by the companies operating in the mentioned sector. These indicators show what classes of activity most actively operate and create the maximum amount of value added.

The general amount of capital investment into the financial and insurance activity (the sum of investments in all the classes) is shown in Figure 4. The highest investment rate was noticed in 2007, in the period of growing economy – even 230,4 mln. LTL. Further investments diminished and in recent years became stable.

Fig. 4. Capital investments into financial and insurance activity, current prices, mln. LTL

Source: Statistics Lithuania (http://osp.stat.gov.lt/)

Fig. 5. Value added of the financial and insurance activity companies (including sole proprietorships) in current prices

Source: Statistics Lithuania (http://osp.stat.gov.lt/)
The value added created by the financial and insurance companies in 2008-2012 years period was fluctuating (Figure 5). After the high level reached in 2008 it dropped to 2444330 thous. LTL in 2010. In 2011 the value added increased, while in 2012 there was a drop in value again. The highest value added in 2012 was created by the class of other monetary intermediation, i.e. commercial banks (Figure 6). The value added of the holding companies in the same year was negative (-5496 thous. LTL). This was the first year when a negative value was noticed in this class of activity. In 2011 the value added of holding companies’ activity accounted for 17379 thous. LTL.

![Fig.6. Value added of the separate classes of financial and insurance activity in current prices in 2012, thous. LTL](http://osp.stat.gov.lt/)

*Source: Statistics Lithuania (http://osp.stat.gov.lt/)*

![Fig.7. The value of production of companies performing the financial and insurance activity, 2012, thous. LTL](http://osp.stat.gov.lt/)

*Source: Statistics Lithuania (http://osp.stat.gov.lt/)*
Table 1. Value of production and purchase of goods and services by the companies operating in the financial and insurance sector, 2012, thous. LTL

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Value of production, thous. LTL</th>
<th>Purchase of goods and services, thous. LTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central banking</td>
<td>134 490</td>
<td>38 860</td>
</tr>
<tr>
<td>Other monetary intermediation</td>
<td>2 520 946</td>
<td>1 040 693</td>
</tr>
<tr>
<td>Activities of holding companies</td>
<td>-3 688</td>
<td>1 808</td>
</tr>
<tr>
<td>Activities of trusts and funds</td>
<td>16 680</td>
<td>16 680</td>
</tr>
<tr>
<td>Financial leasing</td>
<td>210 343</td>
<td>49 883</td>
</tr>
<tr>
<td>Other credit granting</td>
<td>214 244</td>
<td>82 645</td>
</tr>
<tr>
<td>Other financial service activities (factoring)</td>
<td>23 341</td>
<td>13 958</td>
</tr>
<tr>
<td>Life insurance</td>
<td>166 211</td>
<td>74 129</td>
</tr>
<tr>
<td>Non-life insurance</td>
<td>398 579</td>
<td>204 510</td>
</tr>
<tr>
<td>Pension funding</td>
<td>53 019</td>
<td>53 019</td>
</tr>
<tr>
<td>Activities of insurance agents and brokers</td>
<td>121 274</td>
<td>55 357</td>
</tr>
<tr>
<td>Fund management activities</td>
<td>56 417</td>
<td>36 846</td>
</tr>
</tbody>
</table>

Source: Statistics Lithuania (http://osp.stat.gov.lt/)

The value of production of the companies performing financial and insurance activity was continuously increasing from 2002 to 2009; later it slightly dropped (Figure 7). The highest value of production was in a sector of other monetary intermediation, the next was non-life insurance. These classes of financial activity also purchased the biggest amount of goods and services (Table 1). After analysing statistical data of financial and insurance activity, a conclusion can be made that the class of financial intermediation, i.e. the sector of commercial banks created the major part of the value added. Also, its value of production and value of consumed goods and services is also the highest. The ratios of other classes are considerably lower.

