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Zhelyu Vladimirov[1]

DISCUSSING INNOVATION POLICY BIASES IN THE NEW EU MEMBER STATES[2]

The data show that there is a significant and persistent gap in innovation performance between new and old EU Member States. Most of Eastern European countries (EEC) are moderate innovators, except for Slovenia, while Bulgaria and Romania belong steadily to modest innovators. Obviously the new member states face more challenges in creating and implementing effective innovation policies.

Therefore, the goal of this paper is to analyze biases in innovation policy of the new member states (NMS), including Bulgaria, and to suggest some measures to overcome these. It includes an analysis of EU and national EEC innovation policies, investigation of main theoretical approaches underpinning these policies, effects of path-dependency, innovation policy biases, the role of transnational corporations, global value chains, and human capital. It concludes with some propositions to the improvement of EEC' innovation policies.

The necessity of such research originates from the fact that often the EEC policymakers accept uncritically the elements of innovation policy from more developed countries without considering the specificity of local context. The uncritical acceptance of "best practices" approach leads inevitably to biased innovation policies. For example, the EEC innovation policies tend to be based on rather linear understanding of innovation with an accent on R&D and high-tech sectors at the expense of demand-side and medium- and low-tech sectors. It seems that these countries fall into the so-called "periphery paradox". It consists in policy efforts to promote innovation, which are however detached from efforts to strengthen the local actors (firms, universities, and institutions) which demand and offer the knowledge for innovation. This way the innovation policy addresses missing actors.

In order to close the innovation performance gap between old and new EU member states there is a need to modify the innovation policies in EEC as the prevailing R&D based model is less relevant compared to a model of creating local innovation capabilities.

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[1] *Zhelyu Vladimirov is from Sofia University St Kliment Ohridski, Faculty of Economics and Business, e-mail: jeve@feb.uni-sofia.bg.*

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1. Introduction

In the knowledge-based economy, the innovations are considered as a key driver for the firms and countries competitiveness and growth. The "successful economic development is intimately linked to a country's capacity to acquire, absorb, disseminate, and apply modern technologies, a capacity embodied in its NIS (National Innovation System)" (Metcalfe and Ramlogan, 2008, p. 436). OECD (2010) consider that innovations are one of the most fundamental processes underpinning economic growth, and providing solutions to economic and social challenges. The innovation process, however, requires an appropriate *public policy*, particularly for less developed innovation countries. Suurna and Kattel (2010, p. 647) define innovation policy as a set of public sector efforts aimed at enabling the private sector to move into activities that exhibit high rates of innovations.

Although the innovation became an important driver for both the European Union (EU) international competitiveness and the EU internal socio-economic cohesion, a considerable *gap* in innovation performance persists between old and new Member States (NMS). Most of NMS are moderate innovators, except for Slovenia, while Bulgaria and Romania belong *steadily* to modest innovators (EC, 2018c, p. 7). The main differences between old and NMS refer to the lower R&D intensity in the export products; smaller share of employment in high and medium high-tech sectors and in knowledge-intensive services; larger share of micro-enterprises and SMEs; and lower GDP per capita. In order to close this gap, the changes in innovation policy are of particular relevance for the NMS.

The necessity of innovation policy is justified by "market failures" to provide incentives for technology demand and diffusion of innovations (Edquist, 2001). These failures seem to occur more often in Eastern European Countries (EEC), which is due to a great extent to their legacy. In the socialist period, these countries were characterized with specific R&D and innovation accumulation not leading to increased total factor productivity (TFP), while in the post-socialist period a tendency to increased TFP was accompanied by declining R&D. In other words, the growth in EEC countries during the 1990s and early 2000s was based more on the improvements in the production capability rather than on R&D and innovation (Kravtsova and Radosevic, 2012, pp. 110-112).

In respect to the innovation policy in catching-up economies, Kattel and Primi (2012) have identified the so-called "periphery paradox". It consists in rising political attention towards innovation, which is however *detached* from efforts to strengthen the local actors (firms, universities, and institutions) which demand and offer the knowledge for innovation. This way the innovation policy *addresses missing actors*. The other side of this "paradox" is the *weak link* between academy and industry, which is due to the little need or capacity of local firms to "absorb" the results of R&D. Therefore, neglecting the innovation capacity of the existing actors eliminates the efforts of NMS innovation policy to strengthening science-industry links (Radosevic and Reid, 2006).

The Schumpeterian growth theory suggests that countries at different innovation levels should have different policy mixes (Aghion et al., 2013). In their review of the Decade of Innovation Policy in the EU countries, Izsák et al. (2015, p. 797) reveal, however, that a

relative *homogeneity* of policy mixes across countries prevailed despite their differences in technological developments. This homogeneity reflects the emphasis on "best practices" without considering the specific challenges of each country. For example, the prevalent *R&D orientation* of innovation policies may be appropriate for technology leaders but not necessarily for modest and moderate innovator countries such as EEC.

Nevertheless, the EE policymakers often accept *uncritically* the elements of innovation policy from more developed Western countries (Ulnicane, 2006). This copy-paste practice corresponds to the EE *institutional legacies*, where strong vested interests favored the model of R&D based innovation at the expense of the *demand side* of innovation (Banchoff, 2002). The policy-makers have not understood that the innovation policy plays a different role in rich industrialised and catching-up economies. In the first group the main aim is to produce new technologies, while in the catching-up economies the aim is to absorb these technologies and find new areas of their use (Varblane et al., 2007). Therefore, the innovation policy could not be successfully implemented in another country without adapting it to the local economic, social, and cultural conditions.

Borrás and Edquist (2013, p. 1520) also argue that instrument mixes should be different and dependent on the context for which they are designed: "The very specific and unique nature of each innovation system, with its individual strengths and weaknesses, as well as concrete problems and bottlenecks, on the one hand, and the very specific national/regional traditions regarding state-market-society relations on the other, mean that any "one-size-fits-all" attempt is irrelevant". Reid (2011) indicate that certain elements that could be considered key failures in the national systems of innovation in EEC are not taken into account in the policy priorities. These include some framework type failures such as the weaknesses in education and financial systems, institutional failing, and the "demand" side of innovation.

Obviously, the EE economies face more challenges in creating effective innovation policies as their competitiveness is still based on relatively low production costs. Therefore, it is crucial for these countries to identify which types of innovations to support and how to do it, given the budgetary constraints and trade incentives that tend to push towards specializing into low value added (VA) activities (ECLAC, 2008).

The **goal** of this paper is to analyse biases in innovation policy of the NMS (EEC and particularly, of Bulgaria), and to suggest some measures to overcome these. It includes an analysis of EU and national EEC innovation policies, investigation of main theoretical approaches underpinning these policies, effects of path-dependency, innovation policy biases, the role of transnational corporations (TNCs), global value chains (GVCs), and human capital. It concludes with some propositions to the improvement of EEC' innovation policies.

2. Literature Review

2.1. EU innovation policies – making no difference between new and old member states

The EU elaborated an integrated approach to economic growth based on innovations, which, however, did not take into account the differences between old and NMS. In accordance with this approach, the member states set up their strategies for innovation, competitiveness and smart specialisation. The analysis of these strategies leads to the conclusion that the proposed measures also do not consider both institutional and innovation capacity differences between the EU member states. It is common to all NMS that: (1) The normative policy documents on innovation policy were formulated very recently and to a great extent due to the EU's pressure; (2) Innovation policy plans were often short-term; and (3) The existing policy mix reflected strongly the priorities and objectives as defined in the EU programs for R&D and innovation (Suurna and Kattel, 2010, p. 653)

For example, the European Commission (EC) has identified specific sectors to be supported such as: space technology, clean and energy efficient motor vehicles, transport equipment, healthcare, environmental goods, energy supply industries, security industries, chemicals, engineering, transport-equipment, agro-food and business services (EC, 2010). The support consists in implementing advanced technologies and promoting innovations. These sectors, however, are more developed in countries that rank highly in terms of R&D and innovation, and the support is focused on gaining competitive advantages in leading areas of emerging growth (Ormala, 2017).

At the same time, the NMS displays *persistent gaps* with frontier economies in terms of production structure specialization and aggregate innovation performance. These countries show "periphery" features: co-existence of islands of technological excellence with a prevailing low-tech and low-skilled labor production. In most EEC the economic structure is characterized by low productivity growth and dominated by outsourcing activities with low demand for R&D (Kattel and Primi, 2012). Hence, these countries are not quite able to contribute to the high technology development through innovation. Török et al. (20139) also observed that the NMS face significant challenges, as they move towards more knowledge- and skills-oriented industries, which are hampered by weaknesses in innovation capacity and knowledge transfer.

The diversity of technological specialisations, industrial structures, and research policies implies that the relative importance of EU policy instruments differs between member states (Chobanova, 2007, p. 96). Therefore, the NMS need to consider the *absorptive capacity* of their economies and to create innovation policies, which correspond to their specifics.

2.2. NMS innovation policies – not taking into account country's specifics

Although the majority of enterprises in NMS are non-R&D innovators, the national innovation policies still focus on (a small number of) active innovators and neglect the huge

amount of local firms. The company-specific R&D intensity in these countries is relatively low, and tend to rely on R&D embodied in imported inputs (Reid, 2011).

For example, the share of manufacturing products in the EEC' exports increased from 80% in 1999 to 85% in 2013, while the share of machinery and transport equipment in their exports increased between 1995 and 2014 from 20.2% to 44.3%. These increases are due to the new role of EECs as manufacturers of intermediate goods, and as suppliers of machinery and transport equipment within the GVCs (Bierut and Kuziemska-Pawlak, 2016, pp. 12-16). At the same time, the relatively low share of high-tech manufacturing exports (26% vs 33% in Germany and 38% in the EU-15; data for 2014) indicates a relatively low non-price competitiveness (Bierut and Kuziemska-Pawlak, 2017, p. 523). The share of high-tech exports in total exports from these countries remains lower than in more advanced EU countries, with some exception of Hungary and Czech Republic (Table 1).

Table 1

High-tech exports (% of exports)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EU-28	16.1	15.4	17.1	16.1	15.4	15.7	15.3	15.6	17.0	17.9	17.8
Hungary	21.3	20.2	22.2	21.8	20.9	17.3	16.3	14.5	15.4	15.9	15.7
Czech Republic	14.1	14.1	15.2	16.1	16.4	16.1	15.1	15.3	15.5	15.0	15.3
Estonia	7.8	7.5	6.9	10.4	14.8	14.1	14.9	16.3	15.5	15.6	12.0
Slovakia	5.0	5.2	5.9	6.6	6.6	8.2	9.6	9.9	10.0	9.7	10.6
Latvia	4.6	4.6	5.3	4.8	6.7	6.4	8.0	9.7	11.0	10.2	10.2
Croatia	6.5	6.7	7.6	7.0	5.8	7.2	7.9	6.6	7.1	9.7	9.3
Poland	3.0	4.3	5.7	6.0	5.1	6.0	6.7	7.9	8.5	8.4	8.5
Lithuania	7.3	6.5	5.8	6.0	5.6	5.8	5.8	6.6	7.6	7.8	8.1
Romania	3.5	5.4	8.2	9.8	8.8	6.3	5.6	6.4	7.3	8.3	7.9
Slovenia	4.6	5.2	5.5	5.3	5.3	5.2	5.5	5.4	5.9	5.7	5.5
Bulgaria	3.5	3.6	4.6	4.1	3.7	3.8	4.0	3.9	4.4	5.1	5.4

Source: Eurostat (http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tin00140&plugin=1)[3]

As data shows, Bulgaria, Slovenia, Romania, and Lithuania have relatively low share of high-technology exports. The majority of Lithuanian manufacturing value-added is produced in low-tech industries, while Bulgaria's low share of high-tech-intensive export is attributed to the limited and decreasing R&D expenditures. In Romania, the automotive multinational affiliates induce certain high-tech export but the general level is low (Éltető, 2014, p. 53).

[3] The data shows the share of exports of all high technology products in total exports. High technology products are defined according to SITC Rev. 4 as the sum of the following products: Aerospace, Computers-office machines, Electronics-telecommunications, Pharmacy, Scientific instruments, Electrical machinery, Chemistry, Non-electrical machinery, Armament. The total exports for the EU do not include the intra-EU trade.

This situation is due to the fact that many of the local enterprises (mainly SMEs) lack the absorption capacity for new technologies. The insertion of EEC countries into GVCs contributed both to a higher share of their value added (VA) in the exports of other countries, and to an increase of the foreign VA in their exports, which in 2011 was equal to 46.9% (OECD-WTO, 2015). Kravtsova and Radosevic (2012) found that even the high-tech sectors in EEC are not actually R&D intensive as these countries are specialized in low VA segments of high-tech sectors. Currently, the EEC lag behind more developed EU countries in terms of intramural R&D and patent applications. The R&D intensity even of electronics is lower than the average for manufacturing, which means that the high-tech orientation in EEC is an effect of statistics, due to foreign-owned firms investing in the 'low-end' of high-tech (Srholec, 2006). The Summary Innovation Index 2017 relative to EU-28 in 2010 and 2017 shows that two countries (Bulgaria and Romania) have the lowest index (below 50% of EU average both in 2010 and 2017), and the majority of EEC are moderate innovators (Table 2).

Table 2

Summary Innovation Index 2017 of EEC relative to EU 2010 (and 2017)

	Relative to EU in 2010								Relative to EU in 2017
	2010	2011	2012	2013	2014	2015	2016	2017	2017
EU-28	100.0	100.3	98.8	99.9	99.8	101.8	104.6	105.8	100.0
BG	49.5	47.4	39.5	42.2	44.0	45.6	47.5	48.0	45.4
CZ	90.0	88.5	82.7	84.2	83.8	85.5	84.5	87.1	82.3
HR	56.2	57.6	52.2	54.5	49.1	53.9	54.4	54.2	51.2
LV	48.2	48.3	45.5	45.3	54.9	61.7	58.4	59.8	56.5
LT	55.1	56.9	60.0	59.6	58.3	64.3	77.3	75.3	71.1
HU	69.7	68.5	65.3	65.4	66.1	66.8	67.7	69.6	65.7
PL	53.5	53.8	50.3	52.0	50.3	51.7	54.7	56.7	53.6
RO	46.9	46.7	40.1	39.9	32.2	30.4	32.4	32.9	31.1
SL	96.2	98.4	95.7	96.3	98.0	97.1	98.1	97.6	92.2
SK	63.0	66.1	68.7	70.9	66.5	68.6	69.8	67.8	64.0
DE	127.8	129.2	128.8	128.9	124.5	125.3	124.4	126.5	119.6

Source: EC (2018c, p. 98).

If we take, however, Germany as a reference point, the Summary Innovation Index 2017 (relative to Germany 2017) is equal to 26% for Romania, 38% % for Bulgaria, 45% for Poland, 54% for Slovakia, 55% for Hungary, and 69% for the Czech Republic (the EEC' average is 51%).

In general, the NMS have also smaller GDP per capita in PPS compared to older member states, although there are significant differences amongst them. As of 1 June 2018 the GDP per capita in PPS for Bulgaria is 49% relative to the EU-28, for Croatia – 61%, for Romania – 63%, for Latvia – 67%, and for Hungary – 68% (Eurostat, 2018). These data suggest that a great share of the population in these countries are low-income consumers, and can't support more sophisticated and consequently more expensive products and services. If Luxembourg enjoy an almost EUR 2,000 gross minimum wage in 2018,

Bulgaria ranks last with just EUR 261.00, (https://www. reinisfischer.com/minimum-wages-european-union-2018).

Based on these assumptions the question arises to what extent the EEC will be able to participate in the new super-advanced industrial world. Given their deficiencies in the technological level and skills base how far they can contribute to develop space technology, clean motor vehicles, nanotechnologies, and bioengineering innovations? (Bartlett, 2014, p. 36). The EC accounted that "differences in innovation performance in the EU has started to increase, signalling a possible *halt to convergence* in Member States' innovation performance" (EC, 2013, p. 5).

Therefore, it seems that the current innovation policy mixes of instruments do not well reflect the NMS' level of innovation capacity. Often, these mixes are simply transferred from elsewhere rather than being an appropriate response to domestic challenges (Izsák et al., 2015). Under such conditions, Reid (2011) distinguishes four possible types of *system failure*: capability failures; institutional failures; network failures; and framework failures, to which Tsipouri et al. (2009) add "policy failure" (deficiencies in the system of governance). Veugelers (2015) also considers that three types of deficits that can arise: (1) deficits in resources and capabilities for innovation; (2) deficits in incentives for innovation; and (3) systems failures. Amongst these *capability failure* seems to be the most significant, ahead of institutional and market failures. According to von Tunzelmann (2004) the basic failing in transition countries is not so much "market failure" or "government failure", but pervasive "network failures". Particularly, the lack of *social capital* (Putnam 1995) and trust is a serious barrier to the development of the innovation system in these countries.

In summary, low level of R&D intensity and poor demand for innovation in many parts of EE economies, combined with insufficient innovation capabilities, institutional weakness, network failures, relatively small purchase power of consumers, and lack of trust and social capital, constitute specific conditions, to which innovations policies should adapt.

2.3. The case of Bulgaria – a gap between political rhetoric and reality

Against the background of the EU priority sectors, the actual picture of the Bulgarian export shows that the greater share consists in raw materials. The country export specialisation is mainly in low-tech products: manufactured goods classified chiefly by material (23.12% of total export); mineral fuel, lubricants and related materials (17.39%); machinery and transport equipment (16.69%); miscellaneous manufactured articles (15.70%); chemical and related products n.e.c. (10.1%); food and live animals (7.47%); crude materials, inedible (except fuel) (5.91%); beverages and tobacco (2.4%); animals and vegetable oils, fats and waxes (1,02%); and commodities and transactions n.e.c. (0.2%) (NSI, 2018). It is worth noting that products with a higher R&D intensity have the lowest values of the Balassa Index, although it shows a small increase from 0.4 in 2001 to 0.58 in 2011 (Iarlyiska and Dimitrova, 2012).

Most of the Bulgarian companies work *under the technology frontier*, and "their growth is based on improvements in productivity that are neither related to R&D and dissemination

of knowledge, nor to generation of knowledge" (OPIC 2014-2020, 2015, p. 16). The share of innovative enterprises of total number of enterprises is 27.4% in 2012 and 27.2% in 2016 (NSI, 2018), while the EC Digital Economy & Society Index ranks the country steadily on 27 positions (amongst 28 EU countries) for consecutively 2014, 2015, 2016, and 2017 years; (Todorova and Slavcheva, 2018, p. 9). The share of *digitised enterprises* in 2017 (12%) is among the lowest in the EU (EC, 2018b), while the proportion of the population ordering goods or services over the internet in the previous 12 months is 17.7% (EU average: 57.5 %). The number of people using e-banking is also low, accounting for 8.65% of Internet users (and 5.49% of all individuals). Not surprisingly, the share of turnover from sales of the new to the market products in 2016 is only 2.7% of the total turnover of enterprises, the share of turnover from sales of the new to the firm, but not to the market products is 3.3% of total turnover, and these shares are about 1/3 of the EU average (NSI, 2018).

There is a large gap between the political rhetoric to enhance R&I in Bulgaria and the reality of budgetary constraints on these activities. The Bulgarian R&I system is characterised by significant underfunding, of between 0.5- 0.6 % of GDP in the last decade. The RIO country report for 2017 accounts that an insufficient financial support to the R&D&I system continue, as the gross domestic expenditure on R&D (GERD) (as % of GDP, 0.57% in 2011, 0.96% in 2015, and 0.78% in 2016) remains below in respect to both target and EU-28 average. Public expenditure on R&D as a percent of GDP (public R&D intensity) fell from 0.34% in 2009 to 0.25% in 2015; for this indicator, Bulgaria ranked 28th among the EU Member States in 2015. In 2014, the GDP on R&D (GERD) per capita in Bulgaria equalled EUR 46.3, while the EU-28 average reached EUR 558.4 (Todorova and Slavcheva, 2018, p. 15). The R&D by the business sector (as a percentage of GERD) increased from 30 % in 2009 to 50 % in 2010, up to 61 % in 2013 (near the EU-28 average of 64 %), mainly due to the EU's Operational Programmes (EC, 2017, p. 9). The intensity of the business enterprise expenditure on R&D (BERD) has been on the rise since 2009, although on a small pace (Table 3).

Table 3

Main R&I Indicators 2017, Bulgaria

	2010	2011	2012	2013	2014	2015	2016
R&D intensity	0.56	0.53	0.60	0.63	0.79	0.96	0.78
General government expenditure on education as % of GDP	3.60	3.40	3.30	3.70	4.10	4.00	3.40
R&D funded by BES (% of GDP)	0.09	0.09	0.13	0.12	0.18	0.34	
BERD (% of GDP)	0.28	0.28	0.37	0.39	0.52	0.70	0.57
BERD funded by the government		0.00	0.00	0.01	0.01	0.01	
Turnover from innovation as % of total turnover)	7.6		4.2				
Trade balance of high technology products as % of GDP	na	na	-3.50	na	-2.56	-2.38	na
SMEs introducing product or process innovations as % of SMEs			21.4		23.0		
World Share of PCT applications	0.02	0.02	0.02	0.03	0.03	0.02	

Source: EC (2018b, p. 64; Todorova and Slavcheva, 2018, p. 16)

The employment in high and medium-high technology manufacturing in Bulgaria has a smaller share of total employment (3-4% vs the EU average 5.5-6%), while both the share of employment in R&D activities and the R&D expenditure relative to GDP are around half the EU average. The issues with human capital is evident in the fact that "annual requirements of engineering and technical professionals are almost 3 times more than graduates in this area (64,000 versus 23,000) (Anavi, 2015).

The share science and technology personnel of active population in Bulgaria is increasing from 3.3% in 2010 to 6.1% in 2016, while the R&D personnel from all sectors together amounts to 0.68% of the labour force in 2015, compared with an EU-28 average of 1.2%. The structure of R&D personnel is skewed towards government sector (0.25 vs 0.16 of the EU-28 average), while the shares of business enterprise and the higher education lag behind (0.14 and 0.38 vs 0.29 and 0.65 respectively) (Todorova and Slavcheva, 2018, p. 18).

Not surprisingly, both researchers and expert reports on the Bulgarian R&I system are quite critical. For example, in 2007 Chobanova (2007) identified a gap between the R&D objectives and R&D funding base; between fostering innovation aim and slow recovery of R&D in business enterprises; between strengthening the human R&D resource base in economy objective and level of R&D personnel salaries and of funding R&D activities. Eight years later she found that the innovation policy did not lead to the desired results. The structural challenges to the Bulgarian IS remained almost the same, which suggests that this IS addressed inadequately these challenges (Chobanova, 2015, pp. 3-4).

Other reports such as the World Bank 3S Report for Bulgaria (2013) and the RIO country report 2017 also indicate that the R&I system is fragmented, the current funding leads to the low levels of public appreciation of scientific research and low salaries (Todorova and Slavcheva, 2017). The EC report in 2018 find that the system is characterised by a high level of *institutional fragmentation* (especially in the HE sector), and there is an acute – and long-standing – problem-related to national *funding for research*. Research-industry links are impeded by lack of a critical mass in research-performing industrial actors and the low technological absorptive capacity of the domestic sector. There is also a widespread *lack of trust* in the R&I system, which is reflected, in the *low level of researcher salaries* and in the low – and declining – priority the government allocates to knowledge creation in general (EC, 2018a)

2.4. Two models of innovation policies

The review of innovation policies shows that there are two competing models to stimulate the innovation performance. The first model is based on a *linear* understanding of the innovation process by promoting mainly R&D initiatives, while the second model is more complex. According to Tödtling and Trippl (2005) the linear model was dominating until the 1990s. It considers R&D as the main source of innovation by ignoring important feedback loops and interactions among the distinct stages of the process (Samara et al., 2012). By stimulating science-based innovations, it supports primarily the *high tech sectors* at the expense of medium and low-tech ones.

This model emphasised the *supply* of innovation inputs by *neglecting the absorption capacity* of firms and the specific demand for innovation support in different countries and regions. Many policies simply follow "best innovation practices" derived from high-tech areas and well-performing regions, which are often applied regardless of particular regions and countries. The specific strengths and weaknesses in terms of industries, knowledge institutions, and innovation potential are frequently not taken into account. In reality, however, innovation activities differ strongly between central, peripheral and old industrial areas (Tödtling and Trippl, 2005), and there is no one "best practice" innovation policy. Therefore, there is a need for more differentiated innovation policies, which have to deal with *specific innovation barriers in different countries and regions*.

According to the *non-linear* model, innovation results from an interactive learning process of knowledge accumulation, transformation, and commercialisation. This model is reflected in the concept of "system of innovation" (SI) at national, regional, and sectoral level (Freeman, 1987, Lundvall, 1992, Nelson, 1993). The theoretical foundation of this approach lays in the *evolutionary economic theory* (McKelvey, 2005; Saviotti, 2005; Fagerberg et al. 2009), according to which the innovation is an interactive process of learning, highly dependent on history (path dependence), as well as on economic, political and other social factors. Hence, innovation should be seen as an *evolutionary and non-linear process*, requiring intensive communication and collaboration between different actors (companies, universities, educational and financing institutions, standard setting bodies, industry associations and government agencies) (Tödtling and Trippl, 2005, p. 1206). Applying an evolutionary approach to shaping innovation policy, apart from being more economically justified, would also help to increase the demand for knowledge developed in the country (Chobanova, 2001, p. 119).

The concept of NIS allows for revealing the differences between countries in respect to their economic structure, R&D institutional base and innovation performance. The main message of the NIS is that the firms carry out innovation through extensive interactions with universities, research centres, users and suppliers, and under a specific institutional context (Filippetti and Archibugi, 2011). Therefore, the IS concept is viewed as an evolutionary and social process of collective learning (Edquist, 2005).

Soete (2007) distinguishes four essential factors for the well-functioning NIS, which are: (1) investment in social and human capital; (2) research capacity of a country or region and its connection with the higher education system; (3) geographical proximity (regional clusters); and (4) the "absorptive capacity" of firms, clients and consumers in a particular region or country. These factors can be represented as elements of a virtual circle mutually reinforcing each other (Soete, 2007, pp. 278-281). Watkins et al. (2015) also present the functions that an effective innovation system should support.

Kivimaa and Kern (2016, p. 206) propose that policy mixes favourable to sustainability transitions need to involve both policies aiming for the "creation" of new and for "destroying" (or withdrawing support for) the old. Based on that, it seems that the policy mixes to promote R&I in EEC did not contribute to significant "catching up", partly because the "destroying" function was not accompanied by the "creation" one.

2.5. Path-dependency effects

Radosevic (1998) argues that the transformation of NIS in the post-socialist economies of Eastern Europe during the 1990s was evolving between the restructuring and erosion of potentially viable R&D capacities. In their former structure of innovation industrial R&D institutes played the dominant role both in terms of personnel and in terms of expenditure. Suurna and Kattel (2010) also note that the former R&D institutes could have a key role in bridging academic research with industry needs as they were essentially the only existing link between the two. With the collapse of the institute system, however, the links between academy and industry have been destroyed and became the weakest link in the EEC R&D system. During the transition period, the innovation policy was considered to be of secondary importance in respect to privatisation and macroeconomic stability.

The transition period does not lead to successful technological restructuring, quite the contrary. Chobanova (2016) indicates that this process was accompanied by an "implosion" of the Bulgarian R&D system. During the period 1990-1997 the separate state research organizations (about 37) working for state-owned big complexes, as well as R&D offices inside business enterprises, were closed. The R&D funding has withered quickly, and the R&D expenditure from 2.39% in 1990 levelled off at an annual average of just below 0.5% of GDP in the period 2003-2012. The most striking result was the collapse of R&D performance in the business enterprise sector. By 1999 its share dropped by about a factor of three since the early 1990s from more than 90% to about 20% of total (Chobanova, 2007, p. 82). No less important is that the R&D outflow led to the depreciation of problem-solving expertise as many scientists, researchers, and engineers move to better off non R&D activities or abroad (Radosevic, 1998). For example, from 1996 to 2003 the number of total R&D personnel in Bulgaria declined by approximately 40%, and the number of researchers by about 35% (Chobanova, 2007, p. 83).

Filippetti and Archibugi (2011) demonstrate that the recent crisis has not been of the same magnitude across all European countries due to great *differences of structural characteristics of their NIS*. Countries with stronger NIS have been less affected by the downturn, while the most negatively affected were the catching-up NMS. Specifically, the presence of qualified human resources plays a crucial role in cushioning the effects of a downswing in innovation in frontrunner countries, while it seems to be less the case in NMS. "There is the risk that the effects of the downturn will turn out to be structural, and as a result of the crisis at least some of the New Member States will *be no longer able to sustain the catching-up process* they started before the recession"(Filippetti and Archibugi, 2011, p. 188).

According to Chobanova (2016, p. 78) the current innovation gap cannot be justified by both the transition legacy and the 2008-2009 crisis, as all other countries have been affected by these). She considers that the reasons must be sought somewhere else - *in concept, policy*, tools and mechanisms for their implementation.

2.6. Demand-led versus supply-led innovation policies

If the linear model reflects mainly the *supply side*, the non-linear model includes also the *demand side*. The demand-based innovation policies is defined as a "set of public measures to increase the demand for innovations, to improve the conditions for the uptake of innovations and/or to improve the articulation of demand in order to spur innovations and the diffusion of innovations" (Edler, 2009, p. 3). These policies complement and not substitute the supply side measures. For example, the Aho et al. report (2006) suggests that on the supply side, it is necessary to increase resources for R&D, and to improve the structural mobility in Europe, while on the demand side it is necessary to create a market that stimulates innovation.

If the supply of innovation is generally dominated by public resources, demand is driven by private resources (Soete, 2007). Therefore, a way to drive demand for innovative products is to use the public procurement instruments. David et al. (2008, p. 687) argue that "public policy supporting innovation has proven to be especially effective where funding for R&D was combined with complementary policies supporting the adoption of innovation". An important direction for a well-balanced *policy-mix* is to link R&D funding to internal and external demand for these activities (Chobanova, 2015). According to Borrás and Edquist (2013) a relevant issue to analyse in innovation systems is the appropriate balance between demand-side innovation policy instruments and supply-side instruments.

The demand side is a key innovation category, which includes the users of new knowledge and the customers for innovations. The demand policies, however, should be selected in areas in which local producers are competitive due to the knowledge of local demand conditions. One of the comments of the World Bank 3S Report for Bulgaria (2013) is that the funding instruments in Bulgaria have been designed with the idea of the "supply-push" model, while the priority is rather to promote market-oriented (demand-driven) research.

Howells (2005, p. 1231) indicates an almost complete disregard of demand factors in the formation of regional innovative activities, while a more "demand side" perspective of innovation policy will contribute to the local growth. Instead of applying strategic approach, based on analysis of the *national needs*, the policy measures in EEC often follow the EU financing priorities without adaptation to national priorities. In many of these countries, political instruments and tools do not fit the needs of the firms.

2.7. R&D (supply side) biases in NMS innovation policies

The typical NMS innovation policy measures aim to commercialize certain R&D results, mainly in a high-tech area (Kattel and Primi, 2012), while the demand for R&D and skills remain relatively low because of the prevailing specialization into low-end activities. Therefore, where firms carry out basic modernisation of production and incremental innovations, a policy fostering high-level R&D basically *misses its target*. The results of Kravtsova and Radosevic (2012) suggest that R&D plays a relatively small direct role in the current performance of the EE economies. Reinstaller and Unterlass (2011) also find that when we move down the technology intensity ladder, we see that R&D investment and other innovation expenditures are no more the principal factors driving innovation in the

innovation-intense industries. In the countries with these types of industries, technology transfers are more important drivers of innovation along with non-R&D-based innovation activities. This applies to the group of NMS that are technologically more advanced, while in the group of less advanced NMS, technology transfer is the only significant source of product innovations.

According to Edler (2009) all EEC have focused on the supply side and have paid little attention to the demand side for innovation. These policies are facing inevitably a range of system failures such as information and adoption problems, lack of skills to absorb a new technology, with training and education being severe bottlenecks, and so on. Even the poor demand for innovation is recognised, the proposed solution is still supply-side (Edler, 2009, p. 20). Not surprisingly the capacity to generate demand for innovation is the *weakest aspect* of the national innovation capacity of EEC (Radosevic, 2004, p. 655). Aho et al. (2006) also argue that the supply side especially in cohesion regions of the EU is best served if linked to their own context and *the needs of this local context*. It means that innovation policies are successful if correspond to the needs of local demand conditions.

Almost all innovation policy implementation problems in the EEC are due to very weak and disorganised actors with unresolved coordination problems. The policymakers didn't understand that in a catching-up context, R&D denotes mostly *absorptive rather than innovative capability*, which is in line with the two sides of R&D (Kravtsova and Radosevic, 2012). Therefore, the EEC need to overcome the existing mismatch between R&D oriented innovation policy and the needs of new technology absorption.

For example, although the core of the Bulgarian RIS3 is the promotion not only the supply but also the demand for R&I results, the research in the business sector is not accompanied by policies to stimulate demand for its results (Chobanova, 2015). Bulgarian RIS3 focuses again on development and implementation of new technologies by neglecting the knowledge and technology transfer, and the absorptive capacity of local firms (Ministry of Economy, 2017). The efforts to introduce demand-side innovation policies are expressed modestly in corporate and income tax exemption of R&I public institutions, as well as in the accelerated depreciation tax (100% annually) for assets acquired by means of R&D in the private sector too. As Chobanova (2014) indicates, however, tax incentives for R&D expenditures are very limited in scope and have failed to attract private enterprises.

2.8. (Neo) Schumpeterian theory of innovation-based growth

According to the (neo) Schumpeterian theory of growth (Aghion and Howitt, 1998) the successful innovation policies should take into account the technological level of individual countries. Under this framework, not all countries are equally placed to generate and benefit from innovations. Innovation will be a strong dis-equilibrating factor in the processes of economic growth, giving rise to the pervasive differential growth rates between different areas (Verspagen, 1997). Areas that are close to existing successful innovative areas have a better chance of success, while "innovation poor" regions can be locked into a "vicious"' circle of innovation stasis or decline (Howells, 2005, p. 1223)

Therefore, countries at a different distance from the technological frontier are supposed to have different policy mixes. If a country is operating far from the technological frontiers (which is expressed in the characteristics of their products and exports), it would be better to support the upgrading of its activities instead of relying on R&D based industries, where other countries have greater advantages. Radosevic (2011) shows how the implementation of a neo-Schumpeterian perspective promotes policies which are country-specific depending on each country's distance from a technology frontier. This approach differs substantially from the focus on "best practices policies" that prevails in the NMS policies.

The uncritical acceptance of "best practices" leads inevitably to *biased innovation policies* as in the case of most EEC. Kattel and Primi (2012) argue that the innovation policies in these countries tend to be based on a rather linear understanding of innovation (from lab to market), whereas most of the countries are specialized into low-end production activities with low demand for R&D. The majority of firms in catching-up economies do not work on the technology frontier and hence they do not feel a need for R&D. Instead, they should be at first helped to move closer to the productivity frontier through the innovation diffusion and afterwards they should start to invest into R&D (Varblane et al., 2007).

Collier et al. (2016) find that the accelerated innovation process is accompanied by a concentration of knowledge production in privileged "technology frontier" areas, which leads to a continuous decrease in demand for nationally-based results of R&D and a subsequent increase in brain drain (Chobanova, 2011). These trends contribute further to the widening of the technology gap between more and less innovative countries and regions.

2.9. High-tech biases in NMS innovation policies

The innovation discourse in the NMS is still very much driven by a science-based, high tech model where the technology diffusion plays a secondary role (Edler, 2009). Based on the analyses of different strategic documents in the NMS Varblane et al. (2007) found that the major focus in these documents has been on the creation of *high-technology industries* such as biotechnology or ICT by neglecting the demand side of local firms. In reality, first, the R&D systems in these countries and their performance disintegrated heavily during 1990s; and second, this was complemented by the strong specialization into low-end value chains where the demand for R&D and skills remain relatively low (Kattel and Primi, 2012)

Nevertheless, the innovation policy in EEC is dominated by *high-tech bias*, which supports a small number of innovative companies but leaves the majority of firms (mostly SMEs) untouched by innovation policy. The NMS pursue rather narrow innovation policies, which might lead to the creation of "islands of excellence" or "cathedrals in the desert" with little relevance for overall socio-economic development (Ulnicane, 2006). Policies targeting high-innovation intensity are likely to fail in countries that are dominated by not knowledge-intensive sectors as is the case of NMS (Reinstaller and Unterlass, 2011).

Varblane et al. (2007) warns against the emergence of a *dual economy* in catching-up EEC with low productivity traditional sector, and a small high-tech sector that is relatively

isolated from the rest of the economy. The obsession with high-tech industries diverts the attention of policymakers from the real problems of local firms to develop their proper innovation capabilities (Havas, 2006). Therefore, a more adequate strategy for NMS is to stimulate the use of high technology in a wider range of sectors, including low-tech ones as customers of high-tech sectors. It would be better to foster technology transfer, increase absorptive capacity, and improve the basic institutional conditions that encourage growth.

2.10. The role of TNCs and GVCs for innovation in NMS

Nölke and Vliegenthart (2009) consider the EE economies as dependent market economies (DMEs), where most R&D is done outside and then imported. The NMS are considered by foreign corporations mainly as a place for production and not for research. This situation is leading to a growing dualism in economies between a small number of innovative (often foreign) enterprises and the rest.

Particularly in high-tech industries, the linkages of local firms to TNCs is minimal. As Szalavetz (2008) argues high-tech production and export in peripheral countries are not related to any local R&D efforts, or have no local R&D basis. Foreign investors prefer to improve recipient countries' productive, but not technological capability. Researchers in Slovakia also identified a little technology transfer from TNCs to local suppliers, which decreases the chances for technology and innovation spin-off (Akbar and Ferencikova, 2007). Additionally, foreign firms are reluctant to provide core technology into their subsidiaries in countries with weak intellectual property rights (IPR) (Fu et al., 2011). The great share of EE consumers also are not quite able to buy leading-edge technology and innovation products, mainly because of the small disposable income. Therefore, the pre-conditions for innovations to be absorbed in the EE markets are challenging (Edler, 2009). Not surprisingly, Fu et al., 2011, p. 1204) observe that studies largely fail to provide convincing evidence that there is a significant positive technological transfer or spillover effect of FDI on local firms.

The results of Ivanova and Ivanov (2017) suggest that Bulgaria is deeply integrated in global value chains (GVCs) mainly through manufacturing activities such as petrol refining, the production of basic metals, machinery, electrical and transport equipment. The country participates in highly fragmented GVCs and specialises in processing and assembly functions. The products with which Bulgaria participates in GVCs are predominantly inputs rather than final products, which explains relatively low domestic VA content and an intense usage of foreign inputs. The Bulgarian companies with export potential, even when in high added-value industries, are engaged in low added-value activities (Move.BG, 2016).

Fu and Gong (2011) show that geographically clustered and well-connected local firms in China are more likely to produce innovations, rather than local MNCs partners. If foreign firms dominate the high-technology industry, indigenous innovations are the driving forces of the technological capabilities building in the indigenous sector. Some local high tech industries can also grow, although in isolation with the rest of the economy. Besides, they identify negative effects of foreign R&D on local firms in China, due to the strong competition for talent, resources, and markets between foreign and indigenous firms.

Undoubtedly, the GVCs open opportunities for local firms to "move up the value chain" from manufacturing to more advanced functions such as marketing, designing, and R&D through intensive learning and experience accumulation (Watkins et al., 2015). The benefits of technology diffusion can be felt, however, with parallel indigenous innovation efforts and the presence of conducive innovation systems (Fu et al., 2011). Therefore, local firms need to learn how they can absorb, develop, and recombine new and existing knowledge to produce more innovative products and services (Pietrobelli and Rabellotti, 2011).

The technology diffusion and adoption rely on absorptive capacity of local firms, which is defined as "the ability of a firm to recognise the value of new, external information, assimilate it and apply it to commercial ends" (Cohen and Levinthal 1990, p. 128). It depends strongly on the level of *human capital and R&D expenditures* of the country. Foreign technology can help the upgrading of local firms only if sufficient indigenous R&D activities and human capital are present (Fu et al., 2011, p. 1210). Therefore, the decision makers need to understand that the economic growth and competitiveness of their countries depend largely on the capacity of local firms to innovate (Rondé and Hussler, 2005, p. 1150).

2.11. Institutional and human capital dimensions of innovation systems

Innovation systems are social systems as they include social actors such as institutions and organisations, the behaviour of which is influenced by the existing sets of habits, practices and rules (Samara et al., 2012, p. 626).

Institutions (formal or informal) provide incentives, information and resources, reduce uncertainty, and attenuate conflicts, while some institutions may provide the wrong incentives, faulty information, allocate insufficient resources, fuel conflicts, and fail to reduce uncertainty. Niosi (2002) reveals some sources of NIS institutional inefficiencies, ineffectiveness, as well as sources of system inefficiencies, while Tödtling and Trippl (2005) demonstrate that the failures of regional innovation systems (RIS) may be due to an underdeveloped institutional structure. They also observe some indications of *core-periphery differences* of innovation between large agglomeration and rural regions, which can be extended between countries too. The main problem in peripheral regions is a low level of R&D and innovation due to the dominance of SMEs in traditional industries, weakly developed firm clusters, few knowledge providers and a weak endowment with innovation support institutions (Tödtling and Trippl, 2005, p. 1215). For such regions innovation policy should support organisational and technological "*learning*" and should target the SMEs innovation weaknesses. Therefore, innovation policy should deal with enhancing *human capital* (training of workers) and social capital (i.e. encouraging the formation of trust-based relationships between regional actors). Particularly, neo-Schumpeterian models underline the role of human capital as the most important factor, responsible for the country's level of innovation and absorption capacity.

Castellacci and Natera (2013) maintain the idea that the dynamics of NISs is driven by the coevolution of two main dimensions: *innovative capability* and *absorptive capacity*, which influence each other and both are related to the human capital. If R&D is the central

innovative capability factor for advanced economies, infrastructures and international trade are the key absorptive capacity variables for middle-income countries. In this framework, financing for innovation should not be considered as a "direct business transaction", i.e. paying public money and receiving an invention later. Innovation financing should to be considered as an *indirect capability strengthening process* (Szalavetz, 2008, p. 34). Therefore, financing for firms' innovation contributes to the increasing level of absorptive capacity, technology, and human capital as a main driver of the firms' performance.

2.12. Necessity to modify the EEC innovation policies

Borrás and Edquist (2013) define the "policy mix" as a set of different and complementary policy instruments to address the problems identified in a national or regional IS. The selection of innovation policy instruments must be done in relation to the actual problems identified in the IS. These instruments are related to four groups of activities: (1) R&D and *competence* building; (2) *Demand-side* activities; (3) Provision of *constituents* for IS; (4) *Incubation* activities (start-ups, entrepreneurship, small financing, etc.) (Borrás and Edquist, 2013, p. 1518)

The literature review leads to the conclusion that the current innovation policies are unable to overcome the innovation performance gap between new and old EU member states, and therefore need to be modified. The *theoretical framework* of such modification could be the concept of technology upgrading through the creation of *local innovation capabilities*. Kravtsova and Radosevic (2012) distinguished between technology and production capabilities. *Technology capabilities* refer to R&D, design, and engineering, while *production capabilities* require to produce efficiently. A key challenge for EEC is how firms can make the *transition* from efficient production to technological capabilities. Bihde (2006) also argue that the downstream activities and the diffusion of technologies can have greater economic effects through productivity gains than the production of the innovation at the first place.

The necessity to modify the existing innovation models in EEC comes from the fact that the R&D based model is of much lesser economic relevance compared to alternative patterns of technology upgrading from production to innovation capability. The process of upgrading starts with the improvements of production capability and is followed by some incremental innovations. Following this, firms focus on mastering advanced manufacturing and exploratory developments (prototypes). The next step of applied research has a significant threshold and requires different types of skills (Radosevic and Stancova, 2015, p. 12).

Therefore, the EEC countries should develop their own specific policy models as a unique response to the particular challenges that each country is facing. Where the firms and/or universities are weak, as it is often the case for moderate and modest innovators, promoting the links between them is not an effective solution. This is particularly true when local companies have little capacity to "absorb" the results of research, or even don't express any interest in technological upgrading.

According to Filippetti and Archibugi (2011) periods of technological breakthroughs can represent a crucial "window of opportunity" for lagging behind countries to catch up. The

catching-up processes, however, require a reliable base of internal knowledge, human resources (particularly, *qualified human resources*) and infrastructures.

3. Conclusions and Policy Implications

The short review of the NMS innovation policies and underpinning theoretical approaches reveals that these policies follow rather a linear model of innovation process with the accent on the *supply side* (R&D) and neglecting the *demand side*. Consequently, the NMS innovation policies aim at developing *high tech sectors* at the expense of medium and low-tech ones. These policies create an impression that the policymakers do not want to see the current situation objectively. Wishful type of thinking and neglecting path-dependency make the proposed action plans inadequate and not implementable (Varblane et al., 2007).

The IS considers that innovation comes not just from science, but also from the experience of producers and users, which means that innovations can happen in all economic sectors. Therefore, an important task of EEC policy is to stimulate innovation not only in high-tech sectors but in low and medium-tech industries too. These industries also are innovative or at least have a potential to implement innovation developed by high-tech sectors. Consequently, the innovation policies in catching-up economies, where low-tech or traditional sectors are widespread, should focus on innovation *in all sectors, not just high-tech firms*.

The measures targeting the adoption of innovations on the *demand side* may have more widespread effects than direct support for R&D. Creating effective links between demand-side and supply-side tools can improve the efficiency of the innovative system (Edler, 2009). Chobanova (2016) argues that national policies should encourage research where the country has accumulated competence, which means that it should respond to internal and external *demand*. Such policy should be the core of the strategy for smart specialization by focusing not only to promote the supply, but the demand for results of research and innovation carried out in the country.

A broad meaning of the NIS implies that innovation is seen as a continuous nonlinear cumulative process involving *not only radical and incremental innovation*, but also the *diffusion, absorption and use of innovation* (Varblane et al., 2007). Consequently, technological transfer and non-R&D innovation activities could be more important drivers of innovation (Kaderabkova and Radosevic, 2011). In countries that are far from the technology frontier, the innovation policy mix should foster the *knowledge absorption* and *diffusion*. It means a re-orientation of R&D systems in EEC from the knowledge generation to *knowledge diffusion and creation of knowledge absorption capacity*. Where local companies are not able to generate a demand for R&D, the policy should focus on the development of needs for R&D activities. Since non-R&D innovators innovate primarily through technology transfer and training, the policy in these countries should be targeted towards more support for these aspects (Reid, 2011). Therefore, the improvements of the EEC' innovation policies can be achieved by more active government initiatives to *build up local innovation capabilities* (Plank and Staritz, 2013).

As the majority of firms in catching-up economies are SME, they need an access to the appropriate channels of communication about available innovation. This can be done through the creation of *institutions for innovation diffusion* management. Olczyk and Kordalska (2016) argue that the industrial policies of EEC need to be modified through measures that facilitate the SMEs inclusion in early (research, conception and product design) and finishing (sales, marketing and distribution services) stages of global value chains. Therefore, the integration of local firms into networks of foreign investors should be supported. As FDI do not provide automatically the local supplier with innovation skills and competences, additional actions are required to support the development of *local innovation capabilities*.

The OECD (2010) study makes a clear distinction between a few high-performance new and small firms that can have a disproportionate effect on innovation, and the greater share of SMEs, which are less innovative. The two models of innovation policies should target these two groups of SMEs. The R&D based model can be directed to a small number of highly innovative SMEs, while the Doing, Using, and Interactive model can match the requirements of the majority of low innovative SMEs. If the first model reflects the *supply side* of the innovation policy, the second model aims to enhance the *demand side*.

The theory shows that *innovation is a process of learning* both by individual personnel and by the organisation as a whole (Montes et al., 2005). As one of the key shortages in EE economies is lack of *skilled people*, the new innovation policies should include measures to promote the firms' absorptive capabilities through *learning (education/training) system* (Kravtsova and Radosevic, 2012, p. 123). The SMEs that are more innovative are more committed to learning than those that are less innovative, including the personal learning of leaders and directors and the learning of their employees (Saunders et al., 2014). Such measures will increase the local *human capital* and will ensure the necessary competences of skilled people. Although the human capital is a central element of economic growth theory, few innovation programmes concentrate on *human capital* directly (McGuirk, 2015). Upgrading the technology and skills, however, "requires continuous investment by the local firms themselves in people, organisation and equipment" (Schmitz, 2004, p. 356).

No less serious barrier to the innovation development in EEC is a lack of social capital and, particularly, *lack of trust*. Therefore, special measures are needed to increase the trustworthiness and networking. The literature points out also that the *organisational culture* is an important factor for stimulating the propensity to innovation (Padilha and Gomes, 2016). Fostering the innovation culture requires more training for employees and experimentation with new processes and products (Amabile, 1988).

Several authors have underlined, however, that there is no single optimal policy model for innovation (Reid, 2011; Izsák et al., 2015). Therefore, the countries should develop their own *specific policy models* as a unique response to the particular challenges that each country is facing. For example, among EEC only Slovenia has followed a different approach to innovation policy strongly focused on *local capacity building* (Drahokoupil, 2007).

While the government strategies are broadly in line with the innovation challenges facing the NMS, closer analysis of the policy mix would suggest that there is a need for further

refinement of policy measures and methods (Reid, 2011, p. 143). Country-specific studies are needed to assess innovation activities more thoroughly. The technological path-dependency could be used by these economies not as a threat but as an opportunity. There is no need to change the already established EEC industry portfolio but simply to climb up the value ladder in the existing export potential industries.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Tomasz Grodzicki[1]

HUMAN CAPITAL AS A FACTOR CREATING INNOVATION IN THE VISEGRAD COUNTRIES

Human Capital is of great importance in every sector of the economy. Hence, its forms of participation in shaping the economy may differ over the years, due to e.g. increasing robotization and automatization, human capital will remain crucial as a development factor. In the knowledge-based economy, human capital plays a significant role, especially in creating innovation. While Western Europe is leading in innovation in the EU, most of the Visegrad countries are way behind the leaders. Therefore, they need to make an effort to catch-up with Western Europe. One of the most important factors of innovation is human capital. It seems, however, that the Visegrad countries do have a potential for innovation with regards to human capital. There is a growing number of university graduates across these countries, R&D personnel or doctoral students. However, it does not necessarily influence the level of innovation, meaning that some countries may have a higher potential of human capital and a lower level of innovation than others with a relatively lower level of such potential.
JEL: O3; J24; F63

1. Introduction

Human capital is an essential factor of development in the economy. In general, it is assumed that humans are creative and willing to develop and improve things and processes. Human capital is therefore considered as a driving force of the economy, however it does have some costs. People need to learn how to perform a particular job, so the time and money needed for such learning and practicing activities are considered as an investment. In hi-tech industries and innovative firms, such costs are proportionally higher because the level of investment is much higher due to specialised trainings, courses and the long-term process of creating innovations. Therefore, human capital cannot be overestimated in the knowledge-based economy.

Even OECD (2018) indicates that the methods of measuring the role of human capital in innovation processes are not well developed since there is only limited information

[1] *Tomasz Grodzicki, Nicolaus Copernicus University in Toruń Gagarina 13a, 87-100 Toruń, Poland, tomgro10@wp.pl, tg@doktorant.umk.pl.*

available from innovation surveys. Dakhli and De Clercq (2004) underline that innovations as knowledge-intensive activities should be linked to human capital in many ways. Human capital should be perceived as a 'catalyst' for innovation. They claim that there is a positive relationship between human capital and innovation. Further, they explain that people who are more educated, in general, have more experience and expertise, that is because they spend more time investing in their skills and knowledge, what at the end impacts the well-being of the society.

Bianchi (2001) underlines that industry-specific human capital, and especially knowledge exchange within actors of that industry, is a crucial stimulus of innovation. Moreover, Coleman (1988) and Gimeno et al. (1997) point out that human capital in the form of knowledge, skills and expertise can be seen as a significant factor of competitive advantage among societies, individuals and organisations.

Other authors also suggest that extensive trainings, physical and intellectual activities performed by people, increase productivity and competitiveness in the industry, organization and society. This, in fact, creates innovation understood as a knowledge-intensive activity (Black & Lynch, 1996; Cannon, 2000).

2. Research methodology

This paper aims to provide an overview on human capital as a source of innovation in the Visegrad countries (V4). Therefore, it starts from a literature review on human capital and innovation. Then, it continues with an analysis of the European Innovation Scoreboard (EIS) which is published by the European Commission. It is necessary to look at the indicators used in this research and see which countries are leading in this statistic, and locate the Visegrad countries among other EU countries. Finally, human capital is analysed in terms of its potential in creating innovation. The following measures are applied in order to assess human capital among the EU countries: new doctorate graduates per 1000 population aged 25-34, percentage population aged 25-34 having completed tertiary education, percentage population aged 25-64 involved in lifelong learning, international scientific co-publications per million population, scientific publications among the top 10% most cited publications worldwide as a percentage of total scientific publications of the country, foreign doctorate students as a percentage of all doctorate students, employment in knowledge-intensive activities as a percentage of total employment, employment in fast-growing enterprises percentage of total employment.

3. Position of the Visegrad countries in the European Innovation Scoreboard

The EIS contains a comparative analysis of innovation in the EU countries and other regional neighbours. It provides an assessment of the strengths and weaknesses of national innovation systems. Before analysing the situation of the Visegrad countries in this measure, it is necessary to introduce all indicators that form the EIS.

