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## FOREIGN DIRECT INVESTMENT FACTORS IN ASEAN COUNTRIES

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*FDI is very important for the development of a country, especially for developing countries. The experience of newly industrialized countries (NICs) shows that FDI has played an important role in their economic development. In the age of globalization with cross-border flow of capital among nations, FDI becomes a key solution to reducing development gaps among nations. This research intends to identify the direct and indirect effect of ICT driving factor through openness on foreign direct investment and the direct effect of GDP Growth, GFCF on foreign direct investment. The objects of this research are ASEAN countries, while the variables in this research are macroeconomic indicators, ICT driving factor and foreign direct investment. The results are Gross domestic product growth, Gross fixed capital formation, Accessibility of digital content and Openness which affects directly on foreign direct investment, while other research variables have no significant influence. The only variable, Government Prioritization of ICT, affects foreign direct investment through openness.*

**Keywords:** Foreign Direct Investment, Gross Domestic Product, GFCF, ASEAN, ICT.

*ISD sunt foarte importante pentru dezvoltarea unei țări, în special pentru țările în curs de dezvoltare. Experiența țărilor nou industrializate (ȚNI) arată că ISD au jucat un rol important în dezvoltarea lor economică. În epoca globalizării, cu existența unui flux transfrontalier al capitalului între națiuni, ISD devin o soluție esențială pentru reducerea decalajelor de dezvoltare între națiuni. Această cercetare are drept scop cunoașterea efectelor directe și indirecte ale factorilor ISD prin deschiderea investițiilor străine directe și cunoașterea efectului direct al creșterii PIB, FBCF asupra investițiilor străine directe. Obiectul acestei cercetări îl constituie țările din ASEAN, în timp ce variabilele din acest studiu sunt indicatorii macroeconomici, factorii TIC și investițiile străine directe. Rezultatele sunt creșterea produsului intern brut, formarea brută a capitalului fix, accesibilitatea conținutului digital și deschiderea care afectează în mod direct investițiile străine directe, în timp ce celelalte variabile de cercetare nu au nici o influență semnificativă. Singura variabilă, prioritizarea guvernamentală a TIC, afectează investițiile străine directe prin intermediul deschiderii.*

**Cuvinte-cheie:** investiții străine directe, produs intern brut, FBCF, ASEAN, TIC.

*Прямые Иностранные Инвестиции (ПИИ) очень важны для развития страны, особенно для развивающихся стран. Опыт новых индустриальных стран (НИС) показывает, что прямые иностранные инвестиции играют важную роль в их экономическом развитии. В эпоху глобализации с приграничным движением капитала между странами, ПИИ становятся ключевым решением для сокращения разрыва на уровнях развития между странами. Данное исследование предназначено для того, чтобы узнать прямое и косвенное влияние ИКТ факторов, стимулирующих через открытость на прямые иностранные инвестиции и непосредственный эффект ВВП, ВНОК на прямые иностранные инвестиции. Объектом данного исследования составляют страны АСЕАН, в то время как переменными в этом исследовании являются макроэкономические показатели а ИКТ – движущий фактор на прямые иностранные инвестиции. Результатами являются рост валового внутреннего продукта, валовое накопление основного капитала, доступность цифрового контента, открытость, которые влияют непосредственно на прямые иностранные инвестиции, в то время как другие исследования переменных не оказывают существенного влияния. Единственная переменная, правительственная приоритизация ИКТ затрагивает прямые иностранные инвестиции за счет открытости.*

**Ключевые слова:** прямые иностранные инвестиции, валовой внутренний продукт, ВНОК, АСЕАН, ИКТ.

**JEL Classification:** E22, H54, O16, P23, P24.  
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**Introduction.** The rapid growth of multinational corporations (MNCs) has become the major driver for the process of FDI because they appear everywhere in the globe as an investment center. FDI to ASEAN remains highly concentrated and dominated by a few countries. The traditional sources – Japan, the United States and the European Union – remain the significant investors. The top 10 investors accounted for more than 70% of inflows in 2012-2013. Table 1 shows that Japan was the largest investor, followed by ASEAN Member States as a group. Together they accounted for more than 36% of investment in both years. Chinese companies have also been investing actively in ASEAN and in 2013 contributed to \$8.6 billion in flows. Unlike previous years, the companies of the United States invested considerably less – about \$3.8 billion or only 3% of all FDI in ASEAN, dropping its ranking to seventh. The companies from four European countries (the Netherlands, the United Kingdom, Belgium and Luxembourg) invested \$26 billion, representing a 21% share of the total (ASEAN Investment Report, 2014).

In recipient Industries, services and manufacturing sector continued to dominate FDI flows in the region, with some variations between the more developed member economies and the CLMV countries. Moreover, in a more competitive world, information and communication technologies (ICT) is increasingly moving to the core of national competitiveness strategies around the world, thanks to its revolutionary power as a critical enabler of growth, development, and modernization. As the years go by, ICTs, born in the military world and have spread to every social and economic activity. Nowadays, ICT has become the fundamental pillar of the knowledge economy and draws great interest to overcome many of the drawbacks of conventional system and also to save money and/ or time (Takahashi, et al., 2004).

Availability of latest technology, firm-level of technology absorption, government prioritization of ICT and accessibility of digital content are four of the many driving factors of ICT. The four driven factors of ICT become important in this sophisticated era. Availability of latest technology will increase a firm level of absorption and production because the more sophisticated the technology, the more effective and efficient the production. Yet, government have a big proportion to support technology activities by prioritization and concern about it. In order to increase the economic flow, the government can push the business sector to publish the report so to attract the investor. Investor could freely and easily access the report – which has been changing to digital report – moreover, can help to assess business and economic conditions (Lee, 2014).

ICT can give impact to FDI flows through increasing productivity across all sectors, facilitating market expansion beyond borders to harvest the economic scale and lowering costs and facilitating access to services, notably in administration, education, health and banking (Africa Partnership Forum, 2008). Cho and Ha (2009) declare that ICT infrastructure is one of the major determinants to attract FDI.

The aim of this research is (1) to analyze the effect of GDP growth and GFCF on FDI; (2) to analyze the effect of latest technology, technology absorption, ICT government and accessibility of digital content to FDI, intervened by openness.

### **Literature review**

Capital inflows from abroad can be divided into three categories, namely foreign debt, portfolio investment and foreign direct investment (FDI). In general, FDI is a form of direct capital investment engaged in various fields. The main reason for that opinion lays in FDI scheme where business failure risk is born by foreign investors, while for debt financing, the country concerned (in any condition) should bear the risk and oblige to pay the debt principal plus interest. Moreover, FDI is associated with direct ownership, control of plant, equipment and infrastructure which help to finance the creation of capacity growth in an economy, while the short-term foreign debt is more frequently used to finance consumption. According to Moosa (2002), theories of FDI can be classified into four types: (1) Theories assuming perfect market; (2) theories assuming imperfect market; (3) other theories; (4) theories based on other variables.

Gross fixed capital formation includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

In this study GFCF is employed as a proxy of infrastructure. This selection is based on the notion that other measurements of infrastructure such as roads, telephones and ports, only reflect the existing infrastructure and not the potential infrastructure as it is included in GFCF. Therefore, the GFCF is considered to represent both existing and potential infrastructure.

Trade openness refers to a degree of which countries or economies permit or have international trade with others. Trade activities include import and export, inter countries investment, borrowing and lending, and repatriation of funds abroad. Open economies mean greater market opportunities. However, at the same time they also face greater competition from businesses based in other countries. From the perspective of financial development, trade openness means the ability of an economy to obtain funds from other economies, and willingness to invest its surplus fund to other countries.

ICT has become a dominant force in enabling the company to take advantage of new distribution channels, create new products, and provide differentiated value-added services to customers (Maris, 2013). In general, strategic use of ICT to support governance processes includes ICT-enabled transformation in the relationships with business and others. In particular, ICT helps to: deliver public services over electronic and traditional channels, engage various social actors in decision-and policy-making processes and regulate the activities of such actors (Coleman, 2008; Finger, 2005), as well as generate and circulate official communication in digital forms (Coleman, 2008) to reduce information asymmetry in the society (Finger, 2005).

### Research method

The data acquired from the observation unit, macroeconomic indicators observation units are its driving factors: 1) GDP Growth, 2) GFCF, 3) openness. ICT observation driving factors are: 1) availability of latest technologies, 2) firm-level of technology absorption, 3) government prioritization of ICT, 4) accessibility of digital content. The last for foreign direct investment's observation unit are the inflows from the FDI activities in each country.

For this research, sample criteria's as follows:

1. ASEAN countries which listed in the United Nations,
2. ASEAN countries which participate in the Network Readiness Index Survey in period 2008-2013,
3. ASEAN countries which listed in the United Nations Conference on Trade and Development (UNCTAD) in period 2008-2013,
4. ASEAN countries do FDI activities,
5. ASEAN countries which have positive FDI inflows.

The population of ASEAN are 10 countries. However, based on the criteria noted above there are 8 countries which meet the criteria of all ASEAN countries.

Dependent variable in this study is FDI. FDI data in this study refer to FDI net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors where the data are measured in current US dollars. The operating variables table can be set up as follows:

**Table 1**

| Operating Variables                  |  |       |                             |
|--------------------------------------|--|-------|-----------------------------|
| Variable                             | Explanation  | Scale | Source                      |
| <b>Dependent Variable:</b>           |  |       |                             |
| FDI Inflow                           | Net foreign investment   | Ratio | World Development Indicator |
| <b>Independent Variable:</b>         |  |       |                             |
| GDP Growth                           | GDP Growth as percentage increase or decrease of GDP                 | Ratio | World Development Indicator |
| GFCF                                 | Gross Fixed Capital Formation.                                       | Ratio | World Development Indicator |
| Availability of Latest Technologies  | Availability of latest technology in the country                     | Ratio | World Economic Forum        |
| Firm-Level Technology Absorption     | Level of firm in absorbing technology                                | Ratio | World Economic Forum        |
| Government Prioritization of ICT     | How much the government in a country place on ICT                    | Ratio | World Economic Forum        |
| The Accessibility of Digital Content | Accessibility of digital content via multiple platforms              | Ratio | World Economic Forum        |
| <b>Intervening Variable:</b>         |  |       |                             |
| Openness                             | The level of trade openness in host country. (Export + Import) / GDP | Ratio | World Development Indicator |

Source: WEF Secondary Data, and WDI Secondary Data Test Path Analysis was performed using AMOS software version 20.

## Result and discussion

### 1. Research Model Testing

By using AMOS 20 software, the goodness of results reflected in table 2 below.

**Table 2**

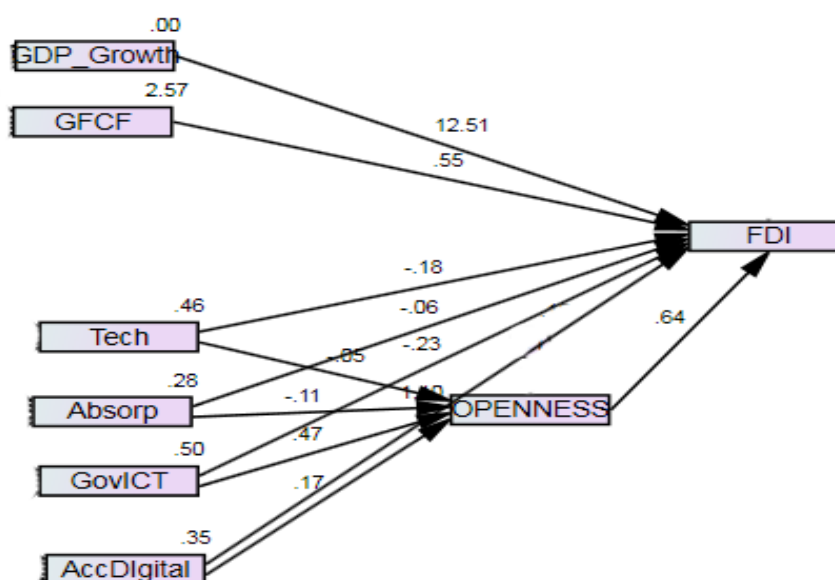
| Goodness of Fit   |               |              |             |
|-------------------|---------------|--------------|-------------|
| Good of fit index | Cut-off value | Model result | Explanation |
| RMSEA             | $\leq 0.08$   | .000         | Very good   |
| GFI               | $\geq 0.90$   | .998         | Very good   |
| AGFI              | $\geq 0.90$   | .967         | Very good   |
| CMIN/DF           | $\leq 3.00$   | .172         | Very good   |
| CFI               | $\geq 0.95$   | 1.000        | Very good   |

Source: AMOS v. 20 Output, 2015.

Table 2 shows that RMSEA value of 0.000; GFI value of 0.998; AGFI value of 0.967; value of CMIN/DF of 0.172; CFI value of 1.000 indicates that the model fit is very good.

### Path Analysis Test Result

In AMOS it can be seen how strong the variables can influence the dependent variable, it is called standardized regression weight. The standardized regression weight of this research can be seen in the following figures.



**Figure 1. Path Analysis**

Source: AMOS v. 20 Output 2015.

Figure 1 shows a path analysis diagram which illustrates the results of hypothesis examination in this research. The figure listed in the diagram shows the influence within the variable in the research.

GDP growth has direct impact on FDI, the results are consistent with research Rininta (2011) which states positive relationship between FDI inflow and economic growth. Percentage of GDP as a catalyst to FDI is assumed to raise the productivity of private capital by financing both public and private investments such as location-specific capital ventures, human capital resource investments, diversified microeconomic investments, and community support, maintenance and sustenance (Azeez, and Begum, 2009).

Over the next 20 years, Southeast Asia will be one of the world's fastest growing consumer markets with ASEAN members' GDP forecast to rise more than fourfold to US\$10 trillion by 2030. The combined GDP of member nations is already significantly higher than India's economic output and by 2018, it will exceed that of Japan according to US industry analyst IHS Global Insight. The AEC will unleash a new era of growth by creating a competitive market of more than 600 million people in the ten

member countries comprising Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam (Investing in ASEAN, 2013).

ASEAN accounted for 3% of the global economy in 2013 but attracted more than 8% of global FDI flows. It accounted for 8% of the combined GDP of emerging markets and developing countries but received 16% of global FDI flows to the developing world. Higher inflows over the past decade have produced a five-fold rise in FDI stock per capita, from \$500 in 2000 to nearly \$2,500 in 2013 (ASEAN Investment Report, 2013).

As a result of continuing high levels of investment, the contribution from industry and manufacturing to economies throughout the Region continues to grow. In Indonesia, the sector's contribution to GDP has reached 47%, 40.2% in Malaysia and 31.1% in the Philippines, and Singapore's services dominated economy industry still accounts for 26% of its GDP (CIA World Factbook, 2013).

Biotechnology is seen as one of the key strategic areas that will support the growth of the country's economy providing 5% of GDP by 2020, when up to 280,000 direct and indirect jobs are predicted to be created. Investment whether in ports, airports, roads, railways, power, water and sanitation or ICT serve as a catalyst for expansion in the economy by lowering the costs of conducting business and as a result contributing to GDP growth. Agricultural output is increasingly important in the composition of the Regions exports. Between 2003 and 2010, agro-based exports increased threefold with the total value rising from US\$11.8 billion to some US\$40 billion. Food processing and manufacturing contributed up to 13.5% of GDP (Investing in ASEAN, 2013).

Travel and tourism business is estimated to contribute to 11.1% of total GDP. Revenues now generated are estimated to sustain a total of 25.4 million jobs, some 8.8% of total employment, across a wide range of economic sectors according to the World Travel and Tourism Council (WTTC, 2013).

No country can afford to be left behind in the digital revolution. It is estimated that a 10% increase in internet penetration leads on average to 1% of sustainable GDP growth, while a doubling internet speed can improve GDP by 0.3% (Investing in ASEAN, 2013).

GFCF has direct impact on FDI. The results are consistent with research Fahmi (2012) which states the more infrastructures will end up with the higher FDI inflow. Infrastructure consists on communications, roadways, transportation, highways and ports among others. In recent studies, Khadaroo and Seetanah (2010) addressed mainly on transport infrastructure along with some other variables of FDI and evidenced the positive significant contribution of infrastructure in captivating FDI. Though, the studies of Akhtar (2000) and Aqeel and Nishat (2004) contribute towards the literature on FDI for Pakistan, but these studies ignored the important determinant of FDI i.e. infrastructure (Khadaroo & Seetanah, 2010).

Infrastructure can have different impact on developing and developed nations. In developing economies, infrastructure has a significant attractiveness for FDI inflows (Khadaroo and Seetanah, 2010; Asiedu, 2006). Sekkat and Varoudakis (2007) assess that Infrastructure has a significant attractiveness of FDI even than that of openness and investment climate in developing countries. Addison et al. (2006) acknowledge such promotional impact only for developed nations but, on the other hand, such situation does not exist for developing countries. Whereas, Bae (2008) states that in developed countries, infrastructure is not a motivator but an indicator to attract FDI in large emerging economies.

Infrastructure availability promotes both types of FDI, with comparatively more impact on vertical FDI as it reduces operational costs. Poor infrastructure causes increase in transaction cost and limits access to both local and global markets which ultimately discourages FDI in developing countries. A greater efficiency can be achieved in extending infrastructure facilities by considering commercial principle and shifting liability for provisioning of infrastructure facilities through management contracts or leases such as build-operate-transfer (BOT), build down operate (BOO) and full privatization. As a matter of fact, privatization has come up with a useful source of attracting inward FDI (Mlambo, 2006).

Availability of latest technologies has no direct impact on FDI. The result indicates that foreign direct investment in every country in ASEAN is not affected by availability of latest technology. There are many other things that foreign investor should focus when doing the FDI activities such as political condition, economic growth and many others (Sun, et al., 2002; WEF, 2012; Sarwedi, 2002). Yet availability of latest technology in the host country of FDI is only the focus of foreign investor because FDI in the host country becomes a driven factor for technology transfer in the host country (Lai, et al., 2009). Maris (2013) declares multinational companies which do the FDI activity will bring the latest technology that has implemented in the origin companies to a subsidiary that will be built or acquisition

company. This happens because the subsidiaries and acquisition companies will adopt the origin enterprise systems and tool of origin companies. Therefore, the availability of latest technology is not a major factor in attracting foreign investors to invest their funds in the country of FDI destination. Moreover, result of hypothesis 3 consistent with the result of Maris (2013) and Lee (2014).

In addition to the direct effect on FDI, availability of latest technology also has no effect on openness. These results contrast with Iyer et al. (2006) confirm these findings and show that developing countries can increase their technological catch-up by opening up to trade and foreign direct investment. Improvements in transport, telecommunications and information technology, together with increased economic integration and greater trade openness, have resulted in higher levels of technological diffusion and increased mobility and accumulation of productive factors over time (World Trade Report, 2013).

Firm-level of technology absorption has no direct impact on FDI. The result declare that foreign direct investment in every country in ASEAN is not affected by firm-level of technology absorption. However, these results are in contrast with the results of the research Lee (2014) which states technologies absorption and innovation capabilities are intimately depend upon the government and societal institutions. Government and societal permission to absorption technology will help manager to make increase their company level of technology absorption, when the company become attractive it can increase the FDI inflow to the host-country.

In addition to the direct effect on FDI, firm-level of technology absorption also has no effect on openness. These results contrast with Comin and Hobijn (2004) find that the degree of openness to trade is one of the most important determinants of the speed at which a country adopts more advanced technologies because it introduces the pressures of foreign competition on incumbents, thereby reducing their payoff from lobbying the government to deter the adoption of new technologies.

Government prioritization of ICT has no direct impact on FDI. The results are consistent with research Maris (2013) which states inflows of FDI in host country have not affected by government prioritization of ICT. It is because of ICT which is not a major factor in the business sector of the company in the country of FDI destination (Maris, 2013). When government is not concerned about ICT and has a weak investor protection it will become a disaster for FDI host country. Foreign investor will not make that country as FDI destination (Ayogu and Bayat, 2010). In South Africa there is a case which is declared by Ayogu and Bayat (2010), When the government has not prioritization in ICT but has good protection of investor, the FDI flow is still good and has insignificant influence by government prioritization of ICT (Ayogu and Bayat, 2010).

However, government prioritization of ICT has effect on openness. Some of investor believe that ICT is a crucial part of economic growth to increase the effective and efficiency company. When the government does not support and supply the infrastructure it will make the investor to think again to invest in the host country. Developing countries must develop more technological capability and greater flexibility to succeed in the more demanding and asymmetric global environment to increase openness, especially in developing countries.

Since the implementation of recommendations provided by Hong Kong's telecommunication regulatory body (OFTA), the country was able to fully liberalize its ICT market in 2001 and maximize an open ICT competition (ITU, 2007). Currently, there are no limits on foreign ownership of the ICT sector and FDI inflow is encouraged by the internal government. The openness of Hong Kong towards its ICT market and its clear market conditions make the country an attractive place for ICT operators and investors.

Accessibility of digital content has direct impact on FDI. When government gives permission to free access digital content it can support the economic growth through lowering cost and facilitating access to service, notably in administration, education, health and banking; providing access to research; and of course it can contribute to better governance, a prerequisite to growth through increased participation, accountability and transparency (Africa Partnership Forum, 2008). The result also consistent with Maris (2013) and Lee (2014), this finding suggests that the accessibility of digital content can attract foreign investors to invest their funds in Asia countries OCED (2006) cited by Maris (2013) states that most of the business activities increasingly depend on digital content. With the case of accessibility of digital content form a country, investors are not going to worry about the business activities in the country.

However, accessibility of digital content has no effect on openness. Clarke (2004) declares the cross-country correlation suggests a possible causal relationship between Internet use and exports, but tells us little about the direction of causality. That is, even if the correlation is not spurious, we cannot



determine whether trade openness encourages Internet use, Internet use stimulates trade, or both. These results contrast with Wallsten (2003) and Balamoune (2002) find that Internet users made up a greater share of the population in developing countries that are more open to trade. Other studies have also found that additional measures of ICT use and investment are correlated with various measures of openness. In general, the correlation between ICT use and openness appears to be stronger in developing countries. Several of the papers that find a positive correlation between measures of ICT use and openness focus on developing countries (Balamoune, 2002).