5. The formation of financial system sustainability

After analysing the statistical data of different classes of the financial and insurance activity, it can be noticed that some of them create bigger value added, others lower, but in any case every class contributes to the sustainability and proper functioning of each of the three subsystems and of the whole financial system. Also, it can be said that the instruments encouraging the sustainability of public finance, business finance and personal finance are interrelated (Figure 8). Instruments influencing the sustainability of public finance partly participate in forming the business and individual finance sustainability. Some means impacting the business finance sector sustainability encourage also the personal finance and public finance sustainability. In turn, personal finance sustainability is closely related with business and public sector finance sustainable development.
The synergistic effect of sustainable development of three fields of finance, that is determined by country financial and other subjects, influences the sustainable development of the whole financial system and even can spread its impact beyond the limits of financial system. This happens because rational allocation of financial resources is undoubtedly important in every economic activity. Thus the sustainable development strategy of financial system can be visually presented in Figure 8. Technical implementation of this strategy requires the adequate legal basis, technological instruments, and human resources. The precise description of the effect of each component on sustainable development of financial system is beyond the scope of the performed research.

**Fig.8.** The formation of financial system sustainability

*Source:* developed by the author

The function of country financial system is to guarantee effective functioning of country financial market with regard to the adjustment of economic interest of all subjects. Sustainability of financial system can be expressed through the efficient and timely implementation with lowest cost to public functions of financial system.

Sustainability of financial system is the power of country financial system enabling with desired guarantee to supply the business, public sector and citizens with financial resources under functioning market conditions and guarantee financial resources required to implement the international liabilities. Necessarily three types of financial sustainability can be distinguished: business, public and household, as well as the fourth – the sustainability of country financial system, – which is mainly related with adequate operation of economy based on efficiently allocated financial flows. Public finance sustainability is often identified with fiscal sustainability.

Capital investments into financial and insurance activities, financial and insurance activities’ value added, as well as value of production and purchase of goods and services by the companies operating in the mentioned sector can explicitly show the effectiveness and sustainability trend of the financial system.

After analysing statistical data of financial and insurance activity, a conclusion can be made that the class of financial intermediation, i.e. the sector of commercial banks created the major part of the value added. Also, its value of production and value of consumed goods and services is also the highest. However, every class of financial and insurance activity contributes to the sustainability and proper functioning of each of the three subsystems and of the whole financial system.

The synergistic effect of sustainable development of three fields of finance, that is determined by country financial and other subjects, influences the sustainable development of the whole financial system and even can spread its impact beyond the limits of financial system.
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SECURITY AND PUBLIC SAFETY: IMPACT OF GENDER ON PRISONERS’ JUSTICE PERCEPTION

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Received 10 January 2015; accepted 10 May 2015

Abstract. Crime is an essential social problem that seriously influences the security of the society and every individual. Social security, in turn, rather closely correlates with state security. Trying to solve the problems of crime by isolating the criminals, at the same time overlooking the gaps in legal and moral cognition, the consequences of crime are temporary prevented but the causes of this problem is often not unmade thus reinforcing the risk of recidivism. The increase of the crime rate among females becomes more topical that taking into account the role of women in the process of reproduction directly influences mental health and security of the society. That, in turn, strengthens the necessity to study the causes of female crime, as well as those determinants that deter the representatives of certain gender from the criminal action. In this regard the study of psychological preconditions in the context of gender differences can arouse interest, highlighting such component of moral and legal cognition as justice.

Keywords: security, safety, prisoners, gender differences, justice, just world, criminal experience