Table 1

Indicators of the European Innovation Scoreboard

FRAMEWORK CONDITIONS	INNOVATION ACTIVITIES
1. Human resources	***6. Innovators***
a) New doctorate graduates	a) SMEs with product or process innovations
b) Population aged 25-34 with tertiary education	b) SMEs with marketing or organisational innovations
c) Lifelong learning	c) SMEs innovating in-house
2. Attractive research systems	***7. Linkages***
a) International scientific co-publications	a) Innovative SMEs collaborating with others
b) Top 10% most cited publications	b) Public-private co-publications
c) Foreign doctorate students	c) Private co-funding of public R&D expenditures
3. Innovation-friendly environment	***8. Intellectual assets***
a) Broadband penetration	a) patent applications
b) Opportunity-driven entrepreneurship	b) Trademark applications
INVESTMENTS	c) Design applications
4. Finance and support	**IMPACTS**
a) R&D expenditure in the public sector	***9. Employment impacts***
b) Venture capital expenditures	a) Employment in knowledge-intensive activities
5. Firm investments	b) Employment in fast-growing enterprises of innovative sectors
a) R&D expenditure in the business sector	***10. Sales impacts***
b) Non-R&D innovation expenditures	a) Medium and high-tech product exports
c) Enterprises providing training to develop or upgrade ICT skills of their personnel	b) Knowledge-intensive services exports
	c) Sales of new-to-market and new-to-firm product innovations

Source: European Commission (2018b, p. 4).

Table 1 shows indicators that were taken into consideration when constructing the EIS. It clearly presents four pillars of innovation, which are: framework conditions, investments, innovation activities and impacts. For the need of this paper, it is important to focus on human resources which is one of three components of framework conditions. At this point, it should be noted that there is a slight difference between human capital and human resources. The latter refers to a tangible asset which is the stock of productive skills and knowledge present in labour.

Human capital, however, is an intangible aspect of human resources, where any spending on employees is perceived as an investment rather than cost (Zakaria et al., 2011). Nevertheless, human resources in the EIS consist of the following measures: new doctorate graduates, population aged 25-34 with tertiary education, and lifelong learning, which, in fact, do not seem to be an extensive group of human resources factors creating innovation. It should also be debatable if it is right to devote only a tiny space in the EIS, although it is mentioned in the very first place. However, we may imagine the EIS could be constructed in a different way, where human capital is one of the pillars. In such a case, the human capital measure could include (in addition to human resources measure): international

scientific co-publications, top 10% most cited publications, foreign doctorate students, public-private co-publications, employment in knowledge-intensive activities and fast-growing enterprises of innovative sectors, and others. In this way, the importance of human capital could be underlined in the process of creating innovation.

The EIS is not an ideal measure of innovation as it is based on the measures that are accessible and possible to collect. However, it seems to be one of the most advanced measures currently available that captures many different factors of innovation. Therefore, it is necessary to comment on the results of the EIS for the Visegrad countries in comparison to other EU countries.

Table 2

2018 European Innovation Scoreboard

Country	Value of EIS	Country	Value of EIS
Sweden	0.71	Malta	0.40
Denmark	0.67	Spain	0.40
Finland	0.65	Estonia	0.40
Netherlands	0.65	Cyprus	0.39
UK	0.61	Italy	0.37
Luxembourg	0.61	Lithuania	0.36
Germany	0.60	Hungary	0.33
Belgium	0.59	Greece	0.33
Ireland	0.58	Slovakia	0.32
Austria	0.58	Latvia	0.29
France	0.55	Poland	0.27
EU average	0.50	Croatia	0.26
Slovenia	0.47	Bulgaria	0.29
Czech Rep.	0.42	Romania	0.16
Portugal	0.41		

Source: Based on data from the EIS database (European Commission, 2018a).

Table 2 shows the results of the EIS, which is a synthetic measure of all factors named in table 1. It can be clearly seen that the Visegrad countries are lagging behind the EU average in terms of innovation, according to EIS. All the Visegrad countries are placed below the EU average. The best-performing country in the EIS is Sweden followed by Finland and Denmark, and for the Visegrad countries the leader is: Czech Republic and then a way behind are the others: Hungary, Slovakia and surprisingly Poland, which is the biggest country from the V4. There is definitely room for improvement for the V4 in terms of fostering innovation in these countries or maximise the usage of their innovation potential in order to catch up with the western EU countries.

4. Human capital as a driver of innovation

Human capital is an evitable part of the innovation process. There are numerous factors of human capital activities, but not all of them are measurable. Hence, the EIS provides some set of human capital indicators in creating innovation. Due to data availability and possibilities of measurement, this paper considers just some, preferably the most significant, factors of human capital in creating innovation.

Table 3

Selected human capital factors in the EU countries

	1 a)	1 b)	1 c)	2 a)	2 b)	2 c)	9 a)	9 b)
	2016	2017	2017	2017	2015	2016	2017	2015
EU28	2.01	39.0	10.9	517.5	10.57	26.1	14.2	4.8
Belgium	1.93	45.7	8.5	1467.6	12.58	41.8	15.6	2.7
Bulgaria	1.52	33.4	2.3	226.6	4.19	6.3	10.2	6.6
Czech Republic	1.69	33.8	9.8	754.8	6.63	14.8	12.9	6.5
Denmark	3.21	46.2	26.8	2345.9	13.37	33.4	15.1	4.5
Germany	2.78	31.3	8.4	812.2	11.33	9.1	14.8	4.6
Estonia	1.08	43.1	17.2	1077.8	8.24	12.0	13.5	3.2
Ireland	2.64	53.5	8.9	1249.3	12.56	28.4	20.6	7.1
Greece	1.13	42.5	4.5	608.3	9.03	:	12.1	:
Spain	2.59	42.6	9.9	732.1	9.29	15.5	12.5	4.8
France	1.70	44.3	18.7	726.2	11.00	40.1	14.5	4.1
Croatia	1.18	32.7	2.3	492.3	4.64	3.9	11.6	3.5
Italy	1.52	26.9	7.9	631.9	10.44	14.2	13.7	3.1
Cyprus	0.65	57.0	6.9	1283.3	8.98	14.3	17.0	0.1
Latvia	0.71	41.6	7.5	315.4	6.21	11.4	12.1	5.2
Lithuania	0.86	55.6	5.9	450.5	4.30	4.6	9.7	2.1
Luxembourg	1.28	51.2	17.2	1715.0	13.06	87.0	22.0	4.6
Hungary	1.01	30.2	6.2	456.3	6.90	11.6	11.6	8.7
Malta	0.70	33.5	10.1	597.4	10.69	54.0	18.4	6.1
Netherlands	2.38	46.6	19.1	1628.1	14.59	40.1	17.1	4.8
Austria	1.90	40.3	15.8	1375.8	11.14	28.3	15.0	1.9
Poland	0.63	43.6	4.0	296.6	5.06	2.0	10.3	5.8
Portugal	1.90	34.0	9.8	918.9	9.04	25.6	10.6	5.0
Romania	0.85	25.6	1.1	181.8	4.80	3.8	7.7	2.6
Slovenia	3.55	44.5	12.0	1134.6	8.56	9.7	13.7	3.2
Slovakia	2.25	35.1	3.4	438.8	6.18	9.1	10.6	7.7
Finland	2.87	40.3	27.4	1658.8	10.83	21.1	16.2	2.8
Sweden	2.71	47.4	30.4	2018.8	12.09	34.7	18.5	5.5
United Kingdom	3.08	47.3	14.3	1222.3	14.98	42.9	18.5	6.4

Where: 1 a) 1 b) 1 c) 2 a) 2 b) 2 c) 9 a) 9 b) are the factors named in table 1.
Source: Based on data from the EIS database (European Commission, 2018a).

Table 3 presents selected factors from the EIS that characterise human capital and its activities. The first three of them come from the human resources category, which is considered as innovation input. It means that doctorate graduates, people with tertiary

education, and people involved in lifelong learning need to be viewed as a ground for innovation. It may also be defined as innovation potential, i.e. the more people that are well-educated, the more chances of having innovative products or services in the economy. However, there might also be an issue of unused or not fully used innovation potential. There could be a high percentage of people with tertiary education that does not necessarily have an impact on innovation. Therefore, it is important to have a closer look into specific human capital indicators, not just at the EIS in general.

From the human resources, the first indicator 1 a) shows the number of new doctorate graduates per 1000 population aged 25-34. The EU28 average is 2.01 whereas the Czech Republic, Hungary and Poland are lagging behind that average scoring 1.69, 1.01, and 0.63 respectively; except for Slovakia that managed to score 2.25. It is interesting to notice that the EU leaders in this measure that score more than 3 are: Slovenia, Denmark, and the United Kingdom. Surprisingly, Slovenia is just below the EU average in the EIS. Then, 1 b) describes the percentage population aged 25-34 having completed tertiary education. Here, the situation is different since Poland is leading within the V4 since it scored 43.6% whereas the EU average is 39%. Other V4 countries are placed below the EU average, but the percentage is higher than 30, while the leading EU countries are: Cyprus, Lithuania, and Ireland. The first two countries are placed below the EU average in the EIS. However, it is interesting why Germany scored only 31.3% considering the fact that it is quite an innovative country according to the EIS. Next indicator 1 c) presents the percentage population aged 25-64 involved in lifelong learning. When looking at the results in a comprehensive way, one may notice that there are significant disparities among the EU countries in this measure, starting from Romania with a level of 1.1%, and ending at the best-performing country – Sweden with a share of 30.4%. The EU average is 10.9% whereas all V4 scored below that number.

In attractive research systems, there are three indicators which may be classified as input of innovation as well. Foreign doctorate students are an input, international scientific co-publications and 10% most cited publications are inputs of innovations as well unless they already describe the innovative process, product or service. The first in the list which is 2 a) presents the international scientific co-publications per million population. The EU leaders Denmark and Sweden have more than 2000 such publications per million people, whereas Romania has less than 200, Bulgaria and Poland have more than 200 and less than 300. Slovakia and Hungary are also behind the EU average (517.5) while the Czech Republic is placed above that average with a score of 754.8. Then, 2 b) shows scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country. In this measure, the V4 are placed below the EU average which is 10.57. Poland scored 5.06% that is the least from the V4 and Hungary was the V4 leader in this measure scoring 6.9%. The best performers are western EU countries: the United Kingdom, the Netherlands, and Denmark. Next indicator is 2 c) that presents foreign doctorate students as a percentage of all doctorate students. This indicator, however, seems to be biased by the small countries and at the same time open economies that attract foreign students. Luxembourg is such a case, where 87% of doctorate students are foreign ones, followed by Malta with a share of 54%, and then the United Kingdom with 42.9% foreign doctorate students. The EU average is 26.1% while the worst performing country in this indicator is Poland 2% whereas Slovakia, Hungary and the Czech Republic with a share of

9.1%, 11.6% 14.8% respectively, are not even close the EU average. It is quite surprising that Finland that score 21.1% is below the EU average, and at the same time is one of the leader in the EIS. The score of Germany which is 9.1%, also seems to be scanty in comparison to the EU average.

The last considered group of indicators are employment impacts that could be perceived as innovation outcome. The first of them is 4 a) which is employment in knowledge-intensive activities as a percentage of total employment. In this measure, the results range from 7.7% (Romania) up to 22% (Luxembourg) with the EU average of 14.2%. All the V4 are below that average, scoring more than 10%. The last considered indicator is 4 b) employment in fast-growing enterprises as a percentage of total employment. That is the only indicator from that selection where all the V4 are above the EU average which is 4.8%. The EU leader in this measure is Hungary with a score of 8.7%, followed by Slovakia with 7.7% share and then Ireland that scored 7.1%. It is worth noting that such countries like Denmark, Finland, Luxembourg Germany, Belgium are below the EU average although they are above the EU average in the EIS.

There is a need for improvement in the V4 regarding human capital and innovation. Therefore, as the V4 are the countries which form an alliance that focuses on cultural, economic, military and energy cooperation, they might consider creating innovation as the next pillar of that alliance.

5. Conclusion

The Visegrad countries are placed below the EU average in the European Innovation Scoreboard. When considering human capital indicators in the process of creating innovation, the V4 need to improve in almost all the measure, but some of them require special attention, including: lifelong learning, top 10% most cited publications, foreign doctorate students, and employment in knowledge-intensive activities. However, the V4 are leading in employment in fast-growing enterprises of innovative sectors. The V4 have innovation potential, however the problem is how they can fully use it in order to catch up with the western EU countries. Further research on this topic might include a regional perspective of human capital, preferably as a single synthetic measure, in creating innovation in the Visegrad countries based on the Regional Innovation Scoreboard.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Maria Markova[1]

COMPANY COMPETITIVENESS THROUGH INTELLECTUAL PROPERTY

The aim of this article is to present the author's thesis for company competitiveness based on intellectual property /IP/.
The author presents definitions for the following terms: company competitiveness, IP, IP portfolio
1. *Company competitiveness – a general review.*
2. *Intellectual property as a content and as a business factor.*
3. *IP portfolio for the company competitiveness – theoretical base and methods.*
4. *Good practices in Bulgaria.*

First of all the author presents hers point of view for company competitiveness and the matrix for its evaluation including economic and noneconomic indicators such as purchases, turnover and profit, revenues from IP and profitability. Special attention is paid to IP as a factor of company competitiveness and IP portfolio of the company - list and structure, expert assessment of their value.
Then the author presents the relations between IP and company competitiveness through revelation of the aspects: IP as innovations and IP as business indicators and then IP as a market factor and as a factor of consumer behavior.
The final part of this article is focused on the IP portfolio of the company as a content and as a factor of company competitiveness following the points:
1. *Identification of IP portfolio as elements and characteristics.*
2. *Analysis of current status of the IP portfolio of the company.*
3. *Presenting of IP portfolio as a factor for obtaining and sustain the company competitiveness*

The practical issue of this thesis is presented as examples from the Bulgarian successful companies.
JEL: K49

1. Introduction

The purpose of this article is to present intellectual property (IP) of the company as a factor of company competitiveness and as an important factor for the national economic growth.

The business activity in IP rights depends on the business environment as a stimulating or not factor to IP implementation in business depends on it.

[1] *Assoc.Prof. Dr. Maria Markova is from University of national and world economy, e-mail: doz.markova@abv.bg.*

The importance of IP rights for the economic development as general macroeconomic indicators such as employment and contribution.

The EUIPO report published on the official website shows that for the last 10 years IPR-intensive industries contribute 26% of employment and 39% of GDP in the EU as average.

In details: The real contribution of IP rights to the European economy on average over this 10 years period, 56.5 million Europeans were employed by IPR – intensive industries, out of a total employment of approximately 218 million. In addition, another 20 million jobs were generated in industries that supply goods and services to the IPR – intensive industries. Taking indirect jobs into account, the total number of IPR-dependent jobs rises to just under 77 million (35.1%).

Over the same period, IPR intensive industries generated almost 39% of total economic growth (GDP) in the EU, worth €4.7 trillion. IPR-intensive industries contribute to economic output, as measured by Gross Domestic Product (GDP). Overall, almost 39% of EU GDP is generated in IPR-intensive industries, with trademark-intensive industries accounting for 34%, design-intensive industries for 13%, patent-intensive industries for 14% and copyright and GI-intensive industries for smaller proportions.[2]

Following the presented purpose the author of this article reveals hers point of view for the discussed practical and scientific terms: company competitiveness, intellectual property and IP portfolio as a content and as a factor of company competitiveness. The article presents theoretical base and methods to create and improve an IP portfolio for the company competitiveness.

The final part of this article is focused on the application and registration activity in IPR of Bulgarian companies and their successful participation in the EU operational program "Innovation and competitiveness" (OPIC).

2. Research Methodology

2.1. Company Competitiveness as a Content and Indicators

First of all the author is to present a definition for the term 'company competitiveness' and the matrix for its evaluation.

The methodological base of the author's thesis is M. Porter's understanding of the company competitiveness based on the valuable differences in the company market offer.

The main author's point of view is the following:

Company competitiveness means positive economic result of the company activities as a marketplace and business results. Business results are divided into: something and something and are measured by economic and noneconomic indicators. The main valuable

[2] www.euipo.europa.eu/publications

source for a company difference and for achievement of positive economic results is the company IP – IP in innovations and IP in business indicators.

The matrix for evaluation of the company competitiveness includes economic and noneconomic indicators:

A. Economic indicators:

- Purchases - volume, turnover and profit; for the purchases of the products based on IP, revenues from IP – implemented in own business field and from license agreements;
- Profitability – expenses for a production and marketing in the company for a defined period, the sales revenue, margin and operating profit;
- Efficiency - the ratio of costs of transactions, operations, ratio of costs, efficiency ratio of income from the activity, ratio of the efficiency of the revenue.

B. Non-economic indicators:

- Market position and share, direct competitors, trends in a specific business area;
- Consumer loyalty based on obtained company image and in relation to the IP;
- Company capital – resources, human and material; IP rights - list and structure.

2.2. Intellectual Property as a Content and as a Business Factor

2.2.1. Intellectual property as a content

Generally, the term 'Intellectual property'[3] includes **objects** – the result of human intellectual work and creativity, and **relations**, that are established during the process of creation, implementation and realization of those results in the business: in production, on the market and in trade.

As general IP objects are the following: objects of **copyright** and related rights called '**art property'**: artworks and performances. In particular: literary, music and artistic works, drawings, paintings, films, architectural projects and works, etc., performances of the artists, phonograms and broadcasting according to the Bern Convention, 1886; objects of **industrial property**: patents for inventions, utility models, industrial designs, trademarks, geographical indications, protection against unfair competition, according to the Paris convention, 1883; new objects: creation of new technologies and knowledge, results of intellectual activities in scientific, industrial and cultural fields.[4]

For every object of IP exists an opportunity to obtain rights of intellectual property. This opportunity is based on the legislation in intellectual property (IP): international

[3] The already mentioned in this study regulations in IP incl. Convention for the establishment of WIPO, 1967, are accessible on the site of WIPO World intellectual property organization - www.wipo.int and on the site of EPO /European patent office: www.epo.org.

[4] For more information: Borissov, B., Vl. Borissova, (2015) Intellectual property, PC 'Stopanstvo', Sofia.

conventions, regulations. European regulations and directives, national laws of the countries-members of WIPO. Those rights are called IP rights. Intellectual property rights are like any other property right. They allow the creators or owners of patents, trademarks or copyrighted works to benefit from their own work or investment in a creation of the intellectual result. IP rights in art property arise automatically, no requirements for applying, registration or deposits of copies, regarding the copyright legislation. IP rights in industrial property arise following the specific legal procedure for applying, examination and obtaining a document granted the exclusive IP rights: the right to use and to license for the owner of those rights and to prohibit other persons to exercise those rights.

There are many international and regional regulations for the protection of patents, industrial designs and trademarks. Most important of them are the following Patent Cooperation treaty – PCT (1970), European Patent Convention – EPC (1977), Agreement of the trade-related aspects of IP rights – TRIPS (1994), Madrid system for trademarks – Madrid agreement (1891) and Protocol (1989), Hague agreement for industrial design (1925), etc.[5]

Following the subject and the purpose of this study we focus on the objects of IP called 'industrial property' with a direct influence to the innovations, their implementation in business and influence to the company competitiveness. Especially:

1. IP rights for the protected innovations (patent for inventions /P/, utility model /UM/, industrial design /ID, plant variety, animal breed, topology on the integrated circuits, etc.).
2. IP rights for the protected business indicators /BI/ (trademarks /TM/, geographical indications /GI/, domain names, logos and others).
3. Company know-how (based on the knowledge and skills of the company staff and information) and factual relations (IP as the established good relations with consumers, business units and institutions).

The focus of this study is IP in the field of innovations as patent, UM, ID and on IP in the field of business indicators as TMs and we not pay attention to other BI and to the company know-how and/or established business relations.

A. IP in the field of innovations[6]

Legal options for obtaining IP rights in innovations are the following: patents for inventions, utility models, industrial design, plan varieties and animal breeds, topography

[5] For more information: www.bpo.bg. www.wipo.int, www.epo.org

[6] The author's point of view for innovation is clarified in the article 'Management of company innovations as IP', published in 'Ec. Alternatives', 2013, N 1. , based on IP theory and on the source 'Management of the firm innovations and investment'. The common definition of innovation is: a creation of new consumer value through solutions that serve to meet the customer needs and market needs in new or modified ways. Innovations could refer to the product, process or organization as a whole. Some of innovations can be protected as industrial property: patents, UM, ID, etc.

of the integrated circuits.[7] The author presents main legal point for the objects patents for inventions, UMs and ID.

- **Patents for inventions**

As Bulgarian patent law[8] envisages: Patents shall be granted for inventions in any field of technology, which are new, involve an inventive step and are susceptible of industrial application. The invention may be protected by the patent. The protection conferred by the patent is limited in time and the term of validity of a patent shall be 20 years from the date of filing of the application (art. 16 of LPUMR). To obtain a patent the inventors should follow a legal procedure for the patenting of their invention, which should meet several criteria to be eligible for patent protection. Hence an invention must be:

1. World novelty

An invention shall be considered to be new if it does not form part of the state of the art. (art. 8 of LPUMR) The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, anywhere in the world, before the filing date or the priority date, as appropriate, of the application. Novelty is a fundamental requirement of patentability.

2. Exhibit a sufficient "inventive step"

An invention shall be considered to involve an inventive step if, having regard to the state of the art it is not obvious to a person skilled in the art. (art. 10 of LPUMR)

With regard to the requirement of inventive step (also referred to as "non-obviousness"), the question as to whether or not the invention "would have been obvious to a person having ordinary skill in the art" is perhaps the most difficult standard to determine in the examination as to substance.

3. Industrial application

An invention shall be considered susceptible of industrial application if it can be made or used repeatedly in any branch of industry or agriculture. (art. 9 of LPUMR)

Nowadays methods of manufacturing can reproduce an invention. "Applicability" and "industrial applicability" are expressions with a specific meaning in IP. The term "industrial" should be considered in its broadest sense, including any kind of industry.

If the invention meets the criteria for patentability, the patent office issues a patent.

A patent is a document, issued by a government office (or a regional office acting for several countries), Patent office in Bulgaria, which describes an invention and creates a

[7] State gazette, N 27, 1993 – Law on patents and utility models, State gazette N 81, 1999 Law for industrial design. The author presents main legal point for the objects patents for inventions, UMs and ID. Plant varieties and animal breeds, topography of the integrated circuits are legal options for innovations in agribusiness and microelectronics. They are subjects of another study.
[8] Law on patents and utility models registration (LPUMR).

legal situation in which the patented invention can normally only be exploited (manufactured, used, sold, imported) with the authorization of the patent owner.

The patent's term of validity shall be 20 years from the date of filing of the application. The patent is valid on the territory of the country, the patent office of which issues the patent. The Bulgarian patent office (BPO) issues the patent, which is valid on the territory of Bulgaria.

The exclusive right in an invention shall comprise: the right to use the invention, the right to prohibit other persons from using it without the consent of the patent owner and the right to dispose of the patent, including licensing. (art. 12 of LPUMR)

The right to use an invention shall comprise the following cases: the making, offering for sale, putting on the market, import included, proper use or warehousing of the product for the purpose of offering, putting on the market or use thereof.

The effect of a patent shall not extend to: use of the patented invention for non-commercial purposes with a view to private needs, where such use does not cause significant material prejudice to the owner of the patent; use of the invention for experimental or research and development purposes relating to the subject matter of the patented invention; extemporaneous preparation for individual cases in a pharmacy of a medicine in accordance with a medical prescription; use of the patented invention on board any foreign land vehicle, vessel or aircraft, which temporarily or accidentally enters the territory, waters or airspace of the country, provided that the patented invention is used exclusively for the needs of such means of transport.

- **Utility Model**

At the lower creative level the product innovation should be protected as a utility model (UM). In a number of countries inventions are also protectable through registration under the name of "utility model" or "short-term patent."

The requirements for legal protection (art. 73-78 of LPUMR) are not as strict as those for patents, in particular in respect of the duration of protection, which is shorter, but otherwise the rights under the utility model or short-term patent are similar. The fees are lower. Utility models are intended for products, not methods. In the Bulgarian patent law the certificate for the utility model shall be granted for utility models which are new, obtain inventive step and are industrially applicable.

Utility model protection shall be available to objects with structural and technical features related to the improvement of the shape or layout of the elements of products, tools, devices, apparatus or their parts, materials, etc., designed for use in production or in everyday life, and that satisfy the requirements mentioned above.

A utility model certificate shall not be granted for the methods and the objects that are non-patentable as inventions. A certificate having a term of 10 years maximum as of the filing date shall provide legal protection for utility models and its duration is 4 years as a start – filing date plus 2 periods of 3 years. At the applicant‘s request, an application for a patent of invention may be converted into an application for a utility model certificate until a decision is taken on the application.

- **Industrial Design**

The new outlook, esthetical or ornamental decisions for the existing product can be protected as an industrial design (ID) (Markova, 2010; Markova, 2008). Generally speaking, industrial design is the ornamental or aesthetic aspect of a useful article. Such particular aspect may depend on the shape, pattern or color of the article. The Bulgarian ID law (Law on the protection of the industrial design – LPID) says: "Industrial design means the appearance of the whole or a part of a product resulting from the specific features of the shape, lines, contours, ornamentation, colors, or combination of such.

Product means any industrial or handicraft article, including parts intended to be assembled into a complex article, sets or compositions of articles, packaging, graphic symbols and typographic typefaces, but excluding computer programs. (art. 9 of LPID)

The right in a design shall be acquired by registration with the Patent Office as from the date of filing an application for registration. The design shall be registered if it is new and has an originality (individual character).

1. Novelty

A design shall be considered new if, before the filing date or the priority date, as appropriate, of the application no identical design has been made available to the public by means of publication, use, registration or otherwise disclosed anywhere in the world (art. 12 of LPID). Designs shall be considered to be identical if their specific features differ only in immaterial details that do not influence the overall perception of the design. Novelty is object of assessment by the patent expert.

2. Originality (individual character)

A design shall be considered to have an individual character if the overall impression it produces on the informed consumer differs from the overall impression produced by a design that has been made available to the public before the filing date or the priority date, as appropriate, of the application (art. 13 of LPID). Originality is object of assessment by the informed consumer – expert in the specific design area and business.

A design must meet both of the criteria to be eligible for a protection. The design must be at once a world novelty and original in nature.

A design shall not be registered if:

- the design is contrary to public policy or to accepted principles of morality.
- the technical or functional features of the product solely determine the specific features of the design.
- the specific features of the design are solely determined by the necessity for the product in which the design is incorporated or to which it is applied to be mechanically assembled or put in, around or against another product, so that both products realize their technical function, with the exception of a design serving the purpose of allowing the multiple assembly or connection of interchangeable products within a modular system.

A registered design shall confer on its holder the right to use and transfer the design and the right to prevent any third party without the holder's consent from copying the design or commercially using the design included within the scope of protection. As a result the rights of the registered ID are exclusive rights such the rights conferred by a patent.

The exclusive right in a design shall comprise: the right to use the design; the right to prohibit other persons from using it and the right to dispose of the registered design.

The right to use the registered design shall comprise: the making the product on the registered design; offering for sale; putting on the market of the subject matter of the design; import included; proper use or warehousing of the product for the purpose of offering, putting on the market or use thereof.

The term of protection for a registered design shall be 10 years as from the filing date of the application. The registration may be renewed for three successive periods of 5 years each, within maximum of 25 years.

Certificate for ID is valid on the territory of Bulgaria. (Registered community design – on the territories of the 28 EC – countries). The right of the ID shall not extend to cases in which using the design for private or for experimental purposes or using the design for the purpose of making annotations or teaching, provided that such use is compatible with fair trade practice and does not unduly prejudice the normal exploitation of the design and that the source is quoted.

Using the design on foreign land, air and naval transportation means when they temporarily or accidentally enter the territory of the country and in which the design is used exclusively for their own needs, as well as the importation of spare parts and accessories for the purpose of repairing such transportation means.

B. IP in the field of indicators

Legal options for obtaining IP rights in indicators are the following: as trademarks, as industrial designs in the Locarno classes: class 32 'Graphic symbols and logos, surface patterns, ornamentation' and class 14-04 'Screens display and icons'.[9]

- **Trademarks ™**

According to the Law of trademarks and geographical indications in Bulgaria[10], art. 9: 'Marks are signs that are capable of distinguishing the goods or services of one person from those of other persons and can be represented graphically. Such signs may be words, including the names of persons, or letters, numerals, drawings, figures, the shape of goods

[9] According to the Locarno classification (international classification in IDs), 9-th edition and it is accessible on www. www.wipo.int/classifications/locarno/en.

[10] State gazette N 81, 1999, Law of trademarks and geographical indications /LTMGI/. The author presents main legal point for the object TM. The legal options for registration of logos and web designs as ID, classes 32 and 14 of the Locarno ID classification, will be not on the focus of attention of this study.

or of their packaging, a combination of colors, sound signals or any combination of such elements.'

A mark may be a trademark, a service mark, a collective mark or a certification mark.

The rights in a mark shall be acquired by registration as of the filing date of the application.

The first to file shall have the right to register. The right to a mark shall be an exclusive right.

Registration of TM could meet the requirements called grounds for refusal of registration of TM.

Absolute Grounds for Refusal of TM Registration (art 11 of LTMGI)

The following shall not be registered:

- signs which are not marks within the meaning of marks which are devoid of any distinctive character;
- marks which consist exclusively of signs or indications that have become customary in the current language or in the established practices of the trade in the Republic of Bulgaria with respect to the goods or services filed for registration;
- marks which consist exclusively of signs designating the kind, quality, quantity, intended purpose, value, geographical origin, time or process of production of the goods or the manner of rendering of the services, or other characteristics of the goods or services;
- signs which consist exclusively of: the shape which results from the nature of the goods themselves; the shape of goods which is necessary to obtain a technical result; the shape which gives substantial value to the goods;
- marks which are contrary to public policy or of accepted principles of morality;
- marks which may deceive the consumers as to the nature, quality or geographical origin of the goods or services;
- marks which consist of or include escutcheons, flag s or other emblems of States party to the Paris Convention, or imitations thereof, as well as escutcheons, flags or other emblems or the full or abbreviated official names of international intergovernmental organizations;
- marks which consist of or include official control and warranty signs and stamps where such signs and stamps are used to mark identical or similar goods;
- marks which consist of or include the name or a representation of historical and cultural monuments of the Republic of Bulgaria, as specified by the Ministry of Culture;
- mark, through use, has become distinctive in relation to the goods or services for which registration is sought.

As relative grounds of refusal of TM registration: A mark shall not be registered (art.12 of LTMGI):

- if it is identical with an earlier mark, and the goods or services of the mark applied for registration and those of the earlier mark are identical;
- if because of its identity with or similarity to an earlier mark and the identity or similarity of the goods or services covered by the two marks there exists a likelihood of confusion on the part of the consumers; the likelihood of confusion includes the likelihood of association with the earlier mark;
- if it consists of a geographical designation or derivatives thereof.

The term "earlier mark" means: a registered mark with an earlier filing date or an earlier priority date as appropriate; a mark applied for registration with an earlier filing date or an earlier priority date, as appropriate, if it is registered; a mark which is well known in the territory of the Republic of Bulgaria on the filing date or priority date, as appropriate.

A mark shall not be registered if it is identical with or similar to an earlier mark and is intended for goods or services that are not identical with or similar to those for which the earlier mark is registered, where that earlier mark is well known in the territory of the Republic of Bulgaria and where use without due cause of the mark applied for registration would take unfair advantage of, or be detrimental to, the distinctive character or repute of the earlier mark.

According to the art. 13 of LTMGI the right in a mark shall comprise the right of its holder to use it and dispose of it, and to prevent third parties not having his consent from using in the course of trade:

- any sign which is identical with the mark in relation to goods or services which are identical with those for which the mark Is registered;
- any sign where, because of its identity with or similarity to the mark and the identity or similarity of the goods or services covered by the mark and the sign, there exists a likelihood of confusion on the part of the consumers; the likelihood of confusion includes the likelihood of association between the sign and the mark;
- any sign which is identical with or similar to the mark in relation to goods or services which are not identical with or similar to those for which the mark is registered, where the earlier mark has a reputation in the territory of the Republic of Bulgaria and where use of that sign without due cause would take unfair advantage of, or be detrimental to, the distinctive character or the repute of the earlier mark.

The term “using in the course of trade” means: affixing the sign to the goods or to the packaging thereof; offering the goods, placing them on the market or stocking them for these purposes under that sign, or offering or sup lying services thereunder; importing or exporting the goods under that sign; using the sign on business papers and in advertising.

The exclusive right shall have effect with regard to third bona fide parties as from the date of publication of the registration.

A mark shall not entitle the proprietor to prohibit a third party from using the following in the course of trade, provided that such use is not contrary to the honest practices of the trade:

- his own name or address;
- indications concerning the kind, quality, quantity, intended purpose, value, geographical origin, the time of production of the goods or of rendering of the services, or other characteristics of the goods or services;
- The mark where it is necessary to indicate the intended purpose of the goods or services, in particular as accessories or spare parts.

Applications that meet the formal requirements shall be published in the Official Bulletin of the Patent Office. In BPO a subject of special expertise is only the mentioned before absolute grounds of refusal of TM registration. The relative grounds are not considered in the BPO examination procedure. The relative grounds can be object of opposition procedure according to the Law on TMs and GIs.[11] Certificate for TM is valid on the territory of the Bulgaria. (Registered EU mark for the territories of the 28 EC – countries) for the term of 10 years period which can be renewed for the next 10 years period. Practically unlimited in time till loose of distinctiveness or economic interest to maintain this registration.

2.2.2. Intellectual property as a business resource

Intellectual property is a company's business resource which generates future revenues for the company.

This specific study of intellectual property is focused on IP in the field of innovations as patent, UM, ID and on IP in the field of business indicators as TMs.

To not lose the focus of the article we will not pay attention of the company know-how and/or established business relations.[12]

The IP objects mentioned above patents, UM ID and TM are divided into two main groups: IP in innovations and IP in indicators caused of their legal nature, product implementation and market results.

- **Intellectual property in innovations**

Undoubtedly, the products manufactured in a new project, model, design or other innovative solution add a value to the basic utility of the product at the level 'functionality'

[11] For more information: Law on TMs and GIs. Art. 36b: Within a period of two months following the publication date of the application, any person may file an objection against the registration of the mark on the ground of Articles 11 and 12. The objection shall be in writing and shall contain a statement of grounds and arguments.

[12] For more information: Markova, M., 'Know-how– legal and factual identification', 'Property and law', 2010, N10

usually done through invention or UM and increase the additional utility of the product at the 'symbolism' and 'aesthetics', which is most often done through design. The user gets a new level of functionality and use, new experience and pleasure by "possession of the product", which is attributed to a certain socio-cultural level and also increases his 'self-assessment' and this possession is a certain form of "self-realization". What is more this is most often achieved throughout user information and through image effect as a component of realized innovation or brand loyalty: the signs 'P' – invention, protected by a patent; ID – protected design, UM – certified utility model. The signed product provides a greater total utility, and therefore it increases the beneficial effects as one of the indicators of the analysis of the relationship "product – competitiveness".

- **Intellectual property in indicators**

This point of intellectual property as a business indicator (communication and image value) will be presented in terms of the following two functions **"corporate identity"** and **"differentiation"** (Markova, 2010).

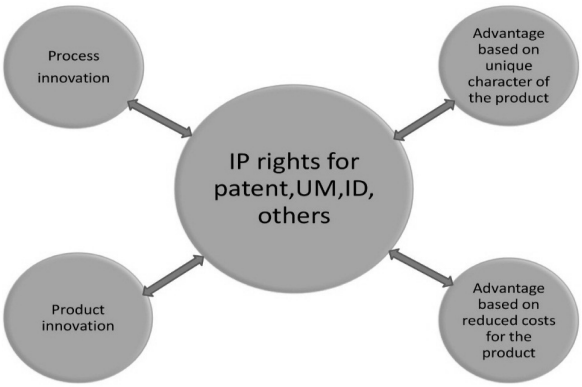
Understanding the term ***'identity'*** as a set of methods, tools and programs through which the company is presented to the public, the author of this article accepts the thesis that 'identity' is achieved mostly by the company's products and the company's communication strategy. Undoubtedly, the product as a tool of the corporate activity is focused on the implemented innovative projects, protected as inventions, utility models, designs, or other objects. The company creates its identity throughout a deliberate program that is intended to impose identity using communication means for instance – names, signs, symbols, atmosphere and events. Identity is established through the following business indicators: brands, logos, slogans and others protected most often – such as trademarks, designs, geographical indications or domain names.

'Differentiation' is "a set of significant differences that distinguish the firm's offers from those of the competitor's." The real or imaginary design parameters of the company's products is the grounds for distinction, qualification and these parameters make preferable certain company's products to others. Based on the fact that today the markets of consumers and producers are growing internationally and that the competitive struggle is no longer carried out on the level "quality – price", we could infer that today's competition at the market is majorly in the field of corporate identity and company differentiation.

Generally, based on IP rights the company can obtain a company competitiveness based on advantages as results of implementation in the business of new product and/or process innovations.

The next figure illustrates the author's view for the IP rights and company competitiveness through competitive advantages.

Figure 1

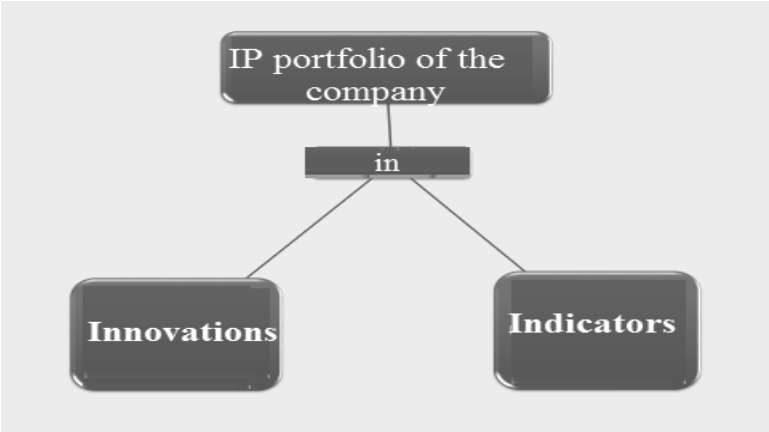


2.3. Intellectual Property Portfolio for the Company Competitiveness

Intellectual property portfolio (IPP) comprises of patents for invention, certificates for the registered utility models, industrial designs, trademarks, new plant varieties and many other results of human intellectual work in the fields of science, arts, technique, technology and design. All of the above IPR are intellectual property of the company. These IP rights are good base to achieve positive business results of the company activity, company competitiveness and positive image.

IP in a company differed into IP in innovations and IP in business indicators as a current IP rights form a current IP profile of the company. This IP profile is not a status, it's under development and upgrading as an answer of the dynamic business environment and the company possibilities in the obtaining new IP rights and in the sustaining of the already achieved IP rights.

Figure 2



The great scientist M. Porter defines (Porter, 2004) two ways in which a company can achieve competitive advantage over its rivals: cost advantage and differentiation advantage. Cost advantage is when a business provides the same products and services as its competitors at a lower level of costs. Differentiation advantage is when a business provides better products and services as its competitors. In Porter's view, strategic management should be concerned with building and sustaining competitive advantage.

The understanding of intellectual property portfolio as a key factor of competitiveness will be focused on two elements of the IP portfolio and will be analysed towards determining the consumer behaviour and through generating and maintaining the product and company competitiveness. In today's global market, the user accepts 80% of the oriented towards him information by his eyes. This information is a set of elements and expressions of business identifiers of the company and is primarily expressed in the company's products as a high scientific and technological level, with new design as aesthetic and functional form, good and attractive packaging, accomplished with prestigious sighs of granted IP rights; patents, UM or ID.

All of the achievements in the aspect of corporate identity and differentiation are becoming a significant market factor that affects consumer attitudes and evaluations such as highly defined consumer behaviour and choice. Of course, do not underestimate the importance of factors such as brand, price, service, commercial and other techniques.

Competitiveness of the product is an economic indicator representing the ability of the product to be distinguished based on the competitive advantage held among other products on the market and this is the base to be preferred by consumers.

The second indicator of our analysis is the market price. The price is an economic indicator which informs the consumers of the company competitive strategy. Here, there are phenomena such as ‘price differentiation’ and ‘price inelasticity’. This illustrates the inelastic demand so-called "abnormal demand curve" which is based on the unique, possessing distinctive parameters of the company offer launched on the market, signed with P, UM, ID, TM or other signs for possessing IP rights.

The last but not least indicator of the analysis is the potential of the business indicators to attract and to sustain of the consumer attention to the company offer and to be a factor of the consumer choice at the nowadays global and technological business area.

The author’s point of view for the IP portfolio as a management term is based on the understanding of business model as a tool for the realization of the long-term business strategy of the company and the theoretical model of M. Porter for the competitive company strategy based on the unique product and/or market differentiation.

The author’s view for management of the IP portfolio (IPP) includes the following steps:

1. Identification of IPP as elements and characteristics.
2. Analysis of current status of the IPP as general.
3. Plan a future IPP for a development of the company competitiveness.

The analysis and the plan of the IPP start with a review of the business environment.

The company management should assess the current factors of the business environment:

- dynamics of processes; dynamics of communications based on new technologies – computer and communication; dynamics of business relations
- speed of identifying new possibilities – as a result of IP rights in the same/ related business areas; speed of reaction to the market need, speed of upgrading of the staff skills;
- high level of innovations protected as IP rights in new (modern) perspective scientific areas of human creativity.

Complex analysis is provided by the following popular marketing techniques: SWOT analysis, matrix of Boston consulting group, GE analysis, analysis of the competitors, etc.

The company management should take into consideration the most important current factors of the business environment mentioned before.

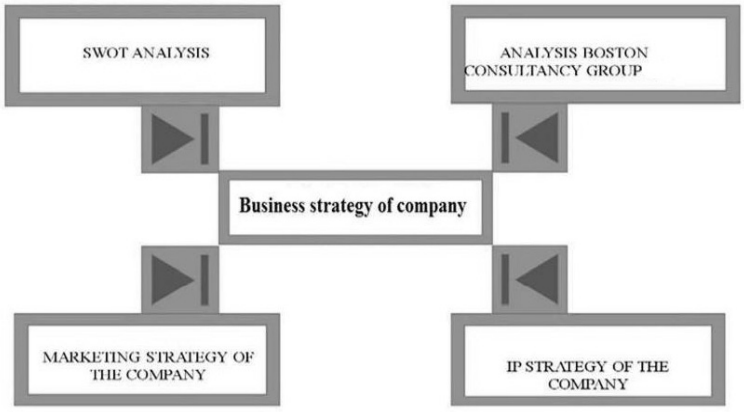
The company management should obtain a complex picture /information of the portfolio of IP rights of the company, the quantitative assessment and perspectives.

The company management should rise and take an answer of the following questions:

- what is the portfolio of the IP of the company: innovations and BI;
- what are the main characteristics of the product/technology profile of the company and the place of IP in them;
- what are the main characteristics of the business environment of the company;
- what is the achieved company image and the future planned image?

The general view for this conceptual model is presented in the next figure.

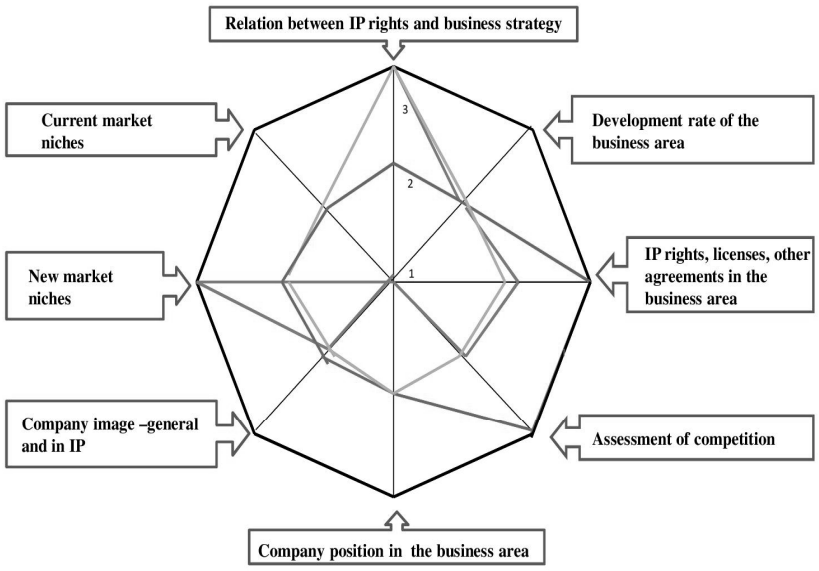
Figure 3



Based on complex SWOT analysis, BCG analysis and GE analysis and achieved IP portfolio to the moment of assessment the company management should form strategies based on IP for the future. When implementing the formed business model based on IP portfolio the company management has to take into consideration the risk factors, the business environmental factors and the company resources so that they could provide adoptable business model and achieve good economic results through this model.

The core of this model is the assessment instrument called by the author of this article IP assessment instrument (based on IP score of EPO) and its implementation for all protected as IP rights objects of IP portfolio of the company according the author's point of view and application of adapted model of EPO for patented technology for all IP rights for protected innovations in company – for product or technology.

Figure 4



Legend: 1 – weak, 2 – average, 3 – strong position. Corours: blue – patents and UMs; red – IDs, green – TMs

Based on a number of factors selected for evaluation, IP assessment instrument can be a basis to calculate the company financial results, focusing on how protected innovations can potentially change the company current financial profile and company competitiveness.

This is a way of estimating and calculating cost of protected product/technology when it is put into use in a given sphere of business based on a number of simple and common economic principles. This model shows the following metrics:

- Effect of protected product/technology on turnover;
- Effect of protected product/technology on costs;
- Effect of protected product/technology on investment.

4. Good Business Practices in Bulgaria

Related to the mentioned above the method of this article and case study of the Bulgarian innovation activity and the participation of Bulgarian companies in the Operational program for innovations and competitiveness (OPIC) has led to the following general conclusion:

The successful company has developed innovation and has put the focus on the innovations for their long-term competitive business strategy. As a result of the implemented company strategy based on innovations protected as IP rights the companies have pursued and have realized an effective competitive business strategy based on the owned or licensed intellectual property in product and technological innovations.

That is the reason for application and registration of patents, UMs and IDs very actively in the last 10 years in BPO especially for the purpose of participation in the European programmes related to the Innovations and competitiveness.

Analysing the specific results of the already completed operational programs focused on the competitiveness of the Bulgarian companies we have indicated the following measures:

- high level of applications and registration activities in P/UM/ID of Bulgarian innovators;
- high level of the registration activity in TM/GO of Bulgarian companies;
- more than 2 protected as IP innovations are found in each of the projects that are ranked and implemented in OPIC business projects for a period 2007-2016[13].
- more than 2 registered TMs in each business projects indicated in the programme 'Brandico' of the Ministry of the economy of Bulgaria.

The author has provided this research in IP literature based on the digital publications and there are presented data and facts for the application activity in IP rights by the Bulgarian innovators for 10 years period.

[13] www.mi.govermnemnt.bg

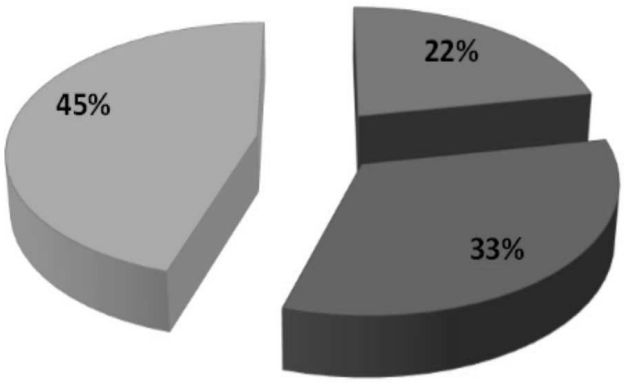
Table 1

IP rights	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Patent application[14]	210	250	243	243	264	245	282	218	280	241
Registered UM	214	135	178	167	205	190	363	220	265	453
Registered ID	356	270	292	201	189	221	273	218	197	166
Registered TM	6873	6357	4578	4335	4058	3844	3068	4215	4101	apr.4600

During the period 2007-2016 approximately 40 innovations by the Bulgarian creators have been applied for PCT patent and around 4550 industrial designs have been registered in EUIPO for the Bulgarian proprietors.

This statistics shows that Bulgarian companies have a growing knowledge in the field of IP rights as a legal protection of innovations as patents, UM and ID as a stable and effective way of protection of their innovations[15] and as a legal protection of company signs as trademarks.

Figure 5

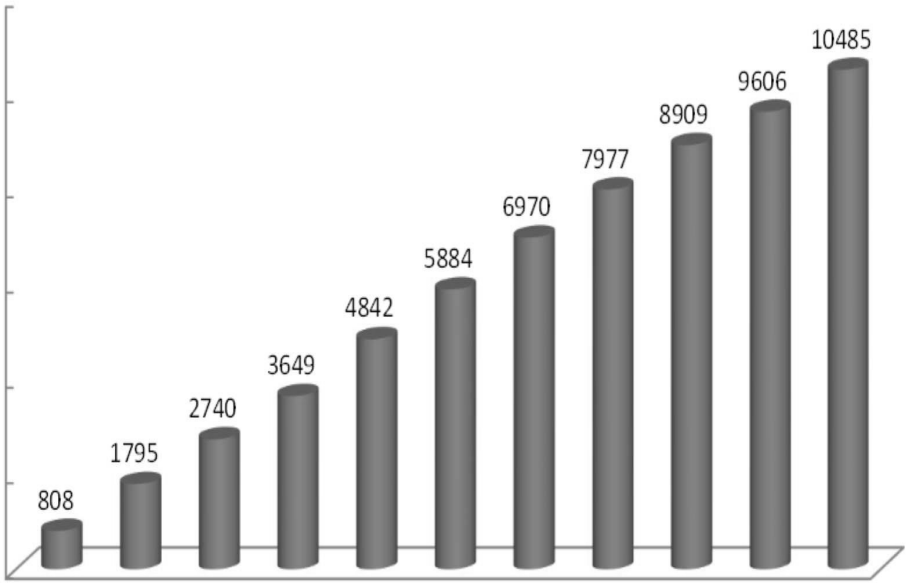


The most active area of innovative activity for the Bulgarian inventors for 2016 field are: machine building – 45% patent applications, electrical engineering and electronics – 33% of patent applications and chemistry and pharmacy – 22% – patent applications.

[14] In this table patent applications are mentioned due to the long period for examination of the criteria of patentability (more than 2 years) and the fact that patent application is an object of business in each aspects as patent (document for the patented invention). The statistic of BPO shows that approximately 32% of patent applications achieve the legal document 'patent'. At the same time the patent application is considered as a result of innovation process.

[15] All figures and facts are accessible on the official web sites: www.bpo.bg, www.epo.org and www.euipo.europa.eu.

Figure 6



There is a positive trend in the number of EP validation for the Bulgarian territory as 13 times approximately for a period 2006-2016.

There is a positive trend in the number of application of utility model as 2 times approximately for a period 2006-2016 (approximately around 460 for 2016).

There is a negative trend in the number of national applications for industrial designs as 2 times approximately for a period 2006-2016 (approximately around 170 for 2016), which is offset by the high level of activity of the Bulgarian applicants for EU registered design within European Union intellectual property office (EUIPO) granted for the whole territory of EC countries.

It should be taken into account that to a large extent the application activity in the last 5 -6 years for patents, UMs and IDs is the result of provided for the companies opportunity to apply to the EU finance projects, governed by Ministry of the economy of the Republic of Bulgaria.

Through the mentioned before business environment and good IP practice, Bulgarian companies should define and implement business strategy successfully based on IP portfolio.

According to the honest practices within the patent attorney services realized by the author of this article there are going to be presented some examples from the Bulgarian practice, undoubtedly supporting the idea for a successful competitive strategy achieved through

innovation protected as intellectual property seen in the form of investment of the company for their implementation and marketing.

Example 1: Product innovation of "Telesat" Ltd. "Management system cable networks", developed and protected as utility model under N BG 1936 has led to successful participation in the competition session 2007-2013 "Competitiveness" of the Ministry of economy, which has provided investment resources for its implementation.

This innovation has been implemented in the company's own business cycle owner of UM and unexclusive license to use this innovation has been given to another company. This acting license agreement is registered under number 1293686 with the Patent Office of the Republic of Bulgaria. Thus, the company – owner of product innovation, protected by a utility model realizes the economic benefit as both use in their business and by receiving royalties from the licensee company.

Example 2: The inventor A. Gonov creates innovation "Equipment for the production of electricity from wind-driven generator" protected simultaneously as an useful model for the territory of Bulgaria under N BG 1498 2011 and as a registered Community Design for EU with N RCD 002 590 455 2014.

At the beginning of 2015 the established by the inventor A. Gonov's company has started producing electrical generators based on the innovation protected by the mentioned above IP rights with good perspective for signing a license agreement with other companies from Europe.[16]

The companies mentioned above can be accepted as examples of good business practices in the area of product innovations based on IP rights and these companies have achieved significant positive economic results in their business sphere due to the IP rights. These results are reflected in better financial and non-financial indicators and are forming investment strategies for these product innovations, protected by intellectual property and there are expectations presuming to ensure the maintenance of this trend for the future.

5. Conclusions

The company management should have a complex information about the current portfolio of IP rights its quantitative assessment and perspectives in the purpose to achieve and to sustain company competitiveness based on the planned IP portfolio.

The company management should assess the current factors of the dynamic business environment using a complex analysis which is provided by the following popular marketing techniques: SWOT analysis, BCG analysis, GE analysis and analysis of the competitors.