Openness has positive effect on FDI. It indicates that openness is one of the many factors important to foreign investor when doing the foreign direct investment. Trade openness enhances the integration of a nation's trade regime into the global economy requiring opening up of the external sector to the international community and the dismantling of international trade barriers (Dean, *et al*, 1994). The results are consistent with research Fahmi (2012) which states open market policy from government which encourages international trade in the form of export and import. Yasmin, *et al* (2003) states that domestic investment, labor force, external debt and trade openness as the significant determinants of the flow of FDI. The impact of openness on FDI depends on the type of investment. When investments are market-seeking, trade restrictions (and therefore less openness) can have a positive impact on FDI (Asiedu, 2002). The reason stems from the „tariff jumping” hypothesis, which argues that foreign firms that seek to serve local markets may decide to set up subsidiaries in the host country if it is difficult to import their products to the country. In contrast, multinational firms engaged in export-oriented investments may prefer to invest in a more open economy since increased imperfections that accompany trade protection generally imply higher transaction costs associated with exporting.

**Conclusions**, based on the results of analyses and discussions, are as follow.

Gross domestic product growth, Gross fixed capital formation, Accessibility of digital content, and Openness, which affects directly on foreign direct investment. Thus, it can be concluded that every enhancement in those variables can attract FDI inflows.

Availability of latest technologies, Firm-level of technology absorption, Government Prioritization of ICT, Availability of latest technologies do not affect directly on foreign direct investment. Thus, no matter how much the availability of latest technologies in a country, it cannot increase or decrease FDI inflows.

Only Government Prioritization of ICT affects foreign direct investment through openness. While the other variables have no significant indirect impact through Openness.

Based on the statement above direct effect in this research is greater than indirect effect on FDI.

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## CEREAL MARKET: CURRENT STATE AND DEVELOPMENT TRENDS

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*The global financial and economic crisis of 2008-2009 has created a state of uncertainty and instability in virtually all fragments of the general management system, based on market relationship. Unfortunately, this state is not overcome even today, creating different and very difficult problems deficits on managerial decision making, especially for the small farmers in rural area. The main goal of the article is to identify, based on carried out investigations, the most favorable directions of farming, given that the aforementioned global crisis has caused significant changes in the correlation between costs and market prices for many agricultural products, primarily – cereals. The methodological basis of investigations is the analysis of dynamic rows in agricultural production, as well as methods of comparison, different methodological approaches, concerning business assessment, identification and / or risk assessment etc. As a main result of the carried out investigations can be seen through the effective management of agricultural diagnosis at the level of regional market of grain products, including – planning rational structure of fruit crops for 2017 and subsequent years in the near future.*

**Keywords:** market, market prices, cereals, cereal products, trends, regional market, global market, dynamic of prices etc.

*Criza economico-financiară globală din perioada anilor 2008-2009 a format o stare de incertitudine și instabilitate, practic, în cadrul tuturor fragmentelor specializate ale mecanismului general de gospodărire de piață. Cu părere de rău, această stare nu este depășită nici până în ziua de astăzi, creând probleme dificile la luarea deciziilor manageriale, în special, pentru producătorii agricoli de dimensiuni mici. Scopul principal al cercetării îl constituie identificarea, în baza investigațiilor efectuate, a celor mai favorabile direcții de activitate agricolă, dat fiind faptul că criza mondială sus-menționată a provocat schimbări esențiale în corelația dintre costuri și prețuri de piață pentru mai multe produse agricole, în primul rând, produsele cerealiere. Baza metodologică a investigațiilor o constituie analiza rândurilor dinamice în domeniul producției agricole, metoda comparației, diferite abordări metodologice privind evaluarea businessului, identificarea și/sau evaluarea riscurilor etc. În calitate de rezultat principal al investigațiilor efectuate poate fi privită eficientizarea managementului agricol prin prisma diagnosticului argumentat al pieței regionale a produselor cerealiere, inclusiv, planificarea structurii raționale a semănturilor pentru roada anului 2017 și următorii ani din viitorul apropiat.*

**Cuvinte-cheie:** piața de desfacere, prețuri de piață, culturi cerealiere, produse cerealiere, tendințe, piața regională, piața globală, dinamica prețurilor etc.

*Мировой финансовый и экономический кризис 2008-2009 годов привел к состоянию неопределенности и нестабильности практически во всех фрагментах общего рыночного механизма хозяйствования. К сожалению, это состояние не изменилось до сих пор, что создает серьезные проблемы в процессе принятия управленческих решений, в частности для мелких сельскохозяйственных предприятий (фермерских хозяйств). Основная цель статьи заключается в том, чтобы на основании проведенных исследований определить наиболее благоприятные направления для сельскохозяйственной деятельности, учитывая тот факт, что вышеупомянутый мировой кризис вызвал значительные изменения в соотношении между затратами и рыночными ценами на многие сельскохозяйственные продукты, в первую очередь, зерновые культуры. Методологической основой исследований является анализ динамических рядов в области сельскохозяйственного производства, метод сравнения, различные методологические подходы, касающиеся оценки бизнеса, идентификации и/или оценки рисков и т.д. В качестве основного результата проведенных исследований можно рассматривать рост эффективности сельскохозяйственного управления посредством более обоснованной диагностики регионального рынка зерновых культур, в том числе, планирование рациональной структуры зерновых культур на 2017 и ближайшие последующие годы.*

**Ключевые слова:** рынок сбыта, рыночные цены, зерновые культуры, продукты переработки зерновых культур, тенденции, региональный рынок, мировой рынок, динамика рыночных цен и др.

**JEL Classification:** E2, E3, L66, Q13, Q17, Q18.  
**CZU:** 338.439.5:664.7

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**Introduction.** Agricultural products market could be evaluated as a mechanism of summarizing the results of the work of farmers in comparison with existing solvent demand from consumers, likely to be present at this market. As a whole, agricultural market is a very important object of economic research, able to identify, analyze and give answers to many questions like: what must be produced; why it should be produced; where it should be produced and what we should do with the profit. Cereal market, in quality of subject to given article shows clear trends to become a market of increasingly extended and dependent not only of the local (national) market, but as well as regional and even global. It has to be mentioned, that this problem is inappropriate reflected in local scientific research. As a result, along with its main purpose – to familiarize the local agricultural producers with actual information about cereal market, it has the objective to open the general picture, correspondingly, on regional and global levels.

**The information base.** Initial data base information was taken from FAO statistics on those issues, as well as the available information from local and regional markets of cereal products, from other regular sources of information, including Internet and different monographic studies.

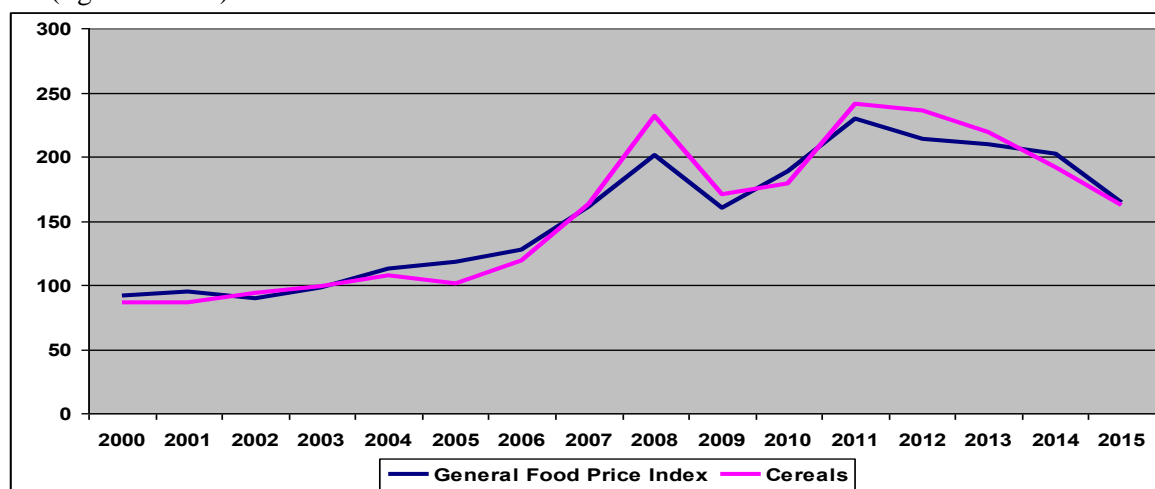
**The core content.** From the entire range of food basket, the group of grain plants represents the main nutritional and caloric value of food for human being. Cereals are rated as the basis for ensuring people's food security simply because they contain essential nutrients elements, have highly developed energy, can be easily kept a relatively long period of time either as raw material, or in the form of semi-finished or ready for consumption products.

Directly for the Republic of Moldova specific characteristic of the grain products is that more than 40.0 percent of the country's citizens rational food consists of bread and bakery products, such as the cereal products, cafeteria flour, pasta, etc. All these products, as it is very well known, have as raw material various kinds of cereals [6].

Obviously, the market movement of cereal occurs in the form of functioning of local markets. However, being in full swing stage scenario of globalization of economic activity, any local or regional market is directly or indirectly (tangential) oriented to the economic (financial) criteria of world cereal market. The most famous representatives of the world cereal market are organizational structures of Food and Agriculture Organization (FAO), as the principal structure of the UN on issues of food security of the population of the planet. Next one is the International Grains Council, followed by different international exchanges cereal crop markets etc.

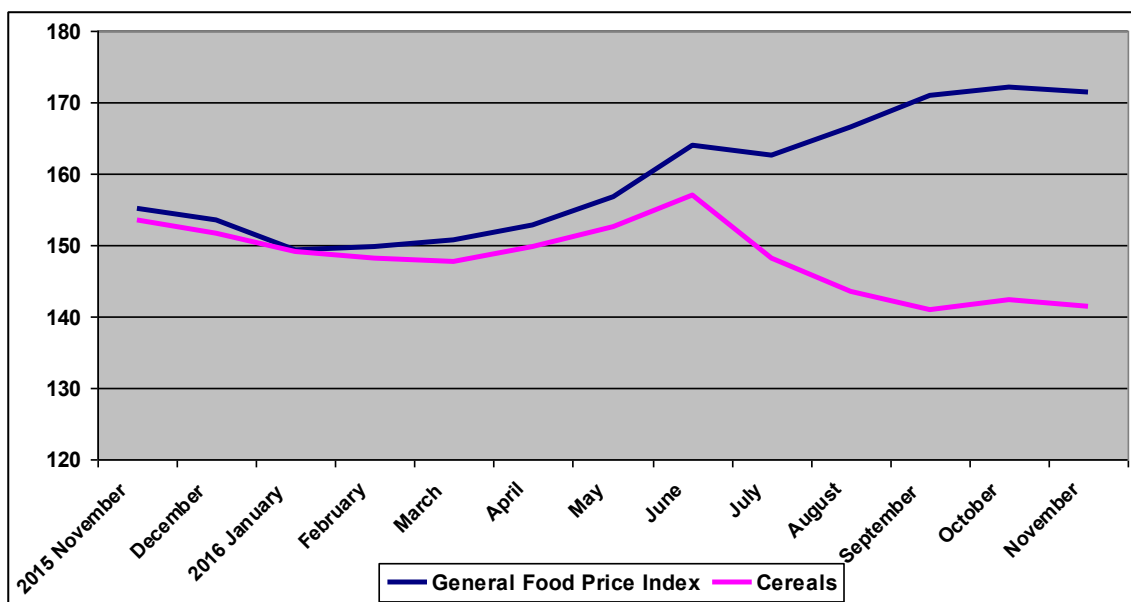
With reference to the reasoned and most professional assessments we will analyze the current state of the world market for grain products (rice, wheat, corn, barley and others) through the prism of structures in charge of FAO. At the same time, this approach will reflect a small perspective trend, but we will not discard either hindsight.

First of all, it should be emphasized, that a relatively stable trend of rising prices (the main indicator in any market products) is globally occurred in a period of time, including up-to 2004. As consequently, the last 3 years of this period of stability – namely 2002-2004 were selected as the basis for comparison, including the so-called – Food Price Index for more kinds of food [2], but primarily – for cereals (figure 1 and 2).



**Figure 1. Trend of General Food Price Index and trend of prices of cereals (at annual level)**

Source: <http://www.fao.org/worldfoodsituation/foodpricesindex/en>



**Figure 2. Monthly trends of General Food Price Index**

Source: <http://www.fao.org/worldfoodsituation/foodpricesindex/en>

As it was already mentioned, since 2005 and onwards, prices of cereals showed a more chaotic motion, with growth of 17,6 percentage points in 2005 and then – 44,5 p.p. in 2007, and even 68,7 p.p. in 2008, reaching proportions of 232,1 percent over the base period. As a result of measures undertaken by various countries – both with potential for export and clearly highlighted intentions of import, first of all – the Arab countries of the North African Continent, during the years 2009-2010 the cereal price index fell back (to 170,2 and correspondingly to 179,2).

However, within the next two years, namely 2011-2012, the price index has increased considerably again, reaching its peak of growth, correspondingly 240,9 and 236,1 per cent, compared to the base period. In absolute amounts of money these increases were reflected, for example, at the wheat prices (standard conditions) at 350-360 \$ USA per ton and, in some cases, more than 400 \$/ton.

It should be mentioned, that already at the first wave of price increases, the global community reacted promptly and fairly efficient. Virtually all UN bodies showed signs of concern about the increasingly limited access of poor people (with a daily income of less than 1 dol. USA per capita) to the food, needed to survive [1].

As a result, very active actions were taken, this time not formal, but really with the high level of results, lifting the production volumes of cereal crops in virtually all the world. In some countries these were orientated to combat poverty, in others – some steps to use the time to gain extra profits, given that wheat production in some regions ensured producers annual profitability level of 200-250 percent and even much more.

The very fact that the undertaken measures have led to the positive results, which really reversal before existing trend, is reflected in the prices of cereals. Since 2013 until today the price index of global cereal products is steadily decreasing, reaching proportions of only 141,4 towards the end of 2016.

The right result of our analysis confirms, that the world prices on the cereal market in 2016 was (permanently) lower as the price level of 2007. Without any exceptions. In comparison with 2011 these prices are almost 2 times lower. We are talking, first and foremost, about export prices. It is well known, however, that not every grains producer has the capacity to export them. Sequentially, the prices directly from producers are much lower, compared to those, fixed in export transactions.

The conclusion is simple. Nearly 10 years of decreasing prices (this time with a few exceptions, obviously), brought farmers, primarily – small producers, enormous drop in revenues or profitability levels. Much of the wheat and corn producers in the Republic of Moldova have finished 2016 with financial losses. By realization prices, often below 2 lei/kg, they have not been able to cover even variable costs of producing those crops [2].

More basic, FOB prices of cereal products, established in 2016 at the seaport, nearest to domestic agricultural producers – Constanta (Romania) are reflected in table 1.

Table 1

FOB – port of Constanta (Romania) (Dol. USA / ton, a.2016)

|                      | Name of cultures |        |        |
|----------------------|------------------|--------|--------|
|                      | Wheat            | Barley | Corn   |
| Minimum price        | 165,5            | 160,00 | 151,94 |
| Maximum price        | 211,05           | 210,00 | 200,31 |
| Average annual price | 178,3            | 176,1  | 154,3  |

Source: <http://www.madr.ro/pretul-cerealelor-pe-pietele-reprezentative-din-romania.html>

As it is shown in the tab. 1, during a single calendar year, oscillation in prices was: the wheat – 27.5%; maize – 31.25%; barley – 31.83%. Although there is no direct correlation between prices and the season of the year, as we found out, the highest prices were fixed usually in the first half of the year, than in the second half.

In turn, market prices are less oscillating in the local markets, which have more considerable flows of grains. Accordingly, prices at the small markets are relatively and absolutely more unstable.

Also during 2016 the market prices of wheat in the ports of Odessa oscillated around gradation of 158,0 USA \$ per ton (standard conditions); corn – 146,0 dol. USA per ton and only 138,0 dol. USA \$ per ton of barley. It is to stress, that alongside to production costs, these prices, almost symbolic, must cover the expenses of loading and transport to the seaport for export, as intended respectively.

Making comparisons regarding the correlation between production costs (for example – barley) with the income as a result of selling, we can see the emergence of damages for the producers, in the best case – variant of "zero" profit.

Referring to the global trend of change in prices of cereal crops has to be noted, that to a considerable extent they are dependent on cereals stocks at the end of the year at the global level. According to the FAO the annual production of cereal crops in the last 10 years (2006/2007-2015/2016) increased from 2012,12 up to 2533.78 mil. tons or by 25,9 percent. It has to be mentioned, that for the year 2016/2017 are forecasted 2577.86 mil. tons of cereals production, which is still 44 million tons more, compared to the previous year.

It is important to emphasize, that the high volume production increases the volume of consumption, but this rate is lower than the growth rate in production volume. Hence, the almost constant growth (at least for the last 5 years) the stock at the end of the period is the biggest issue in global grain reserves, which are forecasted for the current year (2016/2017), nearly 670,35 million tons or 26,0% based to the volume of production [3]. The fact, that more than a quarter of the volume of production of cereals is permanently stored, negatively influence the dynamics of market prices of these products.

All we can conclude from the analysis performed, the consumption of cereals generally speaking, has a domestic character. More than 84.3 percent of the production of grains is oriented to the domestic consumption and only the rest, approximately, 15.7% are subject to export-import. For the years 2016/2017 are forecasted to be exported 388,45 mil. tones or 15.1% of global production [4].

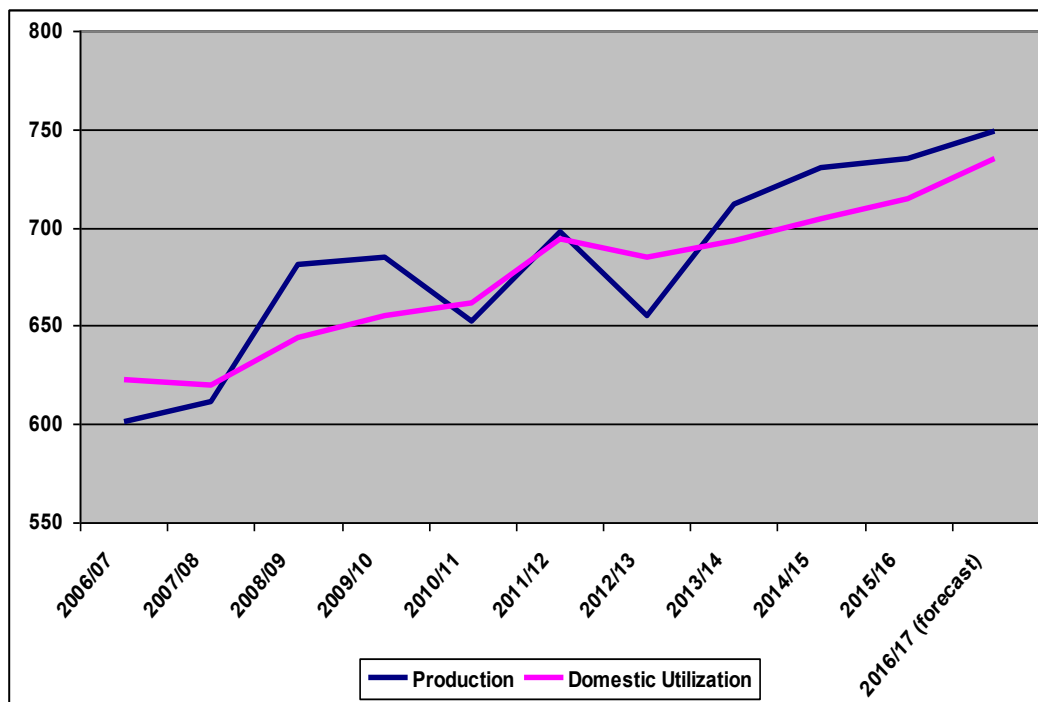
Main features of the world market of wheat are shown in table 2, figure 3 and 4.

Table 2

The volume of global wheat production and its use [2], mil. tons

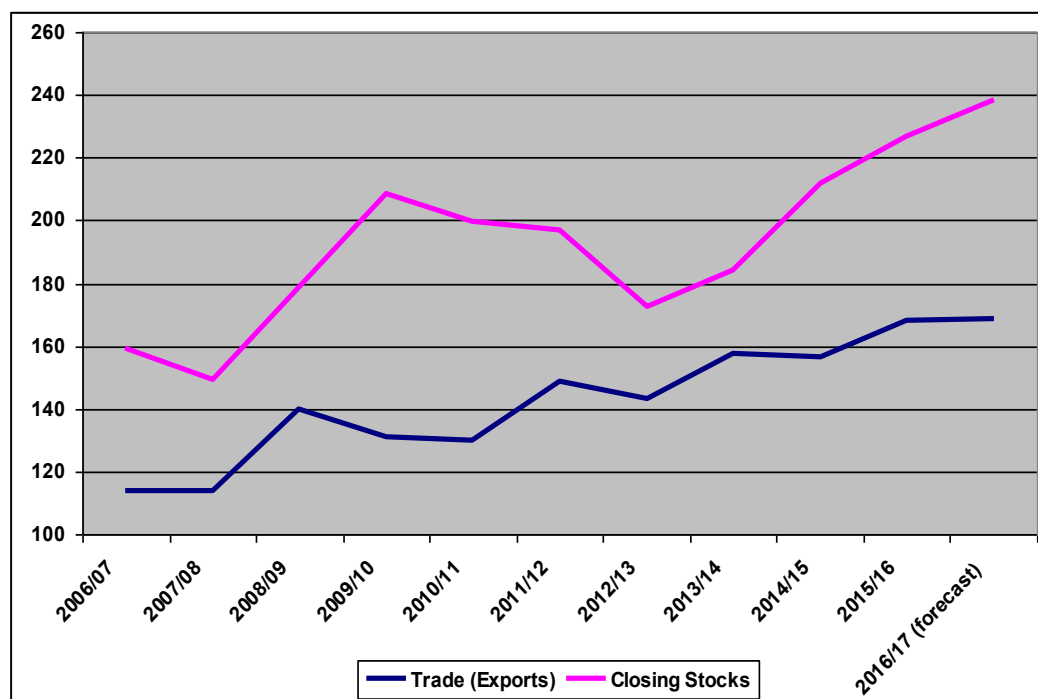
|                 | 2006/07 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17<br>(forecast) |
|-----------------|---------|---------|---------|---------|---------|-----------------------|
| Production      | 600,910 | 655,090 | 711,500 | 730,480 | 735,070 | 749,290               |
| Domestic Supply | 779,030 | 851,960 | 883,960 | 914,400 | 946,850 | 975,840               |
| Domestic Use    | 622,520 | 684,490 | 692,890 | 703,920 | 714,940 | 734,650               |
| Trade (Exports) | 113,840 | 143,420 | 157,750 | 156,630 | 167,830 | 168,490               |
| Closing Stocks  | 159,040 | 172,450 | 183,910 | 211,770 | 226,540 | 238,510               |

Source: <http://www.fao.org/worldfoodsituation/csdb/en/>



**Figure 3. Volume of production and domestic use**

Source: <http://www.fao.org/worldfoodsituation/csdb/en/>



**Figure 4. Volume of export and stocks at the end of period**

Source: <http://www.fao.org/worldfoodsituation/csdb/en/>

It has to be mentioned, that in comparison with the whole cereal group, the stocks at the end of the year of wheat crop, which is the main export crop for the Republic of Moldova, has increased more – 30.8%. The share of exports trade for wheat crop is as much high as for the agricultural year 2015/2016 – 22.8% compared to the total production of 735,07 mil. tons of wheat. Otherwise, general grain trends of market (maize, barley, etc.) correspond to those, fixed for the full range of cereal, which can be taken as a basis for planning for future agribusiness periods.