JEL Classifications: K1, K14, K40

1. Introduction

Nowadays more and more attention is paid to the problems of the security of the society and individuals, since security and public safety is seen as precondition of sustainable development (Stańczyk 2011; Lankauskienė, Tvaronavičienė 2012; Tvaronavičienė, Grybaštė 2012; Šileika, Bekerytė 2013; Račkauskas, Liesionis 2013; Mačiulis, Tvaronavičienė 2013; Vasiuliūnaitė 2014; Zahars, Stivriņeks 2014; Matyasik 2014; Tunčikienė, Drejeris 2015; Giriūnas, Mackevičius 2014; Giriūnienė 2013). Not only are the social and psychological consequences of crime being studied, but also its determinants. In this research special attention is paid to the connection between justice perception by the persons who have committed crimes and the most important determinants of crime. There is no doubt that crime has a globally infecting character that fosters the economic losses of the state, degradation of moral norms of the society and the lack of confidence about the legal and social security. This, in turn, creates a threat for the citizens’ psychological security increasing the risk of various emotional experiences. The consequences of these and several other losses caused by the crime problem are often the increase of the level of recidivism and the general crime rate. Despite the fact that during the last years the statistical data of Latvia (http://www.csb.gov.lv/statistikas-temas/sabiedriska-kartiba-un-tiesu-sistema-galvenie-raditaji-30282.html) present evidence for the decrease of the number of criminals (in 2009 – 18649; 2011 - 14309), the total
Regardless of the diversity of the researches on the gender differences of crime (Farrington 1992; Bergman, Andershed 2009; Steffensmeier, Allan 2000, etc.), there is no single point of view on this matter in the world practice. Several authors (e.g., Farrington 1992; Kokko, Pulkinen 2000; Robins, Price 1991, etc.) state that antisocial behaviour is the result of various social problems and disadvantageous conditions, for example, violence, low level of education, mental health disorders, unemployment, unstable partner relationships, conflicts with partners and children, in addition, it concerns males and females in the same way (Bergman, Andershed 2009). Similar opinion is expressed by Steffensmeier and Allan (1996) emphasizing that the causes of crime from the point of view of the traditional theories of anomy, social control and differential associations can be applied equally for female and male crime. In other words, attachment, the level of training, parents control, dangerous perception and factors alike have a similar impact on both genders. In turn, other researchers (Krater, Hodgins 1999; Moffitt et al. 2001) believe that the mechanisms of antisocial behaviour development differ between males and females; males and females differ in the risk factors that underlay the antisocial behaviour. Moffitt (1993) stated that the origins of antisocial behaviour are similar to both genders; however the continuation of antisocial behaviour that turns into criminal career is more characteristic for males than females (Moffitt et al. 2001), thus individual risk factors are more spread and stronger for the gender of males than females (Moffitt et al. 2001). Moreover the studies reveal that females do not show attachment to criminal behaviour (Bottcher 2001). The researches on the criminal career (Denno 1994; Kruttschnitt 1994) also provide evidence for important gender differences: the participation of females in violent crimes is lower than males. In comparison to females, males begin to commit violent crimes more early and reach the top of their criminal career, females more rarely have tendency for committing recurrent violent crimes and try to avoid it. Some researchers (Messerschmidt 1993; Ellis, Simpson 1995) emphasize that a crime is a way of “realization of gender” or “realization of masculinity”. Thus crimes, especially violent crimes, are the way for males to show their masculinity, besides violence can gain social acknowledgement among males, but is not related with femininity. Other authors (Miller 1998), in turn, think that, for example, robberies committed by males and females have equal social and cultural causes, but the comitance of the crime is affected by the gender. Similar opinion is expressed by Brodby and Agnew (1997) stating that processes that lead to the comitance of crimes are similar to both genders, but their essence is substantially different. Both males and females commit a crime when their legal ways to deal with tension caused by their negative emotions are spent; however females react on tension in aggressive way more rarely. Taking into account these statements a logical question can be raised: what are the determinants that caused the increase of the proportion of crimes committed by females up to 15% in the state and what consequences it may cause.

Several theories (Agnew 1991; Gottfredson, Hirschi 1990; Cornish, Clarke 1987; Akers 1998, etc.) try to explain the causes and regularities of crime, but seldom these regularities are viewed in the context of gender differences, thus it is impossible to reflect entirely the way how the differences in male and female lives create specific gender differences in the display of criminal behaviour. Along the crime interpretation approaches the attention is paid also to the impact of imprisonment and punishment on the criminal. Controversial opinions among the researchers exist in relation to the role of punishment in the process of the correction of the prisoner, on the one hand, it is recognized that imprisonment is an important factor in the process of the correction of the prisoner, on the other hand, there is a wide discussion about the destructive impact of imprisonment upon the personality of the prisoner.

There is an opinion (Zahars 2005; Fuko 2001; Sampson, Laub 1993; Gendreau et al. 1996, etc.) that prisons do not decrease the crime but, vice versa, provoke the risk of recidivism and frequently contribute to the choice of antisocial behaviour after the release as the convicts are predominantly the former prisoners. Fuko (2001) stresses that the younger is the person who gets imprisoned, the longer he stays there due to the fact that a
prison contributes to the alienation of the individual from the society, inability to adopt the norms of the society, strengthening tendency of antisocial behaviour, creating wider range of rejection.