[16] www.bpo.bg, www.euipo.europa.eu.

The current and periodic audits and upgrading of IP portfolio of the company leads to a stable company competitiveness due to the achieved competitive advantage based on differentiations in offered products related to the obtained IP rights.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Baki Hyuseinov[1]

DISCRIMINATORY MANIFESTATIONS AGAINST WOMEN IN THE FIELD OF EMPLOYMENT – RISKS, PROFILES AND PROTECTION

The study examines especially the current problems related to the establishment and protection of women against discrimination in the field of employment.
The main objective of the study is to synthesize the following: based on an assessment of the degree of transposition of the European legislation into the Bulgarian legislation and its actual implementation, as well as of the positions of women in employment, to identify the threatened to discriminatory risk women in different profiles and mainstreaming the main policies/measures to protect them.
The study points out that the Bulgarian legislation is highly harmonized with the European legislation, which allows the efforts to be directed towards its observance and application, incl. through monitoring control. It has been pointed out that the highest legal weight in the country's legislation is the Protection against Discrimination Act and the Law on Equality between Women and Men.
As a result of relevant analyzes and evaluations it is summarized that in the sphere of employment, the qualitative characteristics of the female workforce are clearly outlined as the main factor for its positioning in horizontal and vertical terms. The prerequisites for the occurrence of horizontal and vertical segregation of women, often at the limit of discrimination, result from this.
The main communities of women at higher discriminatory risk in the employment field are defined. Multi-profile analysis and employment assessments of women have been conducted revealing the differences between women and men in terms of employment, the employment status and the payment.
The study recommends that the gender policies and measures be directed primarily towards limiting/overcoming the differences in the level of quality assessment of human resources by gender. The need to combine them with policies and measures for prevention and protection against discrimination is highlighted. In this context, it underlines that substantial importance have the actions of the Commission for Protection against Discrimination which applying the Law achieves real protection against discrimination, incl. also for women in the field of employment.
JEL: J21; J31; J64; J71

[1] *Baki Husseinov is a PhD in Economics at the Institute of Economic Research of the Bulgarian Academy of Sciences, section "Macroeconomics".*

Introduction

The positive tendencies in the development of the Bulgarian economy in recent years, the achievement of a relatively high economic growth and financial stability create conditions and prerequisites for solving the important problems in the sphere of work and the sphere of employment in particular, including the limiting of inequalities, as well as acts of discrimination against women.

In the ten years after the accession of Bulgaria as a full-fledged member of the European Union, not only have there been many improvements of the existing national legislation, but also specific laws have been accepted for the promotion and validation of the equality between men and women and for the protection against discrimination, which is predominant among women. The harmonizing between the national and European legislation has been accomplished through the implementation of the European legislative regulations and standards, which are contained in the many conventions in the sphere of gender equality and the provision of equal opportunities to women in the work sphere. This process has contributed to the greatest extent to the providing of guarantees for the attainment of real equality and maximum "narrowing" of the field of discrimination practices. On the other hand, the topic of effective use and application of the regulatory framework has received a great importance when solving the complicated discrimination case studies.

These findings create a need and uncover the possibilities for performing a scientifically applied research of the position of women in the sphere of employment regarding their inequality, differences and degree of discrimination in comparison with men. Based on this statement, is formulated the main goal as well as the sub-goals ensuing of this research.

The main goal is synthesized in the following way: based on the evaluation of the degree of implementation of the European legislation into the Bulgarian legislation and its real application, as well as based on the position of women in the sphere of employment, the women threatened by a risk of discrimination should be identified and appropriate measures and policies for their protection should be taken.

The implementation of the main goal requires a consecutive realization of the following sub-goals:

- Analysis and evaluation of the corresponding European and national regulatory framework as a guarantee for the reliable disclosure of acts of discrimination against women in the sphere of employment
- Establishment of the position of women in the sphere of employment, the risk situations and behavior of women, the responsibilities of employers for limiting the acts of discrimination
- The allocation of factors and prerequisites for the occurrence of inequality/discrimination against women in the sphere of employment and of the workplace, specifically the differences in payment for equal work to men, uncovering the possibilities for acts of discrimination based on different women profiles,

systematization of conclusions and recommendations with the goal of maximum reduction of acts of discrimination against women in the sphere of employment

For the aims of the current research, the following sources of information have been used:

1. *Employment and Unemployment*, NSI, 2016.
2. *Conducting a nationally representative sociological survey of a territorial feature to identify and elaborate profiles of the groups and communities most affected by the risk of discrimination, Consolidated analytical report in implementation of activity 1 under the project "Prevention of discrimination and equal opportunities BG05M90P001 - 3.003-0001-C001, implemented by the Commission for Protection against Discrimination*, 2017.
3. *Methodology and Tools for Prevention, Detection and Prevention of Discrimination*, Sofia, 2017 (under the same project).
4. *Handbook, Non-discrimination and Equality for Everyone*, Commission for Protection against Discrimination, Sofia, 2016.
5. *Monitoring the Practices for the Application of Anti-Discrimination Legislation*, Commission for Protection against Discrimination, Sofia, 2016.

Evaluation of the Legislation for Protection of Women against Discrimination in the Sphere of Employment

The aggregation of international legal acts, as well as the European legislative regulations and standards, which have been reflected in the Bulgarian legal framework, represent a solid regulatory framework for the establishment of inequality between men and women, as well as acts of discrimination against women. It redefines forms and methods for counteraction with the aim of achieving a higher degree of gender equality and insurance of guarantees for prevention and protection against discrimination related to women in the sphere of employment.

The initial construction of the legislation, which proclaims the equality between men and women as a main principle of social relationships was established 70 years ago (1948) with the adoption of The Universal Declaration of Human Rights of the United Nations. For the first time, the equality between all people was guaranteed with this historical document, including on the ground of gender, with it being noted that they "have the right to equal protection against any discrimination".

The UN Universal Declaration of Human Rights is the starting point for the creation and adoption of a series of international UN and ILO documents that develop and specify gender equality and gender discrimination objectives.

The following ILO and UN conventions are of great importance for the legal settlement of the protection of women's rights in the field of employment[2]:

- ILO Convention No 89 on the Prohibition of Night Work for Women in Industry, 1948;
- ILO Convention No. 3 on Maternity Protection, Revised as Convention No. 103, 1952;
- ILO Convention No. 100 on Equal Remuneration, 1951 ratified by Bulgaria in 1955;
- ILO Convention No 111 on Discrimination in the Field of Work and Occupations, 1958, ratified by Bulgaria in 1960;
- United Nations Convention on the Elimination of Discrimination in Education, 1960, ratified by Bulgaria in 1962;
- United Nations Declaration on the Elimination of Discrimination against Women, 1967;
- United Nations Convention on the Elimination of All Forms of Discrimination against Women, 1979, ratified by Bulgaria in 1981;
- ILO Convention No. 156 on Workers with Family Responsibilities, 1981;
- ILO Convention No. 175 on part-time work, 1994;
- ILO Convention No 177 on Home Work, 1996.

The consecutive ratification by Bulgaria of the indicated conventions assures legal protection of women in the area of work and profession as to specific problems have been dedicated particular conventions. For example, the convention for equal pay, for protection of motherhood, i.e. for protection of women who are also mothers in relation to their participation in the sphere of employment, for the prohibition of nighttime work for women in the industry and others.

A central place in the aggregation of specific conventions for the protection of women is reserved for the UN Convention for the Elimination of All Forms of Discrimination against Women. However, it must be noted that this Convention was ratified by Bulgaria in 1981, but was published in the State Gazette no. 17 only in 2010 when it became an integral part of the domestic law. This fact means that Bulgaria is required to take action in order to eliminate discrimination against women so that gender equality is achieved in the economy, including labor, social, civic and other public spheres.

Moreover, The UN World Conference on Women's Rights has more noticeably followed issues related to the respect of women’s rights worldwide (Beijing, 1995). The Declaration and Platform for action accepted during this conference synthesize strategic priorities for the protection of women’s rights, while priority goals and problems in the area of employment are reserved a special place: compliance with the work rights of women; assurance of equal access to the decision making; lowering the level of unemployment; increasing the employment rate among women. The Beijing conference requires its

[2] The conventions are showed in a chronological order.

participants, including Bulgaria, to provide a plan for action. In order to evaluate the implementation of the decisions, a special UN session, known as "Beijing + 5", was held in 2000 on "Women 2000: Gender Equality, Development and Peace in the 21st Century". The following finding validates the importance of the holding of this session by the United Nations: the goals chosen by the Beijing Conference have not been met. This placed serious requirements upon Bulgaria, more importantly: perfecting the legislation with the aim of removing discrimination in the sphere of work; assuring guarantees for equal access to the enhancing of professional qualifications to both men and women, respectively to the acquiring of better job positions by women; overcoming the gender pay gap.

An important role in the execution of these requirements was completed by the process of the implementation of European legislative regulations into the Bulgarian legislation. It began long before Bulgaria joined the EU and continued during the membership of the country into the European community. Currently, there are also improvements and additions being executed to the legislation in force, according to the innovative changes in the protection of women's work rights.

Which are the main European regulations that have been implemented into the Bulgarian legislation in the sphere of employment, as well as the protection against acts regarding discrimination against women?

Before we consider a specific answer to this question, it is appropriate to emphasize the incredible importance of periodically reporting the execution of the requirements in place, according to the recommendations given to Bulgaria resulting from the provisions in the European Social Charter in the field of work.[3] The degree of detail when defining the progress, of the need to clarify the legal and practical case studies respectively, is too high. This is proven by the contents of the Sixteenth National Report, for the period of January 1 2014 and December 31 2016, i.e. for the period of three years, submitted by the Government of the Republic of Bulgaria to the Council of Europe in accordance with Article C and Article D of the European Social Charter (revised) on the measures for implementation of the adopted provisions.

The European Social Charter, as the main international document, places obligations on the countries with a readiness to ratify individual articles and paragraphs of the Charter, with the emphasis being placed on the issues of equality between women and the implementation of the principle of equal opportunities for women and men. A special place is reserved for the requirement for the elimination of discrimination based on gender.

Bulgaria's integration into the European Community implies not only the implementation of European legal norms and standards into the national legislation but also the establishment of institutional mechanisms for their implementation as well as monitoring control.

[3] European Social Charter, Conclusions of the European Committee of Social Rights of 2016, Bulgaria, January 2017.

It is well known that European law is distinguished by a large and diverse set of so-called European Council directives that regulate the legal frameworks of the main aspects of the problem of achieving equality between women and men, with a focus on women's rights in the various spheres of work relationships, including employment. The founding ones are:

- Directive 75/117 / EEC on the approximation of the laws of the Member States relating to the application of the principle of equal pay for men and women;
- Directive 76/207 / EEC on the implementation of the principle of equal treatment for men and women in regards to the access to employment, vocational training and promotion, and working conditions;
- Directive 86/378 / EEC on the application of the principle of equal treatment between men and women in occupational social security schemes;
- Directives 92/85 / EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers, workers who have recently given birth or are breastfeeding;
- Directive 97/80 / EC on the burden of proof in cases of discrimination based on sex;
- Directive 2000/78 / EC establishing a general framework for equal treatment in employment and occupation;
- Directive 2006/54 / EC on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation;
- Directive 2010/41 / EC on the application of the principle of equal treatment between men and women engaged in an activity in a self-employed capacity.

The specific purposefulness of the European Directives provides an opportunity for an adequate adaptation of their requirements in the Bulgarian legislation and an application in the different fields of work legal relationships respectively.

It definitely can be said that, as a result of many years of efforts by the competent authorities, the national regulatory framework meets the requirements and the legal provisions of the European legal framework to a high degree about the guarantees of equality between women and men in the field of employment and, in this context, with regards to the prohibition and protection against discrimination based on gender.

The main law of the Republic of Bulgaria – The Constitution (1991) proclaims the principle of equality of all people before the law. The right to work is guaranteed by the law and the relevant state authorities carry out its implementation with the necessary competence for this purpose.

It should be noted that, in view of the requirement that the legal framework of Bulgaria be harmonized with the international and European legislation, an addition has been introduced to the Constitution (article 5, paragraph 4) according to which, the international contracts ratified by constitutional order and enacted for Bulgaria become a part of domestic law and take precedence in cases where national law conflicts with them. This

ensures the timely incorporation of current EU law achievements into the relevant area of Bulgarian law.

A founding document that protects the rights of women who work is the Labor Code, which is periodically updated. It includes many important additions regarding the special protection of working women, connected to pregnancy and child-rearing. A great importance is given to the right of women to receive equal pay to men for equal work. The code also defines the responsibilities of employers in regards to pregnant women and mothers.

A series of normative documents regulating different aspects of the participation and protection of women in the workplace, such as the Employment Promotion Act, the Family Code and others act in the legal space. The most important laws regarding the coverage and protection of women against discrimination, as well as the achievement of equality and equal opportunities in the field of work, are the following specific laws:

- Protection against Discrimination Act (promulgated in September 2003);
- Equality Law for Men and Women (promulgated, April 2016).

With the adoption of the Protection against Discrimination Act, the needs for legal regulation of the prohibition and protection against discrimination in different spheres of public life were met. The new provisions provide legal safeguards to protect women against discrimination and equal treatment of women and men, respectively. The law synchronizes the provisions of international law with regard to the prevention and counteraction of discrimination. It is at the center of the legislative framework of the Bulgarian anti-discrimination legislation for all spheres of public life. The Protection against Discrimination Act transposes the provisions of a number of UN and ILO conventions as well as European Union directives, especially those relating to the field of work, employment in particular. Evidence of the high quality of this law is the fact that the European Commission gives a positive assessment of the purposefulness and content of its clauses and identifies it as significant progress in the area of anti-discrimination law.[4]

The Act on Equality between Women and Men is in fact a legal basis for policies to achieve equality and equal opportunities. In this sense, it is a guarantor, but also a regulator of policies and measures for equality in the workplace. This law governs the implementation of state employment policy. Its purpose is to promote the achievement of equality between women and men, creating the conditions for the establishment of an institutional environment and defining the bodies and mechanisms for the implementation of policies for the equality of women and men.

The Act sets out the principles governing the state policy on equal treatment of women and men:

- Equal opportunities for women and men in all spheres of public, economic and political life;

[4] Regular progress report on Bulgaria, European Commission, 2003

- Equal access for women and men to all resources in society;
- Equal treatment of women and men and non-discrimination and gender-based violence;
- Balanced representation of women and men in all decision-making bodies;
- Overcoming gender stereotypes.

In order to achieve a real equality between women and men, the functions and responsibilities of the respective institutional bodies and the mechanisms at central and regional level are detailed in the Act. These executive structures conduct and coordinate policies in line with the National Strategy for Gender Equality.

As the main programming document, The Strategy contains: the objectives of achieving equality in all areas; the authorities responsible for their achievement; priority areas of action, as well as a set of relevant indicators providing monitoring of the implementation of the objectives and policies.

In conclusion, it is reasonable to determine that the Bulgarian legal framework for identification, prevention and protection against discrimination is largely harmonized with European norms and standards. This fact proves that the national legislation provides the necessary safeguards to achieve equality for women and men, which in turn is a basic prerequisite for limiting the discrimination against women in public life and the field of employment in particular.

Identifying the risk communities of women threatened by discrimination in the field of employment

The participation of women and their behavior on the labor market in the context of a unique supply and demand situation, including the female labor force, the identification of the main factors and profiles of gender inequality as well as the opportunities for discrimination against women predetermine the structure and status of their employment. In this field, the qualitative characteristics of the female workforce are more clearly defined as a decisive factor for the effective positioning in the horizontal and vertical cuts of employment. In this process, employers put into practice their needs and preferences for the women's labor force on the labor market, according to their education, professional profile and qualification degree, optimize their distribution by classes of professions and positions.

The identification of female employment makes it possible to reveal the existence of sectoral, professional and occupational segregation of employed women. The different types of segregation are based on differences depending on the existence of risks of inequality and discrimination against certain social communities by women. Such communities at risk of discrimination are women with the following demographic, social, professional and family characteristics:

- **Women from the peripheral age ranges** – young women without professional experience, as well as those who raise small children; there is a paradox where young

women without the necessary length of service are not preferred by employers; in these cases, a vicious circle is created, since young female employees cannot have gained work experience; this case is further complicated when these women are mothers and are raising young children, which is a cause for multiple discrimination. The situation is similar in the case of high age brackets above 50 years of age, where age discrimination is likely to manifest at a higher degree, especially when it comes to women at retirement age;

- **Single mothers** – this community of young and middle-aged women rely mainly on social assistance and childcare by the state through placement in childcare facilities; these state policies provide an opportunity for single mothers to engage in employment, which puts appropriate requirements on employers and, where appropriate, the application of incentive and sanctioning measures on them; incentives to employ single mothers should provide them with part-time employment, training with the goal of raising the professional and qualification status of these mothers, increasing their wages, and reducing the scope for discriminatory practices as an expected target result;

- **Mothers with many children** – a risk segment that intertwines demographic and social factors. Again, it is the responsibility of the state and the economic subjects, but it is necessary to refer to the respective responsibilities of the mothers with many children, mainly related to the ratio between material and financial possibilities and the number of the raised and schooled children, i.e. in this case, the principle of prohibition of discrimination must be applied;

- **Mothers of children with disabilities** – in relation to this community of women-mothers, the state has established appropriate legislation to ensure the specific needs of children are met; the combination of policies and measures not only implies but also excludes the possibility of discriminatory actions, but this should be accompanied by the implementation of specific actions defined in specific legislation;

- **Women with disabilities** – with regard to this group of women, in order to prevent discrimination, it is necessary to strictly observe the specialized legislation;

- **Pregnant women and women during maternity leave** – this group of women enjoys the necessary "privileges" that have been legally settled. Compliance with relevant legal rights, regulations and standards ensures both prevention and subsequent protection of these women from attempts to be discriminated;

- **Women with low levels of education and qualifications** – it is clear that this group of women brings with them the preconditions for discriminatory actions as well as self-isolation; they have a very low degree of readiness for employment, often because of income inefficiency they accept discriminatory working conditions and pay for their labor; employers do not invest in their training and retraining which forces them to be subjected to occupational discrimination; the latter manifests itself as horizontal and vertical segregation;

- **Unemployed women** – in this women's risk contingent, the problem lies in the situation of the labor market and the behavior of unemployed women in view of the demand and

supply of women's workforce; in this area, the opportunities for discrimination are relatively minor;

- **Unemployed women in long-term unemployment** – this women's social group is characterized by very negative dimensions, which reflect the attitude of the employers towards them; other factors such as education, qualifications, marital status, which aggravate / relieve employers' decisions for their recruitment, also influence this. Employers are reluctant to invest in training and updating their qualifications or they compromise but at the expense of their wages; obviously, there are relatively more prerequisites for direct, indirect and multiple discrimination in this group of women;

- **Women from ethnic communities** – as a result of specialized studies[5] on the influence of the "ethnicity" factor, it has been found that there are discriminatory practices among the Roma ethnic group and in particular among Roma women at a comparatively higher level; however, the fact that the discriminatory actions identified are due not so much to the ethnic profile as to a low degree of education or illiteracy, long-term unemployment, complete lack of readiness for employment, multiple-family status, etc . which are inherent to the Roma ethnic minority women; there are discriminatory practices on the labor market and in the field of employment;

- **Women with aggravated family status** – women in this community face the following difficult dilemma: family responsibilities or full-time employment; women dedicated to family care and, above all, to children, ignore their personal desires for professional development, thus creating the conditions for indirect/hidden discrimination; the second group of women have strong interests in professional and public leadership; they are generally not subject to discriminatory attacks; increasingly, there is the formation of a contemporary position of this community of women who prefer to combine their family and professional responsibilities; to achieve this goal which is difficult to achieve, it is necessary for women to "fight" on two fronts: on one hand, in the family, the composition of which is dependent on the number and age of the children, as well as the presence of other dependent members (elderly parents) which predetermines their position on the labor market, and, on the other hand, in the very field of employment where workers and employees with family responsibilities and other workers and employees are opposed to one another. In this respect, the implementation of ILO Convention No 156 on Equality of Opportunities and Equal Treatment for Women and Men with Family Responsibilities is particularly effective. The Convention proclaims that they must exercise their right to work without being discriminated against.

[5] Husseinov, B. "Education and Employment" - Basic Prerequisites for Real Integration of Roma, Collection "Problems of Roma Integration", 2017

Women's positions in employment based on general profiles – a prerequisite for discriminatory events

The classification of women, depending on the type and nature of the possible risks of discrimination should be supplemented by assessments of employment positions by general profiles, revealing those which are most often a premise for discriminatory conditions.

Multi-profile employment assessments of women are indicative of the extent to which they are employed compared to men, as well as the employment structure profiles, employment status, and age structure of employed women.

Table 1

Dynamics and changes in employment based on gender for the period of 2010-2016

Time period	Coefficient of employment			Differences between women and men
	total	women	men	
2010	47.9	43.2	53.0	9.8
2011	46.6	42.4	51.1	8.7
2012	46.6	42.6	50.8	8.2
2013	46.9	42.8	51.4	8.6
2014	48.0	43.6	52.7	9.1
2015	49.1	44.5	54.1	10.4
2016	49.3	44.3	54.6	10.3

Source: based on data taken from Employment and Unemployment, NSI, Sofia, 2016.

The analysis and assessment of changes in employment rates have shown a higher employment rate for men over the whole 7-year period surveyed, with an average of 50-55% for men, compared with 42-45% for women. Employment rates by gender vary between 8-11 percentage points. They reflect the impact of labor market factors on unemployed women as well as the employment rate dependency on typical women's groups at risk of discrimination. To illustrate the real ratios between women and men employed, data is also available in absolute terms for 2016: the number of employed men is 1607.6 thousand, and for employed women – 1409.2 thousand. The difference of nearly 200 thousand shows the existence of unfavorable conditions giving rise to discriminatory actions against women who appear on the labor market and in employment.

Negative results from analyzes and estimates of women's employment rates compared to men are compounded when they are compared with the gender-based employment rates on average for the EU Member States[6]. In 2016, the male employment rate in the EU is 72% and for women it is 61%, i.e. the difference in employment rates by gender is 11%. For the same year, the employment rates for men and women in Bulgaria are 55% and 44%, respectively. It is noteworthy that the difference in the values of the employment coefficients is 11%, i.e. the differences between men and women for Bulgaria and the EU are the same. This coincidence points to the conclusion that the magnitude of the difference between the employment rates of men and women in Bulgaria does not deviate from that

[6] The life of women and men in Europe (statistical portrait) Eurostat, NSI, 2017, p.11.

for the European Union, which reveals that the incidence of discriminatory practices in Bulgaria towards women is not higher than the average for the EU member states. Comparing, however, the differences between the employment rates for men and women for Bulgaria and the European Union, one should not overlook the fact that the average EU employment rate is 17% higher for both men and women than the one in Bulgaria. Obviously, it is necessary to update policies and measures to promote employment in Bulgaria, especially with regard to women.

In order to reveal the possibilities for age discrimination of women, the study also includes the influence of age.

Table 2

Changes in employment based on gender and age for 2010 and 2016 (%)

Distribution by gender	Coefficients of employment			
	15 – 24	25 – 34	55 – 64	65 +
Total				
2010	24.3	70.5	44.9	2.9
2016	19.8	69.9	54.5	4.3
Women				
2010	21.2	64.6	39.2	1.5
2016	16.3	63.6	51.0	2.8
Men				
2010	27.3	76.1	51.3	4.8
2016	23.1	75.9	58.3	6.1
Differences between women and men				
2010	6.1	11.5	12.1	3.3
2016	6.8	12.3	7.3	3.3

Note: the differences between men and women are in favor of men.
Source: based on data taken from *Employment and Unemployment*, NSI, Sofia, 2016.

The defined differences between the employment rates of women and men in the peripheral age groups at the beginning and at the end of the survey period are minimal, with the exception of differences for the age group 55-64. These differences show a marked decrease from 12.1% to 7.3% i.e. with nearly 5%, which shows an increase in the employment rate of women in this age group for a seven-year study period. Women's employment rates for 2010 and 2016 amounted to 39.2% and 51.0%, respectively, registering a 12% increase in female employment. Naturally, this positive fact applies to women in general, which does not exclude discrimination related to the influence of other factors/attributes such as education and qualification level, employment status and family status.

Table 3

Employment of men and women according to employment status for 2010 and 2016 (in %)

Distribution by gender	Employment status			Unpaid family workers
	Employers	Self-employed persons	Employees	
Women				
2010	28.3	38.0	48.0	66.0
2016	28.0	37.0	48.0	67.0
Men				
2010	71.7	62.0	52.0	34.0
2016	72.0	63.0	52.0	33.0
Difference between women and men				
2010	43.4	24.0	4.0	32.0
2016	44.0	26.0	4.0	34.0

Source: based on data from Employment and Unemployment, NSI, Sofia, 2016.

It is interesting to note the results from the research of the correlation relationships and dependencies between the level of employment among women and men, based on employment status.

Professionally analyzed employment status of women in employment reveals broadly-anticipated differences between women and men. With regard to the status of "employers" – the employment rate of men is about 2.5 times higher than that of women; the ratio between men and women by status in employment "employers" amounted to 72:28. Men predominate in the "self-employed" position exceeding women by about 1.5 times. In addition, these ratios persist throughout the surveyed period 2010-2016. It is clear that this status in women's employment creates prerequisites for vertical segregation, often bordering on discrimination. It should be pointed out, however, that in recent years positive trends have developed in the development of innovative technologies, creating new modern niches for the employment status of women. The results of the survey conducted in 2016 among 37 companies in the IT industry and 3172 employees, of which 37% are women, are very encouraging. The positive trend of an increase in the number of women who hold management positions or other higher positions[7] has been reported.

In 2014, women in such positions were 30% and men – 70% in 2015, the ratio is changed to 33 to 67 and in 2016 to 34.5 to 65.5. Obviously, stereotypes in society that ICT is predominantly "male work" are being refuted. In recent years, there has been an increased interest in female employment in this sector, as well as female candidates for such an education. It can definitely be said that opportunities for discrimination against women in terms of employment are excluded. Moreover, the information from the above study reveals that in the outsourcing business where language culture is required (fluency in English and other languages), women employed in this field are predominant.

[7] "Is it easy to be a woman in the IT sphere? ", A Woman's Journal, 2017
- IT (YT) – Information Technology
- ICT – information and communication technologies

Interesting and encouraging is the ranking of employed men and women on the "classes-professions" profile, and in particular the position of "managers". Obviously, there is a difference in their scope between the status of "employers" and the "managers" position. It is possible that an employee (male/female) is a manager, but not an employer, more common in women. Another option that is more relevant to men is when an employer but may not hold a managing position. Different options predict the differences in male: female ratios. In employers' employment, the ratio is 72:28 and in the managers position the ratio is - 62:38. This difference of ten percentage points for women means that there is a higher level of employment for "managers" than for employers.

The above-mentioned ranking of employed men and women on the profile of "profession classes" – position "managers" allows for a comparative analysis between Bulgaria and the EU member states.[8] The male: women average rate for the EU is 67:33, ie. one-third of the executives in 2016 are women. It should be noted immediately that for Bulgaria the relative share of women in the position of managers is 5 percentage points higher than its average for the EU member states. Only six of the countries are positioned before Bulgaria: Latvia with 47% representation of women as leaders, Poland and Slovenia with 41%, Lithuania, Hungary and Sweden – 39%, followed by Bulgaria - with 38%. The remaining 21 countries are ranked after Bulgaria, such as France – 33%, Germany – 29%, Austria – 32%, Greece and the Czech Republic – 25%. This rating proves the comparatively high level of education, leadership skills and teamwork skills of Bulgarian women.

Concerning the employment status of employees, the ratio of women and men shows the expected results – employed women are 4.0 percentage points less than the men employed in 2016. These differences are due both to the professional and qualifying qualities of the female labor, as well as family-related reasons. In this context, it is appropriate to study and evaluate the correlation between the employment of women and the number and age of their children. It is clear that family factors related to children largely determine the type and forms of paid employment of mothers. Family status is aggravated when the woman-mother has to be the head of the family, ie. in case her family partner is unemployed or actively looking for a job. In this situation, the most likely outcome is the participation of women mothers in additional employment, accepting the unacceptable conditions offered by the employers for unremunerated working hours, minimum wage, etc. Obviously, these are manifestations of direct and hidden discrimination of mothers.

As a proof of the importance of the number and age of children as factors, information on the employment rate of mothers compared to men is presented and analyzed, depending on the presence of children aged 0-6 years. It is interesting to combine this factor with the "degree of education of mothers compared to males – fathers.

[8] The life of women and men in Europe (statistical portrait) Eurostat, NSI, 2017, p.15.

Table 4

Coefficients of employment of the population between 20 and 49 years of age, with regards to the presence of children between the ages of 0 and 6, based on gender and level of education (in %)

Gender/ Presence of children	Level of education			
	Total	Higher Education	Secondary Education	Basic Education
Total	70.9	86.6	72.0	41.2
With children between the ages of 0-6	70.0	83.0	74.4	35.5
Without children between the ages of 0-6	71.1	87.7	71.6	42.8
Men	74.8	89.6	76.8	49.1
With children between the ages of 0-6	84.0	95.0	89.6	53.6
Without children between the ages of 0-6	72.9	88.1	74.7	48.0
Women	66.8	84.6	65.7	32.3
With children between the ages of 0-6	58.4	76.2	58.5	19.7
Without children between the ages of 0-6	69.1	87.5	67.3	36.6
Differences between men and women with children				
With children between the ages of 0-6	25.6	18.8	31.1	33.9
Without children between the ages of 0-6	3.8	0.6	7.4	11.4

Source: based on data taken from Employment and Unemployment, NSI, Sofia, 2016.

Indicative are the rates of employment coefficients for women-mothers, and those with children up to 6 years of age are lower than those without a young child by 11%. This fact is more pronounced in mothers with basic or lower education – with 17% lower employment for mothers with young children, followed by mothers with higher education – 11.3%. Even more striking are the differences between women and men with children under the age of 6 – 25.6%, whereas these differences for mothers with basic or lower education and secondary education reach values of 33.9% and 31.1%, respectively. Undoubtedly, these values are indicative of a low employment rate for young women with young children, which in turn is associated with a number of negative consequences: limiting the perimeter of women's participation in paid work; regression in their professional experience; devaluation or reduction of the labor cost of mothers; reduction of the income and quality of life of their families, especially if the number of young children in the family is higher. As an evidence for this statement, information is provided on the impact of the number and age of the children in the family as a factor on the employment of parents, on average for the member states of the European Union[9]. The comparative analysis between the respective employment rates for women and men, depending on the number of young children in the family, shows that, in the EU average of 2016, the employment rates of women and men without children amounted to 65 % and 73%. For Bulgaria for the same year, the employment rates for women and men without children are 69% and 73%. These close employment rates for women without children in Bulgaria and in the EU reflect the fact that this marital status allows women to achieve a higher level of

[9] The life of women and men in Europe (statistical portrait) Eurostat, NSI, 2017, p.11.

employment. It is a separate issue that it is lower than male employment, which is related to traditional stereotypes.

However, the situation changes markedly when women and men raise a small child, in this case it is conventionally meant between the ages of 0-6, as is the standard for Bulgarian statistics. The employment rate for women with a child aged 0-6 years in Bulgaria is 58%, while the average for the EU member states is 71%, i.e. the difference is relatively high and amounts to 13%. This value of the difference in employment rates of women in Bulgaria and in the EU reveals the insufficient degree of development and implementation of policies and measures in order to achieve the reconciliation of family care for children with the professional employment of mothers. It is not important to point out that the employment rates for men with one child in Bulgaria and the EU have almost the same values – 84% and 85%, respectively. This fact proves that the care of a young child is mainly the concern of the woman-mother, which manifests itself more strongly in Bulgaria – the mothers of young children have a lower employment rate than men with 26%, while for the member states of the EU it is lower by 14%.

The analyzes and assessments made are an effective reference point for purposefully developing a strategic antidiscrimination document of specific policies and measures to protect and support women-mothers with a high level of inequality compared to men-fathers.

In the field of employment, there is unequal treatment of women in the workplace, which to a certain extent turns into discrimination. Above all, it is possible for it to manifest itself in non-compliance by economic subjects with labor norms and standards. As already noted, Bulgarian legislation is harmonized with the requirements and provisions of European law. It is appropriate to point out that measures to ensure the full exercise of the right to work without discrimination based on sex are presented in a synthesized form in the European Social Charter (revised):

- Access to employment;
- Professional orientation;
- Professional reintegration;
- Training and retraining;
- Career development;
- Protection from hiring without signing an employment contract;
- Protection against dismissal and dismissal.

One of the most serious violations of women's labor rights on which the employers' behavior towards them in the labor process depends is employment without a contract of employment. It is well known that the actions taken and mainly the requirement for mandatory registration in the NSSI have greatly limited this practice. The ratio between women and men employed without an employment contract is 30:70 and the one for

employees with an employment contract – 48.6: 51.4%.[10] Although the number of women employed without a contract of employment is more than 2 times lower than that of men, the behavior of employers towards women in terms of working time parameters, working conditions, and the pay of their labor tend to lean, to a greater extent, towards the application of discriminatory practices typical of the shadow economy. The negative consequences of women's participation in the informal sector are highly depressing and leading to degradation not only in terms of their professional status but also in a socio-emotional aspect.

Indicative of the assessment and extent of discrimination of women in employment are the results of the sociological survey conducted on the identification of the communities most affected by the risk of discrimination.[11] The survey concludes that in almost all regions of the country more often than not there are multiple discrimination practices, i. on several signs. Apart from gender, mainly against women, discriminatory practices are also found on the grounds of age, ethnicity, right to work, property status. It is of interest to note the approach applied in the study to identify groups / communities at risk of discrimination, namely the self-assessment of the risk of discrimination. Of all the respondents, 14% perceive themselves as discriminated against. Ethnicity is perceived as grounds for discrimination by 35%, which is a very high proportion, followed by respondents who have self-assessed as age-discriminated (17%), physically and mentally disabled (8.4%) and relatively low (7%) rank the respondents who think they are sexually discriminated.

These real results give the basis to summarize the conclusion that the difference in the degree of discrimination is due not so much to gender differences but to other grounds for discrimination. This is confirmed by similar results testifying to the power of action of the individual grounds for discrimination in the search and finding of work: the lowest share is this of the respondents who indicated the gender attribute as a reason for refusal to be employed (1.5%). For comparison, the results of the self-assessment of the respondents for other grounds for discrimination are provided: with the highest share belonging to those who indicated "pay for labor" (38%) as a probable reason for discrimination, followed by "working conditions" "(32.5%), low qualification (25%), age (17%). The evaluation of the values / causes of discrimination examined highlights the importance of equal pay for labor, which is the main source of inequality for women in the field of employment, which often turns into its corresponding forms of discrimination.

The principle of equal pay for equal work – a guarantor against discriminatory practices in the field of employment

The principle of "equal pay for equal work" is stated in the founding international document – ILO Convention No 100 on Equal Pay for Men and Women for Equal Work of

[10] According to data from "Employment and Unemployment", NSI, Sofia, 2016.

[11] Consolidated analytical report on the project "Prevention of Discrimination and Equal Opportunities", Commission for Protection against Discrimination, Sofia, 2017, p.50 and p.54.

1951, ratified by Bulgaria in 1956, but promulgated much later in 1997. Thus, the Convention forms a part of the domestic law of Bulgaria. The following decisions receive a mandatory status: creating an adequate legal environment; the development of an adequate system of valuation and remuneration of labor; settlement of the relationship between workers and employees with collective agreements, including clauses on equal pay by gender. A number of legal acts of worldwide and European significance are devoted to the principle of "equal pay for equal work".

It is well known that the national legislation transposes all norms and standards that require the fulfillment of important obligations to the relevant authorities in order to achieve a real implementation of this principle in the field of pay for women and men. Despite these positive actions, the 'equal pay for equal work' principle has not yet been effectively implemented, as a result of which discriminatory practices persist. In the field of pay, they could qualify as discriminatory pressure, for economic, social and family reasons of aggravating nature, women are forced to accept lower pay than men.

It should be noted that gender pay gaps are formed under the influence of three main groups of factors: economic, personal/family and degree of application of discriminatory practices.

Obviously, for the purposes of this study, it is of paramount importance to determine the share of impact the discrimination factor has in identifying gender pay gaps. In order to minimize or eliminate them, it is advisable to carry out a detailed study and rank the specific factors/causes that created a discriminatory element in the pay gap between women and men.

In this respect, the provisions of the Protection against Discrimination Act on Equal Treatment of Women and Men in Employment and Labor Payments are particularly helpful in this respect:

- Any direct and indirect discrimination based on sex is prohibited;
- The employer provides equal remuneration for equal or equivalent work;
- The labor assessment criteria for determining wages are the same for all employees.

In this context, it is appropriate to bring and analyze information on the pay gap between women and men for equal work. This provision assumes that there is a conflict between the principle of equal pay for equal work stated in the legislation of the country and the social and economic practices applied by employers on the determination of the remuneration of women and men.

The most commonly used statistical indicator for measuring and evaluating the gender pay gap between countries is the share of women's pay from that of men, the gender pay gap respectively. Here, however, the question arises about the choice of wage type comparisons in terms of time – monthly, weekly, daily and hourly. In the European Union, the average gross hourly wages of women and men are used to measure the relative share of women's pay from that of men as well as the gender pay gap. It is also acknowledged that these indicators measure these values in a pure form, as they are not affected by the additional remuneration for achieved results usually paid to men's salaries. Moreover, the choice of

this indicator as a criterion for assessing gender pay differences makes it possible to carry out comparative analyzes between Bulgaria, the European Union (average magnitudes) and individual EU Member States.[12]

The analysis and assessments of the three main indicators of the gender pay gap reveal that Bulgaria is at the center of the "golden middle" of the EU member states with a difference of 15.4% and a deviation of the EU average (-0.9%). The negative value of the deviation shows that Bulgaria registers lower gender pay gap compared to the EU average. This positive trend in reducing the pay gap between women and men in Bulgaria is an important signal for Bulgaria's increased economic and financial stability. It is particularly noteworthy that, for 12 of the EU Member States, including Germany, Austria, the United Kingdom, the Czech Republic, Slovakia, the gender pay gap is higher than the average for the EU and Bulgaria. This conclusion testifies to the successive and effective policies and measures to reduce the gender pay gap and, in particular, to raise women's wages and respect for the principle of equal pay for equal work.

Table 5

Gender Pay Gap for the European Union, member countries, incl. Bulgaria for 2015 (%)

European Union and member countries	Relative share of women's pay from that of men	Gender Pay Gap	Deviations of the pay gap according to country from the average value for the EU
European Union	**83.7**	**16.3**	-
Bulgaria	**84.6**	**15.4**	- **0.9**
Countries with a higher pay gap compared to Bulgaria and the EU			
Estonia	73.1	26.9	+ 10.6
Czech Republic	77.5	22.5	+ 6.2
Germany	78.0	22.0	+ 5.7
Austria	78.3	21.7	+ 5.4
United Kingdom	79.2	20.8	+ 4.5
Slovakia	80.4	19.6	+ 3.3
Countries with a lower pay gap compared to Bulgaria and the EU			
Spain	85.1	14.9	- 1.4
Hungary	86.0	14.0	- 2.3
Sweden	86.0	14.0	- 2.3
Poland	92.3	7.7	- 8.6
Romania	94.2	5.8	- 10.5
Italy	94.5	5.5	- 10.8
Luxembourg	94.5	5.5	- 10.8

Source: Compiled and calculated with data gathered from The Life of Women and Men in Europe (a Statistical Portrait), Eurostat, NSI, 2017.

The composition of countries with a lower pay gap compared to the EU and Bulgaria - Spain, Hungary, Poland, Romania (a total of 15 EU Member States) is also interesting. Here, it is worth noting the fact that for Romania the value of the gender pay gap amounts

[12] The life of women and men in Europe (statistical portrait) Eurostat, NSI, 2017, p.16 and p.17.

to only 5.8%; which is 10.5% lower than the EU average and nearly 10% lower than that in Bulgaria. It is obviously necessary to study good practices in these countries, paying due attention to pay differences due to discriminatory actions applied to women.

Protecting women from discrimination in the field of employment

The main tool for protecting women from discrimination, incl. in the sphere of employment is the national anti-discrimination legislation – laws, norms and sub-normative acts. As already noted, the legal framework in this area is fully harmonized with European norms and standards. Its implementation, and especially the laws with the highest weight – the Law on Protection against Discrimination and the Act on Equality between Women and Men – is a guarantee of the implementation of the measures and actions for the protection of women provided for in these laws. The Protection against Discrimination Act regulates the protection against all forms of discrimination and contributes to its prevention, providing "effective protection against discrimination". Important considerations in terms of the present study are the provisions on protection when exercising the right to work, i. in the field of employment. These include concrete measures for employers to take related to employment, the provision of favorable working conditions and equal pay for equal work.

The Law has provided a proper place to protect women, pregnant women and mothers from discrimination. The prohibition of the specific discriminatory criterion – gender identity is a basic feature of anti-discrimination legislation.

The Executive Agency under the Protection against Discrimination Act is the Commission for Protection against Discrimination, which is an "independent specialized state body for preventing discrimination, protection against discrimination and ensuring equality of opportunity". A very important function of the Commission are the "anti-discrimination proceedings" initiated on the basis of a complaint by the people concerned, on the initiative of the Commission and on signals from natural and legal persons, to state and municipal authorities. In cases where discrimination based gender, usually predominant in women, has been proven, Commission practices lay down uncompromising sanctions.

In this regard, it is appropriate to identify specific practices of the Commission related to the established discrimination against women. The most common ones are the complaints of gender discrimination mainly among women about pay inequalities. In another case, the complainant's career development was restricted. Many women are forced to train newly recruited men who then take their jobs: "Two Pazardjik workers (complainants at the Commission) were instructed to train their younger male colleagues, after which they were made redundant and men were hired in their place." In this case, the Commission finds discrimination and imposes appropriate penalties on employers; in another case of discrimination identified by the Commission: "seven mobile worker complainants complain about the withdrawal of their social benefits after returning from maternity leave" and "not being provided equal opportunities by their employer for vocational training and qualification after maternity leave". The Commission imposes sanctions and provides employers with mandatory injunctions for stopping offenses. There are also cases where

age discrimination has been established – termination of the employment relationships of employees aged 30-40 years, as well as violations of the principle of "equal pay for equal work".

The aggregated information provided by the Commission on alleged discrimination on the grounds of sex is of interest, which found out that the number of cases filed was relatively small – 23 in 2010 and 27 in 2016, decreasing in 2017 by 20 cases. Comparing this data with discrimination on other grounds – education, age, disability, personal situation, social status, shows that gender discrimination is several times less. Obviously, the preventive action of the Commission for the protection of women from discrimination is effective and has a multiplier effect, i.e. employers change their stereotypical behavior towards women and, largely, observe the requirements of the Act with regard to the exercise of women's labor.

It is advisable to focus on the Commission for Protection Against Discrimination's tasks and activities, not only related to protection against discrimination but also to its prevention. From this point of view, it is predicted to increase the capacity of the Commission and its regional representations, as well as to increase the impact of its activities on prevention, detection and protection against discrimination of risk groups / communities, incl. women based on different grounds for discrimination.

The Act on Protection from Discrimination contains provisions that inherently represent specific policies and measures to counteract discriminatory acts. It introduces prohibitions and obligations for employers as a party in an employment relationship.

The Protection against Discrimination Act provides for special protection of mothers taking maternity leave. It guarantees the right of a woman on maternity leave to return to her place of work after leaving the workplace, under conditions which are no less favorable than those she worked in before her maternity leave.

The Law also regulates the employment relationships of women and men with disabilities, and the employer is required to take the appropriate measures to provide opportunities for their professional realization.

Special attention is paid to the practice carried out by the Commission for Protection against Discrimination on the application of the Act, i.e. the institutional mechanism for protection against discrimination. The analysis of its activity reveals a pattern of increase in its decisions taken. It is noteworthy that the most common forms of discrimination are those in the labor market and at work. In its decisions, the Commission actually implements appropriate measures to protect against discrimination and thus assists those at risk of discrimination.

Obviously, the Anti-Discrimination Act is effectively enforced and is an important tool for the implementation of policies and measures by the relevant competent authorities. Through this Law, applied at the same time as the Law on equality between women and men, an implementation of policies and measures is achieved aimed at protecting women from discrimination. They ensure equality and equal opportunities for women and men as well as their social inclusion.

Multi-profile analysis and assessment of the possible discrimination of women in the field of employment has shown that there is, to a greater or lesser extent, in different forms and on different grounds, inequality, in some cases bordering on discrimination. The implementation of laws and other legal acts, the implementation of appropriate policies and measures to curb/eradicate it are the basic preconditions for ensuring the protection of women at risk of discriminatory actions.

Conclusion

The basis for the actual establishment, prevention and prevention of discrimination against women in the field of employment is the relevant legal framework. The ensemble of laws and secondary legislation within the framework of the national legislation in a sufficiently high degree ensures the protection of women in the field of employment. The implementation of the legal norms and standards of the UN and ILO conventions as well as the European directives is a guarantee for their effective implementation by the Bulgarian institutions. A great importance is attached to the periodic reporting and control of their observance, incl. monitoring control. Only in this way is it possible to achieve equality between women and men in the field of employment and, in this context, with regard to the prohibition and protection against discrimination on the grounds of gender.

The highest authority on the protection of women against discrimination, as well as the achievement of equality and equal opportunities in the field of work fall on the Law on Protection against Discrimination and the Act on Equality between Women and Men. These laws are not contradictory, they complement each other, and there is a logical connection and dependence between them. The Act on Equality between Women and Men is, in fact, the legal basis of policies and measures to achieve equality and equal opportunities. The Anti-Discrimination Act provides legal safeguards to protect women from discrimination through prevention and counteraction.

In order to increase the effectiveness of the detection of discriminatory events and practices, it is appropriate to determine the factors and forms of discrimination in the field of employment.

As a result of relevant analyzes and assessments, it has been established that in the field of employment the qualitative characteristics of the female workforce are clearly outlined as a major factor for its effective positioning in the horizontal and vertical cross-section, i.e. by sectors, economic activities, professions and positions. In practical terms, it is particularly important to identify communities of women who are more at risk of discrimination, namely: women from peripheral age ranges, single mothers, mothers with multiple children, mothers of children with disabilities, women in pregnancy and motherhood, women with low education and qualifications, unemployed women, long-term unemployed women, women from a minority ethnicity, women with an aggravated family status.

This classification of women's risky communities is at the basis of the analysis and assessment of the positions in their employment according to the main typical profiles. In this way, the communities that best represent the occurrence of discrimination are revealed.

The employment rate differences between women and men, as measured by the employment coefficients, show that female employment is about ten percentage points lower. Clearly, this fact proves the existence of unfavorable conditions giving rise to discriminatory actions against unemployed women.

The profile analysis of employed women by their employment status once again reveals differences between women and men – in employers status, employment in men is about 2.5 times higher than that of women. Similar is the situation with the status of "self-employed". Obviously, there are prerequisites for the vertical segregation of women.

Of particular interest is the situation where the presence of young children in the family limits the employment of the mothers. In this case, they are forced to do extra work, accepting unacceptable conditions, mostly related to the amount of the pay. It is clear that this is a manifestation of hidden discrimination of mothers. All these negative consequences lead to a further reduction of the quality of their employability. This, in turn, is a source of emerging prerequisites for discrimination.

Last but not least, the influence of the "pay gap" factor between women and men emerges. Despite positive action in this area, the 'equal pay for equal work' principle has not yet been effectively implemented. With regard to this case, it is important to determine the discriminatory factor as the size of remuneration is formed under the influence of other factors, mainly of economic nature.

The study shows that the simultaneous application of the Laws on Protection from Discrimination and Equality of Women and Men ensure the implementation of appropriate policies, measures, and sanctions, aimed at protecting women from discrimination and the achievement of equality, equal opportunities and social inclusion of women's risky communities.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Plamen D. Tchipev[1]

FIRM VERSUS MARKET – COASE REVISITED

In November 1937 Ronald Harris Coase published his fundamental article "The Nature of the Firm", throwing the gauntlet to neoclassical economics, which could not be responded properly already 80 years. The task presented by Coase to the economic community is simple to failure. Reminding us, that in the economic system, led by the free price movements in which all resources are allocated by the price mechanism, we find, in the words of a contemporary economist, "islands of conscious power in this ocean of unconscious co-operation like lumps of butter, which coagulating in a pale of butter", the great scholar asked: why do we need that at all? Why, in the coordinating role of the market does appear the inevitable figure of entrepreneur-coordinator, who leads the production? Indicating that the company and the market are alternative ways of organizing, Coase released genie out of the bottle, because the answer he provided, actually launched an endless string of debates, hypotheses, competing explanations - what exactly is the nature of the company. This paper aims to provide a more detailed look at the essence of the dilemma posed by R. Coase, paying tribute to the anniversary of the issue of his genius work.
JEL: D21; D23

1. Introduction

Recently, they turned 80 years from the first publication of Ronald Coase's "The nature of the firm". Since then, this little article has over 90 different reprints, only in English, in various collections and special editions. According to Google Scholar, by November 2017, there are almost 40 thousand citations, over 1300 – only for the last year. It is obvious, that we have a rare phenomenon of scientific visionary, which affected so important and deep problem that repercussions of the publication do not cease till now. Although, the original solution to the problem of the existence of the firm, launched in the article was not challenged in essence, the debate stemming of it, seems to grow all the time. And it goes in two directions. On the one hand, the article gives an extraordinary boost to scientific research in the direction of the disclosure of firm's fundamentals, which became the basis of a whole new direction in economic theory – *economics of transaction costs*, and through it to the neo-institutionalism. On the other hand, it stimulates finding of complementary or

[1] *Professor Plamen D. Tchipev (PhD) is from Plovdiv University "Paisii Hilendarski" and from ERI-BAS, e-mail: chipeff@gmail.com.*

alternative solutions of the stated problem, (Granovetter, 1995). Diversion in responses comes from the fact, that the question raised affects basic methodological problems concerning the nature and functioning of the economic system and goes far beyond the neoclassical paradigm, regardless the author proclaims his devotion to the neoclassical paradigm.

The paper presented seeks to place the concept, and the article, of Ronald Coase in a broader systemic plan, in order to identify more clearly the peculiarities of both the problem and the solution proposed by the author.

2. Importance

There are several main sources of the significance of the article, respectively of the proposed author's concept on the nature of the company. Above all, the paper offers a consistent methodology. That's why we start our analysis there.

The article provides a fundamental view on the economic system. Coase points out that one of the main weaknesses of economic science is the failure to disclose its *assumptions*, to explore the foundations on which it is erected (Coase, 1937, p. 386). Therefore, he stresses that the economy is treated as an automatic system (working itself), a set in which the individual components work in a coordinated manner. Further, he tells us that supply adjusts to demand, without the need for central control and planning. Although, Coase does not address this point exactly to the marginalist tradition, he builds it on the basis of the views of many contemporary authors, at first place on Hayek in *"The Trend of economic thinking"* (Hayek, 1933). Through them he builds a *systematic* perception on the economy in which *the market* is the main organizing and coordinating mechanism, i.e. the price mechanism.[2]

The article, or more precisely, the concept of the firm, launched by Coase, generated interest, giving rise to complementary and competing explanations. On the one hand, this is the *Transaction cost economics* (TCE), formed by O. Williamson not just as a new field, but claiming to revive the institutional paradigm of Veblen in the form of neo-institutionalism. On its turn, the TCE became a basis for shaping new approaches in other social sciences, as in *Law and Economics*, etc. On the other hand, the paper unleashes all sorts of scientific search for alternative explanations for the existence of the firm – managerial, legal, networking, psychological ones etc.

Coase's approach is not less significant for filling up some of the major deficiencies of the dominant paradigm. For example, one of the main criticisms of neoclassical paradigm – the lack of institutional dimension, seemed overcome. And in addition, with no impairment to the integrity of the marginalist analysis. Although, this did not happen in fact; the Coase' concept, did not become an integral part of economics and did not merge with the intrinsic problems of microeconomics. It may be seen, rather as a supplement, as a component of the

[2] At one point, his quote of Hayek even approaches one of evolutionary principles – "[S]ociety becomes not an organization but an organism" (Coase, 1937, p. 387).

Industrial Economics. Just for example, in the lately became popular textbook of Mankiw (2011), Coase is present only in the *Private Solution to Externalities*, but not as a defining principle for the firms.

The greatest importance for the theory, on my opinion, has the fact that the concept is a consistent economic one, and moreover, it is within the framework of the dominant marginalist paradigm. Coase uses a single economic criterion – *marginal substitution*[3] (calling it Marshall's instrument), for the definition of the whole series of categories. Thus, the existence of the firm has been derived economically; it emerges because it organizes the allocation of resources more efficiently, with lower cost than the market. Accordingly, he provides the definition: "When the direction of resources (within the limits of the contract) becomes dependent on the buyer… a relationship which I term 'firm' may be obtained"(Coase, 1937, p. 392). Moreover, the figure of the entrepreneur is derived through the same criterion. "In the rest of this paper, I shall use the term *entrepreneur to refer* to the person or persons who, in a competitive system, take the place of the price mechanism in the direction of resources" (Coase, 1937, note 2 on p. 388).

The size of the firm is defined by the same logic – any activity could be included in, or excluded off, the firm (including the management *per se*) depending on the criterion, whether the marginal revenue is greater than or less than the marginal cost made for it (Coase, 1937, p. 394). *Combination* and *integration* are acts of, respectively, a *horizontal* and a *vertical* inclusion of activities, from one company to another or from the market to a firm (Coase, 1937, p. 397).