With the aim to familiarize farmers with local food market development trends it is worth noting, that not all agricultural markets are equally fluctuating (volatile) as the cereal market. According to the survey, the most stable (less fluctuating) is the market of meat and meat products. Although broadly followed the example of cereal (from which it is depending really considerably) the range of oscillating market prices of meat and meat products throughout the analyzed period (from 2000 onwards) did not exceed the level of 98.3 percentage points. Otherwise, as already mentioned, market prices for meat and meat products have followed the example of cereals, reaching 198.3 percent in 2014 and constituting 161.5 percent late in the 2016 (percentages are taken into compared to the base period – 2002-2004).

However, it has to be pointed out, that during the years, when the prices of cereal products drop, instead of selling these products, it is better to turn them into meat (milk) and products of their processing.

As another alternative of grain production would be production of oilseed crops (sunflower, soybean, rapeseed) and other cereal crops (peas, beans, chickpeas etc.).

It has to be noted, that index of prices of oilseeds late of 2016 was (the global) – 175.6 percent, or 34.2 percentage points more than the index of prices for cereals. Based on data from the past two years (2015-2016) the price index for cereals, for example, has been in constant decline (from 160.3% in 2015 to 141.4% in late 2016 (rather November 2016), whereas for oil products, conversely, this index increased correspondingly from 147.0% to 175.6%.

The more fluctuating market prices in the reviewed period were found, however, for sugar market. Oscillating range for this product was 101.7% in 2004 (minimum) and properly 368.9% in 2011 (maximum). However, towards the end of 2016 (October) this index lowered to 315.3%.

**General conclusions and recommendations.** Looking at the general picture of the food market the main conclusion should be, that virtually all fragments of this market, being taken into territorial aspect or in the diversified plants, are very unstable, really unpredictable as their changes in trends [5]. As a result of the influence of a whole set of variables, the main of which are: production areas; yield obtained; solvent demand of potential consumers; consumer's preferences; the political will to export or increase internal reserves of state etc., it is expected, that the market for cereal products in the nearest future will maintain the same level of high volatility.

In these conditions farmers must have, first of all, constant access to updated information about the actual state and future trends of development of local and international cereal product markets to take the right decisions in agribusiness and their proper execution.

The following proposal is that, being in the face of extraordinary inequality either energy endowment or technical and / or technological systems, the Government must take into account and subsidize domestic farmers through the mechanism of market pricing cereals, purchased for reserves of state paying for them relatively and absolutely higher prices in comparison with those, existing on the local market.

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## FEATURES OF PRICING OF THE MORTGAGE MARKET IN THE RUSSIAN FEDERATION AND THE REPUBLIC OF MOLDOVA (Part 2)

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*In the second part of the article, based on the analysis of prices on the primary and secondary markets of residential real estate in the Russian Federation, carried out in the first part of the research, and study of the set of statistical indicators that reflect the status and development of the real estate market in Russia, there was carried out the measurement of relationship between the value of real estate on the primary / secondary markets and the volume of mortgage lending in Russian Federation, made up before the introduction of the current regulatory limit of interest rates on mortgages in Russian Federation. There were also considered are some statistical indicators on the development of mortgage real estate market in the Republic of Moldova, and there were studied trends in the development of primary and secondary real estate market, the scale of mortgage lending for different types of real property.*

**Keywords:** mortgage, mortgage loans, residential mortgage loan (RML), residential real estate market (primary and secondary), correlation and regression analysis.

*În partea a doua a articolului, în baza analizei prețurilor pe piețele imobiliare primare și secundare ale Federației Ruse, efectuate în prima parte a cercetării și studierii complexității indicilor statistici ce reflectă starea și dezvoltarea pieței imobiliare în Rusia, este efectuată măsurarea dependenței dintre valoarea bunurilor imobiliare pe piețele primare/secundare și volumul creditării ipotecare în FR, ce predomină până la introducerea reglementării normative a limitei ratelor la creditele ipotecare în această țară. De asemenea, sunt analizați anumiți indici statistici ai dezvoltării pieței imobiliare ipotecare în Republica Moldova, sunt cercetate tendințele dezvoltării piețelor imobiliare primare și secundare, scara creditării ipotecare pentru diferite tipuri de obiecte imobiliare.*

**Cuvinte-cheie:** ipotecă, creditare ipotecară, credit ipotecar imobiliar (CII), piața imobiliară (primară și secundară), analiza de regresie și corelare.

*Во второй части статьи на основе анализа цен на первичном и вторичном рынках жилой недвижимости в Российской Федерации, выполненного в первой части исследования и изучения совокупности статистических показателей, отражающих состояние и развитие рынка жилья в России, проведено измерение зависимости между стоимостью недвижимости на первичном/вторичном рынках и объемом ипотечного кредитования в РФ, сложившейся до введения нормативного регулирования лимита ставки по ипотеке в этой стране. Рассмотрены также некоторые статистические показатели развития рынка ипотеки жилья в Республике Молдова, исследованы тенденции развития первичного и вторичного рынка жилой недвижимости, масштабы ипотечного кредитования по разным видам объектов недвижимого имущества.*

**Ключевые слова:** ипотека, ипотечное кредитование, ипотечный жилищный кредит (ИЖК), рынок жилой недвижимости (первичный и вторичный), корреляционно-регрессионный анализ.

**JEL Classification:** E51, F34, H81, L85, R3.  
**CZU:** 338.5:[336.77:332]

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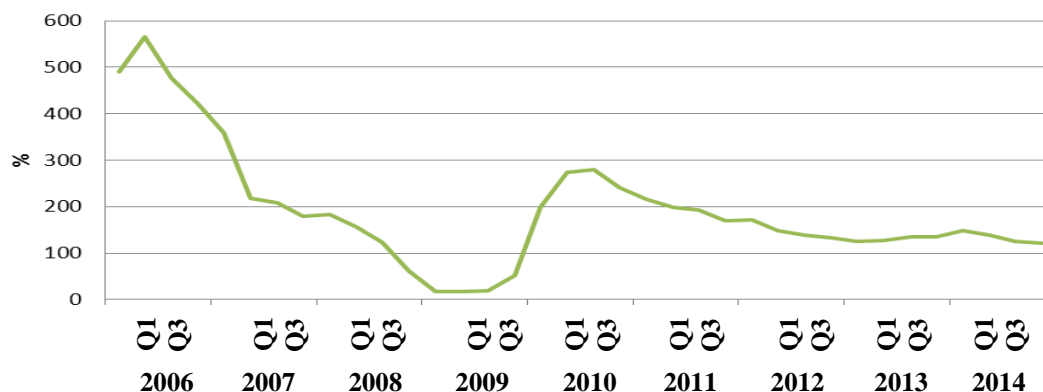
<sup>2</sup> © Olga BUZU, buzuo@mail.ru



**Introduction.** Real estate (and the real estate market) is currently an important object of economic research and analysis. The repeated setbacks and crises of the economy, the desire for a developed real estate market – all of these motivate market participants to constantly improve the tools of analysis of formation of the cost of the property and its assessment, as well as to study the impact of direct and indirect factors affecting the real estate market.

The importance of the mortgage market as the main instrument of social policy and its versatility determine the *relevance* of the study aimed at *identifying the relationship between the volume of mortgage lending and the value of residential real estate, both on primary and secondary markets.*

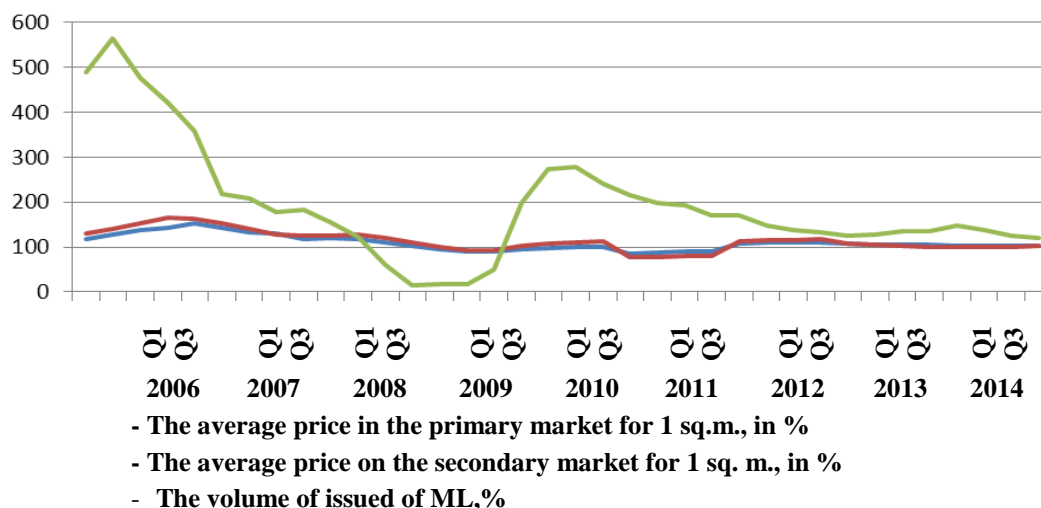
**1. The reaction of the mortgage market.** Based on the analysis of the dynamics of average prices in the real estate market (see figure 2 in the first part of the article) and the dynamics of the *volume of residential mortgage loans* (RML), figure 3)<sup>1</sup>, there can be concluded that the response to crisis events on these markets are reflected in different ways.



**Figure 3. Dynamics of the volume of the issued RML, %**

Source: Data from the website of the Central Bank of the Russian Federation [11] and author's calculations.

The mortgage market quickly reacted to the crisis of 2008, in contrast to the real estate market, whose reaction appeared in 2011 (figure 2), which indicates the presence of a lag. The analysis of data in a comparable scale is presented in figure 4.



**Figure 4. Dynamics of the average prices and the volume of the issued RML, %**

Source: Data from the website of the Central Bank of the Russian Federation [11] and author's calculations.

<sup>1</sup> Numbering of figures and tables in the second part of the article, for readability (avoid confusion with references) of the material is given as a continuation of their numbering from the first part.

To determine the relationship of the processes occurring in the target market, we identify the factors which characterize the situation on the real estate market and mortgage market. As an effective sign, we take the average price for 1 sq. m in rubles (Y1 – the primary market, Y2 – secondary market). As independent variables we choose the volume of issued mortgage loans (X1), the weighted average rate on issued RML in rubles (X2) and inflation by quarter in % (X3). We consider the values of the factors for the period from 2005 to 2014.

Table 3

## Factors forming the dynamic of prices on the real estate market

|               |     | Y1  | Y2  | X1                               | X2   | X3                      |
|---------------|-----|---|---|----------------------------------|--|-------------------------|
| Year, quarter |     | The average price on the primary market for 1 sq. m, in thous. rubles | The average price on the secondary market for 1 sq. m, in thous. rubles | Value of issued RML, mil. rubles | Weighted average rate on issued RML in rubles, % | Inflation by quarter, % |
| 2005          | I   | 22437,7   | 19588,5   | 4 690                            | 14.8   | 5.3                     |
|               | II  | 23223,1   | 20163,0   | 9 838                            | 14.9   | 2.6                     |
|               | III | 24031,8   | 20963,0   | 16 163                           | 15.0   | 0.6                     |
|               | IV  | 25393,7   | 22165,6   | 25 650                           | 14.9   | 2.1                     |
| 2006          | I   | 26641,0   | 25709,0   | 22 995                           | 14.3   | 5.0                     |
|               | II  | 29743,0   | 28192,0   | 55 542                           | 14.1   | 1.1                     |
|               | III | 33290,0   | 32291,0   | 77 114                           | 13.9   | 1.0                     |
|               | IV  | 36221,0   | 36615,0   | 107 910                          | 13.7   | 1.7                     |
| 2007          | I   | 40978,0   | 41901,0   | 82 316                           | 13.4   | 3.4                     |
|               | II  | 42595,0   | 43321,0   | 120 820                          | 13.0   | 2.2                     |
|               | III | 44478,0   | 44993,0   | 160 619                          | 12.7   | 1.8                     |
|               | IV  | 47482,0   | 47206,0   | 192 734                          | 12.6   | 4.1                     |
| 2008          | I   | 48729,0   | 52266,0   | 150 759                          | 12.4   | 4.8                     |
|               | II  | 51299,0   | 54816,0   | 188 424                          | 12.5   | 3.8                     |
|               | III | 52799,0   | 57118,0   | 198 280                          | 12.7   | 1.7                     |
|               | IV  | 52504,0   | 56495,0   | 118 345                          | 12.9   | 2.5                     |
| 2009          | I   | 50465,0   | 57806,0   | 24 546                           | 14.4   | 5.4                     |
|               | II  | 49313,0   | 55059,0   | 30 856                           | 14.6   | 1.9                     |
|               | III | 47968,0   | 53636,0   | 36 111                           | 14.6   | 0.6                     |
|               | IV  | 47715,0   | 52895,0   | 60 773                           | 14.3   | 0.7                     |
| 2010          | I   | 48261,0   | 59007,0   | 48 947                           | 13.6   | 3.1                     |
|               | II  | 48036,0   | 59206,0   | 84 415                           | 13.5   | 1.2                     |
|               | III | 48050,0   | 59446,0   | 100 716                          | 13.4   | 1.8                     |
|               | IV  | 48144,0   | 59998,0   | 145 981                          | 13.1   | 2.4                     |
| 2011          | I   | 41534,0   | 46158,0   | 105 272                          | 12.4   | 3.8                     |
|               | II  | 42201,0   | 46666,0   | 168 169                          | 12.2   | 1.1                     |
|               | III | 42904,0   | 47133,0   | 194 561                          | 12.1   | -0.3                    |
|               | IV  | 43686,0   | 48243,0   | 248 942                          | 11.9   | 1.3                     |
| 2012          | I   | 44956,0   | 51907,0   | 180 950                          | 12.0   | 1.5                     |
|               | II  | 46360,0   | 53358,0   | 248 434                          | 12.1   | 1.7                     |
|               | III | 47483,0   | 54848,0   | 269 185                          | 12.2   | 1.9                     |
|               | IV  | 48163,0   | 56370,0   | 330 378                          | 12.3   | 1.3                     |
| 2013          | I   | 48795,0   | 55421,0   | 226 939                          | 12.8   | 1.9                     |
|               | II  | 49331,0   | 55998,0   | 315 513                          | 12.7   | 1.6                     |
|               | III | 49959,0   | 56247,0   | 363 430                          | 12.6   | 1.2                     |
|               | IV  | 50208,0   | 56478,0   | 447 665                          | 12.4   | 1.6                     |
| 2014          | I   | 49939,0   | 55925,0   | 334 817                          | 12.2   | 2.3                     |
|               | II  | 50919,0   | 56630,0   | 434 836                          | 12.2   | 2.4                     |
|               | III | 51116,0   | 57119,0   | 452 217                          | 12.2   | 1.4                     |
|               | IV  | 51714,0   | 58085,0   | 540 661                          | 12.5   | 4.7                     |

Source: Data from the website of the Central Bank of the Russian Federation [11] and ARML [10], as well as [12].

Table 4

## Factors of the regression model

| Year, quarter |     | Y1  | Y2  | X1                               | X2   | X3                      |
|---------------|-----|---|---|----------------------------------|--|-------------------------|
|               |     | The average price on the primary market for 1 sq. m, in thous. rubles | The average price on the secondary market for 1 sq. m, in thous. rubles | Value of issued RML, mil. rubles | Weighted average rate on issued RML in rubles, % | Inflation by quarter, % |
| 2006          | I   | 1,19  | 1,31  | 4,90                             | 0.97   | 0.94                    |
|               | II  | 1,28  | 1,40  | 5,65                             | 0.95   | 0.42                    |
|               | III | 1,39  | 1,54  | 4,77                             | 0.93   | 1.67                    |
|               | IV  | 1,43  | 1,65  | 4,21                             | 0.92   | 0.81                    |
| 2007          | I   | 1,54  | 1,63  | 3,58                             | 0.94   | 0.68                    |
|               | II  | 1,43  | 1,54  | 2,18                             | 0.92   | 2.00                    |
|               | III | 1,34  | 1,39  | 2,08                             | 0.91   | 1.80                    |
|               | IV  | 1,31  | 1,29  | 1,79                             | 0.92   | 2.41                    |
| 2008          | I   | 1,19  | 1,25  | 1,83                             | 0.93   | 1.41                    |
|               | II  | 1,20  | 1,27  | 1,56                             | 0.96   | 1.73                    |
|               | III | 1,19  | 1,27  | 1,23                             | 1.00   | 0.94                    |
|               | IV  | 1,11  | 1,20  | 0,61                             | 1.02   | 0.61                    |
| 2009          | I   | 1,04  | 1,11  | 0,16                             | 1.16   | 1.13                    |
|               | II  | 0,96  | 1,00  | 0,16                             | 1.17   | 0.50                    |
|               | III | 0,91  | 0,94  | 0,18                             | 1.15   | 0.35                    |
|               | IV  | 0,91  | 0,94  | 0,51                             | 1.11   | 0.28                    |
| 2010          | I   | 0,96  | 1,02  | 1,99                             | 0.94   | 0.57                    |
|               | II  | 0,97  | 1,08  | 2,74                             | 0.92   | 0.63                    |
|               | III | 1,00  | 1,11  | 2,79                             | 0.92   | 3.00                    |
|               | IV  | 1,01  | 1,13  | 2,40                             | 0.92   | 3.43                    |
| 2011          | I   | 0,86  | 0,78  | 2,15                             | 0.91   | 1.23                    |
|               | II  | 0,88  | 0,79  | 1,99                             | 0.90   | 0.92                    |
|               | III | 0,89  | 0,79  | 1,93                             | 0.90   | -0.17                   |
|               | IV  | 0,91  | 0,80  | 1,71                             | 0.91   | 0.54                    |
| 2012          | I   | 1,08  | 1,12  | 1,72                             | 0.97   | 0.39                    |
|               | II  | 1,10  | 1,14  | 1,48                             | 0.99   | 1.55                    |
|               | III | 1,11  | 1,16  | 1,38                             | 1.01   | -6.33                   |
|               | IV  | 1,10  | 1,17  | 1,33                             | 1.03   | 1.00                    |
| 2013          | I   | 1,09  | 1,07  | 1,25                             | 1.07   | 1.27                    |
|               | II  | 1,06  | 1,05  | 1,27                             | 1.05   | 0.94                    |
|               | III | 1,05  | 1,03  | 1,35                             | 1.03   | 0.63                    |
|               | IV  | 1,04  | 1,00  | 1,36                             | 1.01   | 1.23                    |
| 2014          | I   | 1,02  | 1,01  | 1,48                             | 0.95   | 1.21                    |
|               | II  | 1,03  | 1,01  | 1,38                             | 0.96   | 1.50                    |
|               | III | 1,02  | 1,02  | 1,24                             | 0.97   | 1.17                    |
|               | IV  | 1,03  | 1,03  | 1,21                             | 1.01   | 2.94                    |

Source: Data from the website of the Central Bank of the Russian Federation [11] and ARML [10], author's calculations.

**2. Construction of regression models.** Linear regression model parameters were calculated using the MS Excel software package (regression). For building the regression model, the raw data of table 3 have been converted into chain codes shown in table 4. The results of development of one factor, two-factors, three-factor models are presented in tables 5-7. These models have been developed for the primary real estate markets.