Despite the fact that the most of the researches on the impact of imprisonment are done in the group of male prisoners, some authors (Casey-Acevedo, Bakken 2001; Thompson, Loper 2005; Gover et al. 2008, etc.) draw attention to the peculiarities of the behaviour during the imprisonment in the context of gender differences and their role in the arrangement and implementation of the resocialization and correction programmes. Several researches (Bloom et al. 2004; Carmichael et al. 2005; Gover et al. 2008) have found differences between peculiarities of male and female prisoners, thus within the framework of correction and resocialization measures it is necessary to take into account the gender differences of the prisoners adapting to peculiar female needs. Some researches (Thompson, Loper 2005; Casey-Acevedo, Bakken 2001) showed that the tendencies of prisoners’ behaviour are influenced by the length of imprisonment, for example, females imprisoned for a long-term are more violent, have stronger sense of conflict and commit more offences in the prison in comparison with short-term imprisoned females. The history of imprisonments has also an important role that significantly influences the criminal behaviour of both, males and females, furthermore males have characteristic positive connection between the history of imprisonments and offences during imprisonment, for females, in turn, the experience of previous imprisonments decreases the number of offences (Gover et al. 2008).

All these researches verify the necessity to study prisoners as a social risk group in the context of gender differences. One of the aspects that determine the effectiveness of interaction processes between an individual and the society and observance of social norms is justice as a component of legal and moral cognition. As an example of a reaction of an individual to injustice can be mentioned a case from jurisprudence, when previously convicted person was hired for construction works and did not receive the promised payment after the finishing of the works. When he understood that he will not get paid for the work done, the man took down the masonry wall he had built, but the indecent owner lodged a claim against him in the police to bring him to trial for property damage. It could be forecasted that individual’s representations on justice influence also his attitude to legal norms, moral principles and terms of interpersonal relationships by strengthening the choice of socially acceptable behaviour in everyday life, in addition some researches revealed that offender’s belief in a personal just world can be an important precondition for the development of inner motivation to support the socially acceptable norms of behaviour in future (Dalbert, Filke 2007). Thereby two questions were raised for the present research: a) what are the gender differences in the belief in a just world, the assessment of court, prison and personal action?; b) what are the socio-demographic and criminal career variables which influence the belief in a just world of male and female prisoners?

2. Method

2.1. Respondents

373 prisoners in Latvia within the age from 18 to 60 years (M=32.8; SD=10.2) took part in the research, out of them 166 female prisoners (44%) and 207 male prisoners (55%). According to the level of education of the prisoners it was established that 175 (47%) respondents have unfinised or finished basic education, 174 (47%) respondents have secondary education or vocational education, in turn only 24 (6%) respondents have higher education. Analysis of the marital status of the respondents revealed that 155 respondents have a spouse and 218 do not have a partner. 129 respondents have the first criminal record, which makes up 35% of the total number; in turn 84 respondents (23%) have more than 4 criminal records. According to the type of crime it was found that 86 (23%) respondents are sentenced for violent crimes – homicide, crimes against health, morality, 156 (42%) respondents – for burglary and robbery, and the rest 131 (35%) for crimes connected with inobservance of general order, hooliganism, smuggling, violation of road safety, corruption, distribution of narcotics. According to the criminal experience the first criminal record before the age of 18 was established for 120 respondents (32%), 151 (40%) respondents from 18 to 25 years, from 26 to 30 years – 40 (11%) respondents, and after 31 year – 62 (17%) prisoners. The total time spent in prison less than 1 year was established for 62 respondents, from one to three years – 106 respondents (28%), from 3 to 8 years – 122 (33%) respondents and more than 8 years – 83 (22%) respondents.
2.2. Procedure

Respondents were offered to fill in the questionnaire that in the first part included the characteristics of socio-demographic and criminal experience, subjective assessment of the belief in justice and a just world (7 point scale). In the second part of the questionnaire the respondents were asked to provide answers for the questions that were related with the General Belief in a Just World (GBJW), Personal Belief in a Just World (PBJW), as well as the assessment of court proceedings (ACP), assessment of prison justice (APJ) and assessment of personal action (APA), all questions were evaluated by the 6 points scale (Likert scale).