Through this consistent logic, Coase convincingly proves that the company needed to be determined by its function. That is precisely the economic, and not a sociological, philosophical or else definition of the company, and it makes the article sustainable, unlike other definitions, under which authors choose all sorts of other reasons[4] and then legitimately dispute them on each other.

3. Coase' Staging of the Problem

R. Coase raises a very important problem, the mechanism of allocation of resources in the firm is the opposite of that, which is constituted as a superiorly efficient by the logic of standard economic theory – the market, or *the price mechanism,* as he also calls it. Hence, if the basic principle of the neoclassical analysis is valid, the firm remains *undefined*, since its principle of allocation of resources simply should not exist.

[3] Factor A is being redistributed from use Y to use X until their marginal productivity equalize.

[4] Just to illustrate: "The (modern) firm is simply a specific community, currently legally positioned, that is formally registered, within the wider, typically national (or international), community, as an emergent sub-community of the latter, oriented to the collectively co-ordinated production of goods and/or services to be sold to others, in a way that is intended to be advantageous to (at least some of) the community members. It is normally the case that (at least some of) that advantage is interpreted as 'profit'.", (Lawson, 2015, p. 15). That definition is from a relatively recent paper, in which, the author not only exclude the criterion of Coase, but blamed him for not analyzing "the nature of the firm.

What actually happens, at this point of the analysis is, that Coase implicitly enters into a dispute with Hayek and his understanding of planning coordination in the economic system as imperfect, merely trying to do what is already done by the market mechanism. Coase confronts Hayek's view with the reality, pointing out numerous cases where conscious governance or economic planning is used for allocation of resources. He quotes aptly "we find islands of conscious power in this ocean of unconscious co-operation like lumps of butter, which coagulating in a pale of butter" (Coase, 1937, p. 388).

This is the key point in the article. Faced with non-compliance of the marginalist paradigm to the reality, he maintains the validity of marginal substitution principle, and rejects (more precisely modifies), Hayek's concept for the ineffectiveness of *planning mechanism*. Subjecting to doubt Hayek's understanding for the coordinating mechanism of the economic system, Coase actually *verifies the validity* of the principle of marginal substitution. As is well known, the principle is a key for neoclassical theory and is used for the derivation of market prices, motivation and direction of action of economic agents, the optimal size of production, etc. Coase assumes that it is acceptable also, for *defining the firm* as long as one suppose that *there exist certain types of costs*, which are not subject of minimization by the market.

4. Transaction Costs – the Great Contribution of Coase?

Coase accepts that costs exist, which are not subject of minimization by the market, simply because they originate from the latter. They are caused by transactions themselves, some are needed for surveying the prices, others – for execution of the contracts or – due to the incompleteness of contracts, especially the long-term ones, and those, where the contractual subject is the labor factor. Coase explains, fair enough, that the reason for *transaction costs* is not the presence or absence of a guaranteed, or residual income, neither the form of payment, nor the uncertainty, pointed out by Knight (1933). It is not even in the *distinct tax treatment* of the firm and the market, though he assumes that latter could boost the size of firms, once they emerged.

At the same time, Coase does not offer a detailed definition of those costs, and defines them in general, as *marketing* ones. Only subsequently, they are called *transaction costs* and their ever-expanding identification (not just in Williamson's works on *economics of transaction costs*), take alarming proportions.[5]

The main thing, Coase takes care of, is that "there is a cost of using the price mechanism" (Coase, 1937, p. 390), i.e. the market in itself amasses costs. And those costs are essential – they can be reduced, but not eliminated through the function of the market mechanism. Hence, it emerges an *economic* necessity of the firm, which can eliminate them by replacing the market with the administrative (planned, or so) allocation of the resources,

[5] Not surprisingly, Stanley Fisher says: 'Transaction costs have a well-deserved bad name as a theoretical device . . . [partly] because there is a suspicion that almost anything can be rationalized by invoking suitably specified transaction costs' (Fischer, 1977, p. 322, n. 5).

and these costs simply drop out. In this capacity, these costs already serve *to define the need of the firm.*

The firm can include in, or exclude off, each activity depending on the criterion – the marginal costs for it to be less than the marginal costs for the same activity, incurred by the market. This way, the function of the market for allocation of the resources is limited, it works only as much as to the extent where, the costs caused by the market itself, sustain their reduction when included in the firm. Coase connects the latter to the incoherency of marketing costs, which include some costs, organized cheaply by the market, and some – vice versa. This means that in his model of the economic system, part of the activities are to be carried out in the firm and a part on the market. The space here, does not allow to make a detailed critique of this thesis, but it is necessary to mention two weaknesses of the proposed solution.

5. Nature of the Firm-versus-Market Dilemma

First, I would like to attract the attention to the fact, that Coase assumes the *transaction* (or marketing) *costs* as belonging to the circulation, i.e. as expenses created and closed within the sphere of exchange. And that *contradicts* a basic principle of classical political economy. A principle adopted in the neoclassical paradigm as well, though implicitly. Namely, that the sphere of exchange could not, and should not, participate *in the creation of value*, nor in value adding.

Classical economists developed this principle as a reaction to the mercantilists' idea that the value is created only through the course of exchange deals, and the wealth increases only by the trade. Moreover, even the mercantilists realized that such an accumulation wouldn't have been possible *within* the national economies and therefore emphasized that their notion applies to foreign trade, which led to a policy of limiting exports of gold, the material embodiment of value. The theoretical development and application of this principle did not create difficulties to the classical economists, who directed their full attention to the sphere of production.

Otherwise stands the principle in the theories of neoclassical economists. Determination the price mathematically, as an intersection point of two functions – those of supply and of demand, turns the principle implicit for the paradigm. In all likelihood, that seems the reason for Coase to accept possibility for (part of the) costs of a good to be caused by both the production and exchange activities. A source for such mixture could still be grounded on the writings of classical economists, who assume that part of the productive operations might be completed in the sphere of circulation – cutting, packing, etc., but the paradigm assumes that this is a *continuation of the production process* in the circulation, and not an exception to the principle.

Albeit implicitly, the neoclassical doctrine also follows the same principle and assumes the execution of exchange deals done on an equivalent basis; the two trading agents also *exchange equivalents*, though they evaluate their utilities. The thing is that if, as a result from the exchange, one gets more utility than the other that would either bring to a

nonbreaking chain of exchange acts or, more likely, would make the exchange impossible. When Coase suppose that some of the costs emerge in the very exchange act, there are two logical options. Either one of the counteracting agents loses more than the other (seller for example), or alternatively – both agents pile up the same cost. In the first case one gets an inequivalent exchange and in the second one, it is pointless to account, or compare them. In both cases the exchange becomes pointless, since it is always cheaper to organize any production process directly. Hence, one gets a complete autarchy model in which each produces everything. Whichever answer is correct, it cannot be used as an explanation for the existence of firms, because it violates the principle of the equivalence of the exchange.

The second feature of the *firm-market* dilemma is also interesting. Ronald Coase treats the two sides as *alternatives*. The choice to apply one or the other mechanism for the allocation of resources is not a matter of decision, but of the action of the economic system. "Outside the firm, price movements direct production, which is co-ordinated through a series exchange transaction on the market. Within a firm, these transactions are eliminated and in place of complicated market structure with exchange transaction is substituted the entrepreneur – co-ordinator who directs production. It is clear that these are *alternative* methods of co-ordinating production. … It can be assumed, I think, that the distinguishing mark of the firm is supersession of the price mechanism "(Coase, 1937, pp. 388-389)

Thus, the economic structure or the structure of economic agents, or if one uses the language of *general theory of systems*, the structure of the elements of the economic system depends on the development of production, technology and organization. With the development of technology or organization, the structure needs change, and the size of its items increase. Coase proves that by provision the example of the invention of the telephone and the telegraph (Coase, 1937, p. 397). This leads to continuous growth in the size of firms making them, at the same time, more complex through the combination. This can be seen from the chart, he uses to illustrate how might be overcome the requirement for optimal volume of production, imposed by this same marginalist paradigm from which his own analysis originates.[6]

However, such an analysis shall imply the presence of a large number of separate, specialized and *preliminary* fragmented processes. So, the market mechanism is the preemptively postulated and omnipresent. Accordingly, a number of activities drop of it and pass to the firm. Some activities remain intact, as noted by Coase, because with the rise of the firm size, the number of incorrect management decisions also increases and "the returns of management" decrease. But generally, the activities coordinated by the market are constantly reduced. More or less, that would mean, that the economy turns itself into a big firm. And that it emerged from an infinitely dispersed and specialized state of the division of labor – a condition that barely corresponds with the economic history.

The space here does not allow to deploy a debate for an alternative explanation of the causes leading to the emergence of the firm nor to discuss the other problems with the neoclassical theoretical paradigm raised by the theoretical solution of Ronald Coase. So, the

[6] A different issue is that this analysis suggests continuous expansion of the product structure, i.e. the combination as the predominant mechanism for competition, and underestimates the division of labor and specialization.

paper restrains to uncovering some of controversies associated with the concept of transaction costs.

6. Conclusion

The article "The nature of the firm" by Ronald Coase deals with the undoubtedly exclusive in nature and importance problem of verification of marginalist economic paradigm. The clear logic, consistent economic analysis and the originality of the decision do not accidentally inspire, already 80 years, scientific debate in several fields of economics. Debate that does not fade, but becomes more lively and continually promotes new, different approaches. Among many other reasons, this is also due to *internal contradictions* in the very concept of transaction costs offered by the author, as a solution to the problem.

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Yanica Dimitrova[1]

CHARACTERISTICS OF SUCCESSFUL COMPANY IN THE MODERN BUSINESS ENVIRONMENT

The company of the 21st century exists in a business environment characterized by a high degree of uncertainty that implies both opportunities and challenges. An essential condition for sustainable competitors is its functioning as a social enterprise, whose basic parameters are related to the management of the relationships with the stakeholders, the brand, the increase of employees' commitment as well as their retention, emphasis on authentic leadership and networking, corporate culture. Above mentioned must be in the context of a clear understanding and action consistent with continual change and adaptation. The sustainability of strategies and good organizational practices must become an essential element of the corporate mission of the successful 21st-century company.
JEL: M14

The findings of the Global Human Capital Trends 2018 report define the modern company as a combination of a "team of teams, which is also focused on the relationship with and in the business ecosystem in which it operates. The successful organization cleverly maintains a balance between the internal and external environment. This type of organization coordinates its overall activity through corporate culture. An essential requirement for modern organizations is to implement ethical and socially responsible policies by contributing to sustainable development (United Nations, 1987). Consequently, the modern company should be sensitive to the requirements of the environment, to the needs of the stakeholders, adaptable and at the same time functioning as a socially responsible and implementing good policies and practices with a clear understanding of their sustainability. A company whose profile corresponds to the above is defined as a "social enterprise".[2] The social enterprise carries out its activity as a corporate citizen, and for that purpose, it needs to have characteristics that emphasize both "hard" and "soft" factors for successful

[1] *Yanica Dimitrova, Associate Professor, PhD, University of Library Studies and Information Technologies, mobile: 359 887 429746, e-mail: janicadimitrova@abv.bg.*

[2] "A social enterprise is an organization whose mission combines revenue growth and profit making with the need to respect and support its environment and stakeholder network….It is an organization that shoulders its responsibility to be good citizen…serving as a role model for its peers and promoting high degree of collaboration at every level of the organization (Global Human Capital, 2018, p. 2).

management of tangible and intangible resources to help maintain and enhance competitiveness.

The characteristics of a successful company of the 21st century can be briefly formulated in the paradigm of the relationship between corporate culture, strategy, and structure, leadership, corporate communications, relationship manager management, acceptance of the philosophy and CSR principles and the implementation of actions following them.

The challenge for today's companies is the high level of uncertainty in the business environment, which implies adopting the idea of the continuity of change. The company must improve the possibilities of redefining the existing and generating new strategies and tactics, the creation and operation by new business models, constant monitoring and measurement – the performance, the effectiveness of the decisions made, etc. A key component for the success of the company is the ability to manage the risks and problems that need to be transformed in top priority for leaders. For this purpose, one of the possibilities of the modern company is to function as ambidextrous. Ambidexterity is a manifestation of the organization in the context of the continuous dynamics, the uncertainty and the complexity of the environment in which it operates. O'Reilly and Tusheman's definition of ambiguity in organizational conditions defines it as the ability to pursue incremental and radical innovation simultaneously... through multi-faceted, different structures, processes, and cultures applied in the same company (Tushman and O'Reilly,1996, p. 24). Some studies indicate that ambiguity has a positive correlation with the company's competitiveness (Simsek et al. 2009; McGrath, 2001). Ambidexterity is defined with open innovation. The process of "opening" requires a change in strategy, eliminating organization constraints – clear communication policy, understanding the importance of internal and external communication, and their integration. These processes are associated with a change in organizational design and corporate culture. Ambidexterity is not only associated with the innovation and efficiency pursued by the company, or with its competitiveness in different markets; it helps the company to create and develop opportunities to increase its ability to compete in new markets as well as to introduce technologies, allowing the company to survive successfully (O'Reilly & Tushman, 2008). Last but not least, it is important to note that the corporate culture and identity of the organization are one of the essential strategic options that help maintain ambidexterity in the organization (Goia, Patvardhan, Hamilton & Corley, 2013; Chatman, Caldwell, O'Reilly & Doerr, 2013; Schultz and Hernes, 2013).

Corporate culture is a prerequisite for the successful existence of any organization to maintain and enhance its competitive edge. To foster the organization's successful presence in the turbulent business environment, it needs to be adaptive, supporting multiple organizational formats that exist in the social networking organization. Corporate culture needs to shape an environment that ensures the maximization of human potential – development, empowerment, exchange of information, communication, cooperation. The culture of the organization is defeated and determined by its leaders. Modern leaders are increasingly expected to understand, manage, be responsible for maintaining relationships with all groups of stakeholders, and apply an integrated approach to organizational capital management. They must have the skills to lead teams, projects, team networks. The new management style increasingly requires the ability to build and manage teams, to master

and apply coaching skills, to encourage engagement and inspiration for employees. The high level of communication competence, emotional and social intelligence, negotiation skills, conflict resolution, and systemic thinking are the basis of successful leadership in the 21st century. Leaders of modern organizations must be sensitive to multi-voice – inside and outside the organization, with which to capture trends and act proactively. With the presumption that the organization must function primarily as a network – from information exchange relationships (which means the abolition of the so- silos) based on knowledge management (internally and externally), focused on generating and implementing innovations. Adoption and action in line with the values of the culture of innovation ensure to a large extent the commitment of the employees, the attraction and the retention of the clients. Successful leaders are those who succeed in discovering the talents and skills of employees, helping them develop and implement them – through adequate training and career opportunities, and later career development; to be able to promote their leadership skills by motivating them to work together to build a successful sustainable business. Mentioned requires companies to focus on creating and managing a leadership culture that focuses on empowerment, delegation, knowledge and talent management, creativity, risk-taking, identifying and improving leadership qualities that help develop leaders of the future. According to data published at Edelman Trust Barometer 2018, business leaders have a higher degree of confidence than governments, pointing to the importance of a modern company as a corporate citizen. Leaders are expected to initiate and implement changes that have a broader scale and affect not only the stakeholder groups within the organization's microenvironment, but they also have a growing public influence. In countries where the level of trust is stable or rising, companies have to invest in opening new jobs and increasing the competitiveness of employees. In countries where confidence levels are low, expectations for business are associated with increased security and customer rights and data protection. Leaders should act as facilitators of the relationship between the organization, create sustainable partnerships with different types of organizations and institutions to make them equal actors in the processes of public communities and societies. The challenge here remains in the possibilities of identifying and subsequently solving the problems of individuals and groups of stakeholders in the context of ever-increasing diversity.

Leaders, in the environment, characterized by a high degree of uncertainty and ambiguity, must also cope with resolving resource constraints. In the context of this, creativity, realization and implementation of innovation, the application of open innovation strategies is becoming increasingly important to overcome resource constraints, overcome weaknesses and support successful corporate development.

Organizations are no longer static formations but exist as dynamic communities constructed by the joint efforts of all of their key stakeholders (Aggerholm et al., 2011; Cheney et al., 2004). Communication becomes essential for the construction and co-building of the organization in the context of ongoing interactive dialogues and debates with and between the stakeholders (Aggerholm et al., 2011; Deetz, 2003b; Alvesson and Karreman, 2000). It is, therefore, necessary to be aware, both from the leaders and other members of the organization, of the essential importance of the organization's communications. Through them, the network of relationships in which the company is incorporated must be managed, so that the maximum number of prospects is captured and integrated.

In the network organization, responsibility is binding and must be fully transparent. Clear financial indicators and results, customer and employee satisfaction, employee representation should be open. We must not forget the growing number of professionals working as freelancers, which is also a challenge for redefining corporate culture, optimizing communication to manage relationships with them, and maximizing the level of satisfaction for all stakeholders.

Organizations are increasingly digitizing, artificial intelligence, machine learning is becoming an integral part of organizational life. There is a growing need to integrate people and technology, which is becoming a multidisciplinary task. In modern organizations, technology needs to be skillfully used to increase collaboration and facilitate employees, not to replace them. Suggested emphasizes the need to redesign the organization, specific business activities, maximize communication ease, and use online communication channels by introducing more and more tools such as Facebook's Workplace, Slack, Google Team Drives, Atlassian Confluence, Microsoft Skype, etc. Mentioned above means to facilitate learning and learning processes, prevention of information overload, and maintaining the ever more delicate balance between personal and business life. Promoting networking and collaboration by creating business and social networks that exist thanks to various forms and channels of communication; information sharing, sustainability must be critical priorities for the management of modern organizations. In the context of what has been said, the management of large databases and cybersecurity is becoming a priority. Adding value to organizations must harmonize with all of the above. The amount of most companies is growing in recognition of the importance of "invisible" values. In 2020, companies represented on the UK Stock Exchange will form 60-65% of their wealth through "intangible values", soft skills and relationships with the stakeholders (Management 2020, 2014, p. 34). Therefore, for organizations, it is critical to identify new constructs for creating value propositions and increasing employee engagement. Creating value for all stakeholders, including employees, should become an integral component of the sustainable business model of today's organizations.

One of the most important groups of stakeholders in each company is its employees. To a great extent, it is up to them to maintain relationships with external groups of stakeholders – clients, suppliers, the local community. Today, more and more companies offer similar working conditions, pay and social packages. How is it possible to retain competent staff and attract new ones? Potential and current employees are actively seeking information about companies, the products, and the services they offer, and the policies they are implementing. Suggested requires a high level of transparency as well as competence in the design and implementation of communication programs. Mentioned is directly related to employee brand management, talent management, increasing engagement with the organization, and hence translating them to external waiters, In the context of globalization, increasing labor mobility opportunities, it is necessary to discover a holistic approach to motivation, to strengthen the employees' brand, to enhance their welfare – regarding improvement, development, social benefits, the possibility of adequate rest. The traditional understanding of career and career growth has also changed – flexibility, continuous learning, creativity – are essential conditions for employee development.

The employee brand is increasingly defined as a process of continuous communication and building a sustainable relationship between the organization, and it's current and future employees in the context of the internalization of CSR principles. Organizations must have a socially responsible approach to their employees – to identify what they/employees appreciate as crucial for their development and to maintain a healthy balance and to include them in human capital management programs as an essential element of the employees' brand. Surveys indicate that CSR initiatives by companies increase employee identification (Aggerholm et al., 2011; Scott, 2001). The employees' brand is also an essential indicator of the company's value and a component in managing relationships not only with internal but also with external stakeholder groups.

The image of the company as an employer is also important in attracting and retaining employees who will share the values that define the corporate culture and will devote themselves to the realization of its strategies. The communication programs, the communication channels used and the overall presentation of the organization are useful tools governing the corporate brand, the lions and the reputation of the company.

The communications of the organization, it's corporate branding, reputation and activities, in the context of the concept of Corporate Social Responsibility, should be taken into account when designing and implementing the various strategies in the organization. Mentioned poses some of the challenges to the authenticity and consistency of organizations such as brands, which requires a high degree of harmonization between organizational reality and the communications of policies and actions transmitted through the tools of corporate PR. The core of this is the internalization of values that are aligned with social responsibility and sustainability in the company's strategies and related actions. Through the skillful management of the company's "invisible values", the corporate brand will function as unique and easily recognizable, for belonging to the organization by internal stakeholders, which in turn will help increase the confidence of other key audiences. CSR-compliant business activities will be perceived as authentic and trustworthy.

The actions, in line with the CSR postulates and their communication, are reflected in the positive image of corporate reputation and hence in competitiveness because the company maintains the confidence of the stakeholders that it is committed to applying good practices. The values associated with CSR must be an integral part of corporate culture and the fundamental postulate of the corporate mission. The integration of CSR into the overall business of a company must be a strategic goal of any company that exists in reality and is perceived as having an ethical identity of a social enterprise.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Bozhidar I. Hadzhiev[1]
Valentina Nikolova-Alexieva[2]
Iva T. Bachvarova[3]

CREATING THE CONDITIONS FOR BROADBAND BUSINESS ENTREPRENEURSHIP TO ENSURE LASTING SUCCESS FOR THE BULGARIAN SOCIETY

The theory and practice of broadband entrepreneurship is a fact, already. As stated in some research, "...In the modern world of business, entrepreneurship is becoming increasingly broadband and affects the creation of changes in every business space, at every level in every industrial and territorial dimension". This is entrepreneurship driven by broadband shopping of goods and services, instant communications, negotiations and orders. It is based on the ideas of Complex Reengineering theory, the three-star model and the seven concepts of this theory.
This study focuses on opportunities to create broadband business opportunities. An attempt is made to reveal the underlying factors for creating these conditions. The main purpose of this study is to analyze the factors for creating conditions for broadband business entrepreneurship in order to draw attention to the opportunities for achieving lasting success for the Bulgarian society.
JEL: L26; L81; L87

Introduction

A growing number of reports and studies recognize the key role that digital technologies can play in improving the business landscape across the world. It provides an opportunity for both developed and less developed countries to achieve sustainable growth and to create decent jobs and thereby to contribute to the achievement of the sustainable development goals. Broadband entrepreneurship can strongly contribute to reduce poverty and create prosperity and livelihoods and digital entrepreneurs can reap the benefits of the global market. Young people can develop their capacity to build start-ups and innovative community initiatives by using digital technologies as a support. Digitalization can also

[1]*Bozhidar I. Hadzhiev, Professor, Dr. Sc (Econ) at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria, e-mail: cei@abv.bg.*
[2] *Valentina Nikolova-Alexieva, Associate Prof., PhD at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria.*
[3] *Iva T. Bachvarova, PhD student at Department of Industrial Business and Management, University of Food Technologies – Plovdiv, Bulgaria.*

create opportunities in sectors such as cultural and creative industries which employ proportionately greater numbers of young people and women.

Digital hubs and scalable digital services and products are emerging in developing countries. In addition to creating growth and jobs they serve as a way to address local problems using digital means. Broadband entrepreneurship is driven by so-called "frugal innovation", meaning design of products and services that are affordable and durable, without having a focus on sophistication.

Nevertheless, analysis shows that businesses – and SMEs in particular – often struggle with digital developments. Barriers to cross-border trade, regulatory and administrative burdens, insufficient access to finance and digital skills in the workforce. Removing intermediaries, matching employers with their future employees, providing online education, adapting the educational material, giving people their first physical address and their first bank account are just a few of the areas that digital entrepreneurs have to address. In order to build innovation ecosystems, a number of measures are necessary.

Developing and applying the theory of complex re-engineering (CR) prof. Hadzhiev (1996; 2001; 2017) notices the emergence of a new technology related to the philosophy, goals and concepts of CR – **broadband entrepreneurship**. According to him, this technology predetermines the new nature of business management effort and becomes a useful tool for each of the CR concepts, especially the concept of developing and implementing business and/or corporate business models. As known, the concept of developing and implementing business and/or enterprise business models is based on the three-tier model (Diagnostic Model, Change Orientation Model, and Strategic Change Model).

Literature Review

Broadband entrepreneurship is presented as an integrated entrepreneurship that can be applied in any field (competition, value innovation, divergence, convergence). It builds on classical entrepreneurship, building on the theory of prudent process management and CR theory. It is connected with rethinking, redesigning and perfecting complex business engineering. As prof. Hadzhiev stated in the publication of Broadband Entrepreneurship "...there is a question of complex engineering of the main desires, processes, needs, information, products and services in a given sector, providing benefits for business, nature and society". Technology is a particular type of management effort that continually extends every sector, every kind of entrepreneurship by discovering and acquiring knowledge, provoking new behavior through the prism of natural laws and natural processes, human psyche and artificial intelligence. Knowledge about broadband entrepreneurship is becoming an independent high-weight variable for the gaming business area. According prof. Hadzhiev reengineering tools in the gaming business field for enterprise expansion are as follow:

- developing and implementing algorithms for synergy and achieve synergistic effects of different levels: global, international, national, industrial, sector, inter-sector, corporate, intercompany;

- developing and implementation of algorithms for re-engineering the economic and the corporate culture;
- developing and implementation of algorithms for instant orders and for immediate conclusion of transactions;
- developing algorithms for innovation and innovation management at different levels: global, international, national, industrial, sectoral, cross-sectoral, business, intercompany;
- development and implementation of algorithms for broadband shopping in the sector providing merger of wholesale and retail;
- development and implementation of algorithms for the design of artificial intelligence useful for automation and robotic proceedings and businesses in sectoral and cross-sectoral processes (robots with no artificial intelligence are a pile of iron);
- development of algorithms for the implementation of both classical reengineering methods, systems, technologies and standards, as well as the systems SIX-SIGMA, CROSS SELING 1R, MANAGEMENT 3.0 (looks at management and marketing as an upgrade to the industrial era 1.0, that of the Information Age 2.0 based on values as a driver of modern development), AGILE (a series of methodologies in conducting modern dynamic processes), SKREEM (quick process framework for changes), KANBAN (processes for gradual improvements), TEAL (a method of attracting money and neglecting material assets as something shameful), RADICAL MANAGEMENT (the starting point is an organizational culture based on the friendly communication between management and employees and the understanding that the starting point for the business is satisfying customer and all involved in the business process), TQM, GS1 and etc;
- establish and implement algorithms by copying natural processes for solving specific technology and business problems;
- establishment and implementation of algorithms for protection of the environment;
- development and implementation of algorithms to reduce food dependency and the growing desire for comfort.

Broadband entrepreneurship can also be seen as multi-lingual entrepreneurship when entrepreneurial activity is differentiated into different lanes/areas. Broadband is believed to increase the revenue potential for entrepreneurs, as well as reduce the costs of obtaining external resources. As potential entrepreneurial earnings increases, entrepreneurship becomes more attractive.The level of entrepreneurship should therefore rise. **Three main reasons** for increased potential earnings are presented below:

Broadband and Market Access : the increased diffusion of broadband and internet usage will enable entrepreneurs to "efficiently expose their companies, market and sell their products and services to a wider audience than they would have been able to afford to reach using the traditional methods" (Lawrence, Tar, 2011, p. 101-119). For example, broadband

enables activities such as e-commerce, through which retailers can reach customers in a much wider geographic area than through physical stores (Atasoy, 2011, p. 234). The market potential therefore increases significantly for entrepreneurs with access to broadband. Numerous studies have verified the impact of market potential on entrepreneurship. Berry and Reiss claimed that thresholds exist to the regional population size for which firms establish themselves as going concerns. Also, they argued for a positive relationship between population size and firm entry rate. Sato et al. verified the prevalence of this relationship as they found that an increase in population density by 10% raises the number of individuals intending to become entrepreneurs by approximately 1%.

Broadband and Transaction Costs: increased internet usage allows for the establishment of an "effective inter-business collaboration" (Hsieh, Lin, 1998, p. 113-118). As small firms often suffer from limitations in various types of resources, broadband can reduce the transaction costs involved in obtaining these resources externally. According to Williamson (1985, p. 269-296; 1991), transaction costs stem from asset specificity, information asymmetry, and opportunism. Based on this widely accepted theory, other scholars have argued that the increased prevalence of broadband and internet could reduce these factors, hence lower the transaction costs. Afuah (2003, p. 34-53) argued that asset specificity, defined as the "degree to which an asset can be redeployed to alternate uses and by alternate users without sacrifice of productive value" is affected in three ways by increased internet usage. *First*, internet could facilitate low-cost information exchange about the asset and its value to other potential owners. *Second*, it reduces the site-specificity of assets as firms can exchange large quantities of information without actual physical interactions, reducing the dependency of geographic proximity to counterparts. *Third,* internet reduces the specificity of some information technology related assets by replacing them with its more standardized technology. Increased broadband and internet access also reduces information asymmetries (Wallace, 2004) by facilitating access to market prices through, for example, search engines and price-comparison websites (Brynjolfsson, Smith, 2001, p. 541-558). Costs of monitoring and enforcement can also be reduced, as information on and reputation of the potential counterpart becomes more accessible (Brews, Tucci, 2004, p. 429-451). In line with the theories of Coase (1937, p. 386-406), these developments should lower the optimal size of a firm. As transactions can be more efficiently handled through market exchange, the incentive for firms to internalize transactions diminishes. Lower transaction costs could thus indirectly increase the market potential for entrepreneurs, as potential customers become more inclined to purchase goods and services externally, as well as directly lower the costs for entrepreneurs to obtain resources externally.

Broadband and Entrepreneurial Opportunities: the potential earnings as an entrepreneur could also be positively impacted by new opportunities that arise due to widespread broadband access. Baumol (1986) expressed a view of entrepreneurship as individuals responding to opportunities for new products that arise due to technological progress. Eckhardt and Shane (2003, p. 333-349) viewed changes in supply and demand as one way to categorize how these opportunities occur. On the supply side, Schumpeter identified five sources of opportunities including changes in the ways of organizing, new products or services, and new production processes. Exogenous shifts in demand factors such as perception and taste could similarly act as sources of opportunities. Afuah

exemplifies this with internet replacing proprietary communication networks such as Electronic Data Interchange (EDI), in which only network members could exchange information. For example, if a supplier wanted to cooperate and communicate with a new retailer, the supplier had to invest in new EDI equipment in order to access the network specific to the retailer. With the introduction of internet, the supplier could use the same equipment for all relationships. Scholars have further argued that incumbent corporations and organizations might not automatically respond to these opportunities, for example due to uncertainties about the value of new knowledge, information asymmetries and discrepancies between the new idea and core competencies. This would consequently leave room for entrepreneurial exploits. In accordance with Carree et al. who claimed that "[t]echnological change may be the most significant determinant of expanded entrepreneurial opportunities in the late twentieth and early twenty-first century" (Carree, Thurik, van Stel, Wennekers, 2010, p. 167-237), our belief is that increased diffusion of broadband will allow for new entrepreneurial opportunities to arise. These could either be supply-oriented, for example through new ways of using the internet for organizational purposes, or demand-oriented, as consumers demand more IT-solutions.

Increased broadband penetration can also be expected to facilitate the discovery of new opportunities. Heger et al. argued that broadband access reduces proximity not only to customers, but also to "knowledge incubators", such as universities, other institutions, and, in particular, local business communities. According to Harhoff, these networks facilitate entrepreneurial activities through "knowledge spillovers", especially in technology-intensive industries. This line of reasoning is supported by scholars such as Christensen and Peterson, who argued that encounters between an individual and his network are important sources of new ideas.

To clarify the impact of broadband penetration on entrepreneurial risks, we will discuss **how broadband affects** new firm survival:

A. Impact on Entrepreneurial Risks: Based on the many empirical studies conducted in this field (Wallace, 2004; Berry, 2007), two variables, market positioning and financing, are believed to be of particular importance. As entry into an industry often entails investments (Porter, 1979, p. 137-146; Porter, 2001, p. 62-78), entrepreneurs are likely to lack the capital for these relative to larger firms. As support for this hypothesis. White found that small businesses are more present in industries with low capital to labor ratios. As entrepreneurs therefore tend to be more dependent on financing, this factor might pose a significant obstacle for survival. Bates (1997) found that American males who became self -employed between 1976 and 1982 and received above-average rates of financing were less likely to exit than their counterparts. Similar results have been found by Taylor (1996, p. 253). As internet has made business activities more digitalized and less capital intensive (Porter, 2001; Parker, 2004), the need for financing investments has reduced and the risk of entrepreneurship has consequently decreased. Furthermore, scholars have argued that firms having a dynamic or diversified product range as a result of, for example, re-positioning in the event of market changes that creates new niches, increases the chance of entrepreneurial survival. Brüderl et al. found supporting results (Brüderl, Preisendörfer, Ziegler, 1992, p. 227) showing that survival rates were higher for firms with national rather than local

market coverage. As broadband increases "firms' ability to move more quickly from idea to product"[4] as well as to reach a wider market, entrepreneurial survival rates should increase.

Given that broadband has a positive impact on new firm survival rates, the risk associated with entrepreneurial activities is expected to have decreased, making entrepreneurship a more attractive alternative relative employment.

B. Impact on Expected Employment Earnings and Risks – There have historically been doubts as to whether information and communications technologies (ICT) impact productivity. Scholars have discussed the "productivity paradox", classically described by Robert Solow as, "[y]ou can see the computer age everywhere but in the productivity statistics" (Solow, 1987, p. 36). In recent years, increasing evidence have been found on the positive effects of ICT on productivity (Bosworth and Triplett, 2003; Carare et al., 2009; Hadzhiev, 2017).

One could therefore expect some of the increased productivity to be captured by higher wages, increasing expected employment earnings. Scholars such as Gillet et al. (2006) and Kolko (2010) have tried to prove this hypothesis empirically but found no significant evidence of it to be true. According to Kolko (2010), this could be due to flexible labor markets in the sense that immigration of workers keeps wages from rising. Broadband could also be argued to impact some determinants of employment risk, for example by substituting some labor functions and by increasing labor market efficiencies through increased use of e -recruiting. However, due to the lack of research in this field, it becomes difficult to assess the net impact. Despite the results from prior studies, one might suspect that increased broadband penetration increases the risk-weighted wages as a consequence of productivity increases. In particular, the argument by Kolko is not fully convincing in a cross-country setting where labor migration between countries is more restricted.

C. Potential Lagged Effect of Broadband -One might suspect there to be a time-lag before a given increase in the number of broadband subscriptions is reflected in higher levels of entrepreneurship. It could be argued that individuals must pass through a process of "organizational emergence", which consists of activities such as preparing a plan or buying or renting facilities, before they start their business. Few prior empirical studies on the economic effects of broadband have however used lagged variables for other reasons than to correct for reverse causality. Kolko (2012) investigated the possibility of an impact from broadband expansion 1992-1999 on employment growth 1999-2006 and found no significant results, concluding that there are no long lags in the relationship. Czernich et al. (2011, p. 505-532) also use time-lags of their independent variable, but conclude that most of the effect of broadband on economic growth occur contemporaneously.

As can be concluded from the discussion above, increased broadband penetration is believed to be reflected in significantly higher entrepreneurial earnings, as well as lower entrepreneurial risks. While broadband could also potentially raise the risk-weighted employment earnings through increases in productivity, these increases are expected to be significantly lower. Although the magnitudes of our arguments have not been quantified,

[4] OECD. Broadband and the Economy: Ministerial Background Report. Prepared for the OECD Ministerial Meeting on the Future of the Internet Economy. Seoul:17-18 June 2008, p. 11.

this is to be expected given the many more channels through which broadband penetration increases the utility of entrepreneurship. Thus**, our hypothesis** *is that increased broadband penetration has a significant and positive impact on the utility differential*. This would make entrepreneurship a more attractive alternative for many individuals, and should therefore result in a higher number of new business registrations.

Based on the above understandings, we *set out to identify them the main factors for creating the conditions for implementation of the tools of broadband entrepreneurship*, to analyze these factors in order to draw attention to the opportunities for achieving lasting success for the Bulgarian society.

Research Methodology

The aim of the authors' own research was to identify and analyze the impact of digital entrepreneurship in small, medium-sized and large enterprises conducting business activity in Bulgarian enterprises. The survey used purposive sampling. It was conducted in XI and XII of 2017 on a group of 176 enterprises classified, according to the size of employment, as small, medium-sized and large enterprises. Stratified sampling was used to select the enterprises from the food industry, the financial sector, retail, tourism, heavy and light industry. In this case we sent an e-mail to the membership of Bulgarian Chamber of Commerce and Confederation of the Employers and Industrialists in Bulgaria – CEIBG invited them to participate in the survey. A stratified random sample was a useful blend of randomization and categorization, which enabled both a quantitative and qualitative process of study to be undertaken. A survey questionnaire was addressed both to production companies and services companies. The size of the research sample certainly allows the authors to draw initial conclusions and identify regularities that can be verified during the proper studies. The results presented below are only a fragment of the empirical studies conducted. The dominating group among the enterprises surveyed comprised small companies employing from 10 to 49 people, which accounted for 74% of all the companies surveyed (Figure 1).The second dominating group comprised medium-sized enterprises employing from 50 to 249 people, which accounted for 17% of all the enterprises surveyed, whereas 9% of those surveyed were large enterprises, employing over 250 people. The largest group of enterprises, representing 68.5%, has operated on the market for over 10 years; 21.4% of enterprises declared functioning on the market for 5 to 10 years, whereas the remaining companies have conducted their business activity for a year to 5 years. The enterprises surveyed did not include companies entering the market, i.e. those functioning for a period shorter than1 year. Among the enterprises surveyed, almost 63% declared good current financial condition, and over 26.3% assessed their financial condition as very good. Only 1% of all the respondents assessed their current financial situation as very poor or poor.

Figure 1
Distribution the respondents by size of the companies

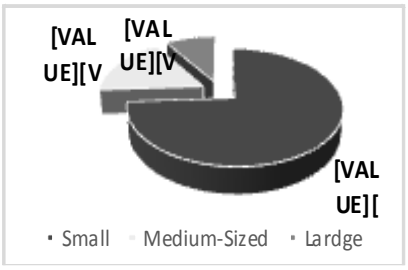


Figure 2
Distribution the respondents by sex

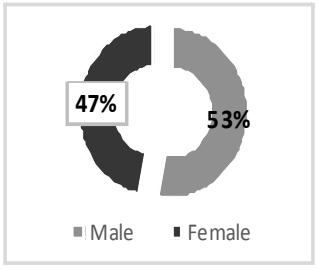
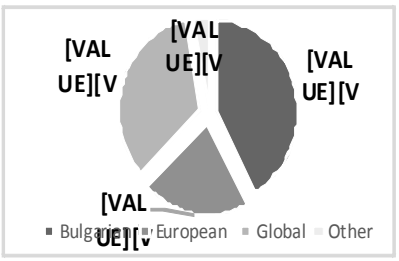


Figure 3
Market orientation



53% of men and 47% of women participated in the study (fig. 2). The presented companies have a different market orientation (fig. 3) – 42% work on the Bulgarian market, 34% on the Global market and 21% on the European market.

Factor analysis was used in this study to measure the validity of the instrument. The questionnaire was designed on a ten point Scale which ranged from 1 to 10 point, where 1 means the very low evaluation, and 10 – very high evaluation. The factors that have been investigated are grouped into separate groups as follows: **Group „A“** – the availability of appropriate infrastructure for active and passive entrepreneurial subjects respectively; **Group „B“ –** knowledge of the relevant market players**; Group „C“ –** the potential to meet business requirements in the relevant market area; **Group „D“** – potential for marketing and financial evaluation of the respective business activity; **Group „E“** – opportunities to rethink the business. Each group includes specific factors that are rated by the respondents on a scale of 1 to 10 (see Table 1).

Table 1

Systematization of the surveyed factors by specific groups

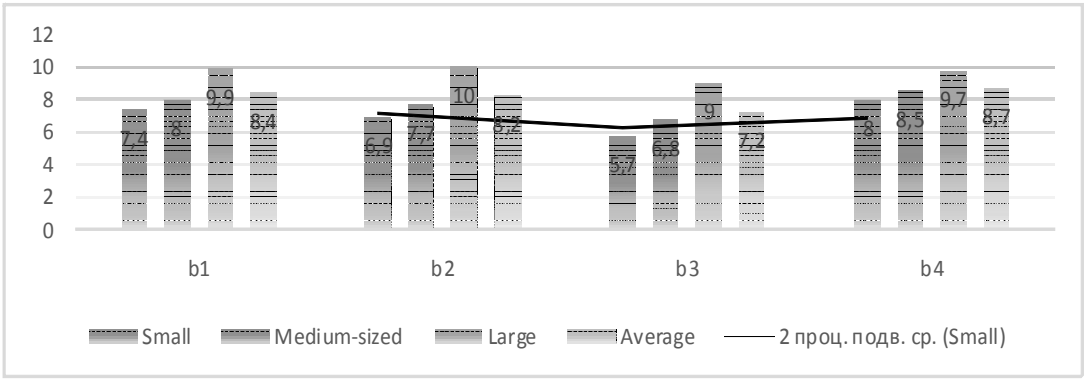
Group	Composite factors
„A“	***-a1*** *– availability of appropriate digital infrastructure* ***-a2*** *– assessment of the development of the productive forces at the destination of the subject and the concentration of production (coefficient of localization)* ***-a3*** *– concentration of consumption at the destination of the subject* ***- a4*** *– stage of development of scientific and technical progress and innovation activity*
„B“	***-b1****-an assessment of the market's need for the relevant business activity of the subject* ***-b2****- assessment of knowledge about the specific features of the market and marketing* ***-b3****- structure of the market share of competitors in the sector* ***-b4****- knowledge's degree of the legal and political factors affecting the market*
„C“	***-c1*** *– the potential of the subject to meet the political and legal requirements for the business concerned* ***-c2*** *– fulfillment of economic requirements related to the business concerned* ***-c3*** *– fulfillment of currency-financial requirements* ***-c4*** *– fulfillment of social requirements* ***-c5*** *– human resources organization* ***-c6*** *– preparation and implementation of innovative, manufacturing, transport, insurance, forwarding and others activities*
„D“	***-d1*** *– marketing knowledge is recommended for the "Logistic model Service Quality"* ***-d2*** *– for the financial evaluation of the respective business activity is recommended evaluation of structure, accessibility, volume and speed use of capital for the relevant business activity;*
„E“	***-e1*** *– the nature and type of business processes;* ***-e2*** *– the nature and type of business communications;* ***-e3*** *– the nature and type of business negotiations;* ***-e4*** *– investment interventions (for SMEs surveyed, low-performance indicators are for circular economy, GS1, artificial intelligence, information networks and applications, robotics, industry 4.0, intelligent technologies, synergy);* ***-e5*** *– interventions to reconsider approaches and exit systems markets (for SMEs surveyed low-performance indicators are for mergers and acquisitions, sales channels, transnationalization, public-private partnerships, cutting-edge technologies and innovation / technological, product, financial/).*

The scale for measuring and evaluating the indicators on the above-mentioned factors is multidimensional with an ordered structure. The possible average value of the indicators is 50. The averaged assessment of the indicators for the surveyed SMEs is 23 and for the large companies surveyed is 38.

The results of the Group „A“Factors rating are shown in Figure 4. It is noted that the factors **a1** and **a4** are the least appreciated from the three types of enterprises. The highest average score is given on factor **a2** (8), large companies give the highest scores averaged estimates of factors **α2** (8.9) and **α3** (7.3).

Figure 4

Assessment of Group "A" Factors

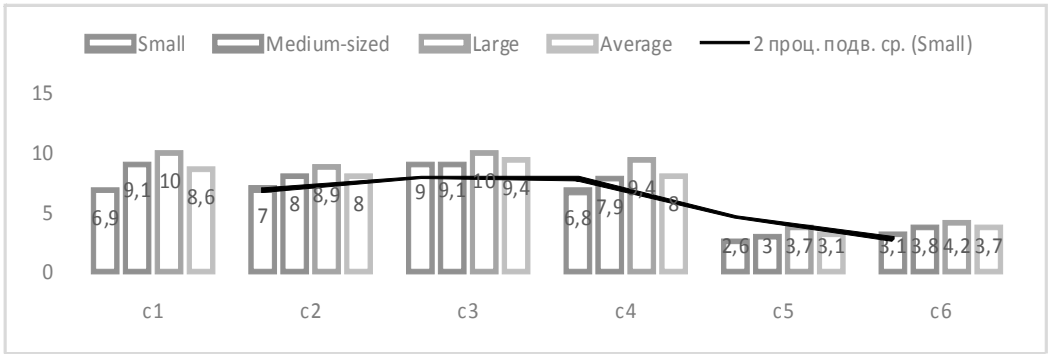


Source: Own Field Survey, 2017.

The results of the Group „B"Factors rating are shown in Figure 5. It is noted that the factor **b3** is the least appreciated from the three types of enterprises. The highest average score is given on factor **b4** (8.7), large companies give the highest scores averaged estimates of factors **b2** (10) and **b1** (9.9).

Figure 5

Assessment of Group "B" Factors

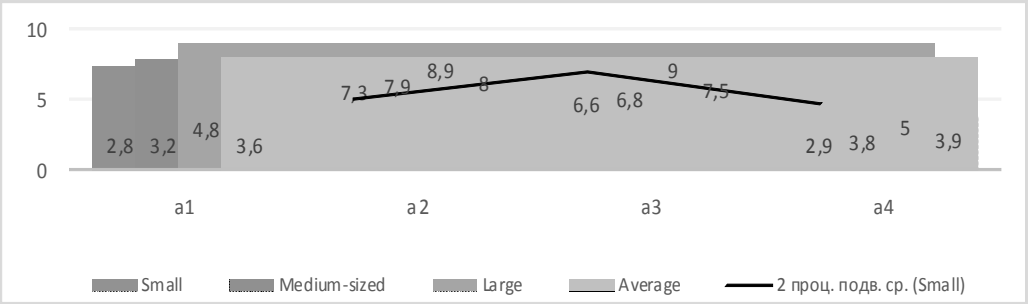


Source: Own Field Survey, 2017.

In the assessment of the Group „C"Factors (see Figure 6), it is noted that the factors with the lowest average aggregate rating are **c5** (3.1) and c6 (3.7). The highest average score is given on factor **c3** (9.4), large companies give the highest scores averaged estimates of factors **c1** (10), **c3** (10) and **c4** (9.4).

Figure 6

Assessment of Group "C" Factors

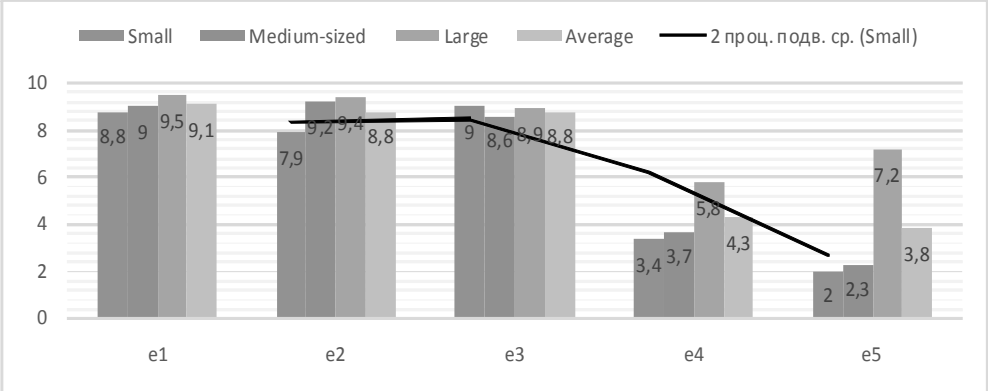


Source: Own Field Survey, 2017.

The results of the Group „D"Factors rating are shown in Figure 7. It is noted that the factor d1 is the least appreciated from the three types of enterprises. The highest average score is given on factor **d2** (8.3), large companies give the highest scores averaged estimates of factor **d2** (9.4), compared to the other representatives of small and medium-sized enterprises – respectively (7.3) and (8.2).

Figure 7

Assessment of Group "D" Factors



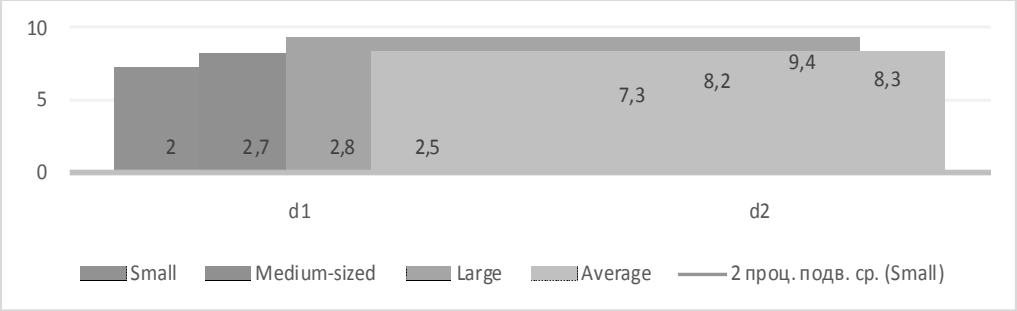
Source: Own Field Survey, 2017.

In the assessment of the **Group „E"** Factors (see Figure 8), it is noted that the factors with the lowest average aggregate rating are **e5** (3.8) and **e4** (4.3). The highest average score is given on factor **e1** (9.1), followed by **e2** and **e3**, which receive the same score – 8,8. It is

noted that large enterprises give a relatively high individual estimate of factor **e5** (7.2), as opposed to low individual ratings of SME representatives – respectively (2) and (2.3).

Figure 8

Assessment of Group "E" Factors

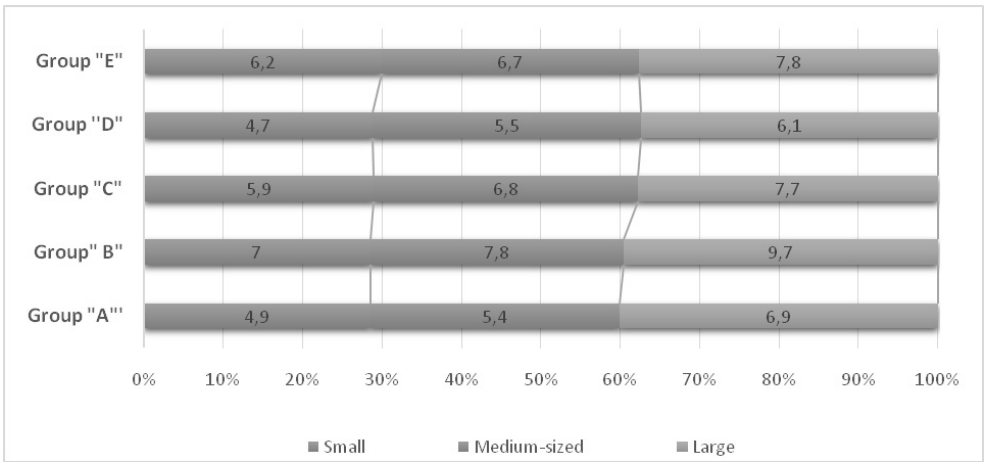


Source: Own Field Survey, 2017.

The average individual ratings of the different types of enterprises (small, medium and large) by the different groups of factors show that relatively the highest estimates are given by large enterprises, followed by medium-sized enterprises (see Figure 9). An important conclusion can be drawn here, namely that a better technological, resource and policy-legal environment needs to be created to stimulate broadband entrepreneurship among SMEs.

Figure 9

Average rating by group of factors



Source: Own Field Survey, 2017.

In particular, management efforts should be directed to improving the lowest-performing indicators. This will allow to create better conditions for the implementation of broadband entrepreneurship tools, and hence to create sustainable success for the Bulgarian business. It could be started by building digital infrastructures to unite the efforts of Bulgarian companies at the sectoral and inter-sectoral level and thus to achieve a synergic and multiplier effect.

Similarly, setting up entrepreneurial centers and clubs and encouraging the entrepreneurial efforts of passive entrepreneurs by finalizing their efforts to obtain a final product or service will help create and operate a Bulgarian market for innovation and smart products.

Conclusion

The present study reveals that creating conditions for broadband business entrepreneurship to achieve lasting success for the Bulgarian society requires efforts both from the passive and active Bulgarian entrepreneurial structures and from the Bulgarian government.

Initially, the focus of these efforts should be to improve indicator values to create a more efficient infrastructure to unite entrepreneurial efforts, as well as to create an appropriate environment (centers, clubs for the promotion of inventive, streamlining and any creative, innovation and investment activity) to promote and support the entrepreneurial activity of SMEs.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Krassimira Naydenova[1]

BUILT-IN PROBLEMS IN THE NEW EUROPEAN REGULATIONS FOR THE BULGARIAN CAPITAL MARKET

The capital market attracts many investors and public companies, therefore their protection is a major objective of the regulations system. This is a complex system, subject to continuous improvement due to market and technology developments.
New markets face the choice of adopting the modern regulations of previous markets or building their own system, adequate for their yet undeveloped and illiquid capital market. Introducing complex restrictions operating in the most developed markets, given the low administrative capacity of the supervisory authorities and insufficient capital base of issuers and financial institutions, gives rise to problems.
The complex norms are "too much of a good thing" (Bruno and Claessens (2007)) and lead to the outflow of both public companies and investment intermediaries and investors, due to over-regulation of the investment environment. This phenomenon is called "bilateral restriction of access" (North, Wallis and Weingast (2006)) and it leads to restricted access to capital of local companies and depriving investors of high-quality assets.
The liquidity of the young markets is low, however, this is one of the main attributes of the attractiveness of each capital market. Part of the new norms introduced since 2018 have significantly worsened key indicators of liquidity and environment uncertainty, so their impact on new capital markets is negative. The new Markets in Financial Instruments Directive (MiFID2) and two EU Regulations, enacted since January 2018, have deepened the problems of over-regulation and have additionally created new ones related to market liquidity as far as the young Bulgarian capital market is concerned.
JEL: G10

1. Introduction

The capital market provides alternatives for companies to attract new capital for their projects as well as opportunities for investors to invest their funds in a variety of financial assets with stable risk characteristics and returns. The capital market consists of an equity and bonds market, as well as of derivative instruments issued on the underlying securities. The main requirements for this type of market are to offer quality assets and to be liquid,

[1] *Krassimira Naydenova is from University of Economics – Varna, e-mail: krassy_naydenova@ue-varna.bg.*

which ensures its usefulness for the national economy. The quality of assets on the national capital market represents a combination of risk, including the liquidity risk, the expected profits and diversification opportunities due to the existence of many attractive investment alternatives. Market liquidity represents the ability of investors to make immediate deals at low transaction costs. The usefulness for the national economy is determined by the opportunities for companies to finance their new high-risk projects that ensure GDP growth.