Table 5

## Single-factor model in the primary housing market

## RESULTS

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,538419 |
| R <sup>2</sup>          | 0,289895 |
| Adjusted R <sup>2</sup> | 0,26901  |
| Standard Error          | 0,146187 |
| Observation             | 36       |

| Dispersion analysis |           |           |           |           |                       |
|---------------------|-----------|-----------|-----------|-----------|-----------------------|
|                     | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i>  | <i>Significance F</i> |
| Regression          | 1         | 0,2966295 | 0,296629  | 13,880267 | 0,0007055             |
| Residual            | 34        | 0,7266    | 0,021371  |           |                       |
| Total               | 35        | 1,0232294 |           |           |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95,0%</i> | <i>Upper 95,0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,962514           | 0,0443516             | 21,70188      | 1,686E-21      | 0,8723807        | 1,052647         | 0,872381           | 1,052647           |
| Variable X 1 | 0,071462           | 0,0191813             | 3,725623      | 0,0007055      | 0,0324812        | 0,110444         | 0,032481           | 0,110444           |

Table 6

## Two-factor model in the primary housing market

## RESULTS

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,541544 |
| R <sup>2</sup>          | 0,29327  |
| Adjusted R <sup>2</sup> | 0,250438 |
| Standard Error          | 0,148032 |
| Observation             | 36       |

| Dispersion analysis |           |           |           |           |                       |
|---------------------|-----------|-----------|-----------|-----------|-----------------------|
|                     | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i>  | <i>Significance F</i> |
| Regression          | 2         | 0,3000824 | 0,150041  | 5,8469608 | 0,003256              |
| Residual            | 33        | 0,723147  | 0,021914  |           |                       |
| Total               | 35        | 1,0232294 |           |           |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95,0%</i> | <i>Upper 95,0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,78661            | 0,4454068             | 1,766049      | 0,0866386      | -0,119577        | 1,692797         | -0,11958           | 1,692797           |
| Variable X 1 | 0,077399           | 0,024514              | 3,157337      | 0,0033935      | 0,0275249        | 0,127273         | 0,027525           | 0,127273           |
| Variable X 2 | 0,167563           | 0,4221243             | 0,396951      | 0,693959       | -0,691256        | 1,026381         | -0,69126           | 1,026381           |

Table 7

## Three-factor model in the primary housing market

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,545009 |
| R <sup>2</sup>          | 0,297035 |
| Adjusted R <sup>2</sup> | 0,231132 |
| Standard Error          | 0,149926 |
| Observation             | 36       |

| Dispersion analysis |           |           |           |           |                       |
|---------------------|-----------|-----------|-----------|-----------|-----------------------|
|                     | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i>  | <i>Significance F</i> |
| Regression          | 3         | 0,3039349 | 0,101312  | 4,5071548 | 0,0095382             |
| Residual            | 32        | 0,7192946 | 0,022478  |           |                       |
| Total               | 35        | 1,0232294 |           |           |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95,0%</i> | <i>Upper 95,0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,74               | 0,4638226             | 1,59336       | 0,1209106      | -0,205739        | 1,683812         | -0,20574           | 1,683812           |
| Variable X 1 | 0,08               | 0,0249756             | 3,127868      | 0,0037374      | 0,0272468        | 0,128994         | 0,027247           | 0,128994           |
| Variable X 2 | 0,21               | 0,4369858             | 0,475391      | 0,6377372      | -0,682372        | 1,09785          | -0,68237           | 1,09785            |
| Variable X 3 | 0,01               | 0,0174396             | 0,396818      | 0,694136       | -0,028603        | 0,042444         | -0,0286            | 0,042444           |

Situation on the secondary real estate market is presented in the one factor, two-factor, three-factor models of regression interdependence, presented in tables 8-10.

Table 8

## Single-factor model in the secondary housing market

## RESULTS

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,575106 |
| R <sup>2</sup>          | 0,330747 |
| Adjusted R <sup>2</sup> | 0,311063 |
| Standard Error          | 0,186366 |
| Observation             | 36       |

## Dispersion analysis

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-----------|-----------|----------|-----------------------|
| Regression | 1         | 0,583605  | 0,583605  | 16,80293 | 0,000243              |
| Residual   | 34        | 1,180898  | 0,034732  |          |                       |
| Total      | 35        | 1,764503  |           |          |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,946106           | 0,056542              | 16,73292      | 5,55E-18       | 0,8312           | 1,061013         | 0,8312             | 1,061013           |
| Variable X 1 | 0,100237           | 0,024453              | 4,099138      | 0,000243       | 0,050542         | 0,149932         | 0,050542           | 0,149932           |

Table 9

## Two-factor model in the secondary housing market

## RESULTS

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,597584 |
| R <sup>2</sup>          | 0,357106 |
| Adjusted R <sup>2</sup> | 0,318143 |
| Standard Error          | 0,185406 |
| Observation             | 36       |

## Dispersion analysis

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-----------|-----------|----------|-----------------------|
| Regression | 2         | 0,630115  | 0,315058  | 9,165215 | 0,000683              |
| Residual   | 33        | 1,134387  | 0,034375  |          |                       |
| Total      | 35        | 1,764503  |           |          |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,30               | 0,560667              | 0,530135      | 0,599567       | -0,84346         | 1,437916         | -0,84346           | 1,437916           |
| Variable X 1 | 0,12               | 0,030864              | 3,963529      | 0,000373       | 0,059538         | 0,185126         | 0,059538           | 0,185126           |
| Variable X2  | 0,62               | 0,531154              | 1,163198      | 0,253091       | -0,4628          | 1,698479         | -0,4628            | 1,698479           |

Table 10

## Three-factor model in the secondary housing market

## RESULTS

| Regression statistics   |          |
|-------------------------|----------|
| Multiple R              | 0,601871 |
| R <sup>2</sup>          | 0,362249 |
| Adjusted R <sup>2</sup> | 0,30246  |
| Standard Error          | 0,187526 |
| Observation             | 36       |

## Dispersion analysis

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-----------|-----------|----------|-----------------------|
| Regression | 3         | 0,639189  | 0,213063  | 6,058768 | 0,002185              |
| Residual   | 32        | 1,125314  | 0,035166  |          |                       |
| Total      | 35        | 1,764503  |           |          |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 0,24               | 0,580143              | 0,405146      | 0,688066       | -0,94667         | 1,416756         | -0,94667           | 1,416756           |
| Variable X 1 | 0,12               | 0,031239              | 3,93499       | 0,00042        | 0,059294         | 0,186558         | 0,059294           | 0,186558           |
| Variable X 2 | 0,67               | 0,546576              | 1,223921      | 0,229917       | -0,44437         | 1,782306         | -0,44437           | 1,782306           |
| Variable X 3 | 0,01               | 0,021813              | 0,507957      | 0,614968       | -0,03335         | 0,055512         | -0,03335           | 0,055512           |

All calculations received in the during the regression with lag in primary and in secondary markets are presented in the tables 11-12.

Table 11

## Single-factor model with lag in primary market

## RESULTS

| <i>Regression statistics</i> |          |
|------------------------------|----------|
| Multiple R                   | 0,458226 |
| R <sup>2</sup>               | 0,209971 |
| Adjusted R <sup>2</sup>      | 0,179585 |
| Standard Error               | 0,173182 |
| Observation                  | 28       |

## Dispersion analysis

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i>  | <i>Significance F</i> |
|------------|-----------|-----------|-----------|-----------|-----------------------|
| Regression | 1         | 0,2072505 | 0,20725   | 6,9101742 | 0,0141973             |
| Residual   | 26        | 0,7797941 | 0,029992  |           |                       |
| Total      | 27        | 0,9870445 |           |           |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 1,300935           | 0,077343              | 16,82033      | 1,716E-15      | 1,1419538        | 1,459915         | 1,141954           | 1,459915           |
| Variable X 1 | -0,12766           | 0,0485629             | -2,628721     | 0,0141973      | -0,227481        | -0,02784         | -0,22748           | -0,02784           |

Table 12

## Single-factor model with lag in secondary market

## RESULTS

| <i>Regression statistics</i> |          |
|------------------------------|----------|
| Multiple R                   | 0,364384 |
| R <sup>2</sup>               | 0,132776 |
| Adjusted R <sup>2</sup>      | 0,099421 |
| Standard Error               | 0,233037 |
| Observation                  | 28       |

## Dispersion analysis

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
|------------|-----------|-----------|-----------|----------|-----------------------|
| Regression | 1         | 0,216178  | 0,216178  | 3,980709 | 0,056603              |
| Residual   | 26        | 1,411967  | 0,054306  |          |                       |
| Total      | 27        | 1,628145  |           |          |                       |

|              | <i>Coefficient</i> | <i>Standard Error</i> | <i>t-Stat</i> | <i>P-Value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|--------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Y-intercept  | 1,360386           | 0,104074              | 13,0713       | 6,16E-13       | 1,146458         | 1,574313         | 1,146458           | 1,574313           |
| Variable X 1 | -0,13038           | 0,065347              | -1,99517      | 0,056603       | -0,2647          | 0,003944         | -0,2647            | 0,003944           |

We consider the regression statistics on primary and secondary markets on the basis of the obtained results (table 13).

Table 13

## Assessment of the relationship of indicators

| Market           | Model                  | Multiple R   | R <sup>2</sup> |
|------------------|------------------------|--------------|----------------|
| Primary market   | Single-factor          | <b>0,538</b> | 0,290          |
|                  | Two-factor             | 0,542        | 0,294          |
|                  | Three-factor           | 0,545        | 0,297          |
|                  | Single-factor with lag | 0,458        | 0,209          |
| Secondary market | Single-factor          | <b>0,575</b> | 0,331          |
|                  | Two-factor             | 0,598        | 0,357          |
|                  | Three-factor           | 0,602        | 0,362          |
|                  | Single-factor with lag | 0,364        | 0,133          |

Source: Author's calculations.

The relationship between factors also reflects the construction of linear correlation on the primary and secondary markets (figure 5 and 6).

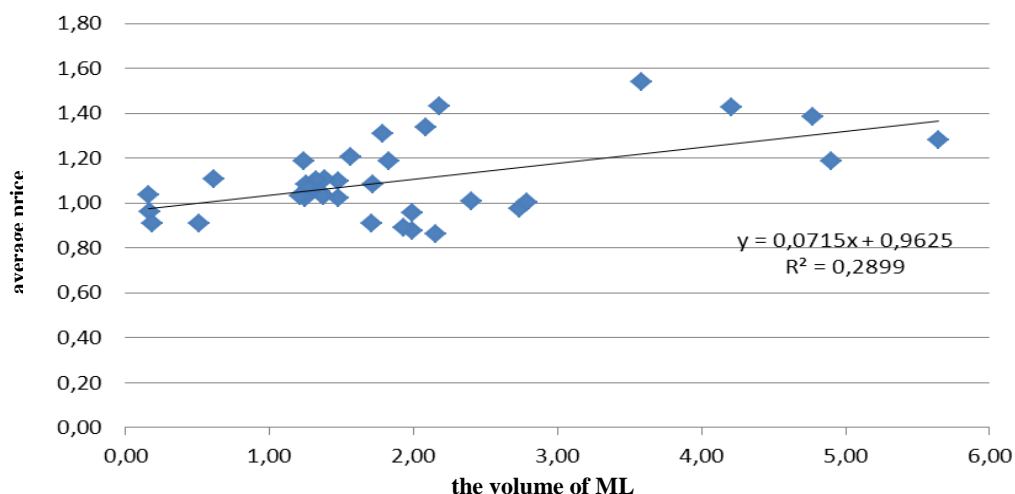


Figure 5. Linear correlation on the primary market (single-factor)

Source: Author's calculations.

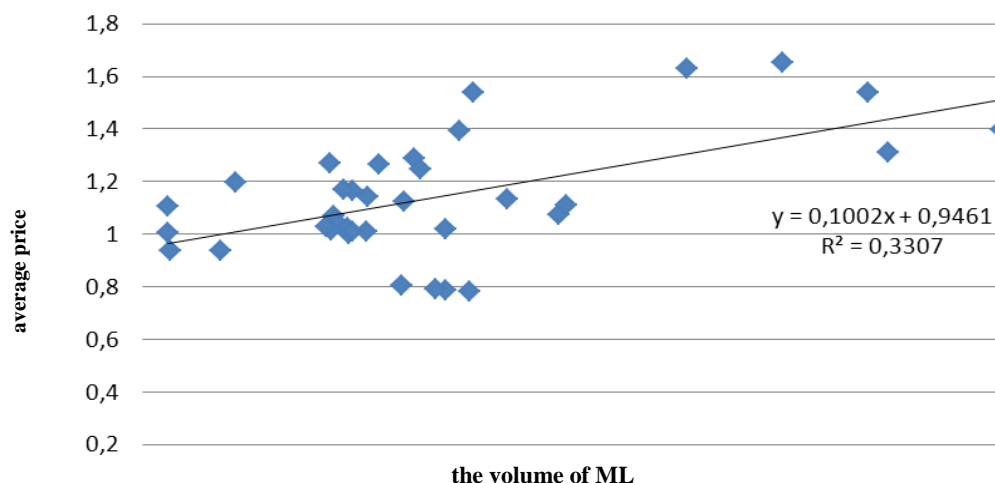


Figure 6. Linear correlation on the secondary market (single-factor)

Source: Author's calculations.

An indicator of the link between factors is the selective *linear correlation coefficient R*, equal to 0.538 on the primary market, showing that the link is observed and direct. In two-factor and three-factor model, the connection is also confirmed. The secondary market is characterized by a close relationship, as



the correlation coefficient is greater than one-factor model on the primary market and accounts for  $R = 0,575$ . Thus, there is confirmed the assumption of the presence of moderate dependence between the volume of mortgage lending and the value of residential real estate, both on the primary and the secondary markets.

#### **Characteristics of the real estate market and mortgage lending in the Republic of Moldova**

The market of objects of real estate is one of the most developed real estate market segments in the Republic of Moldova. The residential fund of the Republic according to the National Bureau of Statistics on January 1, 2016 amounted to 81 531.3 thousand m<sup>3</sup>. In the urban areas it amounted to 32,485.3 thousand m<sup>2</sup> or 39.8% of the total volume of the real estate fund; in rural areas, respectively – 49046.0 thousand m<sup>2</sup> or – 60.2%. The per capita living area in the national average was 22.9 m<sup>2</sup>, in the urban area – 21.5 m<sup>2</sup>, in rural – 24.0 m<sup>2</sup>. The growth of the real estate fund is characterized by a slow pace: in the period from 2002 to 2016, it increased by only 7%, or by 0.5% per year.

Available statistic data are clearly insufficient for determining the gap between the actual rate of construction of new real estate objects and the demand for housing, as well as the need to replace the emergency houses that came in unsuitability due to the duration of use and poor maintenance. The residential fund of the Republic of Moldova as a whole is relatively young; most of the buildings were built in the period between 1975-1993 [15, p. 24]. But because of delays in the repair, it is generally in poor condition. This problem can be solved through new constructions, as well as through reconstructions and overhaul of the existing structures.

According to statistics, over the period 2002-2015, the highest growth rate of new constructions has been achieved in 2015 (table 14), when the amount of housing, completion of construction, increased in comparison with 2002 by 3.3 times. However, during the 2011-2015, the growth rate of giving of objects into operation has slowed, indicating the saturation of market with objects of residential real estate at the existing prices.

**Table 14**

#### **Dynamics of volume of residential buildings and the average spare of apartments in the Republic of Moldova for the period 2002-2015 years**

| Indicators                                    | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008 | 2009  | 2010  | 2011  | 2012 | 2013 | 2014 | 2015 |
|---|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|
| Average area of one apartment, m <sup>2</sup> | 111,8 | 124,7 | 122,2 | 115,4 | 117,5 | 111,9 | 99,6 | 103,7 | 110,7 | 113,5 | 99,1 | 93,3 | 92,6 | 80,4 |
| Growth rates                                  | 1,00  | 1,16  | 1,09  | 1,03  | 1,05  | 1,01  | 0,89 | 0,93  | 0,99  | 1,02  | 0,89 | 0,83 | 0,83 | 0,72 |
| Number of apartments, thous.                  | 2,3   | 2,3   | 2,8   | 4,0   | 4,9   | 5,0   | 6,8  | 4,8   | 4,9   | 5,2   | 5,1  | 5,5  | 5,4  | 7,6  |
| Growth rates                                  | -     | 1,00  | 1,22  | 1,74  | 2,13  | 2,17  | 2,99 | 2,09  | 2,13  | 2,26  | 2,22 | 2,39 | 2,35 | 3,30 |

*Source: Calculations made by the authors based on the National Bureau of Statistics of the Republic of Moldova [14].*

The tendency to reduce the average area of one apartment is also sustainable. If during the period 2002-2004 the average area of apartments handed in operation was large enough and was about 117-122 m<sup>2</sup>, this figure declined steadily in the last five years, amounting to 80.4 m<sup>2</sup> in 2015, which is close enough to the area of a standard 3-room apartments on the secondary market.

One of the indicators of housing provision of population is the number of housing units per 1,000 inhabitants. Currently, the figure accounts for 386 apartments, which is lower than the average of EU countries, where the rate accounts for 450 apartments. According to the review of the situation in the field of housing construction in the Republic of Moldova, the program of the United Nations Human Settlements Programme (UN – Habitat), in Moldova, a family with an average annual income can not afford to buy a house or an apartment even with using a mortgage loan. Getting a mortgage in the amount of 36 thousand Euros for 20 years at a rate of 12% per year would mean the need to make monthly payments of 395 Euros, which is higher than the average monthly wage of an average worker [15, p.59]. This fact clearly shows that for most of the country's population property of own house is not available.

Financing the construction and purchase of housing in Moldova is carried out by commercial banks. In Moldova, the mortgage market has not yet been used to its full potential. Until now, the mass of mortgage loans is not observed, and the conditions are not very appropriate: the inflated rates and short deadlines did not allow citizens to take out loans, and the banks themselves cautiously gave loans to buy housing under construction due to the risk of stopping the construction and loan defaults.

In recent years, the mortgage has become more accessible: competition in the financial market intensified and in the pursuit of customers, lenders have begun to offer loans at more attractive conditions. Today, mortgage loans in financial institutions are issued under the 10-12% for the period from 10 to 20 and even up to 25-30 years. During the period from 2009 to 2015, the total number of mortgage loans increased by 99%. The number of mortgage loans issued to the owners of apartments increased by 89%, while the number of loans issued to the owners of homes, increased by only 8% (table 15). There have been made changes in the share of mortgage in relation to the total number of transactions on real estate buying-selling.

**Table 15**

**Dynamics of the number of transactions of real estate and mortgage contracts  
for 2009-2015 in the Republic of Moldova**

| Indicastsors  | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   |
|---|--------|--------|--------|--------|--------|--------|--------|
| Total number of transactions                          | 286819 | 249690 | 277354 | 276539 | 291767 | 298656 | 318594 |
| Mortgage registration                                 | 12664  | 17220  | 20311  | 21730  | 24048  | 27773  | 25189  |
| Growth rates of the mortgage total, %                 | 100    | 136    | 160    | 172    | 190    | 219    | 199    |
| The number of transactions for the sale of apartments | 11004  | 12357  | 14263  | 14692  | 14196  | 14690  | 15123  |
| Mortgage of apartments                                | 3193   | 4577   | 5398   | 5909   | 6541   | 7514   | 6020   |
| The rate of growth of mortgage of apartments          | 100    | 143    | 169    | 185    | 205    | 235    | 189    |
| The number of transactions for the sale of houses     | 7003   | 6831   | 7473   | 7313   | 7476   | 7755   | 7593   |
| Mortgage of houses                                    | 1566   | 2451   | 3069   | 3069   | 2811   | 2819   | 1936   |
| The rate of growth of mortgage of houses              | 100    | 98     | 107    | 104    | 107    | 111    | 108    |

*Source: Calculations made by the authors based on the State Enterprise "Cadastru" data [16].*

If in 2009 the share of mortgages in relation to the total number of transactions for the sale of apartments was 29%, then in 2015 it was about 40%. The share of mortgages in relation to the number of home sales was 22% in 2009 and 25.5% in 2015. According to the Cadastre data on real estate of mortgage registration, there is not possible to determine the number of mortgages on the primary and secondary markets.

According to real estate experts, the mortgage on the secondary market is developing more actively. On the development of the mortgage, the policy of financial institutions has a great influence. Credit conditions, particularly interest rates, have become more affordable, but still remain expensive

compared with European Union countries. There is a trend of annual decline of rates that become more acceptable for buying a house. In 2016, interest rates on mortgage loans accounted for 9.5-11%. For comparison, mortgage rates in the Western European countries range from 1.36% to 4.36%.

A more active promotion of mortgage is prevented by the economic situation in the country, low salaries, and lack of awareness of the possibilities of housing loans, the psychological barrier and the inability to calculate the income. At the moment, there is a slight movement, but it is hardly to be called a real growth of the market. Nevertheless, the prospects for mortgage lending in Moldova exist due to a lot of construction sites, and the large mass of the population is in need for housing.

The market value of 1m<sup>2</sup> of housing area on both the primary and secondary markets has changed significantly (table 16). On both segments of the real estate market there is a decrease in the prices. However, on the primary real estate market, this reduction occurs at a faster rate. In 2015, the price of 1m<sup>2</sup> area of apartments on the primary market amounted to 78% of the 2007 price level. On the secondary market in 2015, the selling price of 1 m<sup>2</sup> of housing accounted for 89% of the 2007 price level. It is obvious that the real estate market is at the stage of recession. This is due to the increase in supply of apartments in the primary and secondary markets, with the lack of effective demand, high credit interest rates on mortgage loans.

Table 16

**Dynamics of changes in the market price of 1 m<sup>2</sup> in 2007-2015**

| Indicators   | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--|------|------|------|------|------|------|------|------|------|
| Price of 1m <sup>2</sup> of housing on the secondary market (euro) | 650  | 850  | 750  | 690  | 660  | 655  | 635  | 590  | 580  |
| Growth rates   | 1,00 | 1,31 | 1,15 | 1,06 | 1,02 | 1,00 | 0,98 | 0,91 | 0,89 |
| Price of 1m <sup>2</sup> of housing on the primary market (euro)   | 730  | 900  | 710  | 635  | 615  | 600  | 584  | 575  | 570  |
| Growth rates   | 1,00 | 1,23 | 0,97 | 0,87 | 0,84 | 0,82 | 0,80 | 0,79 | 0,78 |

Source: Calculations made by author's based on data from „Nika Imobil” SRL [17] and the State Enterprise „Cadastru”[16].

Thus we can conclude that in the Republic of Moldova mortgage lending has not yet acquired the scale and does not significantly affect the decision to purchase housing units. Terms and conditions for payment of the loan are quite complex.

### Conclusion

The use of regression analysis revealed a connection between the volume of mortgage lending and the value of residential real estate, both on primary and secondary markets of the Russian Federation. The dependence of the price of the RML volume is amply represented graphically.

The assumption of the existence of the dependence of the average price of Russian real estate markets (Y1 and Y2) primarily on the volume of mortgage housing loans (X1) is confirmed by the calculation of correlation coefficients. On the basis of the study it can be concluded that there is a marked relationship between the effective sign Y (average price per 1 sq. M) and the independent variable X1 (the volume of housing mortgage loans).

Analytical results concerning the relationship between the residential real estate market in Russia with the market of residential mortgage loans (RML), representing the Russian experience in the sphere of housing reform, have been augmented by research of features of formation of the mortgage market in the Republic of Moldova. The mortgage market in Moldova is developing not rapidly enough, despite the fact that there exist the developed legal environment of mortgage lending procedures and technology of issuing loans. High interest rates on granted loans do not allow the majority of the population to consider the mortgage as an affordable way to improve their living conditions. Mortgage lending market is not transparent, making it impossible to be studied with the help of economic and mathematical methods.