2.3. Instruments

In order to study the belief in a just world, the adapted Dalbert scale “Personal belief in a just world” (PBJW) was used (Dalbert 1999) that consists of 7 questions and adapted Dalbert, Montada and Schmitt scale “General belief in a just world” (GBJW) (Dalbert, Montada, Schmitt 1987) that consists of 6 questions. To find out the assessment of sentence justice, the modified Otto and Dalbert (2005) scale was used. The perception of sentence justice was studied with 3 questions (“Sentence was just”, “I believe that the court was just towards me hearing my case”, “I believe that the court tried to achieve justice for all parties hearing my case”), in turn in order to assess the justice of personal action or the level of regret of personal action a separate scale was developed that includes 5 statements (e.g., “I feel guilty for the committed crime”, “I do net regret my action (committed crime) as the victim provoked me”). All questions were evaluated according to the 6 point scale (Likert scale) from 1 (totally disagree) to 6 (totally agree). Statistical hierarchical cluster analysis, chi-squared ($\chi^2$) criterion, Student’s t-criterion, analysis of variance for a single factor (ANOVA) with a following Multiple Comparisons were used to test the proposed questions. The level of statistical significance of all the statistical criteria used for the research was $p=0.05$.

3. Results

Answers to the first research question: what are the gender differences in the belief in a just world, the assessment of court, prison and personal action, initially analysing separately the average indicators of the Belief in a just world (BJW) of males and females, revealed that in female sample General belief in a just world (GBJW) and Personal belief in a just world (PBJW) have higher level than male respondents (see Figure 1), higher results for females were found also in three justice parameters – Assessment of court proceedings (ACP), Assessment of prison justice (APJ) and Assessment of personal action (APA), moreover increased results of APJ indicate more negative female attitude to the manifestations of respect and justice in prison environment than in the group of males (Figure 1).

![Fig.1. The differences of average indicators of the parameters of the belief in a just world, justice perception and subjective belief in justice and a just world in groups of male and female prisoners](source: authors’ calculations)
Males, in turn, reflect higher results in the assessment of subjective belief in justice and a just world that indicates a tendency for males to believe in the existence of a just world and justice as such. As a result of a cluster analysis two groups were formed: 1\textsuperscript{st} group with decreased indicators of the belief in justice and a just world, females in this group make 74.1\% out of the total number of females and males 58.5\%; 2\textsuperscript{nd} group – with high indicators of the belief in justice and a just world that includes 25.9\% of females and 41.5\% males. Statistically significant differences were found in the first group according to the belief in justice, females manifest their subjective disbelief in justice more than males in this sample (\(p=.029\)). Analysing the obtained results it can be concluded that females subjectively reject the belief in justice and a just world, but the results of BJW scale show higher level of belief in a just world in comparison to male respondents, moreover increased results of the regret of personal action and the assessment of court proceedings justice could indicate the potential adaptation opportunities for females and the choice of socially accepted behaviour in future. In turn the increase of the proportion of convicted females may potentially indicate the changes in justice perception that could objectively suggest the negative dynamics of understanding of justice in the whole society.

In order to obtain more complete view on the gender differences in BJW by the use of the method of cluster analysis 4 homogeneous groups were formed according to the belief in a just world: 1\textsuperscript{st} group (high level of GBJW and PBJW) includes 30.7\% of females out of the total number of females and 15.5\% out of the total number of males that makes 22.3\% out of the total number of respondents, 2\textsuperscript{nd} group (medium level of GBJW, PBJW) that is the largest according to the total number of respondents (41\%) includes 42.8\% imprisoned females and 39.6\% males, 3\textsuperscript{rd} group (high GBJW, low PBJW) consists of 9.6\% of females and 15.9\% of males (total number of respondents 13.1\%) and 4\textsuperscript{th} group (low GBJW, PBJW) – 16.9\% of females and 29\% of males (23.6\% out of the total number of respondents). According to the \(\chi^2\) criterion there are statistically significant differences in the Belief in a just world between the samples of males and females (\(\chi^2=18.390, p<0.001\)). The analysis of the results showed that statistically significant differences are in the first cluster GBJW (\(p=.001\)) and second cluster (\(p=.015\)), in these groups the indicators of female GBJW are higher than indicators of male GBJW level (see Figure 2).