The regulatory base plays an important role in the liquidity and development of the capital market. It provides market rules and ensures transparency and trust. As a member of the European Union, Bulgaria transposes European norms in its national legislation, which should integrate the Bulgarian capital market and increase its attractiveness both for issuers and investors. Despite the full harmonization that has occurred since 2007, the domestic market liquidity indicators are not improving. The present study attempts to identify some of the reasons why the modern and restrictive rules, while appropriate for the developed capital markets, are not suitable for the emerging and illiquid Bulgarian equity and debt market.

The regulatory base is not the only relative factor for the capital market development, liquidity, and quality. Modern science has established three classic approaches: The Informed Speculation Paradigm, The Inventory Paradigm and Liquidity Commonality. An alternative approach is the Institutional Path Dependence. A number of complex and fundamentally different factors, among which the regulatory framework, have an impact, therefore studying regulations is also important.

The object of this study is the new European Union capital markets regulations. The subject of the study is the expected impact of the second Markets in Financial Instruments Directive (MiFID2) as well as of Regulation 600/2014 on markets in financial instruments and Regulation 588/2017 supplementing Directive 2014/65/EU with regard to regulatory technical standards on the tick size regime for shares, depositary receipts and exchange-traded funds on the illiquid and still young Bulgarian stock market. The regulatory base concerning capital market transactions and market participants' behavior is enormous, but the directive and two regulations mentioned above have been recently introduced and create new restrictions, which is why the research is focused solely on them.

The study tries to solve several research tasks. The first is the argumentation of the role of the regulatory framework for the quality of the capital market, followed by the review of the MiFID2 and two of the new regulations. The complexity of regulations and the introduction of too high requirements for all markets, including the ones of new member states, are identified as a negative problem for Bulgarian market, as evidenced by data from the Bulgarian stock exchange.

The study is an attempt to prove the research thesis, namely that the full introduction of high European restrictions on the Bulgarian capital market is inappropriate and creates negative market effects.

The study is structured in the following order: the first part examines the essence of the legal framework and the principal effects on the Bulgarian stock market due to the

introduction of too strict regulations; the second part concerns the new MiFID2; the third and fourth parts deal with the effects of two of the new regulations – 600/2014 on markets in financial instruments and 588/2017 supplementing Directive 2014/65/EU with regard to regulatory technical standards on the tick size regime for shares, depositary receipts and exchange-traded funds. The conclusion tries to summarize the established effects and to propose changes.

The survey focuses on the Bulgarian main stock market where the most liquid issues are traded, unlike the alternative market that is available to companies with too few deals. The derivatives market in Bulgaria remains underdeveloped and is therefore not included in the study. The bond market is still a very small part of the total securities trading, and the conclusions drawn from debt transactions will not be sufficiently objective. The market statistics prove this: in 2017 the share of bond transactions is only 0.75%.

The econometric tools used include the processing of chronological series, both periodic (stock exchange) and momentary (market capitalization, percentage of government debt assets invested, share prices, number of registered issues of BSE Plc, number of stock exchange members) calculation of mean values and standard deviation. Based on the data obtained from the econometric processing, a logical analysis is performed and some conclusions are arrived at.

2. Importance of the regulations for the stock market quality

Restrictions are a very important part of the financial infrastructure. The financial system is one of the most regulated areas of the national economy, and financial institutions, public companies and investors have to respect complex norms when conducting their business. Markets and market participants operate under a serious regulatory regime which should protect both investors and their property rights through transparency requirements, prohibition of opportunistic behavior[2], and survey on the systemic risk.

The legal framework of the Bulgarian capital market has always been among the most complex ones. The first securities law is a product of the interaction of the Bulgarian authorities and some American foundations, through which the American experience was transferred to Bulgaria years before European regulators paid close attention to the rights of minority shareholders and transparency. Bulgaria's membership in the European Union requires further alignment of the regulatory regime with that of the common European financial market. Harmonization takes place in two phases – full implementation of the First MiFID since the first possible moment in November 2007 and full implementation of the second MiFID since the beginning of 2018.

Researchers define regulations as impact by non-market methods. Such methods are licensing processes, authorization regimes, and regulatory acts (public regulation), as well as the rules of the stock exchange, depository institutions, investment intermediaries and institutional investors (private regulation). In this sense, according to Popov and Sedlarski

[2] Insider trading, related party transactions or manipulation of prices or traded volumes.

(2012), regulations represent public investments in measures and state institutions to address insecurity, complexity and limited rationality, as well to ensure policy-conforming behavior. Their main function is generally to reduce transaction costs (as a result of combining the uncertainty and complexity of the environment with the limited rationality of individuals). On the stock market this is achieved through standards of transparency and non-admission of opportunistic behavior.

There are two main objectives of stock market regulation – investor protection and the formation of a quality market. Investor protection means that investors have guarantees for their property rights. High-quality markets are fair, disciplined, methodical, effective and well-managed (Frost, Gordon and Hayes, 2002). These objectives are implemented through monitoring by supervisory authorities and market institutions, licensing processes, authorization regimes, and public regulatory sanctioning. The lack of regulation or ineffective regulation leads to information constraints, monopolistic practices and transaction costs (Popov and Sedlarski (2012)), all of them representing factors for reduced market liquidity. According to Williamson (1987), the lack of regulation also signifies a high risk of opportunism, which requires a regulatory structure aimed at ensuring market confidence.

In examining the impact of regulations on stock market liquidity, the concept of regulatory failure is essential, its two forms being over-regulation and lack of regulation. The first one imposes too heavy restrictions, leading to loss of cost-effectiveness and reduces the size of the market and the number of transactions, respectively, the supply of financial services. Another aspect of over-regulation according to Coase (1937) is the increase in the number of coordinated transactions, which also increases the frequency of improper rules leading to losses. A side effect is the increase in corruption behavior.

The other form of regulatory failure is the lack of regulation, which has two aspects: lack of regulations or lack of application of the rules. The lack of supervision leads to capital outflows due to high levels of uncertainty, information asymmetry and risk. While the lack of relevant norms is known to investors and they can compensate through private collection and processing of information, the non-application of norms is usually selective and is the result of corrupt practices or incompetence. The non-application of the norms results in a deterioration of the investment environment due to the increase in uncertainty and the decrease in confidence and transparency. The non-implementation of the regulations leads to investors' expropriation[3] and corresponding deterioration of the stock market indicators, including liquidity freezing. This type of regulatory failure is "institutional" as it is a failure of the institutions in place in the performance of their functions. In the case of this failure, certain agents benefit, making profits by opportunistic behavior. The non-application or selective application of the norms is an institutional risk that cannot be diversified and therefore results in a high spread and low market liquidity for the respective stock market.

[3] The term "expropriation" is used by researchers to describe the effect of withdrawal of income of depriving shareholders of their due dividends or profits from price increases due to injury by the majority shareholders, management or other persons with access to information or opportunities for related party transactions.

Regulatory and institutional failures leads to prohibitively high transaction costs (preventing the deal) which has a detrimental effect on economic growth, and leads to market imperfections according to Sedlarski (2008). Transaction costs, which are so high that their size makes transactions meaningless, lead to freezing of the stock market and withdrawal of both investors and issuers, which is the safest way for market liquidity to dry out. Regulations should not hinder competition and investor access to transaction opportunities, and must cover cost-effectiveness tests on the provision and procurement of important information (Frost, Gordon and Hayes, 2002).

In Bulgaria, institutions choose to create a stock market that meets the highest standards of the most developed countries. Through this administrative approach, they risk introducing regulations that do not match business interests and stifle development instead of stimulating it (Moravenov, 2004). The failure of institutions in the real protection of minority shareholders is visible from the data below. The analysis (Table 1) integrates World Bank data on market liquidity, mechanisms for protection of minority shareholders and corruption index. It is evident from the Bulgaria's ranking in the introduced protection that an emerging stock market is burdened with institutions appropriate for the oldest and most developed capital markets. The USA's ranking (35th, 14th for Bulgaria) shows that the world's most liquid market is operating with a simpler regulatory framework and institutions committed to the rights of minority shareholders. The Czech Republic's place in this ranking (the most liquid emerging stock market) is 57th, just before Slovakia, coming last in the ranking.

Table 1 provides information on the average liquidity levels of the different markets (ranking on the basis of an arithmetic average of the performance of the three indicators) as well as the location of the respective economy in the World Bank rankings of the available institutional framework for the protection of the rights of the minority shareholders and the level of non-corruption. The most liquid stock markets are the American, British and German, which is a completely logical result, since they are the oldest, belong to established democracies and market economies, the first two being market-based. The emerging stock market ranking puts the Czech stock market ahead of Romania, Croatia, Bulgaria and Slovakia, Bulgaria being in the penultimate position. Despite the more unpretentious institutional base protecting the rights of minority investors, the Czech stock market demonstrates higher levels of liquidity than the Bulgarian one. The same applies to Romania and Croatia, which are also more liquid.

The World Bank's assessment of the institutional framework securing the rights of minority shareholders puts Bulgaria right after the UK and much ahead of the United States, Germany and the emerging stock markets discussed in the table. For Bulgaria, there is a modern institutional base (including statutory instruments and institutions involved), which should lead to a liquid stock market due to the investor protection provided.

Table 1

Ranking countries according to market liquidity indicators, the protection of minority investors and the perpetrated corruption

state	Lm Rank[4]	MIR Rank[5]	Corruption Rank[6]
USA	1	35	16
Great Britain	2	4	10
Germany	3	49	10
Czech Republic	4	57	37
Romania	5	57	58
Croatia	6	29	50
Bulgaria	7	14	69
Slovakia	8	88	50

Source: World Bank Global Financial Development Database, www.worldbank.org and own calculations, data by 2015.

The review of the World Bank's rating on corruption penetration explains the contradiction created by the highly appreciated institutional framework protecting the rights of minority shareholders and the low liquidity ratios on the Bulgarian stock market. Among the stock markets in the table, Bulgaria ranks last, clarifying why full investor protection does not work and does not lead to a liquid stock market. Modern institutions do not function adequately in a corrupt environment, they can not guarantee investor protection despite existing norms and structures. At the same time, the World Bank's high rating of the institutional framework in Bulgaria does not prove its adequacy. The rules and structures implementing it on our stock market are ranked before those in all the markets reviewed (after the UK), but given the low market liquidity indicators, they do not fulfill their purpose.

The high level of corruption is clearly taken into account in the poor institutional performance, as it is precisely this way that the regulatory base is not working and institutional failures are allowed. Unfortunately, the problem with the regulatory base is more serious and requires a more in-depth review. The conclusion from the submitted data is the existence of high nominal protection for minority shareholders. At the same time, the low market liquidity determines the Bulgarian stock market as unattractive, which classifies the high nominal investor protection as actually non-functioning.

The process of introducing regulations requires a flexible judgment applied to each stock market separately and is compounded by the global requirement to harmonize investor protection regulations. Harmonization, according to Frost, Gordon and Hayes (2002), reduces barriers to foreign investors, and the stock market standards increase market quality. The incompatibility of the national institutions with the institutional systems of the old markets, on the one hand, is a type of regulatory failure. On the other hand, a major

[4] Rank in the market liquidity indicators alignment for 2015.
[5] Place in the World Bank ranking on the basis of Minority Investors Rights for all countries for 2015.
[6] Place of the State in World Bank Ranking for a Non-Corrupt Environment for All Countries by 2015.

problem in the process is the evaluation whether the reception of regulations is appropriate for the relevant market, because the excessive regulatory harmonization is also a regulatory failure.

According to the data above, the investment environment in Bulgaria is characterized by over-regulation due to the introduced too restrictive rules (more than those in the USA), as well as by institutional failure due to the inability to apply the norms. The regulatory regime is too heavy and complicated for the emerging national stock market, which raises transaction costs for all market participants. On the other hand, as evidenced by the data in Table 1, regulators fail in applying the rules.

According to Bruno and Claessens (2007), the technical transfer of regulations from developed to emerging markets can be described as "too much of a good thing." According to Litvak (2007), the too high requirements for public companies lead to their disclosure or to their listing in a stock market in another country. This is the reason why no improvement is seen despite the alignment of standards. Often the good foreign practices do not work so well in another market, with other investment traditions, because of the path dependence. The effect of harmonization in such cases may be qualified as over-regulation, and leads to the corresponding negative effects on stock market liquidity.

The "too much of a good thing" phenomenon is registered on the Bulgarian stock market. Market liquidity was on the increase until November 1, 2007, and the period was characterized by harmonization of norms due to Bulgaria's accession to the EU. After that date, the regulator introduced a full implementation of the first MiFID and practically overregulated the investment process. The data (Figure 1) show a sustained downward trend in market activity (MA) after 2007. Within five months, it down doubled (from 8.39 to 4.06) and was down tenfold to 0.84 in mid-2009. At the end of 2017, the indicator values were close to those in the beginning of 2004.

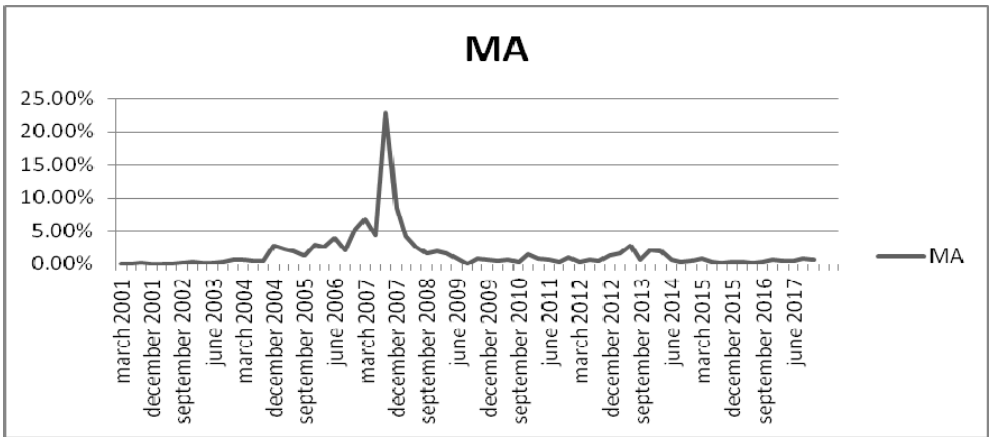
The conclusion points to a stagnated, stable low market liquidity despite the equal investor protection standards. The introduction of new and modern regulations does not fulfill its main purpose, namely to increase the confidence and inflow of capital. This allows for the introduction of modern and restrictive regulations to be defined as "over-regulation".

The calculation of aggregate liquidity indices on the Bulgarian stock market for a longer period confirms the tendency of their deterioration after full harmonization in 2007. Figure 2 shows a sharp increase in the period 2005-2007 and a downward trend in market liquidity indicators from 2008 to 2017, just after the introduction of the first Markets in Financial Instruments Directive. Figure 2 tracks the performance of the three aggregated indicators (turnover, market capitalization and market activity) for the period 2009-2017. The chart identifies not only the lack of a trend to improve market liquidity but also a steady decrease in the period 2015-2017[7].

[7] Only the one-time effect of double market capitalization in the last quarter of 2017 leads to an increase in the level of market capitalization, but this effect is due to the illiquid Bulgarian market, allowing the manipulation of the prices of certain securities.

Figure 1

Market Activity Indicator (MA)[8]



Source: Data on www.bse-sofia.bg, own calculations.

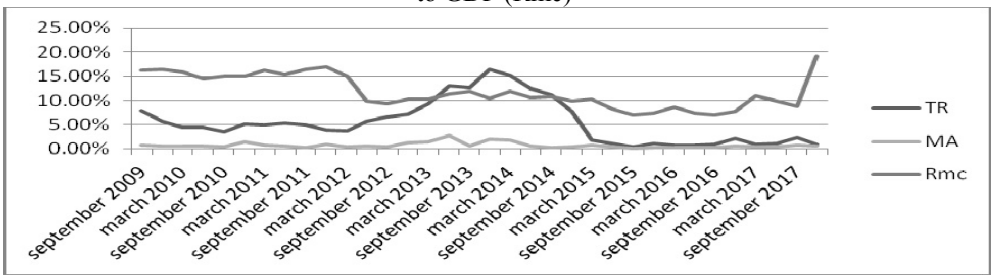
The effects of introducing the first Markets in Financial Instruments Directive for the Bulgarian stock market are not unambiguous. The full harmonization adds confidence to investors, but the financial institutions of the emerging Bulgarian stock market and the young regulatory institutions do not have the administrative capacity to cope with the complex investor protection rules.

Excessive regulations affect the financial system and the stock market much more widely. According to Endo and Ghon Rhee (2006), over-regulation on initial and secondary public offerings, as well as restrictive listing requirements, are a factor for the increase in supply and demand for sovereign debt (crowding out). This process destroys the stock market. The oversupply of government securities also reduces the allocative efficiency.

[8] Only the "market activity" indicator is presented for the maximum period from 2001 until the end of 2017 due to the fact that it does not require data on market capitalization. The other two aggregated indicators for market liquidity work with market capitalization and data are available from September 2009.

Figure 2

Values of turnover ratio (TR), market activity (MA), and the ratio of market capitalization to GDP (Rmc)



Source: Own database calculations from BSE - Sofia Plc.

Table 2 presents data on investments in government debt of Bulgarian universal pension funds as an average percentage of fund assets for the period 2007-2017. As of the end of the nine months of 2017, they total over 10 billion BGN. As can be seen from the data, the percentage of government debt in the portfolios of Bulgarian universal pension funds increased sustainably from under 30% to 50% for a period of 11 years.

Table 2

Report on the average percentage of investments in government debt securities of universal pension funds in Bulgaria

as of September 30, 2007	27.18%
as of September 30, 2008	28.16%
as of September 30, 2009	36.65%
as of September 30, 2010	35.67%
as of September 30, 2011	38.94%
as of September 30, 2012	36.37%
as of September 30, 2013	39.01%
as of September 30, 2014	42.75%
as of September 30, 2015	49.43%
as of September 30, 2016	50.60%
as of September 30, 2017	48.28%

Source: Own calculations based on Financial Supervision Commission data, wwww.fsc.bg, data by 2017.

According to Caprio (1995), emerging markets are risky not only because of political factors but also because they are small, and the imposition of high capital requirements on these markets is dangerous as the requirements are for large and diversified economies. According to him, raising the limits of liability too high could lead to sub-optimal supply of financial services. North, Wallis and Weingast (2006) define this as a serious consequence of over-regulating the local stock market and call it "*bilateral restriction* of *access*". With this phenomenon, investors suffer a reduced supply of financial services due to the withdrawal of issuers and financial institutions, issuers have reduced access to capital, and

leave the national market due to high listing requirements. The consequence is the collapse of the supply of quality investment assets. The process is a built-in mechanism to protect the free market and leads to the freezing of market liquidity.

The evolution of the stock market in Bulgaria in the period 2007–2016 proves the tendency of bilateral restriction of access (table 3). The percentage of the phenomenon is 23.70% reduction in public emissions and 39.53% decrease in the number of investment intermediaries, calculated on the basis of the maximum values achieved before the introduction of the first MiFID. The average annual rate of decrease of the listed issues is 3.27% and that of the investment intermediary withdrawals – 7.55%. While the withdrawal of public companies requires complicated tender procedures, the cessation of the broker's activity does not require additional resources and takes only a few months. Maintaining a 7.55% reduction in these institutions will not only lead to the monopolization of the services, but also to the inability of investors to participate in the Bulgarian capital market due to a sharp decline in the supply of such services.

Table 3

Access to financial services on the Bulgarian Stock Market

year	Issues, traded on BSE-Sofia Plc	Members of BSE-Sofia Plc
2007	509	79
2008	557	84
2009	555	86
2010	528	74
2011	507	69
2012	496	66
2013	495	64
2014	443	57
2015	434	55
2016	425	52

Source: Bulgarian Stock Exchange Sofia Plc, www.bse-sofia.bg, data by 2016.

The conclusion from the above data is that there is a consistent and sustainable withdrawal from the Bulgarian stock market by both issuers and investment intermediaries. These institutions contribute to offering qualitative assets to investors, and to providing access to capital for public companies. This double withdrawal confirms the existence of the phenomenon of "bilateral restriction of access".

In summary, the regulatory fundamentals on the Bulgarian market have a negative impact. Transaction costs are prohibitively high due to over-regulation, the access to financial services is restricted, and the ineffective harmonization leads to lack of real protection (both forms of regulatory failure). Extremely complicated requirements for investors, brokers and issuers form the "too much of a good thing" phenomenon. In practice, investor protection is down, transaction costs are rising, and both investors and brokers, as well as issuers, are repulsed. Regulatory institutions are not able to apply the complex norms, which eliminates real investor protection (institutional failure). The introduction of new and heavier regulations in an illiquid and emerging stock market such as the Bulgarian market is a

negative factor for the quality and usefulness of this market. The young Bulgarian financial and regulatory institutions do not have the necessary administrative and financial capacity to cope with complicated norms, which is why the real protection of investors is not positively influenced.

3. Legislation under the second Markets in Financial Instruments Directive (MiFID2)

The First MiFID[9] (November 2007 to the end of 2017), creates conditions for European investment firms and banks to provide financial services and establish branches in other EU member states on the basis of the permit and under the supervision of their country of origin. To achieve this, the Markets in Financial Instruments Directive harmonises the initial licensing, operational requirements and the functioning of regulated securities markets. The access to the Community investment market requires a high investor protection, which is the reason for establishing new regulatory requirements. In addition, the latest financial crisis reveals weaknesses in regulatory requirements due to insufficient regulation of OTC transactions, respectively transparency and disclosure problems. According to EU authorities, complicated market conditions require more powers for supervisors.

The 2008 financial crisis is believed to have arisen due to weak corporate governance of financial institutions, notably in the investment risks and clients recommendations. The second Directive (from the outset of 2018) introduces more detailed principles and minimum standards applicable to financial institutions. The review of the causes that led to the crisis does not take into account the role of supervisory authorities in systemic risk management gaps and the responsibility of investors to make financial decisions.

The MiFID2 aims to create an integrated European financial market in which investors, efficiency and market integrity are effectively protected. The concept of "market integrity" is likely to be understood as protecting from collapse caused by an unmanageable increase in systemic risk and losses in large financial institutions.

One of the most serious problems arising from the new directive is the supervision of non-financial institutions, but their investment activity is essential. It is explicitly stated that the scope of the Markets in Financial Instruments Directive does not include persons for whom the investment activity is ancillary to their main business but the main activity is defined as the activity in which the prevailing investments are made. This text defines the persons and companies for whom the main equity investments are in financial instruments without being financial institutions offering investment services, as persons subject to oversight. The exact wording is "non-financial companies operating on financial instruments that are disproportionate to the level of investment in their core business fall within the scope of this Markets in Financial Instruments Directive." Additionally, "individuals" in the text are both natural and legal persons. At the same time, the scope of the directive excludes

[9] The texts of both Directives and of Regulation 600/2014 and 588/2017 are further used. The goal is to recreate norms and not to change the meaning.Source: eur-lex.europa.eu/homepage.html?locale=en

collective investment undertakings, insurance companies and pension funds, which are large investors on their own account, whose main business is the investment in financial instruments. Extremely serious problems are caused by the words "persons providing investment services and / or carrying out investment activities falling within the scope of this directive should be subject to licensing by their home member states with a view to protecting investors and the stability of the financial system". If the above logic is followed, all individuals (physical and legal) whose principal investments are in financial instruments become subject to licensing and supervision. This is confirmed by the following text in the Markets in Financial Instruments Directive: "Persons providing investment services and / or carrying out investment activities falling within the scope of this directive should be subject to licensing by their home member states with a view to protecting investors and stability of the financial system".

Transactions of non-financial corporations with financial instruments are increasing as the share of financial assets in the total assets of entities other than financial institutions increases. The process has long been recognized and researchers use the term "financialization" to describe the phenomenon. Financial income and expenses for non-financial corporations and individuals are rising not only because of higher access to capital markets but also by exposing them more to the impact of these markets: low-interest rates on deposits, the responsibility for investing free funds, higher access to capital through capital markets. The banking system itself is changing due to the impact of these factors. Following this logic, entities whose underlying assets are invested in financial instruments will become more and more. Putting them under any form of supervision means that additional resources need to be made available to supervisors and that their administrative capacity is increased to the extent necessary to handle the number of supervised entities. In addition, investments in financial instruments are by definition risky and these individuals invest their own funds. Their status of non-financial institutions means that they do not attract money from the public for investment on the capital market, respectively, cannot cause losses to other persons. In this sense, the systemic risk is not affected by transactions of companies and persons that are not financial institutions, and oversight of their investments, apart from assuming to lead to rising costs of public funds, will also be totally unnecessary.

An additional problem arises from the increase in regulated transactions. Subjecting non-financial corporations and individuals investing equity in securities to supervision means controlling multiple additional transactions, which requires capacity on the part of both supervisors and supervised entities. This additional administrative capacity leads to an increase in transaction costs and a further decrease in the number of persons investing in financial instruments. Whereas for the old and liquid capital markets this outflow may be minimal, for new and underdeveloped markets such as the Bulgarian one similar restrictions mean an increase in the quantitative manifestation of the phenomenon of "bilateral restriction of access", which distorts both the supply of qualitative assets and the access to capital.

Algorithmic trading and high-frequency algorithmic trading are accepted by the Markets in Financial Instruments Directive as a source of disruption to market functioning. Therefore, the rules therein require trading firms and markets to ensure that their trading systems are

sustainable and appropriately tested to cope with the increased number of orders or market turmoil, and that broker firms and trading systems have mechanisms for temporary suspension or limitation of trade in sudden and unexpected price changes. The directive requires that it is appropriate to prohibit the provision of direct electronic access to markets by investment firms to their clients where such access is not subject to appropriate systems and controls. Irrespective of the form of direct electronic access granted, intermediaries providing such access should assess and verify the suitability of customers using that service and ensure that the use is subject to appropriate control measures and that those intermediaries retain the responsibility for trade represented by their customers through the use of their systems.

The texts state two important issues: the suitability of clients and the responsibility of intermediaries for customer investment decisions. The suitability of the clients should be based on their maturity and their ability to act, and the responsibility for individual investment decisions lies with the investor. If investor transactions violate the rules, the liability should lie with them, not with the investment intermediary whose platform is used.

The objective of establishing over-regulation of transactions resulting from investment algorithms is reinforced by the text of the directive that effective supervision requires that competent authorities be given the opportunity to take timely action against false or deceptive algorithmic trading strategies. For this purpose, all orders generated in algorithmic trading must be denoted. This requirement leads to at least one huge technological problem - a software change. This change should be made for both the exchange trading system and the trading platforms of investment firms. Even greater complexity results from the fact that the investment firm does not necessarily know that the client's order is generated by an algorithm.

An additional problem arises from the definition of "wrong or deceptive algorithmic trading strategies." This type of trading is a quick submission of market orders for transactions in financial instruments based on timely and qualitative processing of market information. It is possible that some of the orders are wrong, in the sense that the initiated transaction will cause a further loss. This is a possible end result also in case the order is not filed through such a system. Deceptive strategies should probably be understood as strategies to manipulate trade by entering into transactions that lead other market participants to wrong conclusions about the price, supply and demand of a financial instrument. This type of transactions are prohibited on any stock exchange and by any law on financial instruments markets. However, they continue to happen even if they are not initiated by an algorithm.

Algorithmic trading is just one of the aspects posed on over-regulation. The access to the regulated markets through a trading platform is also restricted. The Markets in Financial Instruments Directive requires every provider of direct electronic access to a trading venue to build effective control systems and mechanisms to ensure that it is properly analyzed and reviewed whether customers are suitable, the margin limits are not exceeded and that there are appropriate risk control mechanisms preventing risk-creating transactions, contributing to a disorderly market or being contrary to the rules of the trading venue. According to the directive, direct electronic access without such control mechanisms is prohibited. An investment firm providing direct electronic access is responsible for ensuring that customers using this service comply with the requirements of this directive and the rules of

the trading venue. The broker should monitor transactions to identify breaches of the rules and report to the competent authority.

The texts raise a number of questions - is it possible that an investor's dealings, however large the investor may be, could destroy the integrity of the market, how the investment firm predicts the macro effect of transactions that are concluded milliseconds after their initiation and how the client's behavior causes problems for the intermediary itself. Moreover, financial supervision commissions are responsible for complying with the rules and preventing non-compliant behavior. They are competent to investigate and establish such practices, and the investment firm should only be responsible for compliance with the laws on the part of their employees. The assignment of supervisory functions to private entities engaged in business for profit is both unnecessary and potentially dangerous to the protection of clients' rights. Restricting the transactions of a client-initiated by an investment firm leads to a limitation of its profitability from the financial instruments chosen by it. A decision to limit client orders, which would later be determined to be wrong by a judicial authority, may lead to an unlimited loss for intermediaries, which already represents an increase in systemic market risk.

Apart from the impossibility of meeting the above requirements, the issue of over-regulation and transaction costs also arises. The introduction of an obligation for investment firms to monitor the behavior of their clients requires technological innovations, electronic systems and skilled employees. They are already responsible not only for the management of their own portfolios but also for the transactions of their clients. The increase in transaction costs and regulated transactions due to this text is quite logical.

Investment consultation and advice are the next objective of the MiFID2 and are even more regulated. According to the directive, the investment firm should indicate in a written statement how the recommendations provided correspond to the preferences, needs and other characteristics of the non-professional client. The fulfillment of this requirement implies that the client has provided tremendous information not only about his financial condition and his risk aversion but also about his psychological characteristics. Such obligations for intermediaries make them "always guilty" and impose responsibility on them for decisions by qualified entities that should themselves bear the consequences of accepting or rejecting investment advice. The risk of such investments is known and subject to prior evaluation, assuming that each investor has the tools and knowledge to judge his decisions. Recommendations are prepared with regard to uncertainty and risk and can not guarantee profit, as they are a presumption made under certain assumptions and conditions. In this sense, a lack of intention and a proper understanding of the risks os wrong advice is appropriate, however, over-restrictions such as the requirement that the advice is correct and appropriate, are neither objective nor possible.

The Markets in Financial Instruments Directive also confirms the classical requirement for the firm to ensure "best execution" of client orders. The attempt to impose an effective "best execution" obligation on client orders with investment firms to ensure that they execute client orders on terms that are most favorable to the client does not take into account the exceptional volatility of the financial instruments. The broker can not know at what point the prices will be the most favorable, respectively, the liability in this sense is not adequate.

An interesting aim of the directive is to achieve complete success in risk assessment. It is pointed out that in the last financial crisis it has become clear that professional clients are not always able to assess the risk of their investments. For this reason, information is required to be provided to eligible counterparts (well-experienced and knowledgeable investors), and municipalities and local public authorities should be explicitly excluded from the list of eligible counterparts and from the list of clients, considered to be professional clients. Municipalities and local public authorities have financial professionals whose competence should allow at least elementary knowledge of financial investments and an assessment of their risk. In addition, it should be known that investing is a risky venture and it is normal for all investors, even unprofessional, to be clear about it.

The literature concerning the risk inherent in financial instruments includes both aspects of the nature of investments in financial assets and instruments for assessing risk. This toolbox is classical and should be mastered by all professionals. Despite its steady development, the toolkit does not guarantee a complete risk assessment. Financial instruments form their prices not only based on investor expectations for cash flows that will be generated, but also on the basis of macro national, regional and global sense, industry expectations for them, money supply and business cycles. Last but not least, is the individual risk aversion. Risk evaluation is an assessment, ie. it is an attempt to approximate reality, and therefore technology for reducing portfolio risk does not lead to its complete avoidance. The standard set of assessment tools cannot guarantee that the evaluation of intermediaries is competent. Indeed, a fully credible risk assessment of a financial instrument ranks right up to and can be entirely due to the availability of insider information, which is a gross violation of the rules. In this sense, the attempts by the directive to impose a full risk assessment are not set on an objective basis.

The directive also aims to facilitate access to capital for small and medium-sized enterprises (SMEs) and to further develop specialized growth markets. It is proposed to develop common regulatory standards for SMEs to gain access to the capital markets. In this connection, it is possible to make recommendations through these standards to introduce common rules for the tools related to crowdfunding, which is an alternative to innovative SMEs (Rafailov, 2017). Unfortunately, the wording in the directive is quite general. Thus, the European Commission and the Member States have great opportunities for different interpretations, which is also a prerequisite for over-regulation.

The very narrow definition of related parties has always been a problem on the Bulgarian market. The new Markets in Financial Instruments Directive introduces the concept of close links, which means that when two or more natural or legal persons own directly or by way of control at least 20% of the voting rights or capital of an undertaking, they are likely to be the subject of a connectivity investigation. It is good for lawmakers to take into account the fact that there may be at least two persons in each company that together hold 20% of the shares. Such persons may have never met each other, so there would be no way to establish links between them, all the less close ones.

The objectives of the directive are too ambitious in attempting to manage systemic risk in commodity markets when investing in these markets through derivatives. Limit positions are introduced with respect to the amount of net position held by a person for commodity derivatives and for economically equivalent OTCs. Restrictions are determined on the basis

of all positions held by a person or by a unified group in order to prevent market abuse and to promote proper pricing and settlement conditions. The rules concern also positions leading to market distortion and to ensure in particular a convergence between the prices of derivatives in the month of delivery and spot prices for the basic commodity without prejudice to the disclosure of market prices for the base commodity price. The limitations shall not apply to positions held by or on behalf of a non-financial entity which are objectively measurable as leading to a reduction in risks directly related to that entity's business.

The expressions "to promote proper pricing", to avoid "market distortion" and to "ensure the convergence between the prices of derivatives in the month of delivery and spot prices for the basic commodity" are impressive. The existence of similar objectives in a private contract is certainly defined as the ultimate form of market manipulation. The measures envisaged to ensure the above objectives include, in addition to tracking the positions and imposing restrictions, an opportunity for the market operator to ask an investor to ensure market liquidity at an agreed price and in an agreed volume, with the explicit intention to mitigate the impact of a large size or dominating position. This means that in the context of market panic, with rising prices, a particular investor will be forced to sell at current market prices, which after only hours may turn out to be low, so he will suffer serious lost profits, even great losses.

On the basis of the above quotes and the theoretical guidelines on capital market regulation, the main expected effects of the introduction of the directive for the young Bulgarian capital market are the increase in transaction costs due to the burden on investment intermediaries with multiple control functions on their clients' transactions and the growth of regulated transactions leading to over-regulation. Both effects imply an outflow of investors and intermediaries, which reduces both access to capital and market liquidity, resulting in a decrease in the quality of the capital market.

In summary, the second Markets in Financial Instruments Directive increases the transactions subject to supervision, respectively increases restrictions. Existing norms before the introduction of the second directive can be defined as too restrictive and the deepening of the process additionally aggravates the phenomena "too much of a good thing" and " *bilateral restriction* of *access*", which leads to highly negative effects for the Bulgarian stock market.

4. Legislation under Regulation 600/2014 on markets in financial instruments

Regulation 600/2014 goes further and states that the European Securities and Markets Authority (ESMA) should be able to require from each person information on its position in relation to a derivative contract, to impose a reduction on that position, and to limit the ability of market participants to enter into individual transactions in commodity derivatives. This concerns all relevant information on the size and purpose of the exposure, and after analyzing the information received, and power to impose reduction or elimination of the position.

The ideas of the OTC deals limitation from MiFID 2 are also pursued in Regulation 600/2014. The regulation must ensure that trading in financial instruments is carried out, as far as possible, at organized trading venues and that all such trading venues are appropriately regulated. Any trading system with financial instruments, such as structures currently known as order comparison systems, should in the future be properly regulated as a type of multilateral trading venue or as a systematic participant. There is also an explicit requirement that derivative transactions should only take place on regulated markets, MTFs or OTFs.

OTC markets have always existed, and the OTC transactions had to be registered on regulated markets, precisely in order to implement transparency on prices of different emissions. Something very important – some of the securities traded on these markets are not listed issues, so the companies are not public. There is no other way for the owners of these securities to sell or new investors to open positions. The regulation of OTC market will let private companies in a very limited position to attract capital.

The next restriction provided in the regulation requires that investment firms are not allowed to execute client orders against their own capital on the regulated markets and MTFs. This means that when a client order a sale, the broker can not buy the securities, and in the case of a purchase order he cannot sell from his portfolio. The aim is probably to avoid conflicts of interest and, in particular, the front-running. The problem will arise in illiquid markets and illiquid assets. In these cases the spread is extremely wide and the client will suffer a loss just because of the lack of adequate counter-order. If an intermediary forms long positions in the respective issue, they could offer an adequate price, the same way this will happen in the reverse transaction. Applying the provision will lead to an even higher volatility of illiquid emissions, as well as to losses for both customers and investment firms.

In order to avoid a negative impact on the pricing process, the Regulation introduces a volume capping mechanism for orders placed on systems based on a trading methodology where the price is determined in accordance with a reference price. This means that investors can not determine the volume of the instruments they buy or sell. Additionally, the definition of the ceilings cannot be objective because the effect of certain transactions on the market becomes clear later, especially since more investors have followed another investor's position.

The Regulation requires data on transactions in financial instruments to be reported to the competent authorities so they can detect and investigate potential market abuse, monitor the correct and orderly functioning of markets, and control the investment firms. The scope of this oversight includes all financial instruments as well as derivatives where the underlying instrument is a financial instrument or an index or a basket of financial instruments, all traded on a trading venue. Investment firms have always presented transaction information on a consolidated basis. The investigation implies that the supervisor will receive information about the parties to the transactions, which supervises not only the investment intermediaries but also their clients.

The powers of the competent authorities should be complemented with a clear mechanism for restricting the placing on the market, distribution and sale of all financial instruments or

structured deposits that give rise to serious concerns regarding investor protection, the integrity of financial markets or commodity markets, or the stability of the whole or part of the financial system. Requirements till now include investor protection through transparency mechanisms and disclosure of all available information and potential conflicts of interest. The normal functioning and integrity of markets cannot be threatened by the introduction of any financial instrument, especially if the rules on disclosure are met. Such a text gives the right to reject new issues because of misunderstanding or reinsurance. In any case, this is a way of limiting access to capital for issuers and new financial instruments for investors. Criteria are also provided for cases where restriction is required - the degree of complexity of the financial instrument and the relationship with the type of client to which it is marketed, the amount or nominal value of the issue of financial instruments, the degree of innovation of a financial instrument, activity or practice, the leverage that a financial instrument or practice provides, the degree of innovation of a structured deposit, activity or practice. These criteria imply that a sophisticated, high-denomination, and high-risk financial instrument will not be admitted to public offering. Unlike the new regulation, the previous directive introduced explicit reductions for high nominal value issuance, precisely because the requirement to invest huge capital means that the investor is either a professional or has access to high-quality professional advice. The question remains whether an innovative product, which is incomprehensible to the supervisor, will have a chance of public offering.

The Regulation introduces extremely heavy restrictions on the activity of both investment firms and regulated market operators as well as market participants who are not financial institutions but invest a significant part of their capital in financial instruments. Restrictions on investors in commodity-based derivatives are even more serious. Algorithmic trading and over-the-counter transactions, as well as investment advices and consultations, are part of the investment activity that poses serious problems with regulators.

The effects of the introduced requirements are a strong increase in transaction costs for both intermediaries and regulated markets, as well as for investors. Since the beginning of 2018, the amended law on the markets for financial instruments has already been in place in Bulgaria. The restrictions introduced by the second Markets in Financial Instruments Directive and the Regulation 600/2014 on markets in financial instruments are for the most part not transposed into Bulgarian legislation. The regulator's intention of future changes to the law is not known, but the full harmonization of the Bulgarian regulatory base with the requirements of the Directive and the Regulation will have serious negative implications for the Bulgarian securities market.

5. Legislation of Delegated Regulation (EU) 588/2017 supplementing Directive 2014/65/EU with regard to regulatory technical standards on the tick size regime for shares, depositary receipts and exchange-traded funds

Since 2018, Regulation 588/2017 introducing liquidity bands has been in force, and respectively minimum quotation steps – tick size regime – for securities traded on national stock exchanges. As part of the European market, BSE Plc has also introduced the

mentioned tick size regime. The essence of the regulation is to set liquidity bands for each issue by setting the average daily number of transactions, with the lowest band (the most illiquid) implying the highest bidding step. The illiquid Bulgarian stock market naturally directs Bulgarian companies to trade at the highest quotation steps. High quote steps mean an immediate increase in the spread between "buy" and "sell" quotes. The spread is one of the main factors for market liquidity and, through it, for the quality of the stock market.

Securities markets should be useful to the national economy. To successfully perform their functions to help raise capital for companies, investing free funds and disinvestment, they must be liquid. Market liquidity is a category that is formed by two important aspects - the possibilities for immediate transactions and their implementation at low transaction costs (Naydenova, 2016). Instantness is ensured by the presence of many investors and issuers, well-developed market infrastructure, diverse and large volumes of investment assets and by the willingness of investors and issuers to invest in and offer assets. The willingness of investors and issuers, in turn, is determined by a number of complex factors (trust, transparency, macroeconomic fundamentals, uncertainty, institutional matrix).

The low transaction costs mean minimum possible spread level, fees and barriers to the transactions and fair market prices, and are achieved through adequate market microstructure, effective regulatory institutions and an adequate regulatory base. Fair transaction prices are a characteristic of the liquid and efficient stock market and, together with immediateness, determine it qualitatively.

While instantness is an indicator influenced by multiple complex and long-term qualities such as the attractiveness of the national market, transaction costs appear to be a system in which accruals and effects are more visible and manageable. They are decomposed into two basic elements - implicit and explicit, according to Domowitz, Glen and Madhavan (2001). Explicit costs are the direct transaction costs: brokerage commission, service charges, taxes. Implicit costs are indirect commercial costs, the most significant being the market (price) impact, and spread. According to the authors, the market price impact represents one-third of the total transaction costs and indicates the importance of evaluating and monitoring it. The market impact is the change in the price of large sales or purchases. At these times, orders are executed at market prices and, depending on their depth and breadth, the price is subject to varying degrees of market imbalance. If multiple orders at a similar price are available, for large volumes, the price impact will not be high, the market will take up the extra demand or supply, and there will be no imbalance in the demand or supply of securities, or an increase in volatility. The bid-ask spread is the difference between the best buy and sell orders. Spread is also an indicator of the quality of the market microstructure as it includes transaction costs and losses due to information asymmetry (Diamond and Kuan, 2012).

The reasons for the high spreads have been thoroughly studied. According to Copeland and Galai (1983) and Glosten and Milgrom (1985) the main reason is the insider trading that results in adverse selection and expropriation, respectively. Barclay and Holderness (1989, 1991) and Mikkelson and Regassa (1991) prove that even the probable insider trading is valued by investors and the spreads grow. According to the Inventory Paradigm (Demsetz (1968), Stoll (1978) and Ho and Stoll (1981)), inventory costs determine liquidity, the spreads, depth and market impact as the main measures of liquidity. Another explanation

for the magnitude of spreads provides the liquidity commonality. It is a synergy in the movement of asset prices, a trend driven by common changes in funding liquidity. The relationship was established by Brunnermeier and Pedersen (2007) and Brunnermeier, Nagel and Pedersen (2008). Chordia, Roll and Subrahmanyam (2000) prove that the individual spreads and depth are provoked by changes in aggregate market spreads and depth. Spread is actually an even more important measure of market conditions. Easley and O'Hara (2010) create a model of uncertainty as a factor of illiquidity. When there is uncertainty about many financial assets, there is little or no trade - market illiquidity - and in this case quotes are not appropriate measures for the fair value of assets because the market is ineffective. The uncertainty spread argues that illiquidity arises from uncertainty, not from risk.

From what has been said so far, the high spread and high price impact are a product of information asymmetry and uncertainty, and have a negative impact on market liquidity and, respectively, the quality of the capital market in the performance of its core functions - access to capital for companies and investment opportunities for investors. In addition, high spreads and price influences significantly increase the level of transaction costs, which directly determine the operational efficiency of the secondary market (Jordanov, 2009). Indeed, the importance of transaction costs is even more serious - Coase (1992) proves that if they are higher than the profit from the deal, the transaction will not take place.

On the basis of the above-mentioned research views, it can be argued that the low spread is an intuitive indicator of the quality of the respective national capital market. The negligible spread, combined with considerable depth and breadth in the market, ensures instant deals for both buyers and sellers of financial instruments. The low spreads indicate both low implicit transaction costs and higher attractiveness on the relevant capital market. The liquidity market implies a negligible spread (below a penny) and a serious depth and breadth of orders. In turn, the market impact influences both the size and attractiveness of the market for investors. For these reasons, spreads and price impacts consolidate the influence of all market and institutional factors and quantify the level of liquidity, which is why they are perceived as a complex determinant of market liquidity (Naydenova, 2016). In addition, low volatility implies undisturbed trading and market attractiveness.

The consequence of the above opinions is the logical conclusion that low spreads, low volatility and low market impact are desirable qualities on any capital market, so supervisors involved in this market should not take action to increase the value of these indicators.

Unfortunately, the newly introduced Regulation (EU) 2017/588 sets liquidity bands and quote steps (tick sizes) that are extremely inappropriate for the emerging and still very illiquid Bulgarian capital market. As a result, there has been a deterioration in both spreads and market impacts and volatility. The effect is to increase the implicit transaction costs and the uncertainties that affect the quality of the national market.

Despite the available scientific basis about transaction costs, spreads and their impact, delegated Regulation (EU) 2017/588[10] aims to ensure the smooth functioning of the markets by setting out regimes for quotation steps or minimum quote steps for some financial instruments. According to the regulation, there is a high risk due to a steadily decreasing share quote, deposit receipts and some types of exchange-traded funds, respectively, there is a negative impact on the proper functioning of the market, therefore, the quote steps and the risk should be controlled through a mandatory for tick sizes. The Regulation does not provide arguments that the constantly decreasing steps of financial instruments pose a risk to the functioning of markets and does not take into account the increase in transaction costs through spread and market impact, especially for illiquid markets.

Despite the danger set by the regulation due to the low pricing steps, a correlation exists between exchange-traded funds and related equity instruments and therefore the minimum tick size for stock-holding funds and depository receipts is set for stock-exchange traded funds. In addition, it is important that all stock-exchange trades covered by this Regulation should be subject to the same quote-based regime based on a single range of liquidity regardless of the average daily number of transactions so as to reduce the risk by circumventing the quote steps in relation to these tools.

Exchange traded funds are known to be one of the most active market players, since they are obliged to reformat their portfolios at any change in the indexes they track, and to invest and disinvest at any change in the value of the portfolios they manage. It is interesting to note that the minimum quotation steps are required for the trading of their units, whereas for the transactions they perform, quotation rates, sometimes higher, are set.

Quotation steps are applied according to the liquidity band (table 4), which corresponds to the average daily number of transactions. The quote step changes depending on the price range in which the order price is located.

BSE Plc gives instructions and an example of quoting. According to a stock exchange announcement "In the event that a given issue of shares XYZ is assigned a liquidity range of LB1 (average daily number of trades from zero to ten), this means that the broker will be able to enter orders with a quote step 0,01 at 1.97, 1.98, 1.99, and so on in a price range of 1 to 2 leva, but there will be no possibility of entering a price of 1.975 levs, for example. Upon changing the price range from BGN 2 to BGN 5, the broker will be able to enter orders with a quote of 0.02 at the price of BGN 2.00, BGN 2.02, BGN 2.04, etc. but it will not be able to place an order at a price of 2.01, 2.03. It should be noted that the quotation step changes as the price range changes until the liquidity stays unchanged. "

[10] The regulatory texts of the Regulation are based on Regulation (EU) 2017/588, http://eur-lex.europa.eu /homepage.html? local = bg

Table 4

	Liquidity bands according to Regulation (EU) 2017/588					
Average daily number of transactions	to 10	from 10 to 80	from 80 to 600	from 600 to 2000	from 2000 to 9000	over 9000
Price ranges	LB1	LB2	LB3	LB4	LB5	LB6
1 ≤ price < 2	0,01	0,005	0,002	0,001	0,0005	0,0002
2 ≤ price < 5	0,02	0,01	0,005	0,002	0,001	0,0005
5 ≤ price < 10	0,05	0,02	0,01	0,005	0,002	0,001
10 ≤ price < 20	0,1	0,05	0,02	0,01	0,005	0,002
50 ≤ price < 100	0,5	0,2	0,1	0,05	0,02	0,01
50 000 ≤ price	500	200	100	50	20	10

Source: Regulation (EU) 588/2017, by January 2018.

Due to the low liquidity of the Bulgarian stock market, the regulation imposes high quotation steps, which increase both the spread and the price impact in cases of market imbalances. This, according to the abovementioned authors, leads to lower market liquidity and increased transaction costs and therefore implies an extremely negative impact on the young Bulgarian stock market, requiring a study of the effects. The following study is conducted with some limitations. Regulation 2017/588 was enforced in the beginning of 2018. January 2018 was characterized by tranquil trade, without the presence of events of a national or global magnitude, which are the cause of high stock volatility. For this reason, the survey compares the January 2018 stock exchange transactions with those of January 2017. The comparison of the February 2018 transactions with those of February 2017 would be incorrect as February 2018 runs on a volatile stock exchange due to the US correction that affected all stock markets and would have even higher scores to confirm the study's findings. Naturally, the period is short, but the purpose of the study is to prove the immediate negative effect of the new restrictions. On the other hand, available researches have so far been clear about the consequences of high spreads and the subsequent calculations are just another proof of their validity and the danger of introducing new standards.

Eleven companies, permanent members of SOFIX, have been analyzed. They are the most liquid with a low price spread. Inclusion in the survey of companies that are not so liquid would distort the results in favor of the findings of the study. Zero trading days and days where few transactions are available at the same price are excluded from the valid results. The Bulgarian stock market has low liquidity and similar interruptions of data are normal for it. Inclusion of a standard deviation of zero in the sample due to a lack of transactions would lower the average, representing data manipulation.

Examining the impact of quote steps begins with spreads changes. With a possible bidding rate of BGN 0.0001, the difference between the buy and sell orders can be BGN 0.001. For a tick size of BGN 0.01, the difference between the best orders may be no less than 0,01. This difference also determines the market spread. The magnitude of the changes, calculated on the basis of changes in the possible margin, is presented in Table 5.

As can be seen from the data in Table 5, the possible market spread is strongly increasing - ninefold for companies with a quote step of BGN 0,01 and nineteen times for companies

with a quote step of BGN 0,02. According to the theoretical provisions, such a deterioration of the spread leads to an increase in the implicit transaction costs, which is a reason for a strong decline in market liquidity, respectively in the attractiveness and usefulness of the Bulgarian capital market.

Table 5

Changes in stock quotes included in SOFIX due to Delegated Regulation 588/2017, data by February 2018

Company	Liquidity band	Stock price on 09.02.2018г.	Quotation step	Possible spread before the Regulation	Possible spread after the Regulation	% change in minimal possible spread
Sopharna Plc	LB2	BGN 4.08	BGN 0.01	BGN 0.001	BGN 0.010	900.00%
CCB Plc	LB2	BGN 1.94	BGN 0.005	BGN 0.001	BGN 0.005	400.00%
FIB Plc	LB2	BGN 5.42	BGN 0.020	BGN 0.001	BGN 0.020	1900.00%
Ind.Holding Bulgaria Plc	LB1	BGN 1.01	BGN 0.005	BGN 0.001	BGN 0.005	400.00%
Neohim Plc	LB1	BGN 46.60	BGN 0.200	BGN 0.001	BGN 0.200	19900.00%
FNEB REIT	LB1	BGN 1.94	BGN 0.010	BGN 0.001	BGN 0.010	900.00%
Monbat Plc	LB1	BGN 10.20	BGN 0.010	BGN 0.001	BGN 0.010	900.00%
M+S Hydravlik Plc	LB1	BGN 7.80	BGN 0.050	BGN 0.001	BGN 0.050	4900.00%
Stara Planina Hold Plc	LB1	BGN 7.70	BGN 0.050	BGN 0.001	BGN 0.050	4900.00%
Albena Plc	LB1	BGN 59.00	BGN 0.500	BGN 0.001	BGN 0.500	49900.00%
Chimimport Plc	LB2	BGN 2.47	BGN 0.010	BGN 0.001	BGN 0.010	900.00%
Average spread increase						7809.09%

Source: Own calculations on data from www.bse-sofia.bg.

The artificial increase in the spread is expected to lead to an increase in the volatility of prices. If the next transaction cannot be at a price lower or higher by BGN 0.001 but lower or higher by BGN 0.01 for most issues, this conclusion is logical. The volatility test (table 6) is based on an analysis of the values of the "standard deviation" indicator for the transaction prices of the most-traded public companies on the Bulgarian stock market. The standard deviation of transaction prices, presented as an average for January 2017 and 2018, increases for all companies except one, with an average of almost 40%. The maximum values for the indicator rise for seven out of eleven companies and the average increase is more than 14%. The minimum values are up for eight out of eleven companies, and the average increase is nearly eightfold. The volatility of the SOFIX index rises about two and a half times.