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## WORLD ECONOMY DEVELOPMENT DIRECTIONS IN THE CONTEXT OF THE PROCESS OF GENERAL ECONOMIC RECOVERY

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*Economic development is a quantitative and qualitative concept with a much wider scope than the economic growth. While economic growth is measured by a limited number of indicators, of which the most important is the growth rate of GDP, in this context the economic development implies a dynamic equilibrium in the long run, designing trajectories for a sustainable growth that will be based on optimum use of all available resources, the continued development of innovative potential and human capital, creating and developing strong institutions to foster economic growth and, obviously, but not least, ensure a judicious distribution of income and wealth (the Gini index). The goal of the research is investigating the state of the global economy in the early XXI century, in the post-crisis period, in order to detect development directions and adaptation to new economic conditions. At global level, cheap and clean natural gas is increasingly becoming a competitor of the coal as the main energy source. It can be mentioned that in many countries, the coal is starting to become unpopular to the extent that governments are tightening the laws on environmental protection. The challenges are just as real and complex as the opportunities. Estimation of the global market is one of the tools of research, identifying and implementing thoughtful, well-developed solutions. It is important to define the challenges and opportunities when they arise along the way in order to adjust them properly and move forward.*

**Keywords:** *development, opportunity, possible availability, growth, constraints, strategy.*

*Dezvoltarea economică reprezintă un concept cantitativ-calitativ cu o sferă de cuprindere mult mai largă decât cea de creștere economică. În timp ce creșterea economică se măsoară printr-un număr restrâns de indicatori, dintre care cel mai important este ritmul de creștere a PIB-ului, dezvoltarea economică implică asigurarea unui echilibru dinamic pe termen lung, proiectarea unor traiectorii de creștere sustenabilă în baza utilizării optime a tuturor resurselor disponibile, dezvoltării continue a potențialului inovativ și a capitalului uman, creării și dezvoltării unor instituții puternice, care să favorizeze creșterea economică și, nu în ultimul rând, asigurarea unei repartiții judicioase a veniturilor și a averii (indicele Gini). Scopul cercetării este de a investiga caracterul economiei globale la începutul secolului al XXI-lea, în perioada post-criză, pentru identificarea direcțiilor de dezvoltare și adaptarea la noile condiții economice. La nivel mondial, gazul natural ieftin și pur devine, din ce în ce mai mult, un concurent al cărbunelui ca sursă principală de energie. Putem menționa că, în multe țări, cărbunele a început să provoace antipatie, în măsura în care guvernele au înăspriț legile cu privire la protecția mediului. Provocările sunt la fel de reale și complexe ca și oportunitățile. Estimarea situației pe piața mondială este una dintre instrumentele de cercetare, identificare și punere în aplicare a unor soluții bine gândite, bine puse la punct. Avem tendința de a înfrunta problemele. De aceea este esențială definirea acestor probleme și oportunități astfel, încât să putem ajusta, în mod adecvat, concentrarea eforturilor și energiei noastre pentru a merge mai departe.*

**Cuvinte-cheie:** *dezvoltare, oportunitate, disponibilități, creștere, obstacole, strategie.*

*Экономическое развитие это более широкая количественная и качественная концепция чем понятие экономического роста. В то время как экономический рост измеряется ограниченным числом показателей, из которых наиболее важным является темп роста ВВП, экономическое развитие предполагает исследование динамического равновесия в долгосрочной перспективе, проектирование траектории устойчивого роста, на основе оптимального*

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использования всех имеющихся ресурсов, дальнейшее развитие инновационного потенциала и человеческого капитала, создание и развитие сильных институтов для стимулирования экономического роста и, очевидно, но не в последнюю очередь, обеспечить продуманное распределение доходов и богатства (инд. Джини). Изучение состояния мировой экономики в начале XXI века, в посткризисный период, в целях выявления развития и адаптации к новым экономическим условиям и направлениям. Дешевый и чистый природный газ все больше становится конкурентом угля в качестве основного источника энергии. В других странах, становятся непопулярными правительства и структуры, которые не используют альтернативные источники энергии, необходимо ужесточить законы об охране окружающей среды. Проблемы, столь же реальны и сложны как возможности. Оценка мирового рынка является одним из следственных инструментов, для выявления и реализации хорошо развитых вдумчивых решений. Мы склонны бросить вызов проблемам. Поэтому важно определить эти проблемы и возможности, чтобы мы могли должным образом настойчиво сосредоточить наши усилия и энергию, чтобы идти дальше.

**Ключевые слова:** развитие, возможности, способности достижения, рост, препятствия, стратегия.

**JEL Classification:** F43, F63, O11, O12, Q32.  
**CZU:** 338(100)

**Introduction.** The history of the most successful modernizations allows noticing two important characteristics, present in almost all of them. Firstly, once again, the impetus for modernization is the understanding by the elites and society of the country's deadlock and the futility of its previous path of development. This may be the result of either a serious external shock (military defeat): examples include Russia post – 1855, France post – 1871, Japan post – World War II; or the political processes leading to the emergence of a new political system, which begins to search for its own identity: as it happens in the United States after 1865, in Germany after 1870, Soviet Russia in the early 1920s or in South Korea after 1950, Malaysia in the 1960s, or in Singapore, which gained independence in 1965; or the change of the political elite following a long period of deepening stagnation: as in China's case in the 1976-1978 years, Spain and Portugal in the early 1980s, in the Soviet Union after 1985, in Brazil in the early 1990s.

As a consequence, in most modernizing countries the historical continuity has been broken; even if the elite tried to find some "footholds" in the past these were rather abstract and quite distant. The recent past was clearly perceived by the public consciousness as something to distance from. Secondly, in the vast majority of successfully modernized countries the modernization took place in conditions when the unity of the elites and the people were strengthening. As a rule, modernization did not immediately lead to higher standards of living, and even if they were, the growth was significantly slower than the growth of the economy as a whole (which is explained by the need for large-scale investments and mainly extensive methods of modernization inherent in its first stages). In these circumstances, the political and economic elites emphasized their unity with the people; still the interests of politicians and businessmen were relatively clearly differentiated: the first sought popularity and fame, the latter – the multiplication of their capital. Ironically, none of the successful modernizers (or Deng Xiaoping and Jiang Zemin in China or Lee Kuan Yew in Singapore or M. Mohammad in Malaysia nor Singh in India or F. Cardoso in Brazil) did not make history as owners of a large personal fortune or as oligarchs, while the majority of those who could not boast any achievements (Mobutu Sese Seko in Zaire, M. Suharto in Indonesia, F. Marcos in the Philippines or Mugabe in Zimbabwe), became some of the richest people on their continent. Successful countries modernized as a whole, while unsuccessful mired in corruption and material inequality.

**The goal of the research** is investigating the state of the global economy in the early XXI century, in the post-crisis period, in order to detect development directions and adaptation to new economic conditions.

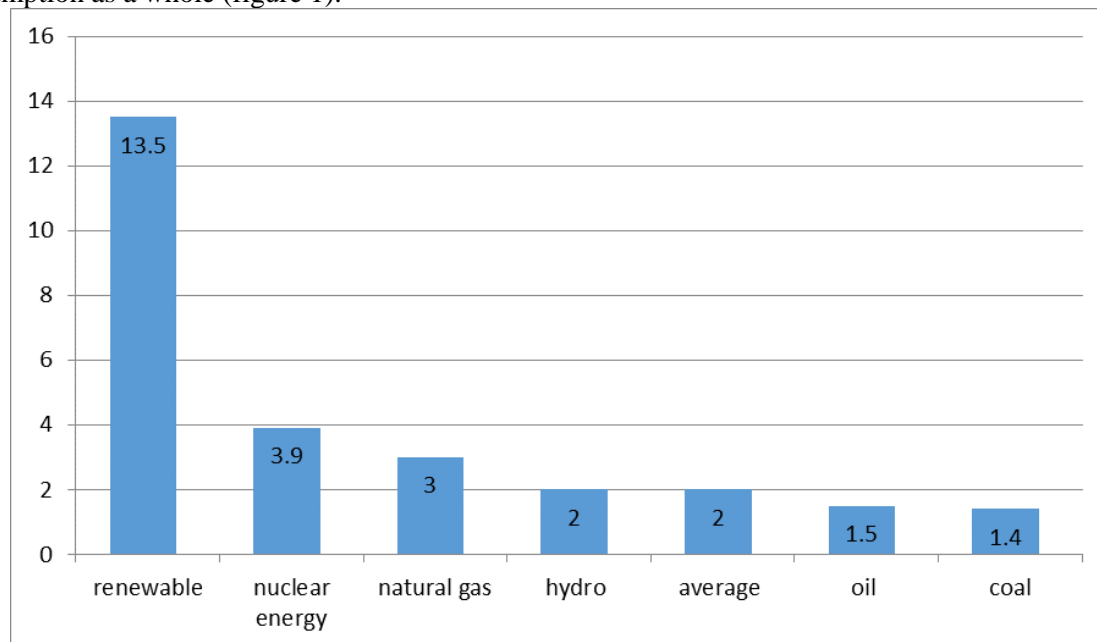
**Results and analysis.** In the US, cheap and clean natural gas is increasingly becoming a competitor of the coal as the main energy source. In other countries, coal is also starting to become unpopular to the extent that governments are tightening the laws on environmental protection.

China consumes almost half of all energy coal in the world and is in dire need to fight against urban pollution and the threat of global warming. The level of pollution in some parts of Beijing is

265 micrograms per cubic meter, whereas the WHO states the safe norm for humans is 25 micrograms per square meter. The reasons to this are smog emissions of enterprises, coal-fired heating systems, as well as construction dust from the numerous construction projects in Beijing. In some areas of Beijing's visibility on the road is less than 200 meters. Starting with January 1<sup>st</sup> 2014 the country introduced control over the use of low-quality coal, as well as toughened penalties for companies that pollute the environment. China's main source of energy is coal. Currently, the power consumption obtained by burning coal reaches in China approximately 66% of the total. Coal has become one of the main causes of severe air pollution in the northern parts of the country. In this regard, the government intends by 2020 to a 15% increase in energy consumption from non-fossil sources, and by 2030 – to 20%.

According to the draft plan for the 13th Five-Year Plan (2016-2020), the authorities intend to use wind and sun energy, nuclear power and energy from biomass feedstock more in the next five years. According to the document, steel, energy and chemical industries will be subject to control on the release of hydrocarbons.

The world's largest energy consumer activates the construction of power plants using inorganic fuel. In 2015, it was planned to launch power plants using wind with a total power capacity of 100 GW. The use of solar energy (China is the largest market of photovoltaic equipment in the world) will increase as well. Globally, the growth of renewable energy will significantly outpace the growth of energy consumption as a whole (figure 1).



**Figure 1. Forecast of growth in energy consumption in the world in 2015-16 by type of sources, % to previous year**

*Source: The Economist Intelligence Unit.*

China is speeding up the construction of nuclear power plants as well. Another reason determining Asia status as a key player in this market is the strong support of nuclear energy by South Korea. Japan will start to run nuclear reactors mothballed following Fukushima plant accident in 2011, which will reduce the demand for imported fossil fuels.

Despite the signs of a "green revolution", inorganic fuel is deprived of the comprehensive support needed for a successful global breakthrough. In 2009 attempts to find a replacement for Kyoto Protocol ended up failing. However, the recent agreement between the US and China on carbon emissions into the atmosphere offers hope that other developing countries will start taking more stringent measures to counter global warming.

#### *Financial services: positive signals*

The past and current years are defined by the presence of more favorable conditions for financial companies than those which followed the crisis of 2008-2009. The companies began to grow faster and basically found solutions to many of their old problems. For some, the main task is simply a profit recovery; others demanded a complete revision of balance sheet accounts and the sale of certain assets; the

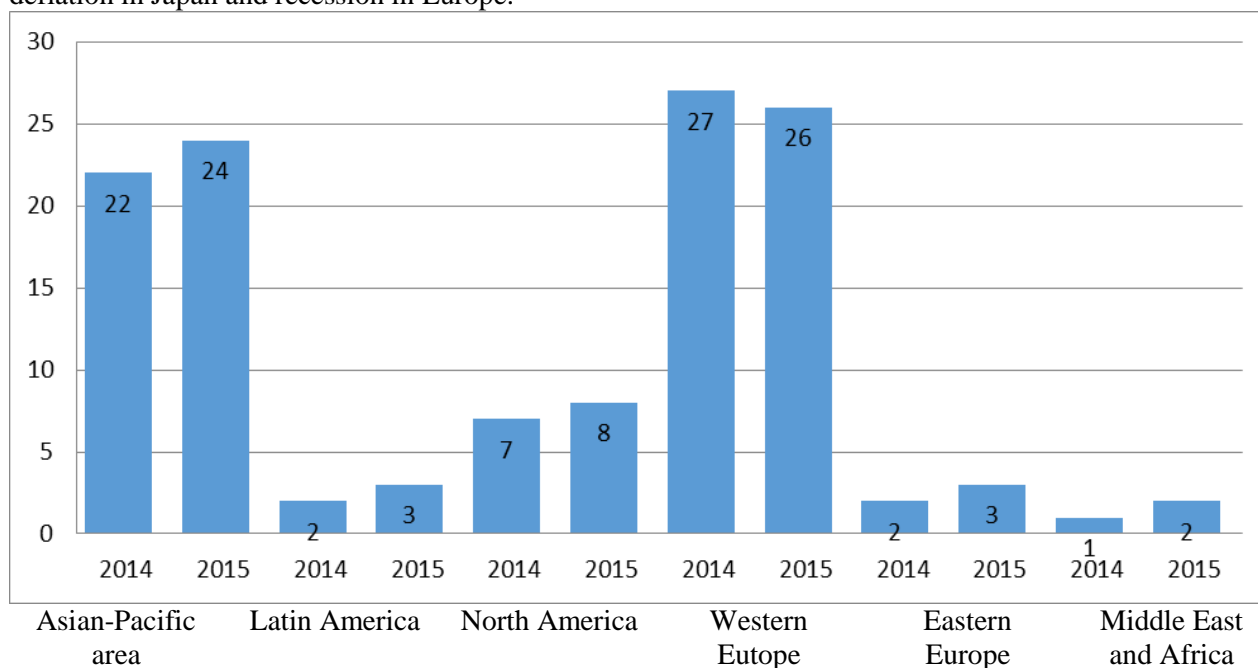


third required a capital increase and state aid.

The main factor is the development of global financial services market: only half of the world's adult population uses the security instruments in regard to their savings, lending and payments from the standard bank accounts. Even a smaller proportion is involved in operations on various types of insurance, securities and pension. For coverage of these share of population is necessary to develop new budgetary instruments, such as bills on mobile phones, etc. The world economy in 2016 will remain volatile and will not become a main factor in the growth of financial companies that rely on macroeconomic demand (as opposed to companies that rely on new complex financial technologies).

Financial companies' possibilities are restricted by heavy financial debt of states and households that do not allow them to assume additional loans. With regard to industrial corporations, in spite of a certain improvement of their position, they remain cautious regarding their capacity expansion due to a limited demand. Perhaps the most important factor for financial firms is the tough post-crisis regulation, which will last for quite a long time. These include obliging the banks to provide information on the ratio of debt to equity and liquidity condition. Additionally, throughout the year is expected the adoption of new regulations on the part of the program of Basel III and the EU Banking Union, as well as US restrictions on proprietary trading, embedded in the Dodd-Frank Act. These measures aim at improving the stability of the financial system during the crisis, but make it less profitable during the periods of economic growth.

Crises on the housing market and sharp changes in the structure of investment flows (as in emerging markets in the 1980s-1990s) remain a permanent threat. There are present risks of renewed deflation in Japan and recession in Europe.

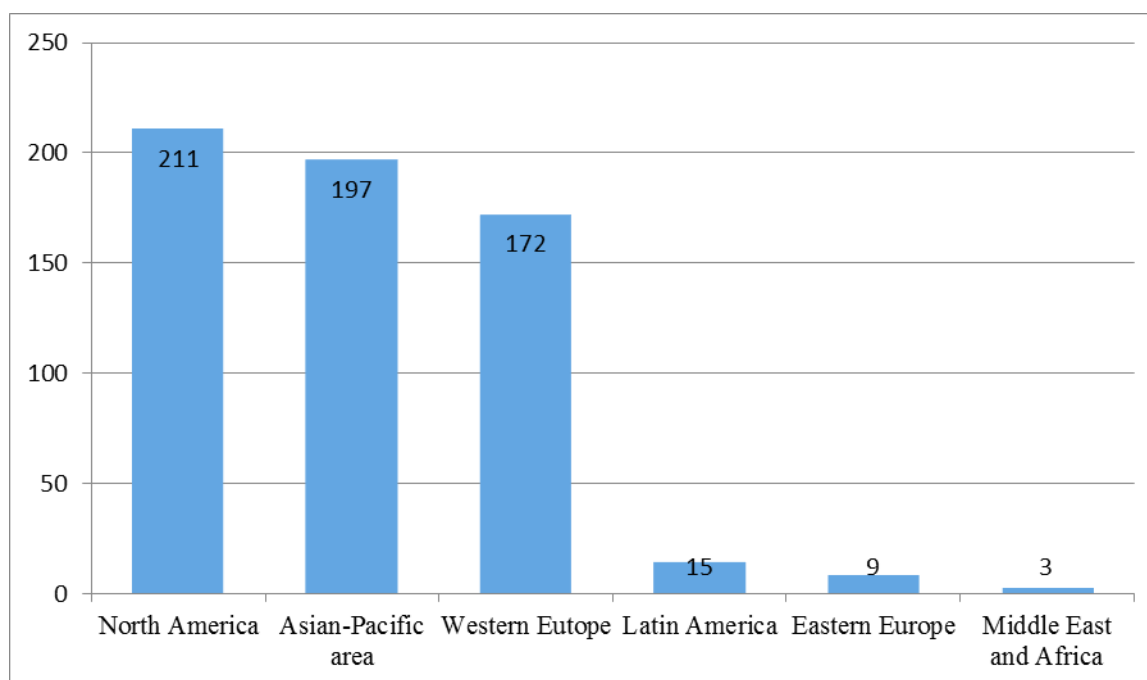


**Figure 2. Bank loans by region in 2014 and 2015, billion USD**

Source: *The Economist Intelligence Unit*.

In recent years, the reputation of commercial banks and traders deteriorated seriously; to a lesser extent this applies to insurance companies, fund managers and other financial institutions. The level of confidence in the financial sector remains very low. Nevertheless, the major financial players as a whole were able to restore the number of their customers – both among individuals and non-financial corporations. This was due to the active adaptation measures: reducing costly branch network, strengthening the presence of the Internet and mobile applications, improving customer service and security. Competitors from developing countries are actively joining the western financial companies.

Nowadays the Chinese bank's advertising can be seen on the highest building of Buenos Aires in Argentina. Stock markets combine their trading floors and marketplaces in South-East Asia and South America. Malaysian, Brazilian and Colombian companies carry out cross-border mergers to strengthen their positions abroad. In 2015, the process of globalization will continue with a broader set of actors.



**Figure 3. Total financial assets in 2015, trillion USD**

Source: *The Economist Intelligence Unit.*

#### *Healthcare and Pharmaceuticals: the Asian expansion*

Companies of this sector have become much more optimistic over the past year. Among the main reasons for it should be noted the recovery of health spending levels in Western Europe are the development of health insurance systems in Asia and profitability increase of the pharmaceutical companies.

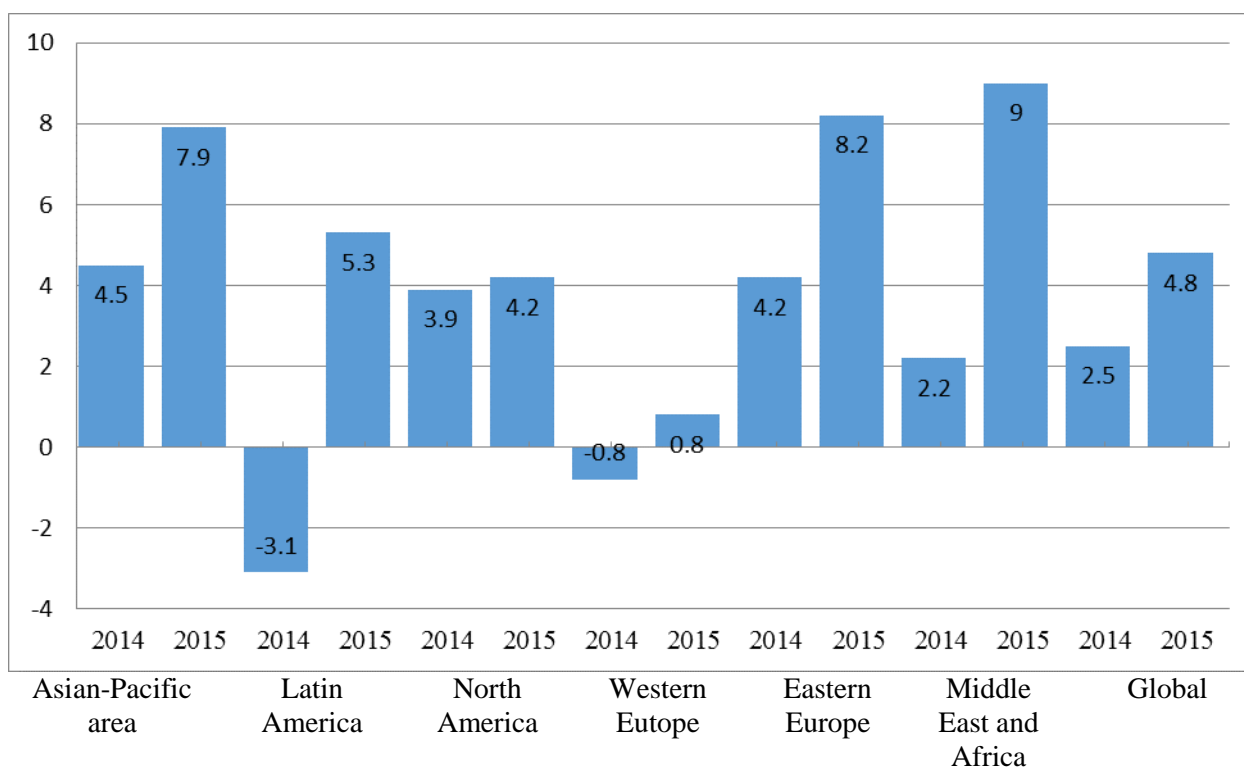
An important factor became the Affordable Care Act (Obamacare) in the United States – the largest health care reform of the last decade. Health insurance market has spread over millions of people in the country. Under this law, companies with a number of employees exceeding 50 people were obliged to provide their employees with medical insurance; for smaller companies the term has been extended until 2016.