![Fig.2. The distribution of GBJW and PBJW values among clusters in groups of females and males](source: authors)
The analysis of the distribution of males and females into clusters according to the Assessment of court proceedings and Regret of personal action revealed that there are statistically significant differences between the samples of males and females ($\chi^2=32.882$, $p<0.001$). 

![Figure 3](image) 

**Fig. 3.** The distribution of ACP and RPA values among clusters in groups of female and male prisoners

In the first group with low indicators of ACP and RPA there are 10.3% females out of the total number of females and 25.7% males out of the total number of males, thus males dominate in this cluster that makes 75.7% out of the number of respondents in the 1st cluster. The largest number of females is in the 2nd cluster with high indicators of ACP and low indicators of RPA (34.5% out of the total number of females that makes 64.8% out of the number of respondents in the 2nd cluster), in turn in the 3rd cluster (low ACP, high RPA) dominate males that make 36.4% out of the total number of male prisoners.

The analysis of gender differences in ACP and RPA levels in clusters (see Figure 3) revealed that there are statistically significant differences in the first group according to ACP ($p=.010$) and RPA ($p=.046$). In the group of females the indicators of ACP and RPA are generally higher than in the group of males.
Analysis of the obtained data revealed that there is a statistically significant correlation (p=.027) in the group of males between the Belief in a just world and ACP, RPA (see Figure 4), in turn in the group of females this correlation was not found, thus a conclusion could be drawn that the stronger is prisoners’ belief in a just world, the higher is the Assessment of court proceedings and the level of regret of personal action. In order to answer the second question of the research: what are the socio-demographic and criminal career variables that influence the belief in a just world of male and female prisoners, the research data were analysed separately in the groups of male and female prisoners according to various parameters, paying special attention to the influence of criminal career and gender on the Belief in a just world.

The analysis of the obtained data in the sample of males revealed that there are statistically significant differences in the General belief in a just world between the respondents with basic education and secondary education ($F_{2,157}=5.024$, $p=0.005$), as well as between respondents with basic education and higher education ($F_{2,157}=5.024$, $p=0.047$), thus it can be concluded that the lower is the level of education, the stronger is GBJW. There were no statistically significant differences found according to the level of Personal belief in a just world ($F_{2,157}=0.295$, $p=0.745$). The results of the research also showed that there is a statistically significant influence of gender on GBJW ($F=24.147$, $p<0.001$), in turn the level of education does not influence GBJW ($p=0.467$). The significant effect of the mutual impact of both gender and the level of education on GBJW was not found ($p=0.089$). While females in general have higher indicators of GBJW, in addition males with higher education have lower level of GBJW than females in this education group, thus it can be concluded that the level of education influences GBJW in the groups of males and females in different ways. It may be indicative of objective reasons of such attitude whose origins are linked to certain deficiencies in the functioning of the society which should be identified and prevented.

It was found that the groups of offenders according to the type of crime have similar level of PBJW ($F_{2,144}=0.364$, $p=0.695$) and GBJW ($F_{2,144}=1.192$, $p=0.307$) that brings to a conclusion that the belief in a just world does not influence the choice of the type of crime, as well as the type of crime does not influence the perception of justice in the sample of males. In the group of females a significant influence of the type of crime was not found, however the average indicators of PBJW show that the highest level of PBJW is in the group of light crimes, in turn the lowest indicators of PBJW is in the group of females with criminal records for violent crimes ($F=2.423$, $p=0.092$).
The analysis of the obtained results in the group of male respondents according to the first imprisonment revealed that there are statistically significant differences in GBJW scale between the group of respondents who had their first criminal record before the age of 18 and the second group (18-30 years) \((F_{2,157} = 3.263, p = 0.012)\), in addition the lowest average indicators were found in the age group from 18 to 30 years that is indicative of a greater negative social experience that transforms into the corresponding perception of the world. In the group of females the influence of the age of imprisonment on GBJW and PBJW was not found. The influence of the number of criminal records on general \((F_{2,157} = 0.205, p = 0.815)\) and personal \((F_{2,157} = 1.936, p = 0.148)\) belief in a just world was also not found. The analysis of the groups of male respondents according to the total time spent in prison revealed that this indicator also does not have impact on the belief in a just world. Separate analysis of the indicators of the female sample did not reveal a significant impact of the total time spent in prison on GBJW \((p = 0.079)\), however the lowest level of GBJW was found in the group of female prisoners who have spent in prison less than one year, in turn the highest indicators of GBJW were in the group from 3 to 5 years. The analysis of the influence of the total time spent in prison on PBJW revealed that there is a statistically significant influence of gender on PBJW \((F = 6.162, p = 0.014)\), but the total time spent in prison does not influence PBJW \((p = 0.356)\). The significant effect of the mutual impact of both gender and the total time spent in prison on PBJW was not observed \((p = 0.081)\). Females with the total time spent in prison more than 10 years have in general higher level of PBJW than males in this group, in turn the lowest indicators are for those females who have spent in prison from 8 to 10 years, males in this group have the highest level of PBJW. In general females have higher level of PBJW than males, thus it can be concluded that the time spent in prison influences PBJW in groups of males and females in a different way.