Table 6

Changes in the "standard deviation" values for some of the most traded stocks on BSE Sofia Plc. The survey covers the periods 01.01.2017 - 31.01.2017 and 01.01.2018 - 31.01.2018[11], data by January 2018

Company	Maximum value		% change to 2017	Minimum value		% change to 2017г	Average value		% change to 2017
	2018	2017		2018	2017		2018	2017	
Sopharna Plc	0.02629	0.06582	-60.06%	0.00010	0.01117	-99.10%	0.00877	0.01900	-53.84%
CCB Plc	0.03503	0.02794	25.36%	0.00631	0.01351	-53.32%	0.01400	0.00909	54.02%
FIB Plc	0.10025	0.05934	68.94%	0.08857	0.04839	83.03%	0.04280	0.03300	29.70%
Ind.Holding Bulgaria Plc	0.03182	0.01824	74.42%	0.02828	0.00207	1266.26%	0.01400	0.01060	32.08%
Neohim Plc	2.01246	2.06094	-2.35%	0.34503	0.07071	387.95%	0.01400	0.00950	47.37%
FNEB REIT	0.03260	0.02765	17.91%	0.00667	0.00050	1233.33%	0.00880	0.00820	7.32%
Monbat Plc	0.16491	0.15872	3.90%	0.00010	0.00084	-88.05%	0.06900	0.05900	16.95%
M+S Hydravlik Plc	0.10368	0.06899	50.28%	0.02500	0.00289	766.03%	0.06110	0.02300	165.65%
Stara Planina Hold Plc	0.12500	0.10251	21.94%	0.02739	0.00379	623.36%	0.07050	0.05040	39.88%
Albena Plc	0.77121	1.32127	-41.63%	0.24398	0.00586	4063.78%	0.41600	0.33250	25.11%
Chimimport Plc	0.01676	0.01706	-1.79%	0.00467	0.00212	120.00%	0.00996	0.00660	50.91%
Average values	**0.31091**	**0.35714**	**14.27%**	**0.07055**	**0.01471**	**754.84%**	**0.06627**	**0.05099**	**37,74%**
SOFIX							**10.29**	**3.01**	**241.86%**

The average daily price change represented by their standard deviation is an important indicator of uncertainty. High volatility is perceived as high uncertainty and leads to freezing of trade. Market liquidity declines and the national market becomes unattractive to both investors and issuers, which is extremely negative for the emerging Bulgarian stock market.

The analysis continues with price impact measurement. Price or market impact is the percentage change in the price when bidding or asking a quantity of some asset that exceeds the normal market volume. High-volume investment positions are always taken into account as this leads to a significant change in the price at which the needed volume of the securities can be bought or sold, or to a significant increase in transaction costs for market orders.

Appendix A presents theoretically possible scenarios when placing a sell order in excess of available demand at a given price level. In the scenario, buy orders are sorted according to the possible quotation steps in both options - before and after the introduction of EU Regulation 2017/588. In the example with Sopharma Plc upon entering the "sell" order and after exhaustion of demand at the price of 4.08 BGN, the next search is at the level of BGN 4.07. At a quote of 0.001 BGN applied prior to the introduction of the Regulation, the next search may be at a price of 4.079 BGN. For sales in volume exceeding the normal, it is

[11] Source: Own calculations on data from www.bse-sofia.bg.

theoretically possible to fulfill all placing orders for the possible prices levels. In satisfying orders at five possible price levels, the gross price effect is 1.23% under the new regulation and only 0.15% in the old quote steps. Of course, in the companies with a higher quote, the price effect is higher - at FIB Plc, whose quote step is BGN 0.02, the price effect increases to 1.85%, with 0.09% for the old quotation steps. Albena Plc, whose quote step is BGN 0.50, the potential price effect rises to 4.24% at 0.01% for a quote step of BGN 0.001.

The possible market impact thus calculated, averaging the results, shows an average change of 2.25% for the quoted steps introduced and 0.17% for the old regulation without the increased quote steps. In case of increased market activity due to a high-interest event, investors trade on all liquid positions, which means a total market effect of 24.79%. At a quote step of BGN 0.001, this would have a combined market effect of only 2.31%.

There are examples that illustrate possible market impact even more clearly. Two of the companies traded on BSE Sofia Plc are very illiquid, but with high market prices, respectively they are given a maximum quotation step (Varna Plod Plc and KRZ Odessos Plc).Varna Plod Plc has a last price of 396.40 BGN and the quotation step is 2.00 BGN. KRZ Odessos Plc has a last price of 90 BGN and the quotation step is 0.50 BGN. This means that each price change will amount to half a percentage of the price for Varna plod and 0.56% for KRZ Odessos. In the theoretical scenario, where investors submitted bids for the possible quotation steps, in five offers, the price effect on Varna Plod will be BGN 10 or 2.52%, whereas for KRZ Odessos the price effect will be BGN 2.50 or 2.78%. At a quoting step of BGN 0.001 the price effect would be 0.001% and 0.006% respectively.

As seen by the results, the market impact strongly increases with purchases or sales that are in excess of the normal market. This effect is of particular importance to institutional investors who hold strong investment positions. Losses for them grow strongly in high volume deals through market orders, which greatly increases their transaction costs.

According to the Regulation, the quote step regime only defines the minimum difference between two price levels of the orders made in relation to a financial instrument in the order book. Therefore, it should apply equally regardless of the currency of the financial instrument. This means that the price of a company traded on the Bulgarian stock market will bear a different spread, traded in Bulgarian levs and in euro, after joining the euro area. For example, Sopharma is traded at BGN 4.22 on January 30, 2018. The company has a liquidity band 2, which means that at a price between BGN 2 and BGN 5, the quote is 0.01. This BGN 0.01 represents exactly 0.24% of the stock price. Following the expected accession of Bulgaria to the Eurozone in the foreseeable future, the price of Sopharma will be determined in euro. With an unchanged EUR-BGN exchange rate, the company's current market price will be EUR 2.16. The quote step, however, will now be set not to BGN 0.01, but to EUR 0.01, which represents exactly 0.46% of the issue price, so the negative effects of the quotation steps will be further enhanced.

When the problem is considered in terms of the profit of the positions, then the percentage ratio of the possible spread to the profit amount becomes significant. In case of a forced sale due to liquidity reasons or changed investment decision, the margin of 0.005 represents exactly 0.12% of the value but exactly 100% of the profit if a decision is taken to sell at a price of 4.225 BGN. The example with First Investment Bank is more extreme. As of

February 5, 2018, the company traded at a price of BGN 5.94 and with a liquidity band 2 and a price between BGN 5 and BGN 10, the quote step was BGN 0.02. This quote step represents 0.34% of the value. If the stock could not be sold at a price of BGN 5,959 (as would be possible without regulation), the investor loses 0.32% of the deal. The old regulation allowed a profit of 0.32% of the position, but the current one imposes a sale at a price of 5.94 BGN (the same as the purchase price), then all transaction costs remain at the expense of the investor.

If the potential profits of 0.12% to 0.32% do not look valuable, the comparison of these percentages with the current interest rates on bank deposits of 0.10% and lower gives a more accurate picture of the magnitude of the impact. Under the current money market conditions, earnings between 0.12% and 0.32% are many times higher, especially if realized not for a year but for hours. Obviously, the liquidity bands and quote steps deprive investors of the ability to trade at low margins, and thus denies the daily trading of securities.

Data analysis confirms increases in volatility, spreads and price impacts. These indicators form market liquidity and their high values greatly reduce it. In turn, volatility is a measure of uncertainty, and high uncertainty leads to the cessation of trade and effective price formation. The high uncertainty, combined with the expected high market impact, is detracting from the attractiveness of each financial instrument market. The low attractiveness, combined with low market liquidity, determines the capital market as poor and unfeasible for the national economy.

6. Conclusion

The complex legal framework applied to the new and illiquid Bulgarian financial instruments market is far too inadequate. It creates significant problems for both issuers and investment firms, investors, the regulated market operator. The application of such restrictions requires the administrative capacity of the supervisory authority, which is not inherent in the emerging markets. Modern regulations, intended for old and liquid capital markets, have negative effects on new markets. These include:

- Over-regulation of the investment process, which ultimately leads to institutional failure in the application of complex norms and in practice to a reduction in the real protection of minority shareholders;
- Bilateral restriction of access deprives public companies of capital through the national capital market, and investors – of qualitative investment assets; the redirection of national capital to foreign capital markets takes away funds from the national economy;
- Sophisticated regulations increase the number of regulated transactions, which causes both supervisory errors and high transaction costs for all market participants and market infrastructure institutions;

- The introduced quotation steps deepen the problems of the young Bulgarian market, further reducing its attractiveness and liquidity by artificially raising the values of the indicators of uncertainty, volatility and level of transaction costs.

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Appendix A

Possible price impact for the two different regimes of quote steps, data by January 2018

Sopfarma Plc	New regulation	Old regime	**CCB Plc**	New regulation	Old regime
Price to 09.02.2018	BGN 4.080	BGN 4.080	Price to 09.02.2018	BGN 1.940	BGN 1.940
Tick size	BGN 0.010	BGN 0.001	Tick size	BGN 0.005	BGN 0.001
possible bid prices	Tick size BGN 0.01	Tick size BGN 0.001	possible bid prices	Tick size BGN 0.005	Tick size BGN 0.001
	BGN 4.070	BGN 4.079		BGN 1.935	BGN 1.939
	BGN 4.060	BGN 4.078		BGN 1.930	BGN 1.938
	BGN 4.050	BGN 4.076		BGN 1.925	BGN 1.937
	BGN 4.040	BGN 4.075		BGN 1.920	BGN 1.936
	BGN 4.030	BGN 4.074		BGN 1.915	BGN 1.935
Gross market impact	1.23%	0.15%	Gross market impact	1.29%	0.26%
FIB Plc	New regulation	Old regime	**Ind. Holding Bulgaria Plc**	New regulation	Old regime
Price to 09.02.2018	BGN 5.420	BGN 5.420	Price to 09.02.2018	BGN 1.010	BGN 1.010
Tick size	BGN 0.020	BGN 0.001	Tick size	BGN 0.005	BGN 0.001
possible bid prices	Tick size BGN 0.02	Tick size BGN 0.001	possible bid prices	Tick size BGN 0.005	Tick size BGN 0.001
	BGN 5.400	BGN 5.419		BGN 1.005	BGN 1.009
	BGN 5.380	BGN 5.418		BGN 1.000	BGN 1.008
	BGN 5.360	BGN 5.417		BGN 0.995	BGN 1.007
	BGN 5.340	BGN 5.416		BGN 0.990	BGN 1.006
	BGN 5.320	BGN 5.415		BGN 0.985	BGN 1.005
Gross market impact	1.85%	0.09%	Gross market impact	2.48%	0.50%
Neohim Plc	New regulation	Old regime	**FNIB REIT**	New regulation	Old regime
Price to 09.02.2018	BGN 46.600	BGN 46.600	Price to 09.02.2018	BGN 1.940	BGN 1.940

Tick size	BGN 0.200	BGN 0.001	Tick size	BGN 0.010	BGN 0.001
possible bid prices	Tick size BGN 0.20	Tick size BGN 0.001	possible bid prices	Tick size BGN 0.01	Tick size BGN 0.001
	BGN 46.400	BGN 46.599		BGN 1.930	BGN 1.939
	BGN 46.200	BGN 46.598		BGN 1.920	BGN 1.938
	BGN 46.000	BGN 46.597		BGN 1.910	BGN 1.937
	BGN 45.800	BGN 46.596		BGN 1.900	BGN 1.936
	BGN 45.600	BGN 46.595		BGN 1.890	BGN 1.935
Gross market impact	2.15%	0.01%	Gross market impact	2.58%	0.26%
Monbat Plc	New regulation	Old regime	**M+S Hydravlik Plc**	New regulation	Old regime
Price to 09.02.2018	BGN 10.200	BGN 10.200	Price to 09.02.2018	BGN 7.800	BGN 7.800
Tick size	BGN 0.010	BGN 0.001	Tick size	BGN 0.050	BGN 0.001
possible bid prices	Tick size BGN 0.01	Tick size BGN 0.001	possible bid prices	Tick size BGN 0.05	Tick size BGN 0.001
	BGN 10.190	BGN 10.199		BGN 7.750	BGN 7.779
	BGN 10.180	BGN 10.198		BGN 7.700	BGN 7.778
	BGN 10.170	BGN 10.197		BGN 7.650	BGN 7.777
	BGN 10.160	BGN 10.196		BGN 7.600	BGN 7.776
	BGN 10.150	BGN 10.195		BGN 7.550	BGN 7.775
Gross market impact	0.49%	0.05%	Gross market impact	3.21%	0.32%
Stara planina Hold Plc	New regulation	Old regime	**Albena Plc**	New regulation	Old regime
Price to 09.02.2018	BGN 7.700	BGN 7.700	Price to 09.02.2018	BGN 59.000	BGN 59.000
Tick size	BGN 0.050	BGN 0.001	Tick size	BGN 0.500	BGN 0.001
possible bid prices	Tick size BGN 0.05	Tick size BGN 0.001	possible bid prices	Tick size BGN 0.50	Tick size BGN 0.001
	BGN 7.650	BGN 7.699		BGN 58.500	BGN 58.999
	BGN 7.600	BGN 7.698		BGN 58.000	BGN 58.998
	BGN 7.550	BGN 7.697		BGN 57.500	BGN 58.997
	BGN 7.500	BGN 7.696		BGN 57.000	BGN 58.996
	BGN 7.450	BGN 7.695		BGN 56.500	BGN 58.995
Gross market impact	3.25%	0.06%	Gross market impact	4.24%	0.01%
Chimimport Plc	New regulation	Old regime			
Price to 09.02.2018	BGN 2.470	BGN 2.470			
Tick size	BGN 0.010	BGN 0.001			
possible bid prices	Tick size BGN 0.01	Tick size BGN 0.001			
	BGN 2.460	BGN 2.469			
	BGN 2.450	BGN 2.468			
	BGN 2.440	BGN 2.467			
	BGN 2.430	BGN 2.466			
	BGN 2.420	BGN 2.465			
Gross market impact	2.02%	0.20%			

Source: Own calculations

ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Elena Shustova[1]
Vesselin Blagoev[2]

RISK MANAGEMENT IN THE INTERNET BANKING
The Case of Kazakhstan

The risk management in the banking sector has always been of primary concern, especially after the cases of mismanagement, which lead to big losses, and even closing down banks. For obvious reason, in the case of internet banking the risk management (RM) issues become much more complicated. This study focuses on the specifics of RM in the case of Kazakhstani banks, using as an example the policy of one of the leading banks in this area – BankCentrCredit. Kazakhstan has all the characteristics of a country which has to develop intensively the internet banking – large territory, low density of the population and as a result – very expensive coverage with bank services with the traditional methods – bank offices. We especially address the specifics of risks in case of providing digital financial services, based on artificial intelligence solutions and related robotized systems.
JEL: M15; G21; L86

1. Introduction

The risk management in the case of internet banking has some special dimensions and characteristics, compared to those in the traditional banking. First of all, it is developed on totally new technological platforms – internet and artificial intelligence, to mention a few. It goes along with transformational changes in the business and society, inspired by the technological revolution, e.g. the implementation of artificial intelligence, and chatbots as substitutes of human employees. Along with these, the provision of banking services is changing in revolutionary ways. According to Scott Vincent (2016) "there is a new central issue to focus attention on: technology and the digital world". Portilla, Vazquez, Harreis et all. (2017) argue about major trends in banking as a result of the digitalization. Although the digitalization of the banking services, and in general – the internet banking, is a mainstream trend, it is still in the emerging stage of development, in particular in

[1] *Elena Shustova, Assoc. Professor, PhD, Kazakh Humanitarian Law Innovative University, Republic of Kazakhstan, shustova_yelena@mail.ru.*
[2] *Vesselin Blagoev, Professor, PhD, Varna University of Management, Bulgaria, tel.+359-421-9595, blagoev@vum.bg.*

Kazakhstan. Obviously, all these changes – new products, new services, new agents, new barriers to entry, affect both the banks' employees, organisation, risk management, as well as the clients. In the conditions of Kazakhstan – large territory, low density and high dispersal of the population, as well as low internet penetration, the implementation of internet banking is much wanted, although probably more difficult, and riskier. It is clear that under all mentioned circumstances, the risk goes "far beyond the operational and technical risks" (Denyes & Lonie, 2016). However, the internet banking is an inevitable development, and therefore the new risk management issues have to be studied with the aim to support the process.

Internet banking defined

There are many definitions of internet banking, e.g. Mock & Zaha (2017), Khrais (2017), Portilla, Vazquez, Harreis et all. (2017), Aaron, Armstrong & Zelmer (2008). Most of them interpret it as offering financial transaction services using IT in the Internet environment. Other authors define internet banking as distance service that covers the traditional banking services (Goh, Yeo, Lim & Tan, 2016), which is about the same, expressed in different wording. Mukhtar (2015) argues that internet development in the end of 80s laid the beginning of the new era of online banking services.

International Finance Corporation (The World Bank Group) is using another term - digital financial services (Denyes & Lonie, 2016). It stresses more on the digital form, rather than on the communication environment or channels. Whatever definition used, the authors, e.g. Salihu & Metin (2017), as well as the previously mentioned authors, argue that internet banking is capable of improving the quality of services and the satisfaction of customers from the fast and secured banking services they get.

For our purposes in this paper we define internet banking as: ***providing digital financial services by the banking system using Internet-based platforms***. Based on that we define and analyse further the types of risk in the case of Kazakhstan. Of course, they cannot be substantially different from those in any other country.

2. Risk Management

The risk management in the banking sector is defined and analysed in hundreds of academic papers, e.g. Vincent (2016), Mock & Zaha (2017), Denyes & Lonie (2016), Harle et all. (2016), Aaron, Armstrong & Zelmer (2008), Pyle (1997), Portilla et all. (2017), Shustova (2018) to mention a few. Of course, they analyse the problem in the scope of the classical banking system, as this is what we had as common practice until recently. In this paper we'll analyse the risk management issue from the point of view of the internet banking/digital financial services. This imposes a critical analysis of what the classical risk management includes, but in the new technological environment. The academic literature shows different approaches in studying such not well-known problems, in which the relatively good understanding of the influence and interconnection of the factors and main

actors in the system becomes insufficient because of the changes in the environment. As we discuss internet-bank risk management issues, where the problems may lie in any of those – the personnel, the system, the technological environment, and in the combination of all those, we decided to accept Grint's approach of analysis (Grint, 1997, p.162), which coincides well with Basel II. We will apply a structural approach, and action/operational approach, of course using all classical instruments of assessing the bank risks.

2.1 Structural (regulatory) approach

The structural approach presumes that the risk-management problem in the internet-banking will be analysed based on the structures/regulations in the banking sector, and in the bank itself, as they guide and stimulate the bank employees into certain risk-free behaviours. Obviously, this is based on the relevant regulations, including Basel II and Basel III, the laws on banking by countries, and even ISO31000 standards for Enterprise Risk Management, which are used to establish principles of risk management in the case of digital financial services (Denyes & Lonie, 2016). The most interesting within the structural approach, with regard to Kazakhstan, include the regulations, management of the strategic risks, and the assessment of value loss.

2.1.1 The regulatory approaches

The regulatory approaches are based on Basel II and Basel III, as well as on the country regulations. As far as they are implemented in every country in a pretty similar, if not identical, way, we shall not go into details, but will rather underline the most important. Basel II concentrates on the so-called three pillars: minimal capital requirements, supervisory review and market discipline.

In regard to the first pillar: required capital, Basel II suggests a few ways for estimating the required capital to cover credit risks (Aaron, Armstrong & Zelmer, 2008, p.42; Stanisic & Stanoevic, 2009, p.8; Zupanovic, 2013, p.86). For example, for measuring the credit risk the banks can select and apply between Foundation (internal-ratings-based) approach (IRB), advanced IRB approach and of course – the well-known standardised approach (rate weights fixed by independent internationally recognised credit assessment institutions). In the case of applying Foundation IRB and advanced IRB approaches, the banks set themselves, and use their own risk assessment models, including for the probability of default, loss-given-default (LGD), exposure at defaults and maturity for each exposure (Aaron, Armstrong & Zelmer, 2008, p.42). In case of applying foundation IRB, the probability of default (PD) must be assessed by the bank itself, while the other risk factors are provided by the supervising authority. In the case of applying Advanced IRB, for every exposure, the bank must estimate PD, LGD, and maturity. In line with Basel II Central bank of Kazakhstan, and Kazakhstani government have a clear policy for stimulating the consolidation in the banking sector (Shustova & Blagoev, 2018). For example, Central bank of Kazakhstan is controlling tightly the minimum bank capital as a risk management precaution and guarantee, and as a pressure to the banks to adopt new better risk management techniques. We presume that there is nothing specific about this pillar in

regard to the risk management in the internet banking, as the regulations, if followed up strictly, should guarantee risk-free levels of liquidity, to mention the most important.

2.1.2 Management of the strategic risks

Anna Mok and Ronnie Saha (2017) of Deloitte US have published a very comprehensive paper on the strategic risk management in banking. They argue, that the strategic risks are "the most damaging risks" the organisations faced in the last decade which follows up on Harvard Business Review (2015) article, presenting the results of CEB research of the market capitalization decline in the previous decade. The analysis did show that "86 percent of the significant market capitalization decline were caused by strategic risks", while only 9 percent were caused by operational risks and 3 percent by legal and compliance risks. The analysis covers the real sector as well, but considering the share of the financial sector in the overall market capitalization, the numbers for the banks are probably pretty similar. If in the cases of Enron and WorldCom the problems were about huge accounting fraud, after the changes in legislation the main cause has changed to the decision making. A well-known example of questionable decision-making is the development of Deutsche Bank's total derivative exposure, which was USD 75 Trillion in 2013, reduced to USD 46 Trillion at the end of 2016 (Durden, 2016), and about USD 22 Trillion at the end of 2017 (Deutsche Bank, 2017). It is clear that there was, and probably is, a real risk issue that needs to be addressed. In its official Credit Overview Deutsche Bank (2018, p.8) reports USD 337 Billion as credit risk only (IFRS balance sheet derivatives trading assets as the present value of future cash flows owed to DB and as a result represent the credit risk to the Bank) which is an excellent development by March 2018. Still the question remains how could such an enormous and obviously unacceptable credit risk in 2013-2016 be formed? Most probably the huge derivative exposure was formed following strictly Basel II First pillar, but along with undertaking unacceptable strategic risk which should have been assessed by the supervisory levels (Basel II – Second pillar). But they were not.

As a result of all those cases, many banks reconsider the responsibilities of the chief risk officer and chief strategy officer, as it is clear now that they cannot perform their duties in separate independent processes. The finance institutions react differently in terms of the names of the new structures, still in one direction. Strategic risk working groups and centres of excellence are formed to coordinate the decisions of the strategic units with those in risk management.

An important change nowadays is the reduction of the influence of the mathematical modelling in the decision-making process. In our view, this is caused mainly by the market volatility of both financial and industrial markets. The low level of predictability makes the modelling less reliable instrument for making strategic decisions and assessing the risks. Thus, the formal logic would suggest, that in the foreseeable future we could expect the AI and modelling to play a less significant role in the strategic decision making, and therefore in the risk management at that level. However, the very strong orientation to digitalize, and to implement AI solutions in every process in the banking sector, may produce, and probably will lead to exactly the opposite scenario with all the risks related to such development.

2.1.3 Action/Operational Approach

Basel II suggests three methods for measuring the operational risk: Basic Indicator approach (BIA), Standardized Approach (SA), and Advanced Measurement Approach (AMA). Again, it is at banks' discretion to decide which of those approaches to use. For example, most of the banks in Canada apply Standardised approach for assessing the operational risk, while most of them apply Advanced IRB approach for the credit risk assessment (Aaron, Armstrong & Zelmer, 2008). What is most important here is to minimize the operational risks with long-lasting effects. There are many different ways to describe the ways through which the operational risk could be formed. For example, McKinsey/Institute of International Finance description of digitalization as a ground to analyse the possible risks (Portilla et al, 2017) includes as following: Data management; Process and workflow automation; Advanced analytics and decision automation; Cohesive, timely and flexible infrastructure; Smart visualization and interfaces; External ecosystem; Talent and culture.

The effect of the new technology (FinTech), including different IT platforms, on the bank risk could be illustrated enough well by the first element – Data management. According to Portilla et al (2017) it includes "overall data governance, data quality, consistency processes, and operating models to enable capturing and use of vast amounts of data—both structured (such as transactions) and unstructured (emails and text messages, social-media posts, photographs, and so on)". In the classical banking there is a human control at each one of the steps/elements, and at any instant of time. In the digital financial services most of the times the data processing and decision making are done using artificial intelligence (AI). In a large financial structure, such as a big bank, the effect of a wrong decision, or a wrong policy, will be seen at much later stage of the process because the AI system will not be set to (formally "instructed") to analyse the possible decision as good-or-wrong. Instead, the algorithm will give a GO if the set of parameters, that are defined in the AI system, is considered right or at least acceptable. Obviously, the dependence on technical and AI reliability and self-control at each one of elements of the decision-making, imposes additional requirements to the risk assessment and risk-management. The advanced statistical techniques and algorithms, as elements of the artificial intelligence (including machine learning, cognitive agents, and robots) is supposed to help managers to forecast the possible developments, assess the possible outcomes, and based on that make better decisions in terms of risk minimization. We have to understand also that these are done under the influence of the external ecosystem in which the bank operates. Knowing how volatile and unpredictable the financial and business developments might be, the idea to delegate substantial part of the decision making to AI seems to be quite frightening. To the possible problems with wrong AI-based decision making we have to add the possible fraud. For example, Michael Soppitt (2016, p. 10) argues that "the growth of the digital ecosystem will continue to work in favour of the fraudster. Social media and an exponentially growing volume of data, creates rich pools of information for criminals to utilise." According to BBC "the cost of social engineering fraud has already doubled to $1bn as a result of the digital transformation" (Soppitt, 2016, p. 11), and the number may have gone higher in 2017-2018. On the other side, the possible biases and their drivers in the digital environment are known, and it is possible to develop risk control software which makes consumer bias monitoring enough effective to help the management and supervisors, and

thus mitigate or even eliminate possible risks for the bank. Different instruments are used to assess the credit risk. For example, Donovan et al. (2018) use credit default swaps (CDS) spreads for companies which are trading them and find them good to measure credit risk as indicated by future credit events (e.g., bankruptcy, credit rating downgrades, interest spreads). It has to be discussed if the classical methods, based on the intuition of the bank officers, could, and should be changed to AI (machine-learning methods), that develop a response-model based on the available statistics. The obvious answer is that in the foreseeable future the intuition-based assessment has to be used, still supported with the results from the AI tools.

2.1.4 Assessment of value loss

The main causes for value loss (Pyle, 1997, p. 3) include the following:

- *Market risk* – the change in the net asset value because of changes in the environment, e.g. interest rates, exchange rates, commodity prices, etc.
- *Credit risk* - change in the net asset value if some counterparties cannot meet their contractual obligations
- *Operational risk* – additional costs, for example, due to failure to meet regulatory requirements
- *Performance risk* and *Automated compliance* – We put these two together, as performance risk in classic banking is about losses caused by poor control of the employees, etc., as well as the "model risk", and automated compliance is about the interaction between the human factor and the AI.

Not going into many details, the market risk is measured using either stress testing, or value-at-risk (VaR) analysis. The stress testing is based on scenario that presumes that a very difficult market situation will occur again, and the bank has to prove good results. VaR analysis uses return distributions and predicted return parameters, that should not exceed certain percent at a time. The operational risk was discussed above.

As we mentioned above, the performance risk will need a special attention, as the internet-banking is based on intensive use of AI at the operational level. Presuming that in the future the AI will be given some managerial functions, this will impose problems both to the model risk, and to the human-AI interaction in the process of internet-banking. At this level we cannot discuss this issue in specifics.

2.1.5 Automated compliance

Härle et al. (2016, p. 8) argue, that "banks will likely have no choice but to eliminate human interventions as much as possible in risk's dealings with customers". Having in mind the progress in the AI even at these early stages of digitalization of the banking services, this statement sounds realistic in the long run. Such changes seem to be the main

avenue of development, and the banking sector, including in Kazakhstan, already goes into that.

However, we think that such changes might impose some possible additional risks if AI-based methods would fully substitute the human involvement. The additional risks would probably stem from the limitations in the modelling, which will form/empower the AI "brain". We can model fairly well the standard banking problems and decision making, but we can hardly model the new types of problems, which the banks are facing now, and will face in the future, e.g. with the derivatives, cryptocurrencies, etc., to mention a few possible causes.

From another perspective, the risk of internet banking could be classified as following (Shustova, 2018b): Depending on the level of banking; Who causes the risk; Level of possible consequences; Depending on the time of appearance.

This classification could be used to predict possible causes of risks and plan activities to eliminate, or at least minimize them. There is one very important additional consideration – the specifics of the national banking systems. Most of them, if not all, are following the international rules and regulations, and develop using the best practices of the other countries in risk management minimization. The analysis of the specifics of such regulations and national practices in particular countries can help add knowledge and get workable ideas for more effective risk management.

3. Risk management in the case of internet banking in Kazakhstan

The development of the internet banking in Kazakhstan is characterised with some problems, which could be classified in two groups as following (Shustova, 2018a): organisational/technical, and economic problems.

The organisational and technical problems include:

- Guaranteeing the security of the e-banking services.
- Sophisticated systems of bank interfaces used by some commercial banks, which makes too complicated the communication of the clients with the bank.
- Outsourcing of some IT functions related to the security controls, which gives access of those non-bank employees to confidential information about the clients and their operations.
- Technical problems of the equipment – at the bank or at the internet provider.

The National bank of Kazakhstan (2016) has regulations according to which in 10 days from the decision to start internet banking the commercial bank has to submit to the National bank a statement that it has internal regulations and procedures for the security of the internet banking system, and specifically – that it guarantees that unauthorised access to the system is not possible. However, it should be noted, that many customers have limited knowledge/literacy of using IT services and devices, and when they face problems they are

ready to accept help from authorised or even unauthorised specialists, and ordinary people. In the big banks these would be the IT specialists, while in the SMO who want to use internet banking – those might be specialists from companies to which they are outsourcing their IT services, or even other unauthorised personnel. In such cases, the main threat is that these external specialists are given the login and password, and they can copy them and use them for unauthorised access to clients' database.

Another problem arises because of massive use of external accountants who serve 3-5, or even 20 SME, when problems with the software lead to upgrading elements of, or even the whole system. In most cases, they use external specialists, which of course could lead to security problems.

The commercial banks design their own handbooks with instructions on how to use internet banking. For example, BankCenterCredit has uploaded in its website detailed instructions how to get in and use Star Banking system for individual customers (BankCenterCredit, n.d.). It includes:

- how to login in Star Banking;
- guide to work in the Star Banking system;
- log in to the mobile application Star Banking with a PIN code or thumb mark;
- registration in Star Banking system with the authorisation of National Authentication Center;
- blocking/unblocking the card in Star Banking system;
- opening a deposit account;
- working with e-invoices and emailing them;
- setting limits to the bank cards;
- transfer of money using Star Banking.

All these above make possible for every potential user of Star Banking to log in and get the desired services.

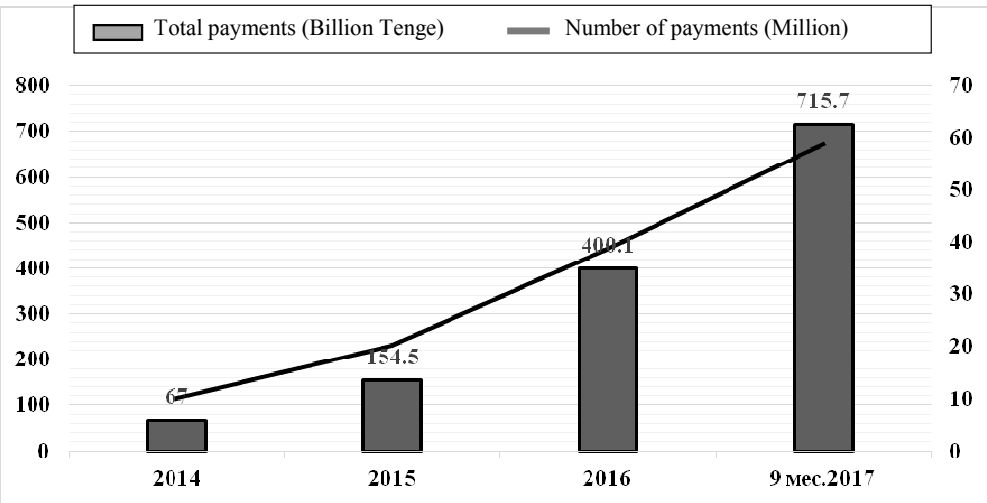
Similar instructions are available for the institutional clients. BankCenterCredit, in collaboration with InfoSoftPro has developed the so-called DirectBank technology, which makes it possible to speed up the transfer of documents between the organisations as clients, and the Internet banking system of BankCenterCredit. The important thing is, that DirectBank technology has the elements of the internet banking security to guarantee the bank services at the desired minimal level of risks.

The example of BankCenterCredit illustrates the development of the internet banking environment in the country. Practically all commercial banks, under the direct control of the National bank, have developed similar systems, which made possible a significant increase of the electronic banking services in the period 2014-2017. In this period the internet-based transfer of payments, including mobile banking, reached 38.7% of all transfers, and 36.4%

of the total amount of payments by bank cards. These results are really impressive when we consider that the number of payments with bank cards in 2017 has increased about 10 times compared to those in 2014 (Fig. 1)

Figure 1

Total amount of payments (Billion Tenge) and number of payments in the internet (Million), including mobile banking, in Kazakhstan in 2014-2017



Source: National Bank of Kazakhstan (2018).

The data of BankCenterCredit for December 2017 show that there have been 524 518 payments through internet banking system, out of total of 633 749 payments. This accounts for 83% of all payments. It is clear that the risk control system has to be really effective to guarantee the problems free banking environment, as well as fast services. The results of the other Kazakh banks are pretty similar in terms of the share of the internet banking payments, which shows a very optimistic picture for the country as a whole.

4. Conclusions

Based on the analysis of the risk management in the case of internet banking, done by different researchers, and our analysis we presume that it has some special dimensions and characteristics, compared to those in the traditional banking. We define internet banking as providing digital financial services by the banking system using internet-based platforms. From the definition it stems that the specific risk factors will be related to a very high extent to the technical issues, specific to the internet system. However, we did not limit our discussion to those factors only. Il line with Basel II we discussed the structural approach, and action/operational approach, of course, using all classical instruments of assessing the bank risks.

Further we studied the situation in the internet banking in Kazakhstan with a focus on the development and the results of one of the biggest banks in that country – BankCenterCredit. Its results in terms of amount (Billions of Tenge) of total e-payments in December 2017, as well as the number of operations, show that under the strict control of the National bank of Kazakhstan, the commercial banks, on the example of BCC, have developed a very reliable internet banking system. This applies to both internal banking systems and the inter-bank operations/transfers.

On the basis of that analysis we would suggest the following to be considered in the development of the internet banking systems in Kazakhstan and elsewhere (Shustova, 2018a):

1. Commercial banks have to guarantee the functioning of the IT system of the bank, without breakouts. They have to develop and apply technological procedures for eliminating losses and other negative consequences from fraud and unauthorised login in the system. The banks have to upgrade its software and technical support to serve their clients, including those who use internet banking, in the best possible way.
2. Special departments/teams have to be established within the bank's structure to provide electronic banking services. Authorised bank employees have to carry on regular monitoring of the risk payments and to the extent possible – analyse the risky logins, including multiple use of wrong passwords, log in from unexpected locations, etc.
3. Simplifying bank interface to make it easier for the clients, improving the work of the call-centres and departments for technical maintenance.
4. In addition – the accountants who serve individual clients and little SME have to be informed about the risks in cases of using external IT specialists to settle the internet banking, which requires sharing passwords, etc. The accountants have to login personally instead of sharing the login codes.
5. Additional information has to be provided in the website, including special instructions on how to get into the internet banking system and how to use it – both for the existing and new clients.
6. Enlarging the mobile banking coverage through additional POS-terminals with options for mobile payments. All these with the aim to increase the speed of the provided banking services to both – services, businesses and individual clients.

The main principle, which all banks have to follow, is that the provided electronic banking services should not have any negative impact on the quality of the bank operations and provided services to the clients.

In conclusion, Kazakhstan has all the characteristics of a country which has to develop intensively the internet banking – large territory, low density of the population and as a result – very expensive coverage with bank services with the traditional methods – bank offices, has developed reliable and secure infrastructure for internet banking. Our analysis shows that the level of risks in the internet banking is minimized as the internet banking systems provide the necessary level of control.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Dimitar Zlatinov[1]

A MODELLING APPROACH FOR FORECASTING NET EXPORTS OF ELECTRICITY FROM BULGARIA

The report presents a modelling approach for forecasting Bulgarian net exports of electricity based on an empirical analysis of the factors affecting trade with this specific commodity. A brief overview of the models and approaches for forecasting the production and export of electricity is made and their adequacy is assessed regarding the situation of the electricity market in Bulgaria and the region. On this basis, a modelling approach is foreseen to predict the net exports of electricity by 2035, taking into account the current situation and prospects for the development of the electricity sector in Bulgaria and Europe.
JEL: C13; F10; F47

Introduction

Traditionally, electricity is considered and explored to meet domestic energy needs of individual countries, taking into account aspects related to national security, but much less economically as a commodity for trade. This is partly due to the specific nature of electricity whose transmission and storage differ significantly from internationally traded goods and services. Despite large fluctuations in Bulgarian electricity exports to the EU Member States between 1990 and 2015, Bulgaria retained its position as a net exporter of electricity. This indicates that the local electricity sector is increasingly focusing on the opportunities for foreign trade, including on the basis of the transit of electricity. Considering that Bulgarian trade balance is permanently negative which puts pressure on the current account balance, at sectoral level an intensified foreign trade in electricity would have a positive effect on the stability of the financial flows of Bulgaria, and at domestic level it would stimulate production and employment in the sector.

Such a trend provokes a research interest in tracking the factors behind it so that its sustainability could be predicted taking into consideration the current state of national and regional electricity market. Devoted to this research task, the report provides a brief overview of basic approaches and models for analyzing electricity consumption and

[1] *Dimitar Zlatinov, PhD, Chief Assistant Professor, Sofia University St. Kliment Ohridski, Faculty of Economics and Business Administration and Economic Research Institute at Bulgarian Academy of Sciences, e-mail: dzlatinov@feb.uni-sofia.bg, d.zlatinov@iki.bas.bg.*

exports. Moreover, we empirically analyze the factors that influence these two electricity market variables in the period 1995-2015 in order to identify the main variables on which net exports of electricity depend in a regional aspect. In conclusion, we comment on the results of the econometric assessment with a view to evincing the trend of the net exports of electricity from Bulgaria until 2035. Our motivation to forecast net exports not only exports of electricity stems from the serious flows of transited electricity through the country, thus the reporting of exports alone would be incorrect.

1. Overview of models and approaches for analyzing electricity consumption and export

The basic assumption we made when reviewing the research papers below is that electricity consumption can be met by both local production and imports and the factors that affect it are generally factors that also determine the dynamics of electricity exports.

Hakkio and Nie (2014) show that net exports of electricity depend on its domestic production and relative prices, noting that electricity consumption in importing countries is much less dependent on exchange rate fluctuations which are a major factor when the export of non-energy goods is concerned. Employing a vector autoregressive model in 2002-2006 for the USA they find that an increase of local energy production by 1 p.p. led to a decrease in imports of 1.7 p.p. and an increase in exports by 1 p.p. The authors' model also proves that regulatory specificities have a significant effect on exports of electricity. Another model developed for Turkey (2009) is based on energy dependence, i.e. the extent to which one economy relies on imports of electricity to meet its needs. The US Energy Information Administration directly derives net exports of energy resources in the USA from domestic production when it forecasts US energy market developments by 2050.

However, to a much greater extent in electricity models and approaches researchers focus on domestic factors that affect electricity consumption which we consider as directly related to its import from other countries, respectively its exports from others. When employing the Integrated Energy Planning Model (IEPM) to predict energy production and demand Suganthi and Samuel (2011) use economic growth and gross value added structure by economic sectors, share of industrial production in total production, population growth, urbanization and number of households. Narayan and Smyth (2005) find a direct relation among electricity consumption, employment and real income per capita in a model for Australia while for Turkey Sozen, Arcaklioglu and Ozkaymak (2005) assess domestic electricity needs on the basis of so-called technological model that includes population, installed capacity and period of technical operation of electricity network as well as net exports of electricity. In a model for Malaysia Chandran, Sharma and Madhavan (2010) find that electricity consumption steadily depends on real GDP and electricity prices especially over a long term, making these variables particularly suitable for long-term forecasts of electricity exports. In addition to the already mentioned variables in a model for China based on demand and supply of electricity Steenhof and Fulton (2007) include electrical energy performance indicators and special variables for market deregulation and depreciation rate of electricity technology.

Besides fundamental factors that affect electricity consumption, according to the gravity model of trade, distance and physical possibilities for its transfer matter when exports of electricity are considered. This is also emphasized in other studies in the field of foreign trade as Galabova and Nestorov (2018) show. The impact of electricity transmission coupled with economic growth, investment costs for maintenance of electricity production capacities and relative electricity prices are variables included in a model for electricity demand in Greece (Skiadas, Papayannakis&Mourelatos, 1993). In research under review, we find that special attention is paid not only to seasonality, climate conditions and cyclicality (Al-Shobaki&Mohsen, 2008) when forecasting electricity consumption but also to changes in legislation and regulatory regime for exports.

2. Modelling the net exports of electricity from Bulgaria

Despite the author's approach, the review of factors influencing electricity consumption shows a repeatability of indicators that affect electricity demand is visible. Having this in mind and taking into account the specificities of the electricity market in Bulgaria where large amounts of electricity are transited through the country, as a first step of our modelling approach, we focus on highlighting the relation among consumption of electricity and its production, exports and imports of electricity and population growth[2]. Therefore, we calculate correlation coefficients that only serve us to gain an overview of the validity of relations between demand for electricity and possibilities for meeting it by exports. Based on the importance of logistic transmission of electricity and building on the gravity model of trade, we identify 5 countries (Greece, Macedonia, Romania, Serbia and Turkey) with which the electricity transmission from Bulgaria is possible. We test the correlation coefficients in the period between 1995 and 2015 due to the availability of comparable data on the surveyed indicators and the possibility of covering different phases of the business cycle in Bulgaria.

Table 1

Correlation coefficients in 1995-2015

Countries	C-X	C-M	C-N	C-Y	Prod-X	Prod-M
Bulgaria	0.19	0.57	0.12	0.59	0.87	0.42
Greece	0.59	0.35	0.53	0.83	0.60	0.51
Macedonia	-	0.45	-0.26	0.87	-0.54	-0.47
Romania	0.67	0.67	0.10	0.85	0.79	0.47
Serbia	-0.26	0.76	0.08	-0.06	0.63	0.15
Turkey	0.85	0.37	0.63	0.98	0.85	0.56

where C stands for consumption of electricity, X is the electricity exports, M is the imports, and Prod is its production. All indicators are based on Eurostat data in GWh. N is the population and Y is GDP at previous year prices according to Eurostat database.

[2] Although we focus on net exports of electricity by Bulgaria, the calculation of the correlation coefficients is based on data on exports and imports of regional countries, so that we can trace the extent to which their domestic consumption and production depend on both variables. Thus, from the point of view of Bulgaria, we can cover the importance of export of electricity to the countries in the region.

Using the estimated correlation coefficients, we can draw some preliminary conclusions that help us in selecting variables for the econometric estimation of the factors affecting net electricity exports of Bulgaria. We see that an increase in electricity production in Bulgaria means an increased export potential, which is largely valid for the other Balkan countries, except for Macedonia. Domestic electricity consumption in Bulgaria is very poorly correlated with its exports, indicating that the export orientation of the electricity sector would not affect national energy security. In most Balkan countries electricity consumption is also not strongly correlated with its imports, probably due to the substantial impact of transit imports, as in the case of Bulgaria. Meanwhile, we find a positive correlation between economic growth and electricity consumption in the countries concerned, which shows that their favorable economic development would increase Bulgarian export opportunities of electricity. However, there is also no clear correlation between electricity consumption and population growth in a regional aspect, as trends in some countries such as Macedonia and Serbia are even contradictory.

Although the correlation analysis cannot account for the direct impact of regulatory specificities on the export of electricity, we assume that with an export tariff for export of electricity from Bulgaria, regulatory factors also affect the country's ability to satisfy external demand for electricity.

Thus, based on the theoretical review and conclusions drawn from correlation analysis, we specify the following regression equation:

$$NX\_BG_t = \beta_0 + \beta_1 Y\_BG_t + \beta_2 Y\_Region_t + \beta_3 C\_Region_t + \beta_4 EC\_growth\_Region_t + \beta_5 Reg\_BG + e_t \quad (1)$$

where:

NX_BG is the net export of electricity from Bulgaria;

Y_BG is the production of electricity in Bulgaria;

Y_Region is the total electricity production in the five countries we consider to be called a region;

C_Region is the total electricity consumption in the region;

EC_growth_Region is the average economic growth of the five countries in the region;

Reg_BG is a dummy variable that reflects export regulations in the country.

The regression equation is estimated with annual Eurostat data in 1991-2015 for Bulgaria, Greece, Romania, Serbia, Macedonia and Turkey using the R Studio. At the same time, we test the equation's specification with the Ramsey's Reset Test, which helps us to judge whether the functional form of the equation is correct. At the probability value (p-value) 0.2934 we do not reject the null hypothesis that all coefficients of the estimated equation are 0, from which follows that the linear equation specification is correct. The type of estimated regression equation is as follows:

$$NX\_BG_t = \underset{(0.00267)}{-3.12} + \underset{(0.00864)}{5.76Y\_BG_t} + \underset{(0.014385)}{1.03Y\_Region_r} + \underset{(0.04562)}{5.94C\_Region_r} + \underset{(0.02146)}{1.20EC\_growth\_Region_t} + \underset{(0.001262)}{-4.31Reg\_BG} + e_t$$

The results show that the estimated values of the individual variables are with their expected theoretical signs and are statistically significant with a high determination coefficient (Multiple R-squared: 0.8328 and Adjusted R-squared: 0.8151). The positive correlation between regional production and net exports of electricity from Bulgaria reiterates the importance of the transit of electricity in the region. The effect of regulations on the exports of electricity from the country is also substantial, similar to the local level of production and consumption in the region. The resulting econometric estimation is based on the time series stationarity check using the Dickey-Fuller test which helps us test the null hypothesis of a unit root when using first differences time series. The Variance Inflation Factor test for multicollinearity shows that the values obtained for all variables are far below 10, and the Durbin-Watson autocorrelation test has a value of 1.7039 showing that autocorrelation between the residuals is not greater than 0. The Breusch-Pagan test for heteroskedasticity has a probability value of 0.05077, which also allows us to accept the null hypothesis of homoskedasticity. Hence, the regression assessment we make allows us move on to a forecast of net exports of electricity from Bulgaria.

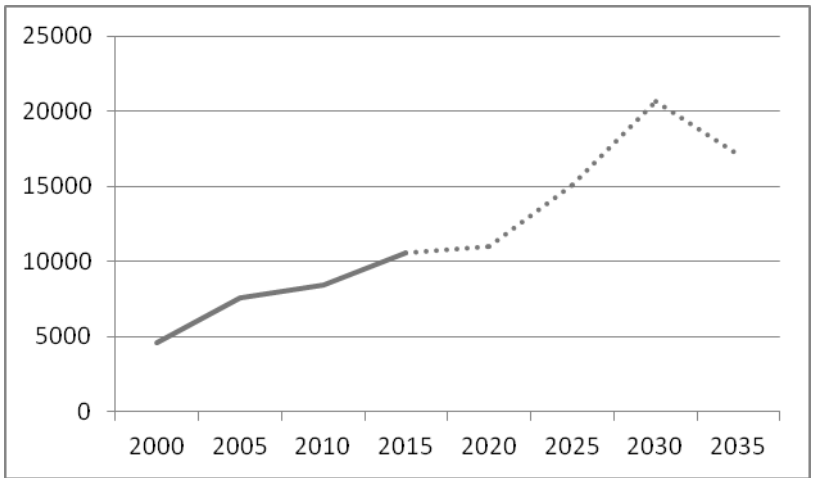
3. Data availability and forecasts for Bulgaria's net electricity exports by 2035

In order to forecast net electricity exports, we use forecasts for production in Bulgaria, Romania and Greece from the European Commission's Reference Scenario for 2016, according to which a gradual increase in production is expected in all three countries. For Turkey, Serbia and Macedonia we use forecasts for production in the moderate scenario from the BAS Report (2018). Estimates of electricity consumption in Greece and Romania are taken from the EC Reference Scenario for 2016. The estimated final electricity consumption in Macedonia, Serbia and Turkey is calculated on the basis of the IMF forecasts for economic growth[3]. We rely on our estimations that in 1995-2015 1 p.p. increase in economic growth is associated with a 1.2 p.p. increase in electricity consumption in Turkey, 0.8 p.p. in Serbia and 0.7 p.p. in Macedonia. Thus, following optimistic IMF forecasts for accelerating economic growth in the countries under consideration (an average of 2.5% for the region in the years up to 2035), the final electricity consumption inevitably increases, and so we expect growing export opportunities for Bulgaria.

Therefore, the results of the model proposed show a decrease of net exports of electricity from Bulgaria in 2015-2020 following a steady growth trend until 2030, with 20.7 TWh net exports in 2035 at 10.6 TWh in 2015.

[3] When we have forecasted electricity consumption in non-EU countries, different specifications of the factors on which it depends have being tested but dependence on economic growth has been the most reliable and statistically sustainable.

Figure 1
Historical data and estimated net exports of electricity from Bulgaria in 2020-2035 (GWh)



Source: Eurostat and own calculations.

The reasons behind the decrease of Bulgarian net exports of electricity by 2020 are mainly due to the contraction of Bulgarian production projected by the EC. This is a consequence of the dropping of renewable energy sources, the expiration of their technical period for use as well as the European-wide measures for limiting the share of coal in the electricity production mix. Meanwhile, the projected growth of production in Greece by the EC in this period is high. However, after 2020 the EC predicts a contraction of Greek production with an increase in the Bulgarian one, which creates opportunities for more exports of electricity. Data on electricity production and consumption in Turkey show that in 2001-2015 the growth rates of the two indicators are almost identical. So a stronger factor regarding Bulgarian net exports up to 2030 is the production and consumption of electricity in Greece rather than the one in Turkey.

At the same time, the expectations for building a large-scale electricity production after 2030 in Turkey have an immediate effect on the projected net exports from Bulgaria, which decline by 3.6 TWh in 2035. As a big economy and market Turkey's developments in energy sector has a very strong effect on Bulgarian net exports of electricity. Its sensitivity to Turkish production and consumption of electricity is very high, which in turn creates serious export opportunities for Bulgaria if Turkey will not carry out the planned energy projects[4]. The share in Bulgarian net electricity exports of other countries concerned – Romania, Macedonia and Serbia – is very low, which determines Greece and Turkey as the main market for export of electricity from Bulgaria while preserving the existing commercial and geographic orientation, which is a basic assumption for testing the model.

[4] According to the Turkey's Energy Profile and Strategy construction of two nuclear power plants in Akkuyu and Sinop are on the agenda.

Conclusions

The testing of the proposed approach for forecasting net exports of electricity from Bulgaria shows that the results obtained are adequate. At the same time, a very important factor for the realization of the forecasts is the technical possibility for electricity transmission from Bulgaria to the region. Such a possibility is a basic precondition for local exports of electricity to simultaneously increase if Bulgarian electricity production goes up, if we overcome the dependence of electricity exports on Greece and Turkey electricity consumption and if energy markets liberalization in Europe deepens.

The ENTSO expects that the maximum electricity transmission capacity to Greece and Turkey will be extended by 32%, reaching 3100 MW by 2024 and that in the longer term a new 400kW double power line with Serbia will be built. This has the potential to increase the transmission capacity up to around 2000 MW. Assuming a 100% load and no electricity transit flows, the expectations for building electricity transmission capacity will make it possible for Bulgarian exports of electricity to exceed to 27 TWh per year. Thus, the forecasts made employing the proposed modelling approach in this paper seem fully realistic if the energy market liberalization continues and the electricity market in the region evolves favourably.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Mincho Hristov[1]

ECONOMIC AND SOCIO-POLITICAL PRECONDITIONS OF MILITARY AUTHORITARIANISM IN SOUTH AMERICA

In the sixties and seventies of the 20th century, military regimes were established in South America, carrying a long-term structural project for national development. Civil rights, legal norms, parties are suspended in order to carry out the pre-determined policy and to accomplish the tasks set by the military institution.

The factors that determine this trend are multi-layered and interconnected. Among these are the economic changes that are unfavorable for the Latin American countries and especially the devaluation of their main export products after the Second World War, the need to close or restructure unprofitable state-owned enterprises and the conduct of socially unpopular steps, the lack of a nationally responsible political elite, highly developed and corrupt institutions. The external political factors can also be added to the economic factors.