Obama proved to be profitable for many companies. In 2014, shares of insurance companies such as Humana, United Health, Aetna and Cigna sky rocketed. They firmly oppose attempts by Republicans to roll down the reform. Several commercial medical networks, as HCA, also recorded growth in profits and revenue due to expansion of their customer base. The same phenomena were applied to pharmaceutical companies. According to experts, the total health expenditure in the US will grow by 5% in 2015, while sales of the pharmaceutical companies – by 6%.

A number of other regions will register even a more pronounced growth (figure 4).

Several Asian countries, including China, India, Indonesia and the Philippines, are actively building up a system of universal health insurance. Even poorer countries, such as Bangladesh and the Middle East countries, follow this trend. In Latin America, public health insurance system is a norm, and a number of countries (like Brazil) are increasingly focused on improving the quality of health care. In Western Europe, the focus is on improving the efficiency of the health system, which has become very expensive. But even here the economic recovery (albeit unstable) allows increasing the number of health care costs.

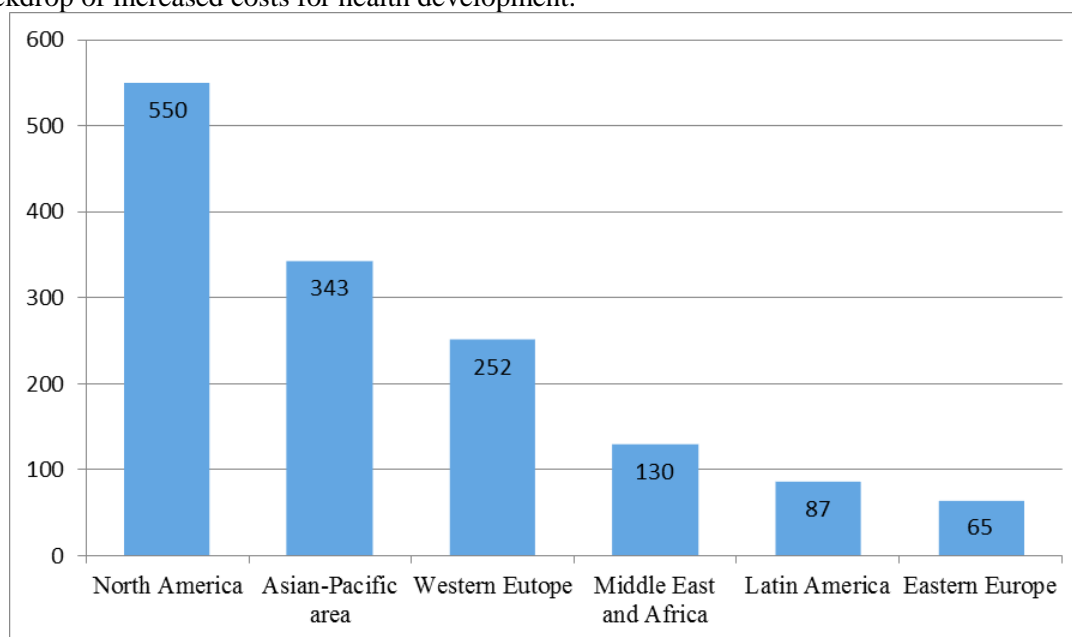
In connection with the termination in 2015 of a number of patent protections of drugs companies such as Novartis, Otsuka, and others it is expected an increase competition from companies that manufacture generics. Even the newest biotech drugs are becoming more vulnerable to copying. Apparently, generic analogues of the biotech drugs will experience a wide spread in 2015. Under these conditions, the pharmaceutical companies try to implement deep restructuring aiming at reducing costs and increasing investments in research and development. It is expected the production of new drugs by such companies as Sanofi, Merck & Co., Johnson & Johnson. Favorable signs for pharmaceutical companies in Asia were noted. In India, where the government has long been interested in the greater availability of drugs than in the protection of innovation, in 2014 has loosened control over drug prices. In China, the same thing can happen in regard to drugs outside the system of state subsidies.



**Figure 4. Growth of expenditures on health care per 1 inhabitant in 2014 and 2015 (forecast) by regions, % compared to previous year**

Source: *The Economist Intelligence Unit; World Health Organization.*

The policy change of the two Asian giants in regard to patent protection was caused by the expanding opportunities in the drugs market. India has already become the biggest exporter of generic drugs, but the tightening of safety regulations in the US could threaten its potential revenues. China also considers the pharmaceutical industry as a source of economic growth and is interested in the elimination of international trade barriers. In general, global competition in this sector may increase significantly, on the backdrop of increased costs for health development.



**Figure 5. Expenditures of pharmaceutical industry by region in 2015, trillion USD**

Source: *The Economist Intelligence Unit.*

*Telecommunications: Problems of Interaction.* The telecommunications sector is in a state of rapid structural change. The rapidly growing use of the Internet, connectivity and interoperability are incorporated into a growing number of mobile devices. Consumer demands for speed and quality of access to information, video and audio are becoming more stringent. As a result, mobile operators, government and Internet service providers are compelled to direct an increasing amount of investment to improve the aging infrastructure.

Adding to that, mobile operators have to find funds to pay for participation in auctions for frequencies (especially costly developing countries such as India and Thailand), which leads to the growth of credit debt. A partial solution to the problems are the linking together of television, broadband, fixed-line and mobile services. An example is the British Telecom – British fixed-line provider, which announced its intention to acquire the O<sub>2</sub> mobile operator in November 2014, after which BT shares soared up [BT in talks with Telefónica ...]. Another strategy of mobile operators is to convince the state to reduce license fees and tariffs for the used frequencies. These problems can be felt by the customers when excessive credit debt will force mobile operators to raise prices for their services. Experts predict that in 2015, the Internet users around the world will consist half of the world population. However, the majority will still get online by conventional methods using a broadband connection via PCs at home or at work. At the same time, in many countries smartphones are becoming increasingly popular, as means of communication are increasingly improving, covering all social groups.

New features were well demonstrated by the last device of the Apple company – the iPhone 6. As the number of applications increases, smartphones can replace credit cards and cash flows. In 2014 in the US has been launched the new Apple payment system, which allows users to make payments via iPhones and Apple Watch, and it is expected to reach Europe in 2015. One of the most pressing and controversial issues remains ensuring "net neutrality" – the principle of equal regulation of all types of information. Most operators are interested in the model when content providers pay extra for the provision of faster communication channels and get an advantage. Consumers, in turn, fear that such a model would lead to higher prices for Internet services and limit access to users with low incomes and those living in remote areas. Especially heated discussions take place in the United States, where in 2014 President Barack Obama appealed to the Federal Telecommunications Commission with a request to reclassify the Internet as a public utilities sector. This will entail the regulation of this sector by the type of water and energy sectors. In 2016 such discussions, will likely occur in other countries as well. Indian Association of mobile operators (COAI) intends to discuss with the Government regarding the monetization of services on the basis of revenue sharing between Internet companies and mobile operators. In the EU, the current agenda includes the strict rules of network neutrality, prepared by the European Parliament, which now requires the approval of the Council of Ministers. So far, only Slovenia and the Netherlands have implemented similar rules, and there are serious concerns that other European countries will slow down this process. In Latin America, similar rules were adopted only by Brazil and Chile. Among other notable events of 2014 it should be noted the rapid rise of the Chinese company Xiaomi, which is often called the "Chinese Apple". In the third quarter of 2014 its growth rate reached a three-digit value, turning the company into the world's third largest producer of smartphones. This was the result of the fact that the company has won over a significant share in the domestic Chinese market from the Samsung Corporation. At the same time, maintaining the progress achieved depends on the conquering of foreign markets. Xiaomi plans to start the production of its smartphones in India and several other developing countries.

The fourth generation 4G mobile communication has become a battle arena of the operators of mobile telephony. In the near future the same will happen with 5G. By September 2015 a "test area" will be completed and commissioned in the UK, including companies such as BT, EE, Huawei, Samsung, Vodafone and others. A number of other projects (which are commonly led by universities) where initiated by the EU, China, Japan, South Korea and the United States.

**Conclusions.** More than two decades of independence have passed as the need for modernization and development emerged, and now it becomes quite evident that no serious changes occurred in the country. The objectives of modernization and its main focus are not yet defined. Niches that Republic of Moldova could fill on the world markets are not yet determined (it is quite naive to assume that the country can start developing rapidly only by restoring the wine industry). The emphasis on technological breakthrough seems unconvincing, as no country has yet reached the standards of post-industrial society, not having mastered firstly the competitive industry on a large scale, which alone can be the "customer"

and the consumer of new advanced technologies.

The development of the industrial base is not included in the priorities of local politicians precisely because the ideology of state paternalism assumed by them suggests that people should "receive" various benefits from the state, which has the right to redistribute them, and not to create or produce them with their own efforts. At the time, the great reformer and head of Singapore Lee Kuan Yew stressed that authoritarian modernization program is very tempting, but always vulnerable because such modernization requires an ambitious and responsible leadership.

The main problem of modern Moldova is precisely the absence of such leadership. The tasks that are set before the country today are the maximal simulation of changes in the conditions of preservation of the notorious stability, with which a real modernization was, is and will remain incompatible. As long as the task itself will not change, until a sober assessment of the state of the domestic economy will be made, and until a program of purely economic reforms and the gradual implementation of political and social change will not be elaborated, until the representatives of the elite, whose interests are inseparably connected with the raw material orientation of the economy will not be removed from the levers of political power no changes are to occur.

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## IDENTIFICATION OF CLUSTERIZATION POTENTIAL AT REGIONAL LEVEL AND IN INDUSTRIAL SECTOR IN THE REPUBLIC OF MOLDOVA

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*Despite the fact that in Moldova there are some premises that stimulate various forms of cooperation between enterprises (predominance of small and medium sized enterprises in the total number of enterprises, the relatively high geographic concentration of businesses location; the existence of quite effective business associations) the process of creating clusters in Moldova has not yet obtained a necessary development. The purpose of the article is to identify those industries with potential for creating clusters in the regions of Moldova aiming at developing the cluster state policy. The identification of "agglomerations" is based on the "three stars" methodology developed and utilized by the European Cluster Observatory for mapping and assessing clusters. The basis of this paper is constituted of interim results of a study under the project for the young researchers "The analysis of the clusterization potential in the industrial sector in the Republic of Moldova" (code 16.80012.08.15A).*

**Keywords:** economic agglomeration, cluster, enterprise, industrial sector, the Republic of Moldova.

*Cu toate că în Republica Moldova există unele premise care stimulează diferite forme de cooperare a întreprinderilor (predominanța întreprinderilor mici și mijlocii în numărul total de întreprinderi; gradul relativ înalt de concentrare geografică a amplasării întreprinderilor; existența asociațiilor de afaceri destul de eficiente), procesul de creare a clusterelor nu a obținut încă o dezvoltare necesară. Scopul articolului constă în identificarea acelor ramuri industriale cu potențial pentru crearea clusterelor la nivelul regional al Republicii Moldova, care ar putea sta la baza dezvoltării politicii statului în domeniul clusterial. Identificarea aglomerațiilor economice de tip cluster a fost efectuată prin abordarea de tip „3 stele”, frecvent utilizată în studiile de cartografiere a clusterelor din țările Uniunii Europene. La baza acestui articol stau rezultatele intermediare ale unui studiu realizat în cadrul proiectului pentru tinerii cercetători „Analiza potențialului de clusterizare în Republica Moldova la nivelul sectorului industrial” (cu cifrul 16.80012.08.15A).*

**Cuvinte-cheie:** aglomerație economică, cluster, întreprindere, sector industrial, Republica Moldova.

*Несмотря на то, что в Молдове есть некоторые предпосылки, которые стимулируют различные формы кооперации предприятий (преобладание малых и средних предприятий в общем количестве предприятий, относительно высокий уровень географической концентрации бизнеса; существование эффективных бизнес ассоциаций) процесс создания кластеров в Молдове до сих пор не получил должного развития. Цель статьи состоит в том, чтобы определить те промышленные отрасли с потенциалом для создания кластеров в регионах Молдовы, которые могут стать основой для разработки государственной кластерной политики. Идентификация агломераций проводилась в соответствии с методом «3 звезды», обычно используемым в исследованиях картирования кластеров в странах ЕС. Основой данной статьи являются промежуточные результаты исследования, проведенного в рамках проекта молодых исследователей «Анализ потенциала кластеризации в Республике Молдова на уровне промышленного сектора» (шифр 16.80012.08.15A).*

**Ключевые слова:** экономическая агломерация, кластер, предприятия, промышленный сектор, Молдова.

**JEL Classification:** O25, O38.

**CZU:** 332.133.6(478)

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**Introduction.** Identification of economic clusters can be achieved by various methods, with no single method and a widely accepted opinion regarding the main variables to be taken into account in determining the geographical boundaries of the clusters [5]. The methods of cluster investigation involve a degree of spatial concentration of the industry in the region.

The specialized literature describes the concentration by measuring the spatial division of labor or industrial specialization [1; 4]. The identification of the spatial inequalities and concentrations of a phenomenon can be carried out by a number of statistical methods, such as the localization coefficient, Herfindahl index used for measuring industrial concentration, the Gini coefficient, which describes the spatial concentration, etc.

According to the cluster development theory there are two approaches of recognizing and developing clusters: the "top down" and "bottom up" approaches. The "top down" approach focuses on developing those priority sectors of industrial and regional development policy of the country or region. In these circumstances, the clusters can be valuable in coordinating and providing initiatives to a particular sector. Clusters of "bottom up" approach are identified through statistical and data analysis using a methodology such as analysis of location coefficient, method known as "three stars" approach [2]. *In this paper, in order to identify the economic agglomerations the method of "three stars" was used.*

**The main considerations.** The „three stars” approach for cluster identification is a standard methodology used in all EU Member States. The groups / industrial agglomerations are classified in terms of a rating scale which takes values from 0 (minimum) to 3 (maximum) stars. The analysis factors are: size, concentration, specialization (the location quotient).

What are those commonly used limits to assign a star to an agglomeration? The specialized literature does not provide any standard measure for this issue. For example, some studies determine a threshold value for each criterion (size, concentration and specialization). A sector that exceeds the threshold value for any of these indicators is given a star.

In the methodology proposed by the European Cluster Observatory, the author of the research introduced some changes regarding the minimum level for indicators of size, concentration and minimum number of employees in the sector, given that the data applied by the European Cluster Observatory are excessively high for the Republic of Moldova. In table 1, the authors present the criteria for clusters identification adjusted to the Republic of Moldova.

Table 1

Criteria for identifying economic agglomerations

| Criteria   | Significance   | The threshold value             |                |
|--|--|---------------------------------|----------------|
|  |  | Regional level                  | District level |
| Size *   | The indicator analyzes the capacity of industrial sector to occupy workforce.<br>Is calculated as the share of employees in the analyzed industrial sector against total employment for that sector within Moldova | >7%                             | >7%            |
| Concentration **   | Calculated as the share of employees of an industry in a region in total employment in that region   | >2.5%                           | >2.5%          |
| Specialization ***   | This indicator shows the extent to which the industry is considered to have a high degree of specialization in a particular region and represents the combination of Size and Concentration indicators             |                                 |                |
| <i>The minimum number of employees in an economic sector</i>   |  | 700                             | 400            |
| <i>The minimum number of enterprises in an economic sector</i> |  | 3                               | 3              |
| The level of sectorial aggregation                             | CAEM rev 2 (Classification of Economic Activities of Moldova)  | CAEM rev 2 by groups (3 digits) |                |

Source: Elaborated by the author according to [2; 3].

This article used the term **agglomeration** in the sense of *geographical concentration of companies operating in identical or similar sectors in a certain geographical area.*

The three-stars agglomeration mapping process was carried out at the regional level (North,

Center, South and ATU Gagauzia), Chisinau municipality, and in each district on the basis of CAEM rev. 2 (Classification of Economic Activities of Moldova) by groups (3 digits) (2014).

According to the calculations, at **the regional level** (North, Center, South, ATU Gagauzia) and Chisinau mun., 50 economic agglomerations were identified (10 of three-stars, 1 of two-stars, 39 one-star agglomeration).

**At the regional level**, the identified agglomerations of three and two-stars are concentrated in the following sectors: manufacture of wearing apparel, except fur (C141), manufacture of wires and cables; manufacture of connecting devices (C273), manufacture of bakery and pastry (C107), beverage manufacturing (C110), manufacture of other textiles (C139).

In **Chisinau mun.** 24 clusters of one-star were identified, within which are concentrated a large number of businesses and employees from various industrial sectors: C141 – manufacture of wearing apparel, except fur (39.4% of total workers of the republic employed in this sector), C107 – manufacture of bakery and pasta products (52%), C110 – manufacture of beverages (36%), C310 – manufacture of furniture (75.3%), C222 – manufacture of plastic articles (73.7%), C331 – repair of metal products, machinery and equipment (74.3%). These sectors have achieved one-star, because exceed the 7% threshold, but cannot be described as clusters of three-stars, given that do not represent more than 2.5% of workers employed in Chisinau mun.

Table 2

**Economic agglomerations identified in Chisinau municipality  
(based on CAEM rev.2 by groups) (3 digits)**

| Industry branches  | Number of enterprises | Number of employees | Share of employees in total employees in sector at national level, % |
|--|-----------------------|---------------------|--|
| <b>1 * (one-star)</b>  |                       |                     |  |
| C101 - Production, processing and preservation of meat and meat products   | 43                    | 1567                | 41.8   |
| C103 - Processing and preservation of fruits and vegetables  | 53                    | 1341                | 43.1   |
| C105 - Manufacture of dairy products   | 12                    | 1605                | 41.4   |
| C107 - Manufacture of bakery and pastry  | 112                   | 4426                | 52   |
| C108 - Manufacture of other food products  | 54                    | 1692                | 53.8   |
| C110 - Manufacture of beverages  | 81                    | 3433                | 36   |
| C141 - Manufacture of wearing apparel, except fur  | 211                   | 5699                | 39.4   |
| C151 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; preparation and dyeing fur | 15                    | 912                 | 91.8   |
| C152 - Manufacture of footwear   | 35                    | 1674                | 64.3   |
| C172 - Manufacture of paper and paperboard   | 93                    | 1216                | 87.8   |
| C181 - Printing and service activities related to printing   | 134                   | 1216                | 87   |
| C203 - Manufacture of paints, varnishes, printing ink and mastics  | 5                     | 1204                | 96.2   |
| C222 - Manufacture of plastic products   | 198                   | 2744                | 73.7   |
| C231 - Manufacture of glass and glass products   | 33                    | 1219                | 85.4   |
| C236 - Manufacture of articles of cement and plaster   | 118                   | 1277                | 57.3   |
| C251 - Manufacture of metal constructions  | 167                   | 996                 | 75.5   |
| C265 - Manufacture of measuring, testing and navigation; production of watches   | 12                    | 1404                | 84.9   |
| C281 - Manufacture of machinery and equipment for general use  | 6                     | 797                 | 89.6   |
| C310 - Manufacture of furniture  | 250                   | 3246                | 75.3   |
| C331 - Repair of fabricated metal products, machinery and equipment  | 148                   | 1739                | 74.3   |
| D351 - Generation, transmission and distribution of electricity  | 48                    | 3247                | 59.9   |
| D352 - Manufacture of gas; distribution of gaseous fuels through pipelines   | 6                     | 1266                | 26   |
| D353 - Steam and air conditioning supply   | 6                     | 1359                | 62.6   |
| E360 - Collection, purification and distribution of water  | 5                     | 1862                | 33.4   |

Source: Elaborated by the author based on summarized financial reports provided upon request by the National Bureau of Statistics.

In the **North region**, based on CAEM by groups 2 agglomerations of three-stars were identified, which employ a total of 8.3% employees in the region and 8 one-star agglomerations, employing 12.5% employees in the region.

In the North region, three-stars agglomerations were identified in the following sectors: manufacture of wearing apparel, except fur (C141) and manufacture of wires and cables (C273).

Also several agglomerations of one-star were identified, indicating the fact that in the North region there is a potential for clustering, mainly in the following industries: manufacture of vegetable and animal oils and fats (C104), manufacture of dairy products (C105), manufacture of bakery and pastry (C107), manufacture of other food products (C108), and manufacture of beverages (C110).

Having a relatively developed industrial potential, in the North region operate industrial enterprises in the following sectors: production of dairy products (JSC "Incomlac", JSC "JLC"), materials construction (JSC "CMC-KNAUF"), production of sausages (JSC "Bassarabia Nord", JSC "SoroMeteor"), manufacture of glass, manufacture of wearing apparel (JSC "Mioara", "Rada"), footwear, wood processing, production of rubber and plastic, oil extraction (JSC "Sunflower"), etc.

Table 3

**Economic agglomerations identified in the North region  
(based on CAEM rev.2 groups) (3 digits)**

| Industry branches  | Number of enterprises | Number of employees |
|--|-----------------------|---------------------|
| <b>1* (one star)</b>   |                       |                     |
| C104 - Manufacture of vegetable and animal oil and fats                    | 20                    | 746                 |
| C105 - Manufacture of dairy products                                       | 11                    | 1830                |
| C107 - Manufacture of bakery and pastry                                    | 64                    | 1261                |
| C108 - Manufacture of other food products                                  | 10                    | 1360                |
| C110 - Manufacture of beverages  | 19                    | 972                 |
| D351 - Generation, transmission and distribution of electricity            | 4                     | 2166                |
| D352 - Manufacture of gas; distribution of gaseous fuels through pipelines | 6                     | 1135                |
| E360 - Collection, purification and distribution of water                  | 50                    | 1419                |
| <b>3*** (three stars)</b>  |                       |                     |
| C141 - Manufacture of wearing apparel, except fur                          | 53                    | 4769                |
| C273 - Manufacture of wires and cables; manufacture of connection devices  | 3                     | 2506                |

Source: Elaborated by the author based on summarized financial reports provided upon request by the NBS.