Conclusions

The initial aim of the research was to study the individual representations of males and females on justice on the basis of the just world theory analysing the belief in a just world in relation with the criminal experience, perception of court proceedings, prison and committed crime justice, as well as the subjective assessment of the personal belief in justice and a just world. The basis for the study of these issues was the previous researches conducted in Germany \((Otto, Dalbert 2004; Dalbert, Filke 2007)\), as well as the researches conducted in Russia \((Sosnina 2006; Golynchik 2004; Gulevich 2007)\) in the field of general representations of justice, in addition the research in the context of gender differences in Latvia was conducted for the first time.

The results of the research lead to the conclusion that the level of prisoners’ belief in a just world depends on gender, females have in general higher indicators in both General and Personal belief in a just world, thus a potential prognosis can be made that the measures of resocialization and social integration would be more effectively implemented concerning females, although these differences can be explained by the fact that the total level of criminality of females are lower than in the sample of male respondents. In addition, subjective rejection of the belief in justice and a just world is more characteristic for females, in turn males have higher results in the assessment of their belief in justice and a just world. Also the assessment of court proceedings, justice of prison officials and personal action depends on respondents’ gender, females in general have higher assessment of court proceedings and sentence justice and show higher level of regret for the committed crime, but females suffers more from the discomfort caused by the prison environment and relations with administration than males that is indicated in the assessment of prison justice, it could be explained with more deep emotional experiences of females and difficulties to adapt in the prison environment, besides the largest part of females are imprisoned for the first time, in turn in the group of males dominate those respondents with a long criminal career.

Regardless of the fact that the Belief in a just world in general does not depend on the type of committed crime, however the type of crime influences the assessment of female personal life experiences or PBJW, although these differences are not statistically significant \((p = 0.09)\), females who serve their sentence for violent crimes have lower level of personal belief in a just world than female respondents sentenced for other types of crime.

The fact that the belief of male prisoners in a just world is related with the assessment of court proceedings and the level of regret of personal action, respectively, the stronger is BJW, the more positive they perceive their
sentence and the more negative is the assessment of personal action, is indicative of the potential positive impact
of the belief in a just world on the sense of guilt that could foster motivation to observe the laws after the release
from prison, in turn this statistically significant correlation was not found in the group of females.

In general the results of the present research allow partially to approve the opinion of other authors (Otto,
Dalbert 2004; Dalbert, Filke 2007) about the impact of the belief in a just world on the potential positive changes
of prisoners’ attitude towards the observance of laws in future. Thus, developing the preventive
and resocialization programmes for prisoners as a potential social risk group it would be advisable to pay
attention to the characteristic elements of legal and moral cognition taking into account prisoners’ individual
representations of justice. The obtained results create new perspectives for the further researches in the context
of prisoners’ gender differences. Considering the fact that there are differences in the perception of justice
between females and males which are not significantly related with the socio-demographic and criminal career
indicators it would be useful to determine those variables, determination and improvement of which could
increase the level of the belief in a just world of males and females, as well as to start the study of other
components of moral and legal cognition.

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