The Cuban Revolution of 1959 and its engagement with the Soviet bloc is one of the reasons for rethinking the US foreign policy towards the entire Latin American region. Under President Kennedy, the Strategic Doctrine "Alliance for Progress" was adopted, where serious attention was given to new challenges and ways to overcome them. The ideological basis of the military regimes is the Doctrine of National Security. Therefore, it is precisely the correlation between painful socio-economic reforms and the repressive nature of military dictatorships that is part of the present study.

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Due to the effects of the social and economic structure that has been imposed in Bulgaria over the last 20 years, many researchers and political observers have begun to make comparisons of the situation to the relevant phenomena in the Latin American region. The strong social contrasts in the latter, the lack of a significant middle class, the huge external debts and the transformation of the countries into net exporters of capital, the establishment of small comprador classes that actually work against the interests of the masses and the widespread corruption, are well-known features of the Latin American societies. In the times prior to and immediately after the World War II, because of their geographical and economic characteristics and because of being able to use the advantages of the international situation, some of the Latin American countries, in particular Argentina,

[1] *Mincho Hristov is Assoc. Prof., Dr.Sc., in Technical University – Sofia, Bulgaria, e-mail: minchok@abv.bg.*

Brazil, Uruguay and Chile, managed to turn their main agricultural goods into a major source of capital from abroad. This source of profit had such a significant impact that it changed the previously established economic and political realities for a relatively short period. Quite often, the participants (especially Europeans) in the Second World War were forced to pay the high monopoly prices in gold. The wealth which has been accumulated in this way empowered the state to have an enhanced economic and social activity. A powerful industrial sector was emerging, a policy known in the economic literature as "an industrialization through substitution of the import". This industrialization has often been regarded by some supporters of "national" and "independent" developments as one of the most significant achievements of Argentina's "Peronism", of the "Vargasism" in Brazil, or of the "Battlismo" in Uruguay. All the terms are derived from the names (and imbedding therein the charisma and popularity) of three historical figures, who were heads of state of respectively Argentine, Brazil and Uruguay: Juan Perón, Getúlio Vargas and José Batlle.

The industrialization succeeded in making the Southern Cone economically the most advanced region of Latin America. However, the extent to which this industrialization is a result of "nationally responsible" political decisions and strategic projections or simply a result of the absence of an industrial import of the traditional economic partners of these countries because of these partners being exclusively engaged in military production, is not the subject of our research. Anyway - a powerful and strongly funded state sector has been created. This is particularly typical for Argentine, for example, where the share of the state sector in the national GDP is more than 40 %. Although these numbers don`t cover the respective values which are characteristic for the so-called "developed" or "mature" socialism, the similarity of the latter with this kind of a state-dominated economy is obvious. Actually, General Perón has repeatedly emphasized the "anti-capitalist" character of his regime and the policy of the so-called "third way" of development as well, that "is neither capitalism nor socialism." Free education and free healthcare, the higher payment for the workforce and the guarantee of many social benefits, including the right to a thirteenth salary, are a truly unprecedented case in Latin American history. Before its painful collapse, the "state of prosperity" appeared to be close to the accomplishment and very real with its apparent socio-economic dimensions and concrete projects.

In the case of Latin Amerika we are witnessing a wide-scaled redistributive policy, characterized by its social focus. These redistributed resources are essentially "external" in character. The scheme here is deliberately simplified, but more importantly, there was a painful socio-economic collapse after the termination of the flow of the "external" revenue. The significant role of populism as a policy that is inconsistent with the economic realities is a particularly important feature of the analyzed societies. Here is also the place to express our essential point: Populism as an economic and political approach enjoys enormous support until the state is able to reallocate a significant public wealth. It collapses when this scheme is deprived of its economic base. The forms which this collapse takes in Argentina and Brazil - the unreliability of the political structures, the need for painful structural reforms, the economic and political anarchy and the unbridled crime are quite similar to what we see in Southeast Europe after the collapse of the socialist economic models. The political formulas that were imposed alongside the essentially structural neoliberal ones are very interesting as well.

In this study, I have attempted to determine the historical place of the military dictatorships and the role of the subsequent democratization in the Southern Cone of Latin America. Were the political consequences unavoidable after the collapse of the formally democratic and populist regimes? What really did determine their misfortune? Why did the military circles occupy the political scene and after a certain period - more or less long - leave it? How did they ideologically legitimize their intervening in matters of politics? What did their governments change? Despite the specificity of each of them, all of these countries demonstrated a development of similar economic and political processes. In the seventies, in all of them, the military was at the top of the governments. In the eighties, namely the military circles organized their withdrawal from power, restoring parliamentary democracy.

In the sixties and seventies of the 20-th century, several military regimes in South America were established, carrying out long-term structural projects for the national development. Initially the presence of the military in politics has been institutionalized through the parliamentary democracy mechanisms, but afterwards, the military itself, on the basis of its long-term and strategic project, began to change the institutional framework of society. Legal norms, parties, or even the constitution were suspended in order to conduct the pre-determined policy of the military. The factors that determine this tendency are multi-layered and interconnected and could therefore be separated only implying certain simplifications. The main ones are the economic changes unfavorable to the Latin American countries, especially the devaluation of their main export products, the need to close down or restructure unprofitable state-owned enterprises, the implemented unpopular policies, the lack of a nationally responsible political elite, the institutionalized corruption and so on.

The Cuban Revolution of 1959 and the engagement of Cuba with the Soviet bloc is one of the reasons for rethinking the US foreign policy towards the entire Latin American region. At the time of President Kennedy, the Strategic Doctrine "Alliance for Progress" was adopted, where the new social challenges and the ways to overcome them were taken seriously. The doctrine of continental security from a point of view of foreign policy is a continuation of the Monroe doctrine formulated by the American President James Monroe in 1823, whose main thesis was that America must be only for the Americans. Furthermore, according to him, "the American continent ... can no longer be considered a subject of a future colonization by any European force." (Castro, 1972, 339)

In the 60-70s of the 20th century, the Doctrine of the Homeland Security aimed at overcoming the subversive and anti-state activity of the world communism and its supporters. This doctrine took the leadership within the surveyed countries. Its major difference from the Monroe Doctrine is, that, according to the latter, the world is now generally divided not on a geopolitical but on an ideological basis, borrowed from the basic principles, established during the Cold War. The military dictatorships in the Southern Cone were a reaction to a certain historical conjuncture, both external and internal. The new international division of labor clearly obliged national elites to carry out painful economic reforms. The present paper is not intended to return to the old discussion of the decisiveness or insignificance of the so-called. external factors. We mention only that the official report of the United Nations Economic Commission for Latin America and the Caribbean

(UNECLAC) for 1987 emphasises "the decisive burden that the external factors have on the economic evolution of the region." (CEPAL, 1987)

Were the military dictatorships the only way out of the situation or other decisions would also have been possible? How realistic were the alternatives in those times and could we anyway state another special one – populism, socialism, or just some kind of a more democratic development? From an economic point of view, the postulates of neoliberalism related to the rationalization of the economy on the basis of comparative advantages seem to be unshakable. The closure of unprofitable enterprises seems inevitable but this is so mainly due to the state's inability to continue its redistributive functions. This raises the question of whether it is possible for a government to conduct market reforms in the frame of a parliamentary-representative system. And whether the authoritarian rule is not, in fact, the only way to impose the social price of reforms on the population. Quite often the paying of this price is associated by some researchers with the objective impossibility for the government to use milder forms of political coercion.

After using all of the economic mechanisms of policy, the government is compelled to implement non-economic or power tools as well. Authoritarian governments in Latin American countries are initially attuned to a significant reduction of the real incomes of the population and to suppression of the various forms of organized resistance of the laborers. The more one have to take away from the already existing standard of living, the more authoritarian pressure is applied. It seems therefore reasonable that in Argentina the repression of the syndicate leaders is many times greater than that of the Communists. By dramatically reducing the consumption of the population and transferring the accumulated share to the sphere of capital, the macroeconomic stabilization characteristic for most of the authoritarian regimes in the region is reached. Could this stabilization have a more humane image in the social sphere? In our opinion, this is hardly possible for purely economic reasons. Huntington noticed that in the poor countries democracy is always an exception, not a rule. (Хънтингтън, 1994, 36)

Typically and according to the common sense, the notions of "dictatorship" and "democracy" are opposed to each other as absolutely incompatible. Dictatorship is identified as reactionary and even inhumane, while democracy is considered progressive, a symbol of justice and even of prosperity. Similar is the case of the "revolution". It is possible for all sorts of socialized and “antisocial” regimes, so it can hardly be a criterion for this analysis. In fact, almost all military governments in South America identify themselves as "revolutionary" and "nationally oriented". Almost all of them are perceived as rescuers of the state and of the traditional national values. In many cases, they are regarded as saviours by a significant number of people. “The military saved Chile and all of us”, the former Chilean President Eduardo Frey said, shortly after the success of the military coup d'état against Allende in 1973. When a government acts like this, the right to uprising is becoming an obligation, he adds. (Frei, 1973)

It is a fact that the military was making significant changes. It is also true, however, that these changes have been made together with gross violations of human rights, repressions often even accompanied by torture and murder. "We are not insensitive to what is happening," a Deputy Minister of Economy of a Latin American country explains. “But we are in front of the most beautiful revolution that we could have. " (Weigert., Sanchez, 1977,

419) The context of this utterance appears to be clear: the goal justifies the means. Such statements let a number of researchers to believe that the military dictatorships have a negative impact, both in political and economic terms, on societies. The question of the essence of the changes made by the military is in fact very much debatable. If one argues that we should consider the processes of concentration and centralization of capital and the explosive growth of the financial capital, typical for the development of any economy, as negative, the actual argumentation of this would be quite difficult. From a moral point of view, the changes are negative because they lead to a growing social inequality, and hence to an increase of the contradictions in society. Do the two points of view actually contradict? According to Samuel Huntington, for example, the economic liberalization can be carried out more easily by an authoritarian regime. (Huntington,1994,53-68) Although this evaluation refers especially to the reforms in Eastern Europe, this can be equally applicable to the military reformers in Latin America.

The constant replacement of the military dictatorships with parliamentary-democratic and populist regimes is a common phenomenon in Latin American history. Many even consider dictatorships a normal political regime in the region. According to them, dictatorships are so prevalent in the Third World that they should be considered as "a normal type of government." (Roy, Carranza, 1978, 117-129) The supporters of such a view believe that if up to two decades ago the military had intervened temporarily and flexibly in the political affairs, retaining the outline of the political structure and handing over the power after a relatively short period to civilian politicians, often elected by them, now, the military intervention is characterized by a relatively longer period of direct control, and more importantly, it is bound to a structural project of economic and political reform. This trend is becoming increasingly apparent in the 1960s and 1970s, when President Kennedy's administration declared their strategic concept of a Continental Alliance of Progress, where the outdated concept of continental defense from external opponents was replaced by the idea of joint action against the revolutionary and subversive movements and elements. The new concept was developed after the Cuban revolution and aims at avoiding the repetition of certain analogous processes in other parts of the subcontinent. Along with the aspects of purely military co-operation, then, for the first time, elements of intentional economic and technological assistance from the United States were foreseen in order to eradicate or at least to soften some social contrasts.

The newly emerging authoritarian regimes in Latin America in the sixties without exception received ideological support according to the so-called Doctrine of national security, regardless of their specificity. Its essence is concentrated in two keywords – security and development. In any case, the ideologies of the above-mentioned regimes remind us of what is the real purpose of the new authoritarian power – the return of democracy. Indeed, some of them are talking about a "new" democracy, different from what they believe has led the society to collapse. This tendency is reflected in a rather successful way by the professor of geopolitics at Santiago's Higher Military School Augusto Pinochet. For example, in 1975 he declared: "There can be no liberal-democratic government. It must be democratic, but at the same time very authoritarian. "(Vasconi, 1978, 55)

The anti-inflationary and the restrictive policy are some of the first steps that the new military rulers make in the economic sphere. It is true that inflation is one of the main mechanisms for redistributing public wealth, diminishing the savings of the population, and reducing real incomes. After a certain limit, however, it hinders the formation of the profit or the accumulation of capital. But there is another point as well. Inflation is convenient as a redistributive economic mechanism as long as there are accumulations of public wealth that can be redistributed through it. Once the bank savings and the economic accumulations disappear, inflation ceases to be a real redistribution mechanism. Then a restrictive and deflationary economic policy is imposed, often having a much more painful social dimension than the inflationary process itself. Inflation is treated by the new economic teams of the military governments as an effect of excessive demand versus limited supply. It is also seen as a result of the "artificial" increase in real wages, a legacy of populism. Artificial in their opinion is the disproportion between the real wages and the overall social productivity. The Argentinian Minister of Economy of the Military Junta, declared, in July 1976, when real wages were cut about 40 percent compared to the first years of the same decade, that “the desired balance had been reached, and hence the real wage must grow according to the overall productivity of the economy". (Shvaizer, Oz, 1980, 205-234)

The statement above is a part of the economic justification for the existence of the dictatorships. The decrease in real wages according to different sources varied between 30-40%. Considering the specific economic realities in the region, it would hardly be possible to balance supply and demand in one of the societies with the traditionally strongest social policy otherwise than forcefully. In Southern Latin America, laborers, especially in the industrial sector, are well-organized and enjoy significant social privileges. It is noteworthy that where the level of organization of laborers and the standard of living are higher (such as in Argentina, for example), the activity of the repressive system is also higher. During the dictatorship in Argentina, the number of missing persons, according to the data of human rights organizations, exceeds 25 000, while in Brazil, Uruguay and even Chile, countries with a relatively lower standard of living, this figure is significantly lower. This fact has much significance. In spite of the variety of ideological and political analyzes of it, it alone poses the question of whether it would be possible to reduce the living standards of big groups of society without repression and without cruel authoritarian regimes, able to suppress the reaction of these groups of preserving their social, economic and political rights.

The "Dependency Theory", launched by many Latin American economists (so-called dezauroism), was created by a number of Latin American economists and sociologists grouped around the Argentinian economist Raul Prebis from the Economic Commission for Latin America to the United Nations (CEPAL) and gained special popularity and influence in the sixties. In their view, economically developed countries are imposing a certain kind of dependent development on developing countries and, in particular, on Latin America. Overall, according to supporters of this theory, Latin America has become the "economic application" of the industrialized countries by providing them with raw materials and some supportive productions. According to them, this dependent development can only be overcome through structural reforms and economic modernization imposed by the state itself.

Particular attention is paid in this respect to the so-called industrialization through import substitution. The intention of this type of industrialization is to reduce the import of industrial goods and especially the means of production from the developed countries and to lay the foundations for a more balanced economic development. Therefore they look for ways in which to overcome the dependence of Latin America (the periphery) of the industrialized countries (the center). The purpose of their strategy is the creation of social capitalism developed through active government intervention. Some "deserters" do not exclude the help of the United States and the developed European countries in this direction.

Analysts of military dictatorships in Latin America quite often address the issue of the decisive influence of the United States on the economic, political and military development of Latin America. Among the arguments in support of this are the strong American presence, as well as the tens of thousands of Latin American officers who have passed courses through special American schools and trained in anti-terrorist and anti-superstitious techniques. Without denying this connection, it would be exaggerated to bind the actions of the armed forces with external influences or ideological persuasions. The doctrine of "continental protection," under the auspices of the United States, has been characteristic for a fairly long period - from the proclamation of the Monroe doctrine in 1823 to the 1950s. In the sixties, it quickly transformed itself into the Doctrine of Homeland Security, in relation to the new rebellious realities of Latin America. Robert McNamara, one of the architects of this US doctrine and secretary of defense, stated in 1967: "The lack of a significant external threat to our continent allows us to concentrate the energies of the Rio Treaty member states (a treaty involving most Latin American states and the United States, aimed at protecting the US mainland) on the common problem of guerrilla warfare. Another important change in our politics is a consequence of the need to counter the threat of guerrilla actions inspired from outside. This danger is quite serious for some of our Latin American allies and we are trying to help them materially, with counselors, equipment and anti-subversive techniques." (McNamara, 1968, 29)

Although the US policy towards Latin America is similar, it is striking that not everywhere the effect of their ideological impact is the same. In some countries, such as Peru, Panama, Bolivia, the military hold an anti-American and anti-imperialist position. Vealco Alvarado, for example, is one of the thousands of Latin American officers trained by the United States in Anti-Partisan combat techniques. This does not prevent him to lead the proclaimed by himself "Peruvian anti-imperialist revolution" in 1968 and to establish close ties with the Soviet Union, by buying a huge amount of Soviet weapons and inviting hundreds of Soviet military instructors. It becomes clear that in some countries the Doctrine of National Security acquires strictly domestic and anti-subversive dimensions, while in others it is rather economic and foreign-political. The key to this question could be found in the degree of development of public relations, the productive forces, the specific problems facing the respective national economies and the correlation of political forces nationwide. The policy pursued by some military regimes in the 1960s and 1970s has some resemblance to populist rhetoric. Many researchers, therefore, speak of a national "military de-arrhythmism" which, at certain times, solves immediate tasks related to the modernization of the national economy. These researchers have not accidentally noted that Latin American military feel like "the true liberators of the state by the bourgeoisie." (Carranza, 1978, 38)

In fact, no war in general and in principle. They always fit into a specific time and space, into a specific historical, political, social and economic problem. Too often, the military can be the authors of unbelievable atrocities firmly convinced that they are doing the best for the country and its people. This is clearly proved by the investigations of human right violations throughout the military dictatorships at question. We should also not forget the serious political support that the military receive in their actions. Shortly after the Chilean coup, the president of the National Party said bluntly in an interview: "It's a pity indeed that so many Chileans were killed, but many more do die in an earthquake." (Harpa, 1973,10). It is noteworthy that in the Latin American region, sometimes the national project of the armed forces and the project of some international financial groups are almost identical. In this case, the military can hardly be accused of being an elemental instrument of foreign financial and economic interests. Given the economic realities, both internationally and nationally, opportunities for political maneuver are often very limited.

Besides the economic aspect, the Doctrine of National Security has another significant element - the national security itself. This is the power of the state to subordinate all enemy forces and thus to achieve national goals. (Gomblin, 1977, 41) The rule is in full force - the purpose justifies the means. According to military developments, the methods for achieving national goals, whether they are democratic or not, are not particularly important. What is important is the result. As General. Augusto Pinochet explains briefly the essence of the government, led by him in 1973 - "the situation of the internal war is introduced to restore peace and order." (Pinochet, 1973) But what are the enemy forces referred to in the Doctrine of National Security? They are well-defined by General Bruno Borges Fortes, chief of the Brazilian Army General Staff in 1973. "The enemy is indefinite, uses mimicry, adapts to any environment, and uses all means legitimate or not to achieve his goals. He may attire to be a priest, a student or a peasant, a defender of democracy, or an elite intellectual, using uniforms or civilian robes if necessary, assuming any role that allows him to deceive and deceive the naive Western nations. " (Fortes, 1973,10) The enemy, in this case, is the "international communism" and its internal agents who attack Western and Christian values. And of course - democracy itself. What is impressive in this case is the deep penetration of this enemy into different social groups and the difficulty for them to be identified. This is hardly accidental.

With such an appearance, the degree of its control over society can be practically unlimited. Every social group, and more importantly, every citizen could be an "enemy", and could be neutralized if needed, for the sake of national security. This unpleasant, yet – according to them – very patriotic task lies with the armed forces. Here lies the explanation of the rather complex conceptual apparatus of the doctors of the National Security Doctrine. The aim is to explain that there is a particular war – "total", "psychological", "absolute", "permanent", etc. The idea is that there is no physical boundary here to separate the two battlefields and that the undetermined opponent is far more dangerous than the one in a conventional war. According to Gen. Pinochet, for example, "Marxism is a constant aggression that serves Soviet imperialism. This new form of aggression gives way to an unconventional war in which the conquest of territories is replaced by the attempt to control the country from within. " (Pinochet, 1976, 9-11) How do the military legitimize their actions before society, and in front of themselves? According Regiment. Roger Trinkie, a prominent theorist of partisan struggle "the pilot is disposed of by the air defense, the marshal- by the shrapnel.

The terrorist should be liquidated through torture. This is the main weapon against the guerrilla war. " (Trinquier, 1964, 58-70) It is particularly important that in this war, the aggressors are revolutionary rebels, and the military response is seen as lawful and legitimate. So it shouldn't be strange that the majority of the officers indeed do consider authoritarianism, torture and murder to be legitimate mean of self-defense and protection of the general public. For them, this is the only way to save the country and to restore the democracy. In this war of life and death, there are only two possible positions. As one of the representatives of the Chilean military junta before the UN raises the issue unequivocally, the problem is whether "with Chile and its government, or with Soviet Communism. No middle ground. We are either on one side or on the other. " (Jarpa, 1974, 3-11, 129)

In the anti-Partisan war, however, military operations and terror are not the only means. So-called "civilian" shares of economic and social nature are widely covered. Not surprisingly, Robert McNamara, one of the ideologists of the National Security Doctrine argues that "security is development and without development there can be no security." (Veneroni, 1973, 206-228) Perhaps this definition largely synthesises the complex and non-linear relationship between the military dictatorships in Latin America and the economic development of the area under study. Certainly development here is not only perceived to be a mechanical economic one without taking into account the social element. The Brazilian strategist, General Golbery do Couto e Silva, says that the dilemma between prosperity and security has been noted by Göring in his famous phrase: "more cannons - less oil." In fact, he continues, there is no way to avoid the need to sacrifice prosperity in the name of security, provided this prosperity is indeed threatened. But there is, on the other hand, a "minimal" prosperity that must be ensured in every possible way. (Couto e Silva, 1978, 32)

Whether and to what extent the military governments in Latin America fail to provide this minimum welfare is a complex issue that must be considered on a case-by-case basis. Either way, however, their least sympathy for this problem explains the considerable sometimes support they receive from the society when changing the qualified as infinitely corrupt civilian politicians. Regardless of how well they manage to deal with the problems of "dependent capitalism," mid-term and long-term development strategies are present in most military governments. In this sense, the so-called "civilian" actions are at least a structural attempt to diminish social problems in society, and not just pure anti-Partisan tactics, which seek to find support from the population in certain areas and thus limit the influence of the guerrilla movement itself. In many cases, civilian actions are not limited to drilling a well or building a bridge. These can often be national campaigns for literacy, vaccination, the introduction of new regional economic mechanisms, and so on. In this sense, the National Security Doctrine aims to legitimize the ideological intervention of the military in the political life of the society and serves as a kind of internal soldering of the military structures. Last but not least, this doctrine also serves as an economic legitimacy for the society.

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Milkana Mochurova[1]
Radmil Polenakovik[2]
Stoyan Totev[3]
Marica Antovska-Mitev[4]
Trajce Velkovski[5]

SUSTAINABLE REGIONAL DEVELOPMENT – THE CASE OF NORTHEAST PLANNING REGION IN THE REPUBLIC OF MACEDONIA AND THE KYUSTENDIL DISTRICT IN THE REPUBLIC OF BULGARIA

The paper argues that cross-border cooperation is important for border regions for building productive economies and inclusive societies. It justifies also the need of integrating sustainable development principles into regional development practice. The paper analyses levels and dynamics of key socio-economic indicators of the Northeast Region of Macedonia and Kyustendil district in Bulgaria such as – regional GDP, gross value added, employment, economic structure, demographic indicators. It concludes by presenting prospects for development of cooperation in the observed regions.
Keywords: regional development, cross-border cooperation, Northeast Region of Macedonia, Kyustendil district in Bulgaria
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1. Border regions

Border areas traditionally are considered as disadvantaged and low opportunity regions. The geographical coordinates of such areas are expected to have a low competitiveness profile for one or more of the following reasons: (i) low population densities and lack of

[1] *Milkana Mochurova, Assistant Professor, Economic Research Institute, BAS, +359 888-927-830, e-mail: m.mochurova@iki.bas.bg.*
[2] *Radmil Polenakovik, Professor, Ss. Cyril and Methodius University Business Start-up Centre – Skopje, e-mail: radmilpolenakovik@yahoo.com.*
[3] *Stoyan Totev, Professor, Economic Research Institute, BAS, +359 886-193-874, e-mail: s.totev@iki.bas.bg.*
[4] *Marica Antovska-Mitev, Center for Strategic Research, MANU, e-mail: mantovska@manu.edu.mk.*
[5] *Trajce Velkovski, Assistant Professor, Ss. Cyril and Methodius University – Skopje, e-mail: trajcev@gmail.com.*

agglomeration economies; (ii) a peripheral location and an isolated position with respect to the economic and political heartland of their country, resulting to relatively high transportation costs; (iii) limitations to physical flows of commodities, limited markets and distorted trade relations; (iv) a relatively poor infrastructure – transport and communication networks, etc.; (v) a less developed social and business service provision and large differences in legal, administrative and social welfare systems, which altogether hamper communication and cooperation with regions across the border. National border regions, especially for not quite developed countries, as a rule are characterized by lower than average levels of development.

OECD Regional Outlook (OECD, 2016) shows that while gaps in GDP per capita across OECD countries have narrowed; within their own borders' countries have increasing income gaps among regions, cities and people. There will always be interregional gaps, but those border regions lagging behind have opportunities to "catch up" in terms of social and economic development by developing cross-border relations.

Cross-border cooperation (CBC) brings together the communities on both sides of the border. It helps to transform the border into a possibility for development. A border is more than an obstacle to contacts; a border also creates "friction" which can offer business possibilities (Järviö, 2011). Differing conditions across the border can therefore be utilised to benefit regional development. Utilisation of a border as a gateway means that the border is a resource for those operating across it. It generates benefits that would not be available without the border.

Cross-border relations creates also possibilities for sustainable regional development (SRD) that refers to the integration of sustainable development principles into regional development practice (Clement et al., 2003). Accordingly, SRD encompasses all activities and instruments that promote sustainable development within regional economic initiatives. This focus is justified firstly by the important role of regions as intermediaries between national and local levels, and secondly by the growing consensus that sustainability is an essential criterion within future regional development.

1.1. CBC in Bulgaria and Macedonia

Due to their peripheral geographical location, far from the economic centre of Europe, Macedonia and Bulgaria cannot ignore the importance of cross-border relations. The development of cross-border activities is of special importance for the bordering regions of these countries that have low economic and social performance in comparison to the national average and have common borders only with Balkan countries.

Cross-border cooperation (CBC) plays a very different and significant role to the small Balkan countries than it played in Central European countries. This is primarily because the potential for other forms of cooperation is not so favourable for these countries. So intra-regional relations are foreseen to play an increasingly important role for the countries from the Balkan region.

In the same time, one should have in mind that the Balkan region is a severely parcelled economic area. Borders function as a real barrier to economic activities and do not allow development axes to expand easily beyond borderlines. This is one of the main reasons for the unfavourable development of the border regions and for the increase of regional divergences inside every given country. For the isolation of the border regions of the Balkan countries certain impact has also the fact that not only the development axes do not cross, but also it is not observed spillover of zones with a high population density between the borders.

2. Northeast Region of Macedonia

In 2007, under the imperative to harmonize its laws with the EU, Macedonia adopted the Nomenclature of Territorial Units for Statistics (NUTS 3 level) and created eight statistical regions: Vardar, East, South-West, South-East, Pelagonija, Polog, North-East and Skopje. These regions serve as main units for development planning. Moreover, they have been assigned the role of planning regions entitled for the planning process and implementation of a consistent regional development policy and for harmonization with EU regional policy.

The Northeast Planning Region consists of the municipalities in the far North-eastern part of the country, along the borders with Kosovo, Serbia and Bulgaria. The total area of the region is 2,310 km^2, i.e. 9.3% of the total territory of the Republic of Macedonia. This planning region consists of 6 municipalities (Kumanovo, Lipkovo, Staro Nagorichane, Kratovo, Kriva Palanka and Rankovce) with 176,018 inhabitants (8.5% from total population in Macedonia). Communication with Bulgaria is conducted through Kriva Palanka.

According to the level of development, the Northeast planning region is the economically least developed planning region in the Republic of Macedonia. Its share in the Gross Domestic Product of the Republic of Macedonia is at a modest level of 5.0% (for 2014), which is much less than the share (9.3%) of the region in the total territory and the total population of the country (8.5%).

The acceleration of the economic activity in the region and the gradual escape from the crisis since the end of last decade affects to increase the GDP per person from 4,5 % in 2009 to 5,5 % in 2012. However, the share again decreased and reduced to 5.0% in 2014.

Another important factor that is related to the level of development of the region is the average gross/net wage paid per employee. Northeast region has the lowest level of wages compared to all other regions. For 2016, the average net wage of a single employee in the Northeast region was only 68.3% from the average salary in Macedonia.

The Northeast planning region in 2016 had 4,095 active business entities and compared to 2010, the number of active entities decreased by 6.86%, while the decreased number of active entities in the Republic of Macedonia was 5,27%.

The most valuable sectors in the economic activities are the industry (food, chemical and metal, tobacco and cigarettes) and construction. The Northeast Region had the lowest share of 2.1% in total gross fixed capital formation in 2014.

By measuring which sector has the biggest gross fixed capital formation – it can be seen that this sector is construction (52.34%), and this percentage is higher than the average in the Republic of Macedonia.

Otherwise, the construction sector showed increased marks by the value of the construction activities. In 2016, 147 building permits were issued, while the value of the construction work was 1 billion and 73 million Macedonian denars (MKD).

Another important indicator for economic development of the region is *Gross value added, by sector of activity*. The current structure of businesses by sector of activity in the Northeast Region of Macedonia shows that dominant sector according to the gross added value is the Wholesale & retail trade, repair of motor vehicles & motorcycles, transportation and storage; accommodation & food service activities with 29%, followed by the sector of Mining, manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities with 18% and the sector of Real estate activities, plus imputed rents with 16% and the Public administration and defence with 14%.

3. Kyustendil district

The Kyustendil district is one of the five NUTS 3 regions forming the Southwestern region of Bulgaria (NUTS 2 level). Specific for this region is the big difference between the districts – on the one hand, the highly developed metropolitan area – Sofia city district, and on the other hand, Kyustendil district, characterized by comparatively low economic indicators – both in terms of achieved level and dynamics of development. In this sense, the Kyustendil district fully covers the understanding of a traditionally underdeveloped border district with the typical features for the development of border regions in the Balkan countries.

The population of Kyustendil district represents only 1.76% of the population of Bulgaria. The population density is significantly lower than the average for the country and the district is 20th out of the 28 regions of Bulgaria according to this indicator. What is more important for the population of Kyustendil district is the quite clearly expressed tendency of its decrease, namely, in the last 10 years only its share in the total population of Bulgaria has decreased from 1.98% to 1.76%. The natural negative growth of more than 12‰ annually and ranks the district in the group of the 5 most disadvantaged areas under this indicator**.**

Concerning the dynamics of the overall changes in the demographic indicators, the forecast of the change of the population of Kyustendil district is for a decline of about 40 percentage points even in its most favourable scenario.

The unfavourable development determines also the low level of GDP per capita, which ranks the Kyustendil district on 20th position among the 28 districts in the country. The low share is also a result of the change in the relative participation of the region in the formation of GDP of the country as a whole, which in 2015 is 78.1% from the one in 2007, with 92.8% average unweighted for all 28 districts.

Labour productivity is also lower than the average unweighted for the country, in the Blagoevgrad district it is lower. Mechanical growth is an indicator that varies a lot in individual years, but for Kyustendil district it is higher than the average unweighted for Bulgaria, in 2015 and in the previous years.

The observed low economic indicators for the Kyustendil district find an explanation also in the unfavourable demographic indicators. All this leads to the "vicious circle" of low GDP and foreign direct investment as an absolute volume in the regions with low population density, respectively low socio-economic indicators, and as a consequence of this a negative mechanical growth and the aging of the population in these districts. This, of course, also contributes to the lower pay in these districts, which further stimulates young people to look for opportunities in other regions – Kyustendil and Blagoevgrad districts by the labour cost index are among the 5 districts with the lowest pay.

4. Prospects for development of CBC within the observed regions in Macedonia and Bulgaria

Regional cross-border relations that can be expected to be established among the two countries are the following:

- Border region to border region, which is typical for cross-border relations within SMEs from the two sides of the border – Bulgarian and Macedonian cross-border relations can be expected to follow this form;
- Supra regional (big agglomeration to region) – in Bulgaria that would be from Sofia to the border regions of Macedonia and from Skopje to border regions of Bulgaria. As an example, Bulgarian firms will be working from Sofia to Kumanovo in Macedonia, respectively from Skopje to Kyustendil region. This form of relations creates favourable possibilities for cooperation between SMEs and also between SMEs and large firms in the regions of two countries.
- A similar form of cross-border relations is when large firms establish headquarters first in metropolitan regions and parallel in border regions. Thus, large firms find it easier to cooperate in border-to-border regions;
- Quite effective form of CBC is the twinning of towns. The twinning of towns is a successful example of CBC, as it leads to tangible economic results quickly. Cooperation on a local level is more effective and it is easier to start developing cross-border relations if such a relationship already exists;

- The creation of free trade and industrial zones also could be very beneficial for fostering CBC.

Developing of intra-regional economic relations will allow searching for trade possibilities to their not highly competitive industrial production on the open European Market.

The divergence of the export composition of the two countries is indicative to what extent the trade relation can be developed under realizing of inter-industry trade within the observed countries, in other words to what extent export is complementary and the other alternative in case of coincide of the composition of the export to estimate the possibilities for intra-industry trade.[6]

One specific possibility of development of cross-border relations is by creating regional innovation systems (RIS). The economists argue that cross-border areas in case of existence of given circumstances has the possibilities to develop an integrated innovation space. The development of different stages of RIS differ from the geographical areas – researches indicates that knowledge spillovers, which are ascribed to play a crucial role in the innovation process (Lundquist and Trippl, 2009).

It is also outlined that due to the combined effects of ongoing globalisation tendencies and the acceleration of technological change continuous learning and innovation have become a core strategy for sustaining competitiveness, growth and prosperity. Essential contributions in this respect can be obtained by the RIS approach, which highlights the crucial importance of spatial proximity and favourable institutional structures at the regional level for innovation activities.

Cross-border RIS should be seen as the most advanced form of transnational integration, more specifically, by bringing together the innovation capacity and achieving innovation-driven integration. Strongly integrated trans-border RIS are characterized by a considerable flow of knowledge, expertise and skills across the border, innovation-related networking among firms, academic collaborations.

Another important possibility and change in regional development, that shapes also CBC, is the recent economic crises, and global challenges to society, economy and environment. It has risen the question how to find new sources for growth which are related to the contemporary trend of searching synergy among economic, environmental and social spheres. The green economy can be thought of as an alternative vision for growth and development; one that can generate growth and improve people's lives in ways consistent with sustainable development.

Sustainable regional development aims to act as a catalyst in raising awareness amongst regional development professionals. It illustrates that there is no longer scope to concentrate only on economic growth, and this broader perspective encompasses activities ranging from establishing new forms of partnership to exploring innovative planning and integration methodologies.

[6] Intra-industry trade refers to exchanges within same industries. In contrast to inter-industry trade, which requires specialization in different branches of production.

Cooperation between regions is especially necessary in the context of the 2030 framework on climate and energy and the Energy Union. According to a recent study by Gephart et al. (2015) a "quantum leap" in regional cooperation is required to address the further deployment of renewable energy from 2020 to 2030. Green economy projects, especially the development of decentralized energy sources, eco transportation and measures for improving energy and resource efficiency could foster the competitiveness and innovations in the CB region and bring economic, as well as environmental and social benefits.

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Economists has come to one general conclusion that the only one possible and feasible option for Balkan countries to attempt to reduce or offset the disadvantages of their peripheral location or isolation, should be implemented by developing regional cooperation among those countries. So, the development of relations within the Bulgaria and Macedonia is of vital importance for the two countries that are located peripherally to the European economic gravity centre.

Providing CBC is a good indicator for regions' and countries' adaptability to cooperate and respond to new integration and globalization processes. It should be understood that this is a win-win situation. In other words, regional interests coincide with national interests. Any other policy that tries to put the "national interest" ahead of the regional one will result in not defending the national interests.

The successful implementation and effectiveness of regional integration and CBC will depend significantly on making Bulgarian and Macedonian authorities aware of the importance of those activities.

The accumulated influence of negative factors for the border regions of Bulgaria, and Macedonia is of such a character that every initiative to improve economic conditions in these regions even if it does not have an obvious effect for the time being, in the long run can be expected to have a resoundingly positive impact for regional economic development. The cross-border relations need a purposeful regional policy that should be provided with the understanding that at this stage total effectiveness cannot be expected, but recognizing that supporting economic development is the only thing that will keep regional disparities from increasing.

The cross-border cooperation offers to the small and medium enterprises undoubted advantages that very often are the only way for the small firms to access foreign markets. That is why activities in supporting the development of the small and medium enterprises in the border regions are essential.

The latter shows the importance of the EU programs in this direction and second and even more important is the need the authorities of border countries (BC) to realize that the CBC is not only a matter of EU but is a national responsibility. So, it can be said that there is a large enough potential for CB economic initiatives and development of trade relations that so far were not used to its full capacity.

Overall, it seems that the best strategic reaction for the region as a whole to the pressures generated by economic integration is based on regional cooperation and regional integration. It can be underlined that the main benefit of the BC cooperation is expected to be realised mainly from CB relations and it can be accepted as an "optimal" regional policy for these countries, however the effectiveness of these relations needs efforts by local and state authorities to create favourable environment for that.

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Shteryo Nozharov[1]

THE INSTITUTIONAL ECONOMICS OF COLLECTIVE WASTE RECOVERY SYSTEMS: AN EMPIRICAL INVESTIGATION[2]

The main purpose of the study is to develop the model for transaction costs measurement in the Collective Waste Recovery Systems. The methodology of New Institutional Economics is used in the research. The impact of the study is related both to the enlargement of the limits of the theory about the interaction between transaction costs and social costs and to the identification of institutional failures of the EU concept for the circular economy. A new model for social costs measurement is developed.
JEL: A13; C51; D23; L22; Q53

1. Introduction

The Institutional Economics has come a long way since the renowned work of Hamilton (1919). For the last 100 years, it was developed and the focus was put over various economic fields. The following publications appeared: The Institutional Economics of Foreign Aid (Lensink, 2003), The Institutional Economics of Corruption and Reform (Spechler, 2009), The institutional economics of biodiversity, biological materials, and bioprospecting (Polski, 2005).

In the current publication, it is made an attempt to be developed institutional basis in the economic analysis of a specific economic sector – Collective Waste Recovery Systems. The concept for *circular economy* provokes increased scientific interest. The principles of the circular economy are being studied (Geissdoerfer, Savaget, Bocken and Hultink, 2017). The definition for the circular economy (Kirchherr, Reike and Hekkert, 2017) and its content (Yuan, Bi and Moriguichi, 2008) have been clarified. However, the aforementioned publications used mainly the methodology of Ecological Economics. There is lack of in-depth analysis based on the methodology of the New Institutional Economics.

[1] *Shteryo Nozharov, Ph.D., Full-time faculty member, Department of Economics, University of National and World Economy, Bulgaria, e-mail: nozharov@unwe.bg.*
[2] I would like to thank to Prof. Sebastian Berger, author of *The Social Costs of Neoliberalism – Essays on the Economics of K. William Kapp (2017),* for his critical remarks, concerning the idea of the current study. I would like to thank also to Prof. Rumen Gechev, project manager of university scientific project NI-19/2018, UNWE-Sofia, for the financial support of the current study.

One of the main purposes of the current research is to analyze the possibilities, social costs to be deducted only by the basis of transaction costs. Such kind of hypothesis has not been proven yet because it is perceived as an impossible one (Berger, 2017).

Another goal of the study is to reveal the institutional failures of the EU concept for the circular economy (COM/2015/0595). For that purpose, the model for transaction costs measurement in Collective Waste Recovery Systems (Nozharov, 2018) will be used.

2. Theoretical background

2.1. Institutional failure

The main institutional components of the current study are the company (private hierarchy) and the government (public hierarchy). The market is examined as a set of rules and prices which determine the coincidence between supply and demand needs for the whole quantity of goods. The following risk factors for the market equilibrium are identified: a wide variety of traded goods, possible delays in supply, business investment distortions, discrepancies between household needs and purchasing power, government failures, oligopolies and monopolies, externalities, information asymmetry, etc. (Pitelis, 1992).

One of the opportunities such risks to be overcome according to the economic theory is the free markets to be replaced by hierarchies (Kroszner and Putterman, 2009). The main purpose is this fact to cause more efficient resource allocation and to solve the problems related to the market failures. For example, the government as a "public hierarchy" could intervene in the market and compensate the market failures (Arrow, 1970; Coase, 1960; Pitelis, 1992). The government could exercise its power to overcome the market failures with lower costs than those of the market and the "private hierarchies" (companies). The government, however, could not replace the private sector entirely because it has problems with its effectiveness (Lewin, 1982; Mueller, 2003). The functioning of hierarchies is related to low power stimuli in comparison to the markets and this fact limits their effectiveness (Williamson, 1973; Valentinov and Chatalova, 2014).

The EU established a specific type of hierarchy in the field of waste management in order to be overcome the existing market ineffectiveness. These hierarchies exist in the current European legislation and they are called "Collective financing schemes to meet obligations arising from the extended producer responsibility" (Directive 2012/19/EU). The new European legislation for "circular economy" make provisions for such schemes. In this legislation, the schemes are called "organisations implementing extended producer responsibility" on behalf of the obligated producers (COM/2015/0595). The term "collective waste recovery systems" which is used in the current publication is equal to the meaning of the aforementioned schemes.

These collective waste recovery systems are a specific type of hierarchy, which is a combination of private and public hierarchies. Obviously, the main purpose of EU when introducing such schemes in the legislation for the circular economy is to overcome the disadvantages of the private and public hierarchies. For example, if a company meets

individually its obligations for extended producer responsibility (Directive 2008/98/EC), it will not have enough financial capacity and its transaction costs will be high (Dubois, 2012). On the other side, if the government meets the obligations for extended producer responsibility on behalf of the companies, this activity will be much more inefficient (Mueller, 2003). However, there is a risk in the EU legislation for the circular economy to be combined not the advantages of the private and public hierarchies but their disadvantages. One of the main purposes of the current publication is the aforementioned issue to be clarified.

2.2. Relationship between social and transaction costs

There are various definitions for the term "Social cost". The mainstream definition assumes that they are a combination of the "private costs" of the transaction and the "externalities" imposed on the society as a result of the production and consumption of the traded good or service (Berger, 2017; Pigou, 1954). The current study assumes the wider definition of Kapp (1971). According to his definition, social costs are the sum of the direct and indirect losses, endured by a third party or by the society as a result of the unrestrained economic activity. Lewin (1982) sees the possibility social costs to be widespread examined as missed social benefits from the viewpoint of the concept for "opportunity cost".

The relationship between social costs and transaction costs is studied by Coase (1960). According to him the presence of externalities is explained with the high level of transaction costs in the contract. The solution of the problem he sees in the predefinition of the property rights. Valentinov and Chatalova (2014) put the attention on the paradox that social costs are generated by the same hierarchies which successfully minimize the transaction costs.

Social costs in the field of environmental policy are defined by the U.S. Environmental Protection Agency (EPA-USA, 2000a). According to EPA, "total social cost" is the sum of the opportunity costs made by the society as a result of the pursued regulation policy. This is the value of goods and services lost by society as a result of the use of resources in compliance with the requirements of the regulation and the reduction of the final output. The external benefits for the society (for health and environment) which compensate the externalities are not taken into account. Total social cost in the EPA model consists of five components: *Real-resource compliance costs, Government regulatory costs, Social welfare losses, Transitional costs, Indirect costs*. They are measured by the analysis of the demand and supply elasticity of the goods and services. Transaction costs are included in the *Transitional costs,* together with the level of unemployment, companies' bankruptcy and etc. They are presented as a small part in one of the five components of the social costs. According to EPA transaction costs arose as a result of the implementation of new stimuli based policies such as a tradable permits program.

All of the examined publications in the field of social costs in the waste management, use the model of EPA-USA (2000a). Kinnaman, Shinkuma and Yamamoto (2014) studied the socially optimal level of recycling in Japan. What has been achieved by their model is the

fact that not only external costs are taken into account but also the external benefits of recycling. Jamasb and Nepal, (2010) also use the model of EPA in their publication. They carry out a social cost-benefit analysis of waste-to-energy in the UK. They admit that transaction costs are a small part of the social costs in terms of implementation of policies based on new economic tools. The publication of Dijkgraaf and Vollebergh is in the same sense (2004). The one and only publication that uses a different approach to measure the social costs is that of Jones, (2010). In Jone's publication, social costs are examined through the focus of social capital theory. According to this theory, social costs have no economic value and they are an indicator for environmental behavior. Social costs consist of four factors: social trust, institutional trust, compliance with social norms and participation in social networks.

The purpose of the current publication is to prove that social costs could be deducted only by the transaction costs. This hypothesis goes beyond the mainstream economic theory for social costs, examined in the paragraph above.

3. Study area, methods and results

The economic model for "extended producer responsibility" and collective waste management systems in the EU is the scope of the research. There will be used statistical data for Bulgaria since 2007 as a EU member state in order the model to be empirically tested. The statistical period of research is over ten years, which allows the summarized conclusions about the main hypothesis of the research (the possibility social costs to be deducted by the transaction costs and the presence of institutional failures in the EU concept for the circular economy) to be valid. There will be analyzed the waste oils flow (Regulation (EC) No 2150/2002, Annex III – Waste statistical nomenclature, "*01.3 – Used oils*") because of its economic significance and the fact this issue is not examined in depth by the researchers. Quantitative and qualitative analyses will be applied.

3.1. Qualitative methods

The main purpose of the qualitative analysis is to analyze the quality and impact of the institutional environment over the collective waste recovery systems. The financial analysis methodology based on four indicators will be used. The Commercial register (2018) will be used as a main source of statistical information. According to the data, the average number of collective waste recovery systems in the field of waste oils management for the period 2007-2017 in Bulgaria is 5. The average number of companies in the sector of hazardous waste management in Bulgaria is 50. The financial analysis includes the following four indicators: profit, value of the long-term tangible assets, average number of the persons employed and total liquidity ratio. The results of the analysis are presented in table 1.

Table 1

Financial analysis of the collective waste recovery systems in Bulgaria in the field of waste oils management based on four indicators (2007-2017)

№	Indicator	Amount
1.1	Average profit for the period – 5 collective waste recovery systems (annually) (euro)	-11.483
1.2	Average profit for the period – 50 companies (entire sector) for hazardous waste management (annually) (euro)	29.950
1.3	Share of the collective waste recovery systems in the entire sector for hazardous waste management, which work at a loss (%)	60
1.4	Highest average profit for the period, made by a collective waste recovery system (annually) (euro)	3.125
2.1	Average annual value of the long-term tangible assets – 5 collective waste recovery systems (annually) (euro)	3.245
2.2	Average annual value of the long-term tangible assets for the entire sector – 50 companies in the field of hazardous waste management (annually) (euro)	1.143.500
3.1	Average number of persons employed in collective waste recovery systems (annually) (persons)	2
3.2	Average number of persons employed in the entire sector – 50 companies in the field of hazardous waste management (annually) (persons)	95
4.1	Average total liquidity ratio of a collective waste recovery system	0.8491
4.2	Average total liquidity ratio for the entire sector – 50 companies in the field of hazardous waste management	1.1701

Source: Author's calculations.

The results of the financial analysis based on the four indicators show that collective waste recovery systems in Bulgaria in the field of waste oils management for the period 2007-2017 are decapitalized, unprovided with employees and long-term tangible assets and they have no liquidity. They work at loss, while the other companies in the sector work at profit. The average annual value of the long-term assets is approximately 3000 euro which amount is equal to the amount of the average monthly wages in the EU. This amount is 352 times lower than the average value of the long-term assets in the entire sector of companies in the field of hazardous waste management in Bulgaria for the period 2007-2017. The average annual personnel in the collective waste recovery systems consists of 2 employees which number could be compared to the personnel of a bookstore. This number is 47 times lower than the average number of persons employed in the entire sector of companies in the field of waste oils management in Bulgaria. The total liquidity ratio of collective waste recovery systems is under 1 (0.84), while the total liquidity ratio for the entire sector is over 1 (1.17). There is a risk for collective waste management systems of servicing their debts.

Consequently, the following conclusion could be done – there are institutional failures for the execution of the extended producer responsibility by collective waste recovery systems. Bulgaria is a member of the EU since 2007 and more than ten years the country enforce the EU legislation. Since all collective waste recovery systems, involved in the management of the same type of waste oils suffer from the same financial defects, the problem is obviously in the institutional environment. This leads to an institutional failure.

3.2. Quantitative methods

The purpose of the quantitative analysis is to examine the level of the social costs as a result of the institutional failure of the collective waste recovery systems. The analysis is done in the example of Bulgaria, but it could be implemented in every EU member-state. The existence of such type of costs was identified in the qualitative analysis. In order the social costs to be measured, there will be used the model for transaction costs measurement in Collective Waste Recovery Systems from the publication of Nozharov (2018). The first level of the model measures the so-called "Social Public Costs":

$$\text{Social Public Costs (SPC)} = \textit{the quantity of regenerated waste oil with collective systems – the quantity of regenerated waste oil without collective systems} \quad (1)$$

These costs are called Social Public Costs because they are differently measured compared to the conventional concept for "Social cost", according to which social costs are the sum of Private Costs and External Costs (Berger 2017, Pigou 1954). In the current publication the model for social costs measurement will be developed as follows:

$$\text{SPC} = \textit{the quantity of regenerated waste oil with collective systems – the capacity of technology in the private processing companies in the relevant country in accordance with Directive 2010/75/EU} \quad (1.1)$$

or

$$\text{SPC} = \textit{the quantity of regenerated waste oil with collective systems – consumer quantity demanded of produced goods from regenerated waste oil according to the available statistical data} \quad (1.2)$$

Due to the limited number of pages of the current paper, there will be presented only the results of the calculations. In equation 1.1, the capacity of technology in the private processing companies in Bulgaria is *two times* over the quantity of the regenerated waste oil which is reported as a result of the Collective Waste Recovery Systems activity. The statistical data about the capacity of technology of the private processing companies are taken from the registers of the Bulgarian Ministry of Environment in accordance with Directive 2010/75/EU. The statistical data, concerning the quantity of regenerated waste oil with collective systems are also taken from the registers of the Ministry of Environment of Bulgaria in accordance with Directive 2008/98/EC and Regulation (EC) No 2150/2002.

In equation 1.2, the consumer quantity demanded of produced goods from regenerated waste oil exceeds *seven times* the quantity of the regenerated waste oil which amount is reported as a result of the Collective Waste Recovery Systems activity. There must be taken into account also the quantity of the imported goods of regenerated waste oils. Even in this case, the consumer demanded quantity of goods, produced from regenerated waste oil will be two times higher than the quantity of the regenerated oil. On the other hand, there must be taken into account the amount of the exported goods, produced from regenerated waste oil, which amount could compensate the amount of the imported goods.

This means that the existence of Collective Waste Recovery Systems is not necessary when the processing companies could buy the waste oil from companies with extended producer responsibility.

Consequently, the social public costs will equal the total costs of the 5 Collective Waste Recovery Systems in Bulgaria. These social public costs could be measured by the opportunity costs, paid by the companies for the services provided by the Collective Waste Recovery Systems. The direct opportunity costs will be measured as loss for the society as a result of the missed opportunity these companies to invest money in new green technologies.

Conclusions

In accordance with the mainstream economic theory, social costs equal *private costs* + *external costs* (Berger, 2017; Pigou, 1954). However, the current publication disputes the conventional definition for social costs. First of all, for Collective Waste Recovery Systems we cannot talk about "Private Costs" in accordance with the classical understanding of the term. This due to the fact that the main purpose of the Collective Waste Recovery Systems is not to produce goods which will be traded at the private markets, but to make a high profit. The main purpose of such systems is to lower their total costs through the implication of the "extended producer responsibility" principle (COM/2015/0595). Secondly, for Collective Waste Recovery Systems we cannot talk about "External Costs". This due to the fact that the main purpose of Collective Waste Recovery Systems is to eliminate "External Costs", rather than to create them. Their mission is to clean the environment of waste materials, rather than to create them. In this way, their social costs cannot be calculated as a sum of the "Private Costs" and "External Costs". These costs could only be calculated as a function of the transaction costs in accordance with the model presented in the publication of Nozharov (2018). Consequently, the social costs of Collective Waste Recovery Systems will be a function of their transaction costs. The amount of these social costs will depend on the institutional ineffectiveness which equals the sum of the total costs of collective waste recovery systems. The loss for the society will be measured by the opportunity costs.

If the market structure of the waste recovery sector is an oligopoly, then Collective Waste Recovery Systems are inefficient and the amount of their transaction and social costs will be at the maximum.