In the **Centre region** three agglomerations of three-stars were identified, which employ 8% of total employees in the Central region and 6 agglomerations of one-star, employing 10% of employees in the region. In the Central region economic agglomerations of three-stars were identified in the following sectors: manufacture of bakery and pastry (C107), manufacture of beverages (C110), manufacture of other textiles articles (C139). Also, agglomerations of one-star were identified in the following sectors: extraction of stone, sand and clay (B081), production, processing and preservation of meat and meat products (C101), fruits and vegetables processing (C103), manufacture of wearing apparel, except fur (C141).

Table 4

**Economic agglomerations identified in the Center region  
(based on CAEM rev.2 groups) (3 digits)**

| Industry branches  | Number of enterprises | Number of employees |
|--|-----------------------|---------------------|
| <b>1* (one star)</b>   |                       |                     |
| B081 - Extraction of stone, sand and clay                                  | 45                    | 991                 |
| C101 - Production, processing and preservation of meat and meat products   | 39                    | 1388                |
| C103 - Processing and preservation of fruits and vegetables                | 71                    | 828                 |
| C141 - Manufacture of wearing apparel, except fur                          | 64                    | 1777                |
| D352 - Manufacture of gas; distribution of gaseous fuels through pipelines | 4                     | 1248                |
| E360 - Collection, purification and distribution of water                  | 105                   | 1202                |
| <b>3*** (three stars)</b>  |                       |                     |
| C107 - Manufacture of bakery and pastry                                    | 92                    | 1824                |
| C110 - Manufacture of beverages  | 69                    | 2208                |
| C139 - Manufacture of other textiles                                       | 9                     | 1839                |

Source: Elaborated by the author based on summarized financial reports provided upon request by the National Bureau of Statistics.

In the **South region**, based on CAEM by groups 3 agglomerations of three-stars were identified, which employ a total of 12.1% of employees in the region, one agglomeration of two-stars, which employ a total of 3.1% of employees in the region and one-star agglomeration.

The findings have indicated that in the South region there is a potential for clustering mainly in the following industries: manufacturing of wearing apparel, except fur (C141), manufacture of bakery and pastry (C107), manufacture of beverages (C110).

Enterprises from the South region are specialized mainly in the production of wines and divines. Among the most recognized wineries in the South region are: Purcari, Stefan-Voda, Ciurari Taracia, Bassarabia L-Win Invest, Basarabasca, Imperial Vin and Ampelos. Among the largest producers of divine in the region can be highlighted: the Winery "Zolotoi Aist" from Tvardita, Taracia [6].

Table 5

**Economic agglomerations identified in the South region  
(based on CAEM rev.2 groups) (3 digits)**

| Industry branches  | Number of enterprises | Number of employees |
|--|-----------------------|---------------------|
| <b>1* (one star)</b>   |                       |                     |
| E360 - Collection, purification and distribution of water                  | 54                    | 745                 |
| <b>2** (two stars)</b>   |                       |                     |
| C141 - Manufacture of wearing apparel, except fur                          | 12                    | 949                 |
| <b>3*** (three stars)</b>  |                       |                     |
| C107 - Manufacture of bakery and pastry                                    | 23                    | 896                 |
| C110 - Manufacture of beverages  | 41                    | 1949                |
| D352 - Manufacture of gas; distribution of gaseous fuels through pipelines | 4                     | 833                 |

Source: Elaborated by the author based on summarized financial reports provided upon request by the National Bureau of Statistics.

In **ATU Gagauzia** 2 agglomerations of three-stars were identified, which employ 15.1% of the employees in the region and are concentrated in the manufacture of beverages industry (C110) and manufacture of wearing apparel, except fur (C141).

Table 6

**Economic agglomerations identified in the ATU Gagauzia  
(based on CAEM rev.2 groups) (3 digits)**

| Industry branches                                      | Number of enterprises | Number of employees |
|--|-----------------------|---------------------|
| <b>3*** (three stars)</b>                              |                       |                     |
| C110 - Manufacture of beverages                        | 22                    | 962                 |
| C141 - Manufacture of wearing apparel, except fur C110 | 6                     | 1288                |

*Source: Elaborated by the author based on summarized financial reports provided upon request by the National Bureau of Statistics.*

*At the district level*, the mapping process based on "3 stars" method has allowed the identification of 12 economic agglomerations (6 agglomerations of three-stars, 5 agglomerations of two-stars, and one-star agglomeration).

*At the district level*, the three-stars and two-stars agglomerations are concentrated in Balti municipality and the following districts: Soroca, Anenii Noi, Criuleni, Ungheni, Ialoveni, Criuleni, Orhei, Cantemir, Taraclia.

Thus, in Balti there are concentrated the following industrial sectors: manufacture of dairy products (C105), manufacture of wearing apparel, except fur (C141). Soroca district is specialized mainly in fruits and vegetables processing and preservation (C103) and manufacture of wearing apparel, except fur (C141). Anenii Noi and Criuleni districts are specialized in the production, processing and preservation of meat and meat products (C101).

Manufacture of beverages (C110) is concentrated in Ialoveni, Cantemir and Taraclia districts and Orhei districts is specialized in the manufacture of bakery and pastry (C107).

Table 7

**Distribution of 3, 2, 1 stars agglomerations by districts  
and types of activity according to CAEM rev.2 groups (3 digits)**

| Industry branches  | Number of enterprises | Number of employees | Number of stars |
|--|-----------------------|---------------------|-----------------|
|  |                       |                     | <b>3***</b>     |
| <b>Balti</b>   |                       |                     |                 |
| C105 - Manufacture of dairy products                                     | 3                     | 859                 | ***             |
| C141 - Manufacture of wearing apparel, except fur                        | 31                    | 2747                | ***             |
| <b>Soroca</b>  |                       |                     |                 |
| C103 - Processing and preservation of fruits and vegetables              | 3                     | 547                 | ***             |
| <b>Anenii Noi</b>  |                       |                     |                 |
| C101 - Production, processing and preservation of meat and meat products | 6                     | 563                 | ***             |
| <b>Criuleni</b>  |                       |                     |                 |
| C101 - Production, processing and preservation of meat and meat products | 6                     | 538                 | ***             |
| <b>Ungheni</b>   |                       |                     |                 |
| C139 - Manufacture of other textiles                                     | 3                     | 1693                | ***             |
|  |                       |                     | <b>2**</b>      |
| <b>Soroca</b>  |                       |                     |                 |
| C141 - Manufacture of wearing apparel, except fur                        | 8                     | 695                 | **              |
| <b>Ialoveni</b>  |                       |                     |                 |
| C110 - Manufacture of beverages  | 16                    | 558                 | **              |
| <b>Orhei</b>   |                       |                     |                 |

| Industry branches   | Number of enterprises | Number of employees | Number of stars |
|---|-----------------------|---------------------|-----------------|
| C107 - Manufacture of bakery and pastry                   | 13                    | 572                 | **              |
| <b>Cantemir</b>   |                       |                     |                 |
| C110 - Manufacture of beverages                           | 4                     | 403                 | **              |
| <b>Taraclia</b>   |                       |                     |                 |
| C110 - Manufacture of beverages                           | 9                     | 484                 | **              |
|   |                       |                     | <b>1*</b>       |
| <b>Balti</b>  |                       |                     |                 |
| C104 - Manufacture of vegetable and animals oils and fats | 3                     | 646                 | *               |
| <b>Total agglomerations 3***</b>                          |                       |                     | <b>6</b>        |
| <b>Total agglomerations 2**</b>                           |                       |                     | <b>5</b>        |
| <b>Total agglomerations 1*</b>                            |                       |                     | <b>1</b>        |

Source: Elaborated by the author based on summarized financial reports provided upon request by the National Bureau of Statistics.

**Conclusions and recommendations.** There is a large variety of quantitative methods for identifying economic clusters, but there is no single method and a widely accepted opinion regarding the main variables to be taken into account in determining the geographical boundaries of the clusters. Cluster investigation methods involve investigating the level of spatial concentration of an economic sector in that region.

The statistical analysis for the three-stars mapping process led to the identification at the regional and district levels of several industries which have a higher degree of specialization. Among them can be highlighted:

- *manufacture of wearing apparel, except fur (C141)* with a number of 4769 employees and 53 businesses in the *North region*, 949 employees and 12 businesses in the *South region*, 1288 employees and 6 enterprises in *ATU Gagauzia*;

- *manufacture of wire and cable; manufacture of connection to them (C273)* with approximately 2506 employees and three businesses in the *North region*;

- *manufacture of bakery and pastry (C107)* with 1824 employees and 92 enterprises in the *Central region* and 896 employees in 23 companies in the *South region*;

- *manufacture of beverages (C110)* with 2208 employees and 69 businesses in the *Centre region*, 1949 employees and 41 businesses in the *South region* and 962 employees and 22 businesses in *ATU Gagauzia*;

- *manufacture of other textiles (C139)* with a total amount of 1839 employees and 9 enterprises in the *Central region*.

At the **district level**, based on CAEM by groups (3 digits) three and two-stars agglomeration were identified in the following sectors:

- *manufacture of dairy products (C105)* in *Balti municipality* with a number of 3 companies, in which activate 859 employees;

- *manufacture of wearing apparel, except fur (C141)* in *Balti* (31 companies and 2747 employees) and *Soroca district* (8 companies and 695 employees);

- *production, processing and preservation of meat and meat products (C101)* in *Anenii Noi district* (6 enterprises and 563 employees) and *Criuleni district* (6 enterprises and 538 employees);

- *manufacture of other textiles (C139)* in *Ungheni district* in which operate 3 companies and 1693 employees;

- *manufacture of beverages (C110)* in *Ialoveni district* (16 businesses and 558 employees), *Cantemir district* (4 enterprises and 403 employees) and *Taraclia district* (9 companies and 484 employees);

- *manufacture of bakery and pastry (C107)* in *Orhei district* (13 businesses and 572 employees).

Although the mapping process based on statistical analysis is an important tool for identifying



clusters, however it is not enough. In order to validate the statistical findings and eventually supplementing them with new results, there is a need in qualitative information that cannot be obtained from the analysis of statistical data. The necessary information can be collected mainly through interviews with potential cluster actors (local government bodies, businesses, etc.), as well as through questionnaires.

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## STRATEGIC ACTIONS FOR SUSTAINABLE DEVELOPMENT OF TOURISM IN THE REPUBLIC OF MOLDOVA

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*Publication of this article aims to raise awareness among the decision makers in tourism filed, which are responsible for this branch, and to undertake concrete actions related to organizational management for a sustainable development of tourism industry in the Republic of Moldova. The popularity created around the concept of sustainable development has led the author's conviction that tourism can be developed in compliance with the philosophy of sustainability. In seeking solutions for achieving the sustainable development there is required a specific sectoral view as that of services performance in the tourism field. Because of the intensive connection of tourism with many other economic and social development areas, sustainable tourism should be seen as a whole that encompasses all other sectors, this representing an essential argument in planning the government's agenda. Tourism planning and development should be integrated at all levels, so that the development policies of this sector should reflect the regional, national and international levels. Analyzing the deficiencies and problems faced by the branch of tourism of the Republic of Moldova, the author comes up with proposals on the implementation of concrete actions which would boost this industry, capable of becoming a competitive and balanced developed economic sector, to be supplier of hard currency in the country, to effectively capitalize on heritage tourism, to promote Moldovan hospitality and to ensure welfare of the population involved in servicing tourists. Research methodology lies in identification of the problem, data collection and information about the tourism branch, solution proposals and formulating conclusion. Identification of the problem. Functionality of Moldovan tourism industry largely depends on state policy in the management of this branch. Nowadays, the legal and regulatory framework is outdated and Law 352 "On the organization and conduct of tourism activity in the Republic of Moldova", requires major changes. Many segments of the sector have no regulations. The tourism market is growing faster than the normative base. Recommendations. Improvement of the legal framework in the field of tourism, in accordance with the requirements of the tourism market, harmonization of tourism legislation to European standards, implementation of actions proposed by the author in the 5 areas of intervention in the tourism industry.*

**Keywords:** *tourism, sustainable development, tourism industry, inbound tourism, tourism potential, tourism information and promotion structures, tourism brand, tourism register, tourist areas.*

*Publicarea prezentului articol are ca scop sensibilizarea factorilor de decizie din domeniul turismului, care sunt responsabili de această ramură și întreprinderea acțiunilor concrete ce țin de managementul organizațional în vederea dezvoltării durabile a industriei turistice a Republicii Moldova. Popularitatea creată în jurul conceptului de dezvoltare durabilă a determinat convingerea autorului, conform căreia, turismul se poate dezvolta în conformitate cu filosofia durabilității. În căutarea căilor spre obținerea unei dezvoltări durabile este necesară o viziune specific sectorială, ca cea a performanțelor serviciilor în domeniul turismului. Din cauza conexiunii intensive a turismului cu multe alte domenii de dezvoltare economice și sociale, turismul durabil trebuie văzut ca un întreg, care cuprinde toate celelalte sectoare, acest fapt reprezentând un argument esențial în planificarea agendei guvernamentale. Planificarea și dezvoltarea turismului trebuie integrată la toate nivelurile astfel, încât politicile de dezvoltare a acestui sector să reflecte nivelul regional, național și internațional. Analizând deficiențele și problemele cu care se confruntă ramura turistică a Republicii Moldova, autorul vine cu propuneri privind implementarea unor acțiuni concrete, care ar impulsiona această industrie, capabilă să devină un sector economic competitiv și dezvoltat echilibrat, să fie furnizor de valută forte în țară, să valorifice eficient patrimoniul turistic, să promoveze ospitalitatea moldovenească și să asigure bunăstarea populației implicate în deservirea turiștilor. Metodologia cercetării constă în identificarea problemei, colectarea datelor și informației despre ramura turistică, propunerea anumitor soluții și formularea*

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concluziei. Identificarea problemei. Funcționalitatea industriei turistice a Republicii Moldova depinde, în mare măsură, de politica statului în gestionarea acestei ramuri. La momentul de față cadrul legislativ și normativ este învechit, iar Legea 352 „Cu privire la organizarea și desfășurarea activității turistice în Republica Moldova”, necesită modificări esențiale. Multe segmente ale sectorului nu dispun de reglementări. Piața turistică se dezvoltă mai rapid decât cadrul normativ. Recomandări. Perfecționarea cadrului normativ în domeniul turismului, în conformitate cu cerințele pieței turistice, racordarea legislației turistice la standardele europene, implementarea acțiunilor propuse de către autor, în cele 5 domenii de intervenție ale ramurii turistice.

**Cuvinte-cheie:** turism, dezvoltare durabilă, industrie turistică, turism receptor, potențial turistic, structuri de informare și promovare turistică, marcă turistică, registrul turismului, zone turistice.

Публикация этой статьи предназначена для информирования органов публичного управления в сфере туризма, которые ответственны за эту отрасль, и имеет как цель реализацию конкретных действий, связанных с устойчивым развитием индустрии туризма Республики Молдова. Туризм в Республике Молдова должен стать конкурентноспособным и равномерно развитым сектором экономики, который эффективно осваивает туристическое достояние страны, продвигает молдавское гостеприимство по высоким стандартам, обеспечивает разнообразный досуг для граждан страны. Поиск решений, которые могут обеспечить устойчивое развитие туризма, требует концептуальный отраслевой подход. Для этого необходимо сконцентрировать весь потенциал и ресурсы, которые имеются на данном рынке. Из-за интенсивной связи туризма с другими экономическими и социальными отраслями, устойчивое развитие туризма следует рассматривать как одно целое, которое охватывает весь экономический спектр других отраслей, представляющий как существенный аргумент в планировании действий со стороны правительства. Планирование и развитие туризма должно быть сконцентрировано на всех уровнях таким образом, чтобы развитие этого сектора отражали региональные, национальные и международные уровни. Анализируя недостатки и проблемы, с которыми сталкивается туристическая отрасль в Молдове, автор предлагает реализацию некоторых действий, способных стимулировать развитие этой сферы. Туризм может становиться конкурентноспособным и сбалансированным сектором экономики, быть поставщиком твердой валюты, эффективно используя при этом культурное наследие и молдавское гостеприимство. Туризм может обеспечить и благосостояние населения, которое участвуют в обслуживании туристов. Методология исследования заключается в выявлении проблем, сбор данных и информации о туристической отрасли, а также формулировка предложений и реализация конкретных действий по этому вопросу. Функциональность индустрии туризма в Республике Молдова, зависит во многом от государственной политики в управлении этой отрасли. В настоящее время правовая нормативная база устарела, а Закон «Об организации и осуществлении туристической деятельности в Республике Молдова» требует существенных изменений. Многие секторы туризма не имеют соответствующей регламентации. Туристический рынок развивается быстрее, чем нормативно-правовая база. Рекомендации. Совершенствование нормативной базы в области туризма в соответствии с требованиями туристического рынка, приобщение законодательства к европейским стандартам, внедрение действий предложенных автором в пяти областях деятельности индустрии туризма.

**Ключевые слова:** туризм, устойчивое развитие, индустрия туризма, въездной туризм, туристический потенциал, структуры по информированию и продвижения туризма, туристическая марка, регистр туризма, туристические зоны.

**JEL Classification:** L83, L89, L80.

**CZU:** 338.48(478)

**Introduction.** Republic of Moldova currently faces many problems that have to be solved immediately, mostly of them concerning the socio-economic development, but it would be a mistake to ignore the needs of future generations. We can not endlessly exploit natural, human, and economic resources without their regeneration and sustainable management.

Economic growth and development inevitably involve changes in ecosystems, and therefore the economic policy of tourism development should be designed rationally so as not to harm the natural and human environment, either now or in the future.

For sustainable development to be implemented, it will have to meet the needs and aspirations of people while respecting the ecological limits of the country, and the only viable way to achieve this is the economic integration of tourism into the environment without causing any negative ecological consequences [1].

**The importance and consequences of sustainable development.** Sustainable development implies a new paradigm that takes into account the entire capital stock: natural capital, anthropic capital, human capital and social capital, and maintaining a proper relationship between them.

**The value of tourism in the development of society.** Tourism is one of the industries that should be involved in sustainable development as a resource industry dependent on the natural and human potential, cultural heritage of society. Statistical dynamics on the development of this sector over the last five years is shown in table 1.

Table 1

**Internal, inbound, outbound tourism during 2011-2016**

|             | Internal tourism |          |               | Organized inbound tourism |          |               | Outbound tourism |          |               | Total revenue in tourism |
|-------------|------------------|----------|---------------|---------------------------|----------|---------------|------------------|----------|---------------|--------------------------|
|             | Total            | Tourists | Excursionists | Total                     | Tourists | Excursionists | Total            | Tourists | Excursionists |                          |
| <b>2011</b> | <b>37764</b>     | 27917    | 9847          | <b>10788</b>              | 8993     | 1795          | <b>136095</b>    | 135875   | 220           | 860,026 mil.MDL          |
| <b>2012</b> | <b>34363</b>     | 27965    | 6398          | <b>12797</b>              | 11 369   | 1 428         | <b>146791</b>    | 146 425  | 366           | 972,634 mil.MDL          |
| <b>2013</b> | <b>34172</b>     | 25446    | 8726          | <b>13150</b>              | 11492    | 1658          | <b>157556</b>    | 157288   | 268           | 1,05 bil.MDL             |
| <b>2014</b> | <b>43045</b>     | 26648    | 16397         | <b>14362</b>              | 10608    | 3754          | <b>180646</b>    | 179573   | 1073          | 1,38 bil.MDL             |
| <b>2015</b> | <b>37255</b>     | 24817    | 12438         | <b>15514</b>              | 12717    | 2797          | <b>189790</b>    | 185702   | 4088          | 1,57 bil.MDL             |
| <b>2016</b> | <b>41297</b>     | 25437    | 15860         | <b>15668</b>              | 11937    | 3731          | <b>177252</b>    | 170131   | 7121          | 1,48 bil.MDL             |

Source: Developed by authors based on data from the National Bureau of Statistics of the Republic of Moldova

Table 2

| Tourists staying in accommodation units in the Republic of Moldova | Year Tourists    | 2009          | 2010          | 2011          | 2012          | 2013          | 2014          | 2015          | 2016          |
|--|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1  | Local tourists   | 168325        | 166300        | 173309        | 179233        | 175901        | 189104        | 184474        | 184967        |
| 2  | Foreign tourists | 59563         | 63593         | 75000         | 88956         | 95640         | 93897         | 94381         | 121340        |
|  | <b>Total</b>     | <b>227888</b> | <b>229893</b> | <b>248309</b> | <b>268189</b> | <b>271541</b> | <b>283001</b> | <b>278855</b> | <b>306307</b> |

Source: Developed by authors based on data from the National Bureau of Statistics of the Republic of Moldova

Tourism "sells" these resources as some parts of its product, but also shares some resources with other users, including local communities, occupying one of the main roles. It is essential for tourism to be active in issues of sustainable development and cooperate with other industries in ensuring the quality and longevity of resources on which the entire tourism activity is based [2].

Table 3

**SWOT analysis of the tourism industry of the Republic of Moldova**

| <i>Strengths (S)</i>  | <i>Weaknesses (W)</i>  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Positioning of tourism as a priority branch of the Republic of Moldova's economy</li> <li>2. Availability of natural and anthropogenic tourist resources</li> <li>3. Road infrastructure in continuous growing</li> <li>4. The existence of the legal and normative framework in the field</li> <li>5. Implementation of tourism projects financed from the state budget</li> <li>6. Implementation of strategies and programs of tourism development different regions</li> <li>7. Availability of tourism reception structures with modern accommodation and food functions</li> <li>8. Availability of unique wine cellars</li> <li>9. Presence of conference rooms equipped with modern equipment</li> <li>10. Operation of two training and personnel retraining centers in the tourism industry</li> <li>11. Activity of specialized various associations</li> <li>12. The Republic of Moldova is a member of international organizations that support the development of tourism (World Tourism Organization of the United Nations, the Danube Competence Center, BSEC, GUAM, CIS Tourism Council, etc.)</li> <li>13. Approval and entry into service of new tourism country brand.</li> </ol> | <ol style="list-style-type: none"> <li>1. Tourist legislation unaligned to European standards</li> <li>2. Insufficient and outdated legislative and regulatory framework</li> <li>3. Lack of qualified human resources in tourism management and provision of quality services</li> <li>4. At the central level, there is no institutional framework for the implementation of state policy in the field</li> <li>5. Lack of functional tourist information offices in Moldova's diplomatic missions accredited abroad</li> <li>6. Lack of Tourism Information and Promotion Centers nationwide.</li> <li>7. Limited number of tour operators and travel agencies that form and sell local tourism products</li> <li>8. Lack of tourism hotels of 2-3 star category, which would contribute to the development of inbound tourism through attractive prices competitive on the international tourism market.</li> <li>9. High accommodation costs for services in the local tourist places</li> <li>10. Low number of accommodation structures in rural areas where the sights are located.</li> <li>11. Few classified accommodation structures</li> <li>12. Weak tourism indicators</li> <li>13. Lack of information stands nearby tourism sites</li> <li>14. Old tourist buses park</li> <li>15. Lack of skilled personnel and experts of international languages in tourist attractions and museums</li> <li>16. Statistics are calculated incorrectly and do not reflect the actual situation from the field</li> <li>17. Lack of records on individual tourists</li> <li>18. Low efficiency of the control mechanism on compliance with quality of tourism services provided</li> <li>19. Lack of LOW-COST flights with major European countries.</li> </ol> |
| <i>Opportunities (O)</i>  | <i>Threats (T)</i>   |
| <ol style="list-style-type: none"> <li>1. Traditional hospitality.</li> <li>2. Beneficial strategic position of the country (border with the CIS and the European Union countries).</li> <li>3. No need of visas for citizens of EU, USA, Japan, Canada, etc.</li> <li>4. Reducing the number of countries which have the status of country with high risk of migration, taking as a basis the list approved by the European Union.</li> <li>5. Air connections with major airport hubs</li> <li>6. Liberalization of prices on flights and demonopolisation of aviation</li> <li>7. Existence of foreign aid projects for tourism development</li> <li>8. Large number of events with a high tourist attraction: cultural, artistic, sporting, recreational</li> <li>9. Worldwide known status of a wine country</li> <li>10. Computerization of services for inbound tourism at the country level</li> <li>11. The availability of online platforms in 3-D format of sightseeing</li> <li>12. The existence of a performant country web page</li> </ol>   | <ol style="list-style-type: none"> <li>1. Underdeveloped infrastructure at sights of national and international interest</li> <li>2. Low level of knowledge in Europe and the world of Moldova as a tourism destination</li> <li>3. Lack of favorable investment climate for investors to develop infrastructure of tourist reception structures with functions of accommodation and food for mass tourism.</li> <li>4. Low competitiveness of Moldovan tourism offer (high costs for visa to Moldova, high costs to the flights operated by local airlines)</li> <li>5. Extremely limited number of objectives included in the UNESCO heritage list and in the Guinness book</li> <li>6. Insufficient financial resources for promotion of the field: exhibitions, promotional materials, financial support to projects in the field, etc.</li> <li>7. Inefficient management of the tourism sector at the second local government level.</li> <li>8. Lack or improper restrooms at entry points in the country and at gas stations designed to serve foreign tourist groups on national tourist routes</li> </ol>  |

Source: Developed by author.

Sustainable development in tourism is a necessity, and the link between tourism and the environment is stronger than in other industries. Often tourism has created significant economic, social or environmental effects and their mitigation can not be done only through a professional management that could attract in the decision making process all stakeholders involved in tourism development.



Being a sector of services, tourism contributes to the economy through capital accumulation within about 12 types of activities specific for the sector, attracting in its activity around 20 work related branches.

**Tourism Development Strategy „Tourism 2020”.** The strategy was developed in 2014 and approved by the Government Decision no. 338 of 19 May, 2014 [3]; it identifies the development of tourism as a national priority and examines the situation in the field and the given consultations have allowed to mention achievements, finds trends, highlight problems and suggest prioritizing areas for development of the field for the period 2014-2020. The overall objective of the Strategy is to boost tourism activity in the Republic of Moldova by developing domestic and inbound tourism. The SWOT analysis of the development of internal and inbound tourism is presented in Annex 2. In our opinion, this strategy justifies the financial support that has to be given to infrastructure rehabilitation of tourism areas and valorization of natural, historical and cultural heritage, to include them in the touristic circuit and promote them to attract tourists.

Investments in tourism will allow developing regions to use the advantages offered by the potential of tourism and cultural heritage in identifying and strengthening own identity in order to improve its competitive advantage in sectors with high added value and high qualitative and cognitive content, both on traditional markets and new emerging markets [5].

Tourism creates opportunities for regional and local economic growth and helps in creation of new jobs through cultural and natural heritage valorization, specific to each of the three development regions of the country.

In the author's opinion, valorization of tourism attractions in different parts of the country can contribute to the economic growth of some declining urban centers, by favoring the emergence and development of local enterprises, transforming areas with low economic competitiveness in areas attractive to investors.

Tourism activity creates demand for a wide range of goods and services purchased by tourists and tourism enterprises, including goods and services produced by other economic sectors (trade, construction, transport, food industry, handicrafts) [1].

In all developing regions, development of tourism attractions is largely limited by the quality of infrastructure of tourism areas, services in general, and of accommodation and entertainment services, in particular, all of these being major obstacles to tourism development.

It is expected that the implementation of the Tourism Development Strategy "Tourism 2020" will help to improve tourism areas infrastructure, services, accommodation and leisure facilities and through a sustained support domestically and internationally for Moldova's image, to increase the quality to European standards, of all the conditions for practicing tourism, with direct impact on tourism demand for Moldova as a tourism destination.

Tourism in the Republic of Moldova must become a balanced developed and competitive economic sector that capitalizes effectively the country's tourism heritage, promotes Moldovan hospitality at high standards and provides citizens leisure diversity.

**Fields of intervention.** In the author and the working group's view, that had developed the Tourism Development Strategy "Tourism 2020" for boosting tourism activity in the Republic of Moldova, for the development of domestic and inbound tourism, **5 areas of intervention are required** [3]:

1. improvement of the legal framework in the field of tourism in accordance with the requirements of the tourism market, adjusted to European standards;
2. valorization of the national tourism potential and promotion of Moldova's image as a tourism destination;
3. the regional development of tourism;
4. enhancing the training level of specialized staff and the quality of tourism services;
5. technological modernization of the tourism industry through the use of information technology and communications.

For the **first area of intervention** "*Perfectioning the normative framework in the field of tourism in accordance with the requirements of the tourism market, adjusted to European standards*", **9 actions** are needed:

**I-st action.** *Development of the legal framework on the assessment of tourism heritage and tourism zoning*, which will provide the development and approval of the Registry of tourism, development of the mechanism of assessment of tourism potential of administrative-territorial units based on the tourism Registry. In order to develop the Registry of tourism there is necessary to:



- establish the tourism sightseeing that have to be assessed;
- establish the mechanism for evaluation and methods of granting scores for the administrative territorial units;
- develop tourism zoning criteria of the country;
- include tourism areas determined in the National Land Management Plan.

**II-nd action. *Development of the legal framework on tourism routes, tourism signs*** will result in the inclusion of the concerned concepts in the legislation, development of methodological norms that will comprise the requirements and conditions for the creation, certification and registration of tourism routes.

For tourism signalization there will be developed a regulation or standard, where will be stipulated requirements for the construction and use of tourism signs in accordance with European standards, the content of tourism signs, also who makes orders, who manufactures, installs and who is responsible for the maintenance of indicators, penalties for intentional damage, etc.

**III-rd action. *Perfectioning the normative framework regarding the delimitation of tasks of tour operators and travel agencies*** will aim at increasing the accountability of economic agents, holders of tourism licenses, in forming the package of tourism services, enhancing the quality of sold products and services and protecting consumer rights. The aim of the action will be achieved by introducing specific requirements in legislation for the formation of tourism services packages, of the conventional liability for breaching the law on the formation of tourism services packages.

The amendments in the tourism legislation will create prerequisites for the development of the tourism market in an appropriately competitive environment and with a high quality of provided services, will help reduce the risks of purchasing poor quality tourism products, and tour operators will be able to get specialization on certain segments that would allow diversification of tourism offers, capable of meeting the most diverse wishes of tourists.

**IV-th action. *Improving the legal framework for ensuring the quality of tourism services*** will include:

- modification of the model of tourism contract on the provision of tourism services between the economic agent – owner of a tourism license and beneficiary of tourism services;
- development of new typological contracts in tourism: commercial agent contract, recreational contract, bailment contract, contract for providing transportation services for tourists, contract on providing accommodation services, contract on performance of tourist guide services;
- changing requirements and criteria for grading the tourist reception structures with functions of accommodation and food services;
- review the requirements concerning tourism transportation.

**V-th action. *Improving the legal framework on the protection of tourism services consumer rights***. In order to increase the quality of tourism product and ensure consumer's protection it is necessary to develop quality standards of tourism services, tourism services certification mechanism, rules of use of Tourism Label of the Republic of Moldova.

Mechanism to ensure the quality of tourism services and consumer protection will also provide the control of the tourism activity. To this end, the **Specialized Body of Central Public Administration** will perform, based on risk factors, controls on the activity of agents of tourism market.

**VI-th action. *Development of the legal framework on the activity of tourism guides***. The action will include the development and inclusion in the legislation of provisions regarding the activity of tourism guides: who can become a tourism guide, who approves the terms of selection, training and use of tourism guides, how the qualification level is being assessed, what are considered as contraventions in the activity of tourism guides and so on. The regulatory framework will contain methodological norms on the selection, training and use of tourism guides and a Regulation related to the certification of tourism guides, which will include: guides categories, the procedure of attestation, requirements for activity, activity control.

**VII-th action. *Development of a mechanism for organizing and functioning of the structures of tourism information and promotion***. To this end, in the Law no. 352-XVI of 24 November 2006, there will be introduced provisions on the conditions of organization and operation of office and tourism information and promotion centers, there will be extended the list of structures which have the right to establish tourism promotion and information centers, will be exposed their duties, after which there will take place the development of the legal framework on the creation of the Tourism Information office and of the Framework-regulation – on the organization and operation of tourism promotion and

information centers.

**VIII-th action. Simplification of procedures related to starting a tourism businesses in rural areas** will contain the development and inclusion of provisions in the legislation regarding the start of businesses in the field of rural tourism, namely the introduction in the Law no. 352-XVI of 24 November 2006 of a new chapter "Development of rural tourism", simplifying classification procedures for tourism accommodation structures and modification of the Methodological norms concerning the classification of tourism reception structures with functions of accommodation and catering, referring to structures from the rural areas.

**IX-th action. Improving statistical tools and the mode of collection, processing, validation and dissemination of statistical data on tourism** includes the following activities:

- a) improvement of the mode of collection, processing, validation and dissemination of statistical data on tourism;
- b) gradual implementation of the electronic reporting module on tourism statistics, using the Internet network;
- c) gradual implementation of the Satellite Account in Tourism.

**For the second area of intervention "Valorization of national tourism potential and promotion of the Republic of Moldova's image as a tourism destination",** there are **8 actions** necessary to be achieved:

**I-st action. Diversification of tourism promotion tools**, which will include the development of a policy of promoting tourism potential and marketing plans, drafting, editing and distribution of promotional materials: advertisings, maps, travel guides, tourism events organization, use of the Tourism Label of the Republic of Moldova in promotional materials, participation in exhibitions in the country and abroad, etc.

**II-nd action. Including the national tourism potential in the international tourism circuit**, which will be achieved through certification of routes and tourism sightseeing, connection of domestic routes to European tourism routes, creation of common tourism routes with neighboring countries (eg. "Wine Route", "Monasteries of Bessarabia" "Medieval Jewelry: Hotin, Soroca, Suceava fortresses"), etc.

**III-rd action. Valorization of active forms of tourism at present**, which will include activities on the development of wine, business, rural, spa, religious and tours tourism,.

**IV-th action. Development of forms of tourism that need to be boosted**, which will include activities on boosting the cultural, gastronomic, social, sporting, automotive, weekend, urban, nostalgic and ecologic tourism.

**V-th action. Development of a perspective form of tourism**, which will include the implementation of activities that would boost the development of academic, transit, water, medical and adventure tourism.

**VI-th action. The diversification and enhancement of types of recreation** that will be achieved by promoting the locations and types of recreation, with their subsequent inclusion in tourism offers.

**VII-th action. Diversification of tourism destinations on outbound tourism under agreements to be concluded with states which are of interest for tourists from the Republic of Moldova**, will include consultation with economic agents from the field of tourism and civil society in order to identify new destinations of interest to the outbound tourism and increasing bilateral and multilateral collaboration with the countries concerned, which will result in agreements on cooperation in the field of tourism.

**VIII-th action. Collaboration with the Diaspora to promote the country's image and attracting foreign tourists** will be achieved by organizing in the country jointly with the Moldovan Diaspora, of promotion actions of the country, the organization in their countries of residence, during national and traditional holidays of cultural and tourist events, editing and distribution through Diaspora associations of leaflets about traditions, customs and national tourism; support, based on partnerships, of projects of national and international importance in the field of tourism between economic agents in the country and the Moldovan Diaspora.

**For the III-rd area of intervention "Regional development of tourism",** it is necessary to implement **6 actions**.

**I-st action. Carrying out the tourism zoning of the country**, which will contain:

- a) inventory and records of tourism heritage which will be achieved by completing the Registry of tourism, according to its structure and official documents for registration of tourism heritage;
- b) assessment of the tourism potential of administrative – territorial Units according to the content

of Registry of tourism and carrying out the country's tourism zoning in accordance with the approved methodological norms;

c) inclusion in the National Land Management Plan of highlighted tourism areas.

**II-nd action. *Identifying and valorization of investment opportunities***, which will contain:

- development and implementation of projects funded from national and international funds;
- attracting investment projects and grants in the tourism industry;
- promoting investment opportunities in tourism during business meetings;
- organization of events such as the Forum of investment in tourism, trainings for writing and implementing projects, etc.

**III-rd action. *Support and stimulation of economic agents from the tourism industry that contribute to the development of domestic and inbound tourism***, will be achieved by:

- organization of events for awarding the economic agents from the field of tourism;
- free participation economic operators in the tourism industry that contribute to the development of domestic and inbound tourism in the national stand of the Republic of Moldova at international exhibitions;

- free inclusion of economic agents in printed promotional materials edited by the state, etc.

**IV-th action. *Modernization of tourism infrastructure and planning of tourism destinations***, which will be achieved by implementing tourism projects financed from various sources, but mainly from the Regional Development Fund.

**V-th action. *Establishment of a tourism-pilot zone***. The purpose of this action is to create a tourism – pilot zone with adequate infrastructure that will serve as a model for tourism development. In this respect, a feasibility study will be conducted to identify the most appropriate locations and ways of their creation, followed by the project development and establishment of the zone.

**VI-th action. *Development of an efficient mechanism of cooperation with local authorities***. Activities within this action are directed towards:

- a) designation of the persons responsible for tourism development in the local authorities of the second level;
- b) training of responsible for tourism development in the local authorities of the second level;
- c) coordination by the **Specialized Body of Central Public Administration** of the development and implementation of local policy documents of tourism development;
- d) creation of tourism promotion and information centers in the regions with tourism potential;
- e) creation and exploitation of local tourism routes;
- f) creation of local registers of tourism;
- g) development of recommendations for the development of rural tourism, etc.

**For the fourth area of intervention "Improving the training level of specialized staff and the quality of tourism services", 4 actions** are required to be achieved.

**I-st action. *Adjusting training programs for specialists in the tourism branch to market requirements*** will be achieved by updating the nomenclature of functions of tourism and their description, revision of academic curricula in the field of tourism, development of curricula for new specialties as required by the tourism market.

**II-nd action. *Diversification of opportunities for staff perfectioning***, will include:

- elaboration and implementation of plans for staff perfectioning,
- organization of seminars, conferences, thematic round tables;
- exchange and training of specialists in the field from abroad;
- training of tour operators on the creation of tourism packages through information technologies;
- inviting foreign IT specialists in tourism, for training and transfer of new technologies in the provision of tourism services, etc.

**III-rd action. *Enhancing the level of compliance with quality standards in tourism*** will be achieved by:

- intensification of the classification process of tourism reception structures with functions of accommodation and catering. This action will include: record of all accommodation structures, identification of unclassified accommodation structures, classification of tourism reception structures with functions of accommodation and catering, control on compliance with classification requirements;
- checking the quality of tourism service provided by the agents of tourism market. This will be done through thematic checks on the work of agents of tourism market, etc.

#### **IV-th action. Counteraction of the phenomenon of illegal activities and illegal work in tourism.**

In pursuit of this action, there will be concluded cooperation agreements between the **Specialized Body of Central Public Administration** and various state agencies concerned to combat illegal activities and illegal employment in tourism; thematic working groups will be created formed of representatives of the Tourism Agency and other ministries and their subordinated institutions that will undertake joint action to combat these phenomena.

**For the fifth area of intervention "Technological modernization of the tourism industry through the use of information technology and communications", 4 actions** are necessary to be achieved.

**I-st action. Creation and implementation of the evidence mechanism, in an electronic format, of the tourism potential of the country.** This action will be achieved by developing an electronic database on the tourism potential, which will result in the creation, development and functionality of the Automated Information System "Registry of tourism", interoperable with other banks and databases on tourism potential, and at a later stage, the creation of the mechanism of reflection on the online map of the location and information about the tourism sightseeing from the Registry of tourism through the creation and use of the Automated Information System "Digital map of tourism potential".

**II-nd action. Creation and implementation of the mechanism of electronic statistic recording and reporting,** will be achieved through the conclusion of the agreement between the **Specialized Body of Central Public Administration** and Electronic Governing Center on connecting to the platform "M-Cloud", development of forms of electronic reporting "Report on the use of travel vouchers", 1-TUR and 1-B-SC, with the subsequent connection to SIA "E-reporting".

**III-rd action. Gradual transition to provision, in an electronic form, of tourism services** will be performed through 2 areas: public and private. In the next years, there will take place the transition to electronically receiving, by state institutions, of requests of classification of tourism accommodation structures and certification of tourism guides. Among the actions that have to be taken should be mentioned the development of the Concept of classification service in the form of e-service, in accordance with the single desk of tourism principle and placing the service of classification of tourism accommodation with functions of accommodation and catering on the Public Services Portal [www.servicii.gov.md](http://www.servicii.gov.md). During the development of the Regulation of certification of tourism guides, there will be provided the way to receive applications for certification in an electronic format.

**IV-th action. Diversification of tourism promotion instruments in electronic form** shall contain:

- development and launch of websites to promote tourism of the Republic of Moldova;
- creating accounts for the country's tourism promotion on social networks;
- development and implementation of electronic orientation applications and tourism promotion, etc.

Within the portal, the specialized tourism information will be presented through audio travel guides, electronic tourism brochures, with the possibility of uploading images in real-time or videos through modern technology (GPS, digital guides, smart phones, etc.).

**Conclusion.** The important role that tourism should play in developing the economic and social future of the Republic of Moldova is undeniable. Tourism must have a considerable positive impact on the economic development of areas and regions of tourism attraction. The most important positive effects of tourism refer to the contribution in currency, contributions in government revenues, generation of opportunities for business and employment of human resources.

Tourism expenditure made by foreign tourists and services exports generate significant revenue for the economies of receiving countries and stimulate necessary investment to finance other sectors, thus accelerating through the multiplier effect, the economic growth and development.

Tourism development is justified by the fact that tourism helps to ensure funding sources for conservation of natural areas, arts, crafts, historical and archaeological areas, some cultural traditions, as these items represent attractions for tourists.

However, many efforts have to be made in order to ensure that the potential of the tourism industry of the Republic of Moldova is fully valorized. Both government and tourism branch will have to find solutions to a large number of challenges, to ensure that maximum benefits are achieved for the economy and society in a sustainable and long term.

Long-term planning at regional and national level is a prerequisite for generating investor confidence and organization of successful and sustainable development of tourism in the Republic



of Moldova.

Principles that should guide the design and implementation of policies for tourism development in the Republic of Moldova, in our opinion, are:

- creating a positive image of the Republic of Moldova as a tourism destination by promoting the national tourism brand;
- develop and strengthen inbound tourism by supporting tourism products and specific marketing activities;
- creation of a diversified and competitive tourism offer by supporting the development of domestic and international investments, leading to the increased volume of tourism activity and respectively, of tourism traffic;
- stimulating the development of qualitative tourism offer, enabling the increase of revenue in domestic and foreign currencies in the tourism filed, as well as the increase of the share of tourism in GDP;
- increase of net revenue of the population involved in servicing tourists and increase the absorption level of labor force;
- sustainable valorization and restoration of the cultural heritage through the creation and modernization of related infrastructure;
- creation of Tourism Information and Promotion Centers to increase the number of tourists;
- establishment of an integrated and computerized system of the Moldovan tourism offer;
- decentralization of the decision making process from the central level, to the local public administration of second level;
- ensuring a partnership between all actors involved in the development of tourism industry;
- planning the use of natural and human resources through programs and projects to attract investments;
- co-financing through the financial contribution of the various actors involved in implementing programs and projects for tourism development.

Implementation of those actions, which were described in this article, in our view, would accelerate the pace of development of the tourism industry and the community could become the main beneficiary of the positive effects generated by this branch.

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## EFFICIENCY OF BUDGETARY EXPENDITURES: SYSTEMIC APPROACH

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*Currently, Romania has made considerable efforts to maintain the course of the national development on a constitution of an innovative economy. Therefore, the researches directed through assessing the quality of development directions in accordance with its own budget possibilities, defining government priorities, and then the formation, planning of budget expenditures for certain periods and subsequent evaluation of the effectiveness of their enforcement are relevant. The study aims to outline the elements of a systematic approach in evaluating the budget, which will be more revealing and suitable to formulate conclusions and recommendations on adjusting the activity of all state institutions to ensure the necessary conditions for stimulating the long-term economic growth. The main methods applied in this scientific study are based on a systemic approach to study the concepts and situation of the analyzed branch. During the research there were used the following classic methods: systemic methods, logical and dialectical methods (scientific abstract