Transaction costs in the field of environmental policy do not exist only in the implementation of incentive-based policies, as it is stated by the EPA-USA (2000). They also exist in the case of distortions of the institutional environment where the environmental policy is implemented. Because of the limited number of pages of the current paper, the proposals for developing the EU concept for the circular economy will be presented in a separate research study.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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Inna Timofeeva[1]
Elena Lavrova[2]
Tatiana Agapova[3]
Elena Koroleva[4]

REGIONAL DIFFERENTIATION IN HOUSING AND COMMUNAL SERVICES: IMPACT ON ECONOMIC SECURITY

The article considers the problems of increasing economic security and quality of life, which are the strategic priority of the world community. Authorial methodology for assessing regional differentiation in the housing and communal sector has been developed. It was tested on the example of 17 regions of Russia. The statistical data for 45 years were used. The proposed methodology was first applied to identify links between sectoral indicators, levels of economic security and the quality of life of the population. Comparison of indicators with threshold values allowed to conduct an economic security assessment, identify dangerous trends, identify regions with high, medium and low levels of security. The authors argue that in Russia, considering its size and uneven distribution of resources, the problem of sectoral and regional differentiation is most acute. The high volatility of the development of certain industries significantly affects the quality of life of the population in different regions of one country.
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Currently, one of the strategic national priorities of the world community, including Russia, is to improve the quality of life of the population. The change in the quality of life reflects the effectiveness of national economic security. The main threat to economic security is the

[1] *Inna Timofeeva, Doctor of Sciences (Economy), Professor of Russian Presidential Academy of National Economy and Public Administration (214025, Russian Federation, Smolensk, Churilovsky Tupik, 6/2, +79646199600), e-mail: innatimoff@mail.ru.*
[2] *Elena Lavrova, Candidate of Sciences (Economy), Associate Professor of Russian Presidential Academy of National Economy and Public Administration (214025, Russian Federation, Smolensk, Churilovsky Tupik, 6/2, +79156390901), e-mail: e.v.lavrova@list.ru.*
[3] *Tatiana Agapova, Doctor of Sciences (Economy), Professor of Moscow University of Ministry of Internal Affairs of Russia (117437, Russian Federation, Moscow, ul.Volgina, 12, +79164964982), e-mail: tnagapova@gmail.com*
[4] *Elena Koroleva, Associate Professor of Russian Presidential Academy of National Economy and Public Administration (214025, Russian Federation, Smolensk, Churilovsky Tupik, 6/2, +79206696615), e-mail: buleelena@yandex.ru.*

unfavorable dynamics of economic development, which predetermines the relevance of scientific research assessing the impact of the development of individual sectors of the economy on the quality of life of the population. Development of modern instruments of economic security requires mandatory consideration of sectoral and regional developmental features, the degree of their differentiation according to various criteria and indicators, including the results of the assessment of the effectiveness of government bodies' activities.

Each state has a certain socio-economic differentiation. As for Russia, considering its huge area, uneven distribution of socio-economic, natural, technological, demographic resources, the problem of sectoral and regional differentiation is most acute, which makes it necessary to identify and reduce the backlog of regions as much as possible from the average Russian level.

Problems of regional differentiation in the sphere of housing and communal services are urgent as this important industry of national economy influences the quality of life of the population.

In the Russian industry of housing and communal services, more than 50 thousand economic subjects (the state and municipal entities, managing companies, the resource supplying organizations, non-commercial communities, etc.) oriented to forming of an effective and high-quality life support system of the population of the country function now. Throughout formation, forming a housing and communal services permanently, and everywhere test, the different types of threats connected with insufficient ensuring its development. It predetermines need of scientific research and the analysis of the factors influencing effective functioning of institutional and infrastructure mechanisms of a housing-and-municipal industry of economy, and development of the scientific and methodological tools directed to increase in the level of its economic safety.

Recent research and publication analysis

Modern scientific researchers pay a lot of attention to questions of research of organizational and economic mechanisms of improvement of quality of life of the population. In modern conditions, include not only the consumer benefits and working conditions and extent of development of the services industry in the content of category "quality of life". The level of development and quality of housing and communal services directly influence the welfare of the population, household, sanitary, and hygienic living conditions, purity of water and air basins, and labor productivity level and social and economic development of the territories (Valentey, Bakhtizin, Bukhvald & Kolchugina, 2014, p. 9-22). Therefore, the stable functioning of the sphere of housing and communal services influences the level and quality of life of the population.

Now housing and communal services have trouble. Difficulties arise because of weak technological level and a lack of capacities of the branch, deficiency of funds for development and the maintenance of a housing-and-municipal complex. Today housing and communal services are a threat of national security of the country as accident rate, the number of technogenic destructions with serious consequences increases, decreases

reliability and stability of work of life support systems of the population (emergency and shabby housing stock, wear of fixed assets of a housing-and-municipal complex). However, despite the close attention of the scientific community to ensuring an economic safety, there is a need of detailed consideration of indicators of an economic safety for the sphere of housing and communal services.

While speaking about territorial differentiation, it is worth mentioning the well-known theoretician of the "new economic geography" P. Krugman (Krugman, 2008), who believed that the cumulation of economic activity in regions that have a favorable geopolitical position, rich resource potential, developed infrastructure, and implement an active policy for the development of human capital with agglomeration effect is the main cause of economic inequality.

The level of Russian regional and sectoral differentiation by many researchers (Krivoshey 2005; Bruscaglioni, Cellini and Saracino, 2015) is recognized as critical and is characterized by a much greater differentiation compared with the level of acceptable unevenness. Economic differentiation can be leveled by influencing the causes that lead to it. The methods of such leveling can be very different, for example, influencing the starting capacities of regions, the structure of the economy, the sectoral features of development, the availability of comfortable housing, the use of quality water, demographic indicators, etc. (Glazyrin, 2013).

The concept of economic security researchers consider from different points of view. Thus, the United Nations focuses on the international aspects of economic security, which are of particular importance for the development of relations between industrialized and developing countries. For example, United Nations General Assembly resolution 42/165, "International Economic Security" and the report of the Secretary-General of the United Nations "Concept of international economic security" (a/42/314 of 4 June 1987). In defining economic security, the authors consider the conditions specific to develop and developing countries, and the prevailing view is that its content reflects the state of the economy of the country that provides the ability to withstand adverse external economic impacts. For developing countries, along with external circumstances, the authors take into account the internal economic situation, for example, the disproportion of economic development.

Housing and communal services are a set of life-supporting industries in the region, the functioning of which directly affects the quality of life of the population and the level of economic security (Koroleva and Timofeeva, 2015).

Analysis of the state of the housing and communal services industry in Russia leads to the conclusion that a number of threats to economic security accompany the functioning of this industry. The considered neglect of infrastructure in the sphere of housing and communal services has a negative impact on the quality of life of the population. The current situation requires increased attention from the public authorities.

Thus, the role and place of housing and communal services as a separate object in the system of economic security includes the following features and patterns that directly affect the level of economic security of housing and communal services:

1) The Sector of housing and communal services refers to the infrastructure complex of the country, region, and individual territory. The infrastructure complex unites the industries that produce a variety of services, provides high-quality functioning of various parts of the economy, and determines the quality of life of the population, which significantly affects the level of national and economic security.

2) Subjects of housing and communal complex (power, water, gas and heat supply) are characterized by external economic instability (in particular, uneven demand), as well as very high fixed costs. As a result, the marginal costs in them decrease with the growth of production and are lower than the average, which leads to loss of enterprises and organizations that supply housing and communal services. As subjects of housing and communal services are commercial and non-profit organizations, large (energy production, water utility, engineering and utilities) and small (for example, management organizations) enterprises and organizations. Unlike business structures, profit should not become the main goal and a key indicator of the effectiveness of enterprises and organizations of housing and communal services.

3) Functioning of housing and communal infrastructure has large-scale positive effects, i.e. such results of their activity which are realized not in profit of its enterprises, and in the increase of profit of the enterprises, economy of expenses and growth of welfare of the population. The sector of housing and communal services is characterized by a combination of production and non-production functions, which are associated with the production of material products and the provision of services.

4) Housing and communal services is an integral part of a larger and more complex system-the economy of the region. The components of the housing and communal complex have a number of quantitative and qualitative differences. The subjects of housing and communal services are organizationally divided by territorial and sectoral characteristics, often they have dual subordination. The activities of housing and communal services enterprises are characterized by the following specific features: the inability to compensate for the failure of the production program of housing and communal services without prejudice to consumers or its subsequent over-fulfillment, or the provision of other types of services, the variable mode of operation in accordance with the schedule of consumption of housing and communal services. Climatic specifics of regions lead to a difference in seasonality of the provided housing and communal services and, consequently, to objectively different cost of housing and communal services.

5) The activity of the subjects of housing and communal services is accompanied by an increased social effect. Regulation of the activities of the subjects of housing and communal services is a necessary part of the state social policy. The non-subsidized functioning of housing and communal services and the full payment of housing and communal services by the population at their real cost contribute to the transformation of the structure of the population's expenditures, lead to a decrease in the social welfare of households and their demand in the market of consumer goods and services. In the sectors of housing and communal services, there is a mass production of public services, which have a high social value, but such services cannot be sold as ordinary goods. The peculiarity of housing and communal services as a life-supporting sector of the state

economy is that it is necessary to ensure a minimum of housing and communal services, regardless of the solvency of the population. The special social significance of the functioning of the subjects of housing and communal services requires state regulation and public control (in particular, by consumers of housing and communal services).

The authors' analysis of the differentiation of the regions of Russia belonging to the Eastern part of Europe in the sphere of housing and communal services allowed to reveal the distinctive signs of threats to the economic security of the region arising in the field of housing and communal services, which are systematized in Table 1.

Table 1

Distinctive industry features of threats to the economic security of housing and communal services and their characteristics

Distinctive feature	Characteristic
Multiplicative effect of increasing threats	Housing and communal services is an important branch of the regional economy. Its activities have an impact on other components of the region's economy – social, financial, investment, production, etc.
Complex nature of threats	The economic security of housing and communal services is affected by various socio-economic factors (inflation, unemployment, etc.). The functioning of this industry is influenced by the contradiction between the interests of business and society, as the purpose of the functioning of enterprises of housing and communal services is to make a profit, which contributes to the increase in prices for housing and communal services, while the main effect of their activities is obvious social nature. Therefore, there is a need for state regulation of housing and communal services.
Socio-economic nature of threats	The entire population of the country is directly dependent on the provided housing and communal services, as the housing and communal services industry ensures the safety of life and contributes to the creation of comfortable living conditions.

These features determine the impact of the housing and utilities sector on the socio-economic development of the regions, the state of regional infrastructure and the quality of life of the population.

Taking these circumstances to consideration, the trend towards increased regional differentiation, as well from the point of view of the efficiency of the housing and communal services sector, is extremely unfavorable, creating a real threat to the national economy and the quality of life of the population. Robert Reich (Reich, 2012, 2015) writes in his works about the "slipping of the economy" towards the inevitable inequality of incomes and, as a consequence, the deterioration of the quality of life of the middle class in America. Similar trends are observed in Russia. Integral assessment of the level of development of housing and communal services in the constituent territories of the Russian Federation is a difficult and very urgent task, because it is almost impossible to provide the reflection of the real state of the industry with the help of some formalized methods. Nevertheless, some important characteristics can be identified, which can give an idea of the current situation in the communal sector of the region. These circumstances determine the need to develop a methodology for assessing regional differentiation based on the

analysis of the dynamics of sectoral indicators for the subsequent determination of their impact on the quality of life and the level of economic security.

The research objective

The research objective consisted in definition of the influence of regional differentiation in the sphere of functioning of branch of housing and communal services on quality of life of the population in regions of Central Federal District of the Russian Federation based on the developed and approved indicators of economic security of housing and communal services.

Key research findings

Housing and communal services represent a set of life-supporting branches of economy of the region which functioning directly influences the quality of life of the population and the level of economic security. Taking into account these circumstances, the trend to the strengthening of differentiation of regions from the point of view of efficiency of housing and communal services and quality of life is extremely adverse, creating a real threat for the national economy [4, 6, etc.].

Integrated assessment of the level of development of housing and communal services in subjects of the Russian Federation is a difficult and very urgent task since the formalized methods do not reflect a real condition of housing and communal services.

Nevertheless, authors consider that it is possible to define some major characteristics allowing gaining an impression about the situation in housing and communal services which has developed in the region. Therefore, indicative assessment of regional differentiation in the sphere of housing and communal services is necessary for the subsequent definition of influence on quality of life and the level of economic security.

The indicator is an integral index that quantitatively determines the qualitative characteristics of the economic process. Among the various numerous indicators that assess the state of housing and communal services and the specifics of sectoral economic security threats (Sorgutov and Glazyrin 2013), we have identified groups of indicators that are characterized by the following features: the possibility of quantitative assessment of indicators; high volatility and sensitivity to socio-economic and political processes; interaction and mutual influence.

It is possible to assess the regional differentiation basing on four groups of integral indicators of economic security in the housing and communal sector: industrial-technological, financial-economic, institutional and social, which have been studied in detail in the scientific works of the authors.

To determine the threshold values of indicators of economic security of housing and communal services and to identify on this basis the main threats, the authors used multivariate statistical methods. Having conducted a functional and institutional analysis of housing and communal services in 17 subjects of the Central Federal district of the Russian

Federation, belonging to the Eastern part of Europe, the authors identified four integral indicators of economic security of housing and communal services: production and technological, financial, economic, institutional and social. After statistical analysis, the authors determined the threshold values of indicators of economic security of housing and communal services.

Thus, the study showed that the largest number of thresholds have indicators such as debt on housing loans (94.1% of the total number of regions), household spending on housing and communal services, including telecommunications and the Internet (94.1%), the number of unprofitable enterprises of housing and communal services (82.3%), the number of families who have improved housing conditions (76.4%), fully worn-out fixed assets of housing and communal enterprises (76.4%), violations in the management of housing and communal services (70.5%).%), investment in housing (35.3%). At the same time, the threshold values of these indicators indicate the presence of real threats to the economic security of housing and communal services and a decrease in the quality of life of the population.

This article presents the results of the assessment of two main production and technological indicators – an improvement of housing stock and the degree of depreciation of main funds of housing and communal services organizations.

An indicator of housing stock improvement reflects the number of housing units equipped with running water, sewerage, heating, bathroom (shower), gas, hot water, electric stoves. With the increase of construction activity, the improvement of the housing stock should increase, but as a result of the retrospective analysis, these indicators show multi-vector trends related to political and socio-economic transformations in Russia (see Table 2).

Table 2

Housing stock improvement in Russia for 1970-2015 (as a percentage of total housing stock)

Conveniences	1970	1980	1985	1995	2000	2005	2010	2013	2014	2015
Running water	78.9	89.8	91.8	71.0	73.0	76.0	78.0	80.0	77.0	75.9
Sewerage	75.8	87.8	89.7	66.0	69.0	71.0	74.0	75.0	73.0	72.2
Central heating	73.6	86.5	88.9	68.0	73.0	80.0	83.0	84.0	82.0	82.0
Gas	64.6	79.7	78.4	69.0	70.0	70.0	69.0	68.0	65.0	65.0
Hot water	33.8	57.1	71.2	55.0	59.0	63.0	65.0	66.0	64.0	74.0
Bathroom	60.7	79.9	83.2	61.0	64.0	65.0	67.0	68.0	65.0	66.0
Average index	64.6	80.1	83.9	65.0	68.0	70.8	72. 7	73.5	71.0	72.5

While the research and calculation process the authors used the official statistics data (Rosstat, 2017).

The positive dynamics of the indicator of the housing stock improvement was observed from 1970 to 1985 – averaging 19.3%, from 1995 to 2013 – averaging 8.5%. However, the pace of growth in housing improvement decreased by a factor of three. In 1985, the country's housing stock was maximally improved and provided with running water by

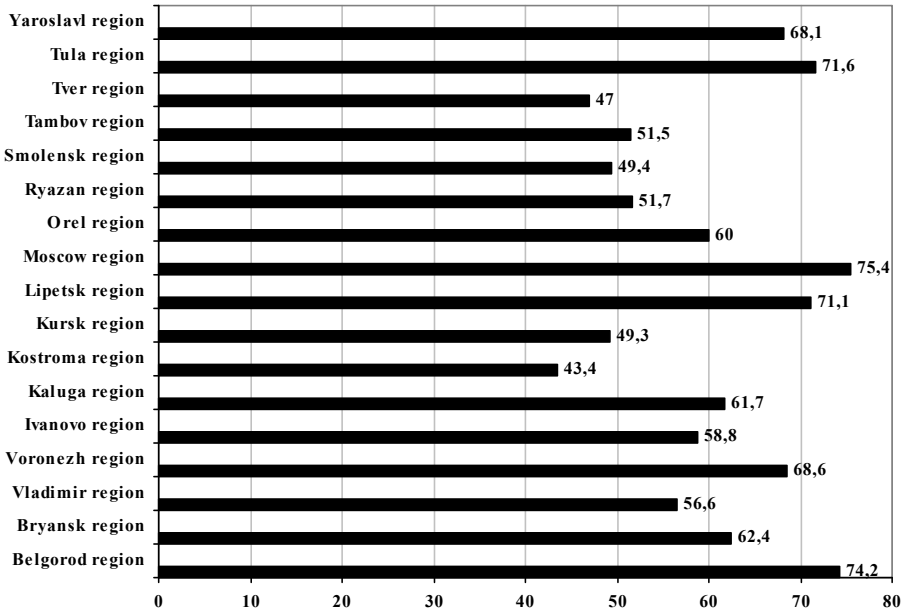
91.8%, sewerage by 89.7%, central heating by 88.9%, bathrooms and showers by 83.2%, gasification reached 78.4%. In 2015, the indicators of housing improvement deteriorated and reached the level of 2010. The revealed dynamics over the past 45 years demonstrates the existence of a deep social and economic crisis caused, primarily, by the radical economic reforms in Russia in the early 1990s.

However, in world studies (Global Health Observatory, 2016) the household energy consumption index is used, which shows the proportion of the population, using solid fuels, i.e. not having central heating. The use of solid fuels in households replaces the indoor air pollution index. The use of solid fuels such as firewood, charcoal and crops is associated with a decline in the quality of life of the population and the increasing mortality among the population. The greatest risk – over 90% – falls on the countries of Africa, North Korea. The most favorable situation is observed in Europe, Russia, USA, Canada, Australia, Japan. In China, India, Indonesia, about half of the population is exposed to risks, as they use solid fuels and do not have central heating.

To identify regional differentiation basing on the reported data of the fund for the reform of housing and communal services (Foundation for Assistance to the Housing 2016) an assessment of the improvement of the housing stock for 2015 was made by the example of 17 subjects of the Central Federal District of the Russian Federation. The city of federal significance Moscow was excluded from the study because of its significant differences from other subjects (Figure 1). The presented indicators were calculated by the authors.

Figure 1

Housing stock improvement in the regions of the Central Federal District of the Russian Federation in 2015 (as a percentage of the total area of the housing stock)

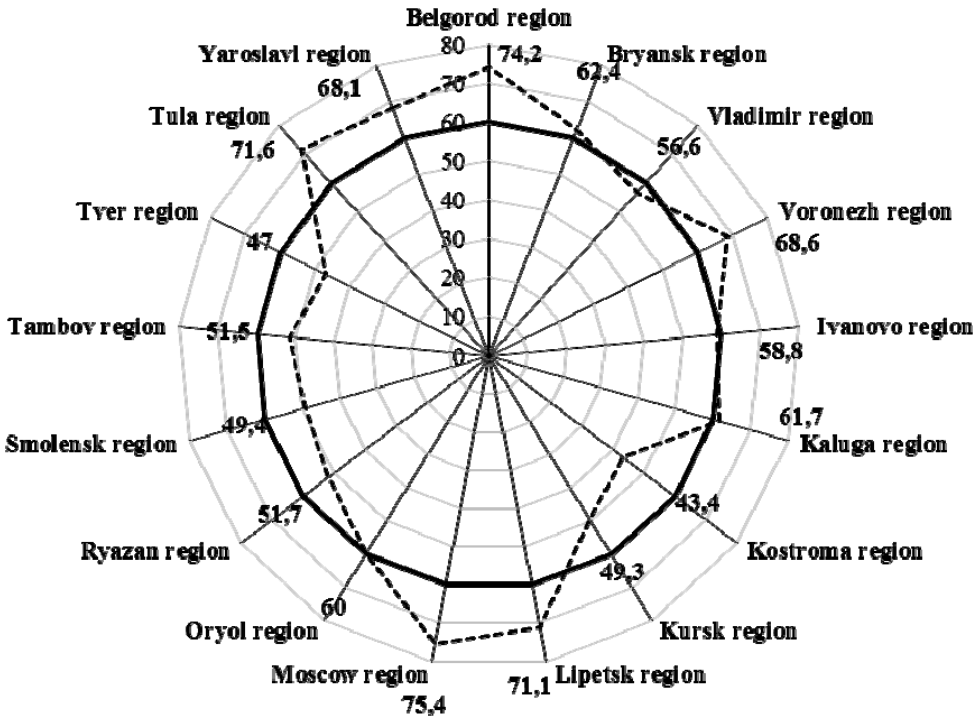


The analysis allows to draw a conclusion about the sectoral inequality in the regions for the improvement of the housing stock, which is characterized by the largest amount of comfortable housing in 2015 in Moscow (75.4%), Belgorod (74.2%) and Lipetsk regions (71.1%). The minimal indicators of housing comfort are observed in Kostroma (43.4%), Tver (47%), Smolensk (49.4%) and Kursk (49.3%) regions, which indicates serious threats to the economic security of the housing and communal services in these regions in terms of reducing the quality of life of the population.

The threshold value of the indicator of housing stock improvement basing on the study is identified by the authors as 60% of the total number of housing, the reduction of which requires urgent state and public intervention to equalize the quality of life of the population and ensure economic security in the industry and the region. For descriptive reasons the condition of improvement of housing in regions following the results of 2015 in relation to the threshold value is presented in Figure 2.

Figure 2

Improvement of housing stock in regions of the CFD of the Russian Federation in relation to the threshold value (percentage of the total area of housing stock), authors' construction



For a more objective and accurate definition of the level of economic security of the housing and utilities sector, it is essential to analyze the dynamics of this indicator, that is, the characteristics of the process of forming a trend (or smoothing out) the differences between regions in the housing and communal sector. The quality of life of the population directly depends on the housing stock improvement (water supply, sewerage, central heating, gas, electric stoves, bath/shower, central heating), and therefore the level of economic security of the state and society rises. Table 3 shows the indicators of housing improvement in the regions of Russia in 2009-2015 (Murie, 2007, p. 49-66).

Table 3

Housing stock improvement in 2009-2015 (as a percentage of the total area of the housing stock)

Subject	2009	2010	2011	2012	2013	2014	2015
Belgorod region	65.1	66.7	66.2	66.6	69.8	72.4	74.2
Bryansk region	57.1	57.6	58.2	59.7	62.9	61.4	62.4
Vladimir region	65.1	65.2	64.8	65.8	65.0	58.3	56.6
Voronezh region	61.0	61.7	62.5	63.2	64.3	67.1	68.6
Ivanovo region	59.6	59.9	60.1	60.2	60.6	59.4	58.8
Kaluga region	60.1	60.3	60.3	60.6	60.7	53.7	61.7
Kostroma region	54.7	55.1	56.3	55.8	57.0	45.5	43.4
Kursk region	56.2	56.7	57.3	57.8	58.2	50.7	49.3
Lipetsk region	69.3	70.0	69.7	70.1	72.5	70.9	71.1
Moscow region	68.2	68.4	68.0	68.1	68.6	74.0	75.4
Oryol region	63.6	63.8	63.7	63.9	65.7	60.8	60.0
Ryazan region	61.3	62.1	62.3	62.2	63.8	53.6	51.7
Smolensk region	56.2	56.5	57.4	57.6	59.1	50.8	49.4
Tambov region	59.6	60.1	61.5	61.8	63.2	53.1	51.5
Tver region	52.8	53.4	54.2	54.4	54.2	48.2	47.0
Tula region	62.6	66.2	69.3	69.3	69.3	69.8	71.6
Yaroslavl region	61.2	69.7	69.8	69.8	70.0	67.6	68.1

The study of this indicator shows its positive dynamics in 2009-2015 in Tula, Belgorod, Voronezh, Yaroslavl, Moscow and Bryansk regions. Negative dynamics of housing improvement is observed in Kostroma, Ryazan and Vladimir regions.

Thus, despite the active measures taken by the state to reform and modernize the housing and communal services, the indicator of the housing stock improvement shows significant differences in the sectoral development of the housing and communal services, which affects the quality of life of the population and the level of economic security in the regions. The level of economic security of the regions according to the indicator of the housing stock improvement was calculated by the authors and is presented in Table 4.

Table 4

The level of regional economic security according to the indicator of the housing stock improvement

Region	The amount growth of well-maintained housing stock (as a percentage of 2009)
High level	
Tula region	+14.3
Belgorod region	+14.0
Voronezh region	+12.4
Yaroslavl region	+11.2
Moscow region	+10.5
Bryansk region	+9.3
Satisfactory level	
Lipetsk region	+2.6
Kaluga region	+2.6
Low level	
Ivanovo region	-1.3
Oryol region	-5.6
Tver region	-11.0
Smolensk region	-12.0
Kursk region	-12.2
Vladimir region	-13.0
Tambov region	-13.6
Ryazan region	-15.6
Kostroma region	-20.6

A high level of economic security with positive dynamics was demonstrated by 35% of the subjects. Satisfactory level of economic security of housing and communal services for the housing stock improvement was identified in Lipetsk and Kaluga regions. These regions constitute the so-called "middle" of the rating. At the same time, a low and dangerous level was detected in 53% of subjects. Thus, in Kostroma region, the reduction in the share of well-equipped housing in comparison with 2009 was 20.6%, in Ryazan region – 15.6%.

The degree of depreciation of fixed assets of housing and communal services organizations is another indicator, the results of which are presented below. With the passage of time and in the absence of renovation processes, depreciation of fixed assets increases, which indicates a deepening crisis in the housing and communal services sector. Thus, from 2005 to 2015, depreciation of fixed assets of enterprises of housing and communal services increased by an average factor of 1.4 (see Table 5).

Table 5

Degree of depreciation of fixed assets for 2005-2015 (as a percentage of the total number of fixed assets)

Type of economic activity	2005	2010	2011	2012	2013	2014	2015
Management of housing stock operation	29.3	45.7	46.3	39.7	47.1	53.0	59.6
Gas production and redistribution	39.1	41.3	25.1	37.1	43.2	44.3	45.4
Production, transmission and redistribution of thermal energy	41.3	44.8	36.2	38.8	41.5	41.5	41.5
Collection, purification and distribution of water	54.7	49.2	56.7	49.1	58.3	59.1	60.0
Management of uninhabited fund operation	27.5	27.8	37.1	32.0	39.6	43.3	47.3
Sewage and waste disposal	33.4	46.1	35.5	48.6	40.8	42.5	44.6
Personal services provision	34.7	42.8	35.5	48.6	43.4	46.6	50.0

The analysis of official statistical data (Rosstat 2017) for 2005-2015, systematized in Table 4, showed the largest depreciation of fixed assets in enterprises for collection, purification and distribution of water (60.0%), as well as in enterprises that manage the exploitation of housing stock. The least deterioration of fixed assets falls on the organization for production, transfer and redistribution of thermal energy (41.5%) and enterprises for disposal of wastewater and garbage (44.6%). There is no official data on the degree of depreciation of fixed assets of enterprises in the inspected industry in 2014-2015, therefore, using the method of exponential smoothing, we predict that, on average, the degree of depreciation of established enterprise funds in 2015 compared to 2005 has increased by 12.7%

A high share of completely worn out fixed assets of the housing and communal sector constitutes a serious threat to economic security. About 50% of communal equipment in Russia was manufactured 20 years ago. Over the past 10 years, the number of violations and accidents in the work of communal facilities has grown 5 times. About 50% of facilities and utilities require replacement; at least 15% are in an emergency condition. Losses in thermal facilities and networks reach 40%, water pipes – up to 20%, electricity – up to 15% (Rosstat, 2017).

Unsafe water supply and inadequate sanitation increase the risk of diseases and worsen the quality of life of the population. The health of the population depends on the effectiveness of water purification. According to international studies, in 2013, 97% of the population in Russia use quality water sources and 70% of the population use high-quality sanitation facilities (World Health Organization, 2013), which does not correspond to the indicators obtained on the results of our research. The received results testify to a high degree of depreciation of fixed assets at enterprises for collection, purification and distribution of water, which does not allow to provide the population with high-quality water.

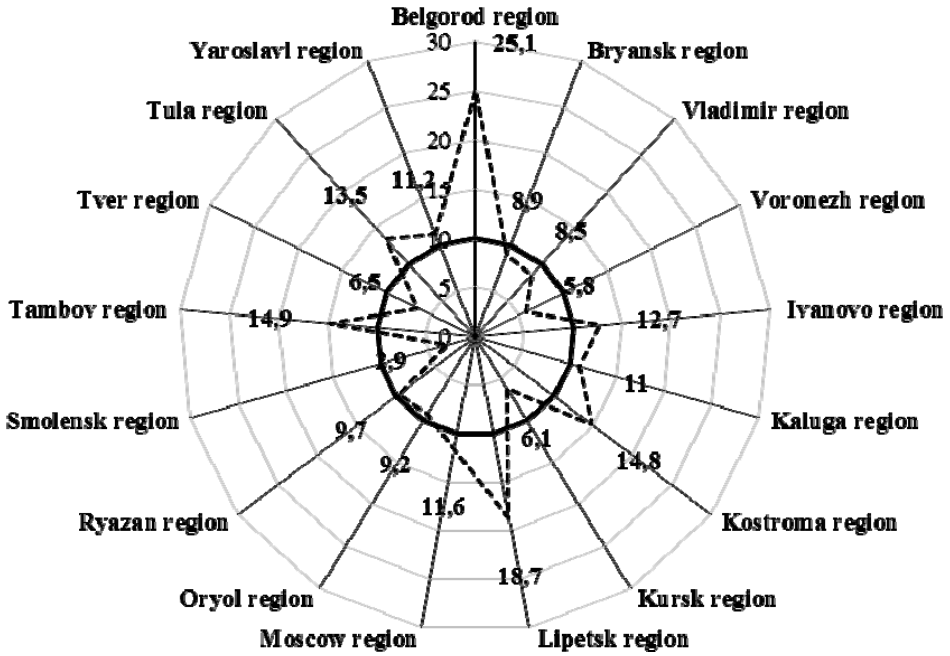
On average, the number of worn-out fixed assets of enterprises in the industry in 2015 constituted 11.2%. Researchers determine the threshold value of the indicator of total depreciation of fixed assets as 10% of the total number of fixed assets of enterprises of the housing and communal services. If the threshold value increases by more than 10%, then

urgent state and public intervention is required to protect the population from extreme man-caused and natural disasters.

For descriptive reasons the condition of wear-out of fixed assets of subjects of housing and communal services in regions following the results of 2015 in relation to the threshold value is presented in Figure 3.

Figure 3

Wear-out of fixed assets of the enterprises of housing and communal services in regions of the CFD of the Russian Federation in relation to the threshold value (percentage of the total area of housing stock), authors' construction



For a more objective and accurate determination of the level of economic security of the housing and communal services, it is essential to analyze the dynamics of this indicator, characteristics of the process of forming a trend (or smoothing) the differences between regions in a given sector. The degree of renewal of fixed assets at enterprises of the housing and communal services raises the quality of life of the population, and, consequently, the level of economic security. Table 6 presents the generalized indicators of the share of worn-out fixed assets of organizations and enterprises for the production and distribution of electricity, gas and water in the regions in the regions studied for 2009-2015. The indicators were calculated by the authors.

Table 6

The share of depreciation of fixed assets for 2009-2015 (as a percentage of the total number of fixed assets)

Region	2009	2010	2011	2012	2013	2014	2015
Belgorod region	6.5	8.3	11.1	15.5	16.1	20.1	25.1
Bryansk region	13.9	11.1	7.4	10.0	10.4	9.6	8.9
Vladimir region	16.3	10.1	9.7	11.7	10.6	9.5	8.5
Voronezh region	9.0	8.6	7.8	6.4	6.8	6.3	5.8
Ivanovo region	17.2	15.8	16.2	14.3	15.6	14.1	12.7
Kaluga region	26.5	28.2	22.1	19.2	14.9	12.8	11.0
Kostroma region	7.7	7.0	9.9	10.5	12.0	13.3	14.8
Kursk region	7.3	6.7	7.3	7.0	6.5	6.3	6.1
Lipetsk region	7.9	8.7	11.0	13.2	14.1	16.2	18.7
Moscow region	13.8	11.8	12.8	12.5	12.4	12.0	11.6
Oryol region	18.2	14.9	15.7	11.0	11.6	10.3	9.2
Ryazan region	15.4	13.4	12.9	10.5	11.4	10.5	9.7
Smolensk region	7.1	8.4	7.7	7.4	7.4	4.7	2.9
Tambov region	5.9	4.9	5.2	11.4	11.0	12.8	14.9
Tver region	7.2	7.2	8.6	5.7	6.8	6.6	6.5
Tula region	14.4	14.4	16.5	14.6	13.9	13.7	13.5
Yaroslavl region	6.7	6.5	8.7	9.8	9.5	10.3	11.2

According to the study, from 2009 to 2015 the share of completely worn out fixed assets of enterprises increased by an average of 5% (of the total number of fixed assets). The number of worn-out fixed assets of enterprises for the analyzed period decreased in 12 regions out of seventeen. Leaders in reducing the number of completely worn out fixed assets of enterprises, their disposal, renovation and modernization are Smolensk region (-59.1%), Kaluga (-58.5%), Orel (-49.4%), Vladimir (47.8%), Ryazan (-37%), Bryansk (-36%), Voronezh (-35.5%) and Ivanovo (-26.1%) regions. Belgorod region shows negative dynamics of increase in worn-out fixed assets of enterprises.

Basing on the study, the levels of economic security of the regions were determined by the indicator of depreciation of fixed assets of enterprises of the housing and communal services sector. The ranking of regions by the number of worn-out fixed assets of enterprises is presented in Table 7. The indicators were calculated by the authors.

A high level of economic security according to the indicator of depreciation of fixed assets of enterprises in the sector with positive dynamics was demonstrated by 47% of the subjects. The "midpoints" of the rating are regions with a satisfactory level of economic security: Kursk (-16.4%), Moscow (-16%), Tver (-9.7%) and Tula (-6.2%) regions. On average, in the listed regions the share of completely worn out fixed assets of housing and communal services enterprises decreased by 12.8% compared to 2009.

Table 7

Levels of economic security of regions according to the share of depreciation of fixed assets

Region	Dynamics of depreciation of fixed assets of enterprises of housing and communal services (as a percentage of 2009)
High level	
Smolensk region	-59.1
Kaluga region	-58.5
Oryol region	-49.4
Vladimir region	-47.8
Ryazan region	-37.0
Bryansk region	-36.0
Voronezh region	-35.5
Ivanovo region	-26.1
Satisfactory level	
Kursk region	-16.4
Moscow region	-16.0
Tver region	-9.7
Tula region	-6.2
Low level	
Yaroslavl region	+67.1
Kostroma region	+92.2
Lipetsk region	+136.7
Belgorod region	+286.1

Conclusions

The sector of housing and communal services is a multi-component, combining a variety of subjects and objects, requiring a thorough scientifically sound institutional regulation. One of the important factors of ensuring the economic security of housing and communal services, in our view, is the identification of sectoral features of institutional regulation of housing and communal services.

The security system should be aimed at all social groups, at ensuring the constitutional rights and freedoms of the person as a consumer of housing and communal services, the owner of the premises, a decent level and quality of life of the population, taking into account the equal satisfaction of the General interests of the individual, society and the state. When ensuring and maintaining a high standard of living in Russia, it is necessary to take into account the problems of functioning of housing and communal services, caused by a complex of destructive factors and threats. Allocation of housing and communal aspect in the system of economic security allows clarifying and expanding the definition of "economic security of housing and communal services" in combination with such fundamental concepts as national security, economic security.

One of the most pressing problems preventing the effective development of the regional housing and communal sector is the deterioration of facilities and the need for their

modernization, technological re-equipment in the very near future with the involvement of private investment. A low level of safety according to this indicator was found in 24% of subjects. Outsiders in terms of the dynamics of the number of completely worn-out fixed assets of enterprises are Yaroslavl (+67.1%), Kostroma (+92.2%), Lipetsk (+136.6%), Belgorod (+286.1%) regions, which may entail serious industrial, technological and environmental disasters, and negative social consequences as well.

The conducted research of the main production and technological indicators made it possible to reveal threats and identify sectoral features of economic security condition according to indicators of housing stock improvement and the depreciation degree of fixed assets of enterprises in the regions of the Central Federal District of the Russian Federation. These indicators are determined by the significant impact of the housing and communal services on the quality of life of the population, the socio-economic development of the regions, the state of the regional infrastructure and life safety. The comparison of indicators with threshold values allowed the authors to conduct a comprehensive assessment of the state of economic security and identify dangerous trends in the industry. Foreign researchers make similar conclusions about high risks in the housing and communal sphere and the need of formulating a housing policy, which takes into account the demographic, ecological, technological situation in a particular region (Ocepek 2009, Murie 2007, Bloom 2008). The revealed difference between the dynamics of the studied indicators in the regions proves the existence of economic inequality in the housing and communal services sector. Regions with high, medium and low economic security were identified. It was concluded that regional differentiation and high volatility in the development of certain industries was manifested under the influence of historical, political and socio-economic processes, which significantly affected the quality of life of the population in different regions of one country.

A feature of the functioning of housing and communal services is that this industry is regulated by a set of control subjects, such as the Federal government (the government of the Russian Federation, the Ministry of construction and housing and communal services, etc.), regional bodies of state power, and bodies of local self-government. Given the fact that the housing and utilities sector includes housing, utilities, construction, fuel and energy block, tariff policy, it is obvious that a number of destructive factors characterize the management of housing and communal services. The study of control actions of public authorities allows determining the composition of institutional changes, including a set of economic and legal methods of management and contributing to the detection of threats to economic security of housing and communal services.

In our opinion, the institutional regulation of housing and communal services in the region should meet the conditions of effective development of the regional economy; ensure coordination and coordination of the interests of the region, economic entities of housing and communal services and consumers of housing and communal services, to neutralize internal contradictions between all elements of the industry. The basis of institutional regulation of housing and communal services of the Russian Federation is the constitutional principle of differentiation of functions of Federal, regional and municipal levels of functioning of housing and communal services.

The analysis allowed us to identify the following sectoral features of institutional regulation of housing and communal services:

Lack of coordination and interconnection in the formation of the principles of the division of subjects of jurisdiction, powers and responsibilities in the housing and communal services between the levels of public administration (Federal, regional and local),

Lack of a legislative fixed set of tools for the development and implementation of comprehensive coordinated actions of Federal, regional and municipal authorities in the regulatory, tariff activities, pricing,

Lack of effective mechanisms and tools for the formation and development of the investment base of housing and communal services,

Lack of an adequate system of institutional indicators of economic security of housing and communal services.

The target orientation of the formation of economic security of housing and communal services provides for the resolution of contradictions arising between the subjects of housing and communal services and their protection from external and internal threats. Targeted and conscientious relations between the subjects of housing and communal complex should be aimed at ensuring constitutional rights and freedoms, protection of national interests and national values, implementation of the strategic goals of the Russian Federation, a decent standard of living.

The economic security of housing and communal services is included in the scheme: security – national security – economic security – economic security in certain sectors – economic security of housing and communal services-economic security of public utilities, economic security of housing.

The role of housing and communal services in ensuring economic security is largely due to the peculiarities and laws of the functioning of this industry. Housing and communal services as the largest socially significant and life-supporting sector of the economy has certain patterns of functioning. Housing and communal complex is a complex dynamic system of sub-sectors of life support of the population, which determines its place in the economic security of the state.

The obtained scientific results were applied to identify links between sectoral indicators of economic security, their threshold values and the quality of life of the population in various regions. Monitoring and identification of positive (negative) dynamics of sectoral indicators of economic security make it possible to use the obtained data for strategic forecasting of spatial changes in the social and economic development of the country and optimizing the activities of the subjects of the housing and communal services sector.

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SUMMARIES

Zhelyu Vladimirov

DISCUSSING INNOVATION POLICY BIASES IN THE NEW EU MEMBER STATES

The data show that there is a significant and persistent gap in innovation performance between new and old EU Member States. Most of Eastern European countries (EEC) are moderate innovators, except for Slovenia, while Bulgaria and Romania belong steadily to modest innovators. Obviously the new member states face more challenges in creating and implementing effective innovation policies.
Therefore, the goal of this paper is to analyze biases in innovation policy of the new member states (NMS), including Bulgaria, and to suggest some measures to overcome these. It includes an analysis of EU and national EEC innovation policies, investigation of main theoretical approaches underpinning these policies, effects of path-dependency, innovation policy biases, the role of transnational corporations, global value chains, and human capital. It concludes with some propositions to the improvement of EEC' innovation policies.
The necessity of such research originates from the fact that often the EEC policymakers accept uncritically the elements of innovation policy from more developed countries without considering the specificity of local context. The uncritical acceptance of "best practices" approach leads inevitably to biased innovation policies. For example, the EEC innovation policies tend to be based on rather linear understanding of innovation with an accent on R&D and high-tech sectors at the expense of demand-side and medium- and low-tech sectors. It seems that these countries fall into the so-called "periphery paradox". It consists in policy efforts to promote innovation, which are however detached from efforts to strengthen the local actors (firms, universities, and institutions) which demand and offer the knowledge for innovation. This way the innovation policy addresses missing actors.
In order to close the innovation performance gap between old and new EU member states there is a need to modify the innovation policies in EEC as the prevailing R&D based model is less relevant compared to a model of creating local innovation capabilities.
JEL: O32, O38

Tomasz Grodzicki

HUMAN CAPITAL AS A FACTOR CREATING INNOVATION IN THE VISEGRAD COUNTRIES

Human Capital is of great importance in every sector of the economy. Hence, its forms of participation in shaping the economy may differ over the years, due to e.g. increasing robotization and automatization, human capital will remain crucial as a development factor. In the knowledge-based economy, human capital plays a significant role, especially in creating innovation. While Western Europe is leading in innovation in the EU, most of the Visegrad countries are way behind the leaders. Therefore, they need to make an effort to catch-up with Western Europe. One of the most important factors of innovation is human capital. It seems, however, that the Visegrad countries do have a potential for innovation with regards to human capital. There is a growing number of university graduates across these countries, R&D personnel or doctoral students. However, it does not necessarily influence the level of innovation, meaning that some countries may have a higher potential of human capital and a lower level of innovation than others with a relatively lower level of such potential.
JEL: O3; J24; F63

Maria Markova

COMPANY COMPETITIVENESS THROUGH INTELLECTUAL PROPERTY

The aim of this article is to present the author's thesis for company competitiveness based on intellectual property /IP/.
The author presents definitions for the following terms: company competitiveness, IP, IP portfolio
1. Company competitiveness – a general review.
2. Intellectual property as a content and as a business factor.
3. IP portfolio for the company competitiveness – theoretical base and methods.
4. Good practices in Bulgaria.

First of all the author presents hers point of view for company competitiveness and the matrix for its evaluation including economic and noneconomic indicators such as purchases, turnover and profit, revenues from IP and profitability. Special attention is paid to IP as a factor of company competitiveness and IP portfolio of the company - list and structure, expert assessment of their value.
Then the author presents the relations between IP and company competitiveness through revelation of the aspects: IP as innovations and IP as business indicators and then IP as a market factor and as a factor of consumer behavior.
The final part of this article is focused on the IP portfolio of the company as a content and as a factor of company competitiveness following the points:
1. Identification of IP portfolio as elements and characteristics.
2. Analysis of current status of the IP portfolio of the company.
3. Presenting of IP portfolio as a factor for obtaining and sustain the company competitiveness

The practical issue of this thesis is presented as examples from the Bulgarian successful companies.
JEL: K49

Baki Hyuseinov

DISCRIMINATORY MANIFESTATIONS AGAINST WOMEN IN THE FIELD OF EMPLOYMENT – RISKS, PROFILES AND PROTECTION

The study examines especially the current problems related to the establishment and protection of women against discrimination in the field of employment.
The main objective of the study is to synthesize the following: based on an assessment of the degree of transposition of the European legislation into the Bulgarian legislation and its actual implementation, as well as of the positions of women in employment, to identify the threatened to discriminatory risk women in different profiles and mainstreaming the main policies/measures to protect them.
The study points out that the Bulgarian legislation is highly harmonized with the European legislation, which allows the efforts to be directed towards its observance and application, incl. through monitoring control. It has been pointed out that the highest legal weight in the country's legislation is the Protection against Discrimination Act and the Law on Equality between Women and Men.
As a result of relevant analyzes and evaluations it is summarized that in the sphere of employment, the qualitative characteristics of the female workforce are clearly outlined as the main factor for its positioning in horizontal and vertical terms. The prerequisites for the occurrence of horizontal and vertical segregation of women, often at the limit of discrimination, result from this.
The main communities of women at higher discriminatory risk in the employment field are defined. Multi-profile analysis and employment assessments of women have been conducted revealing the

differences between women and men in terms of employment, the employment status and the payment.
The study recommends that the gender policies and measures be directed primarily towards limiting/overcoming the differences in the level of quality assessment of human resources by gender. The need to combine them with policies and measures for prevention and protection against discrimination is highlighted. In this context, it underlines that substantial importance have the actions of the Commission for Protection against Discrimination which applying the Law achieves real protection against discrimination, incl. also for women in the field of employment.
JEL: J21; J31; J64; J71

Plamen D. Tchipev

FIRM VERSUS MARKET – COASE REVISITED

In November 1937 Ronald Harris Coase published his fundamental article "The Nature of the Firm", throwing the gauntlet to neoclassical economics, which could not be responded properly already 80 years. The task presented by Coase to the economic community is simple to failure. Reminding us, that in the economic system, led by the free price movements in which all resources are allocated by the price mechanism, we find, in the words of a contemporary economist, "islands of conscious power in this ocean of unconscious co-operation like lumps of butter, which coagulating in a pale of butter", the great scholar asked: why do we need that at all? Why, in the coordinating role of the market does appear the inevitable figure of entrepreneur-coordinator, who leads the production? Indicating that the company and the market are alternative ways of organizing, Coase released genie out of the bottle, because the answer he provided, actually launched an endless string of debates, hypotheses, competing explanations - what exactly is the nature of the company. This paper aims to provide a more detailed look at the essence of the dilemma posed by R. Coase, paying tribute to the anniversary of the issue of his genius work.
JEL: D21; D23

Yanica Dimitrova

CHARACTERISTICS OF SUCCESSFUL COMPANY IN THE MODERN BUSINESS ENVIRONMENT

The company of the 21st century exists in a business environment characterized by a high degree of uncertainty that implies both opportunities and challenges. An essential condition for sustainable competitors is its functioning as a social enterprise, whose basic parameters are related to the management of the relationships with the stakeholders, the brand, the increase of employees' commitment as well as their retention, emphasis on authentic leadership and networking, corporate culture. Above mentioned must be in the context of a clear understanding and action consistent with continual change and adaptation. The sustainability of strategies and good organizational practices must become an essential element of the corporate mission of the successful 21st-century company.
JEL: M14

Bozhidar I. Hadzhiev
Valentina Nikolova-Alexieva
Iva T. Bachvarova

CREATING THE CONDITIONS FOR BROADBAND BUSINESS ENTREPRENEURSHIP TO ENSURE LASTING SUCCESS FOR THE BULGARIAN SOCIETY

The theory and practice of broadband entrepreneurship is a fact, already. As stated in some research, "...In the modern world of business, entrepreneurship is becoming increasingly broadband and affects the creation of changes in every business space, at every level in every industrial and territorial dimension“. This is entrepreneurship driven by broadband shopping of goods and services, instant communications, negotiations and orders. It is based on the ideas of Complex Reengineering theory, the three-star model and the seven concepts of this theory.
This study focuses on opportunities to create broadband business opportunities. An attempt is made to reveal the underlying factors for creating these conditions. The main purpose of this study is to analyze the factors for creating conditions for broadband business entrepreneurship in order to draw attention to the opportunities for achieving lasting success for the Bulgarian society.
JEL: L26; L81; L87

Krassimira Naydenova

BUILT-IN PROBLEMS IN THE NEW EUROPEAN REGULATIONS FOR THE BULGARIAN CAPITAL MARKET

The capital market attracts many investors and public companies, therefore their protection is a major objective of the regulations system. This is a complex system, subject to continuous improvement due to market and technology developments.
New markets face the choice of adopting the modern regulations of previous markets or building their own system, adequate for their yet undeveloped and illiquid capital market. Introducing complex restrictions operating in the most developed markets, given the low administrative capacity of the supervisory authorities and insufficient capital base of issuers and financial institutions, gives rise to problems.
The complex norms are "too much of a good thing" and lead to the outflow of both public companies and investment intermediaries and investors, due to over-regulation of the investment environment. This phenomenon is called "bilateral restriction of access" and it leads to restricted access to capital of local companies and depriving investors of high-quality assets.
The liquidity of the young markets is low, however, this is one of the main attributes of the attractiveness of each capital market. Part of the new norms introduced since 2018 have significantly worsened key indicators of liquidity and environment uncertainty, so their impact on new capital markets is negative. The new Markets in Financial Instruments Directive (MiFID2) and two EU Regulations, enacted since January 2018, have deepened the problems of over-regulation and have additionally created new ones related to market liquidity as far as the young Bulgarian capital market is concerned.
JEL: G10

Elena Shustova
Vesselin Blagoev

RISK MANAGEMENT IN THE INTERNET BANKING
The Case of Kazakhstan

The risk management in the banking sector has always been of primary concern, especially after the cases of mismanagement, which lead to big losses, and even closing down banks. For obvious reason, in the case of internet banking the risk management (RM) issues become much more complicated. This study focuses on the specifics of RM in the case of Kazakhstani banks, using as an example the policy of one of the leading banks in this area – BankCentrCredit. Kazakhstan has all the characteristics of a country which has to develop intensively the internet banking – large territory, low density of the population and as a result – very expensive coverage with bank services with the traditional methods – bank offices. We especially address the specifics of risks in case of providing digital financial services, based on artificial intelligence solutions and related robotized systems.
JEL: M15; G21; L86

Dimitar Zlatinov

A MODELLING APPROACH FOR FORECASTING NET EXPORTS OF ELECTRICITY FROM BULGARIA

The report presents a modelling approach for forecasting Bulgarian net exports of electricity based on an empirical analysis of the factors affecting trade with this specific commodity. A brief overview of the models and approaches for forecasting the production and export of electricity is made and their adequacy is assessed regarding the situation of the electricity market in Bulgaria and the region. On this basis, a modelling approach is foreseen to predict the net exports of electricity by 2035, taking into account the current situation and prospects for the development of the electricity sector in Bulgaria and Europe.
JEL: C13; F10; F47

Mincho Hristov

ECONOMIC AND SOCIO-POLITICAL PRECONDITIONS OF MILITARY AUTHORITARIANISM IN SOUTH AMERICA

In the sixties and seventies of the 20th century, military regimes were established in South America, carrying a long-term structural project for national development. Civil rights, legal norms, parties are suspended in order to carry out the pre-determined policy and to accomplish the tasks set by the military institution.

The factors that determine this trend are multi-layered and interconnected. Among these are the economic changes that are unfavorable for the Latin American countries and especially the devaluation of their main export products after the Second World War, the need to close or restructure unprofitable state-owned enterprises and the conduct of socially unpopular steps, the lack of a nationally responsible political elite, highly developed and corrupt institutions. The external political factors can also be added to the economic factors.

The Cuban Revolution of 1959 and its engagement with the Soviet bloc is one of the reasons for rethinking the US foreign policy towards the entire Latin American region. Under President Kennedy, the Strategic Doctrine "Alliance for Progress" was adopted, where serious attention was given to new challenges and ways to overcome them. The ideological basis of the military regimes is the Doctrine

of National Security. Therefore, it is precisely the correlation between painful socio-economic reforms and the repressive nature of military dictatorships that is part of the present study.
JEL: F5

Milkana Mochurova
Radmil Polenakovik
Stoyan Totev
Marica Antovska-Mitev
Trajce Velkovski

SUSTAINABLE REGIONAL DEVELOPMENT – THE CASE OF NORTHEAST PLANNING REGION IN THE REPUBLIC OF MACEDONIA AND THE KYUSTENDIL DISTRICT IN THE REPUBLIC OF BULGARIA

The paper argues that cross-border cooperation is important for border regions for building productive economies and inclusive societies. It justifies also the need of integrating sustainable development principles into regional development practice. The paper analyses levels and dynamics of key socio-economic indicators of the Northeast Region of Macedonia and Kyustendil district in Bulgaria such as – regional GDP, gross value added, employment, economic structure, demographic indicators. It concludes by presenting prospects for development of cooperation in the observed regions.
Keywords: regional development, cross-border cooperation, Northeast Region of Macedonia, Kyustendil district in Bulgaria
JEL: R10; R58

Shteryo Nozharov

THE INSTITUTIONAL ECONOMICS OF COLLECTIVE WASTE RECOVERY SYSTEMS: AN EMPIRICAL INVESTIGATION

The main purpose of the study is to develop the model for transaction costs measurement in the Collective Waste Recovery Systems. The methodology of New Institutional Economics is used in the research. The impact of the study is related both to the enlargement of the limits of the theory about the interaction between transaction costs and social costs and to the identification of institutional failures of the EU concept for the circular economy. A new model for social costs measurement is developed.
JEL: A13; C51; D23; L22; Q53

Inna Timofeeva
Elena Lavrova
Tatiana Agapova
Elena Koroleva

REGIONAL DIFFERENTIATION IN HOUSING AND COMMUNAL SERVICES: IMPACT ON ECONOMIC SECURITY

The article considers the problems of increasing economic security and quality of life, which are the strategic priority of the world community. Authorial methodology for assessing regional differentiation in the housing and communal sector has been developed. It was tested on the example

of 17 regions of Russia. The statistical data for 45 years were used. The proposed methodology was first applied to identify links between sectoral indicators, levels of economic security and the quality of life of the population. Comparison of indicators with threshold values allowed to conduct an economic security assessment, identify dangerous trends, identify regions with high, medium and low levels of security. The authors argue that in Russia, considering its size and uneven distribution of resources, the problem of sectoral and regional differentiation is most acute. The high volatility of the development of certain industries significantly affects the quality of life of the population in different regions of one country.
JEL: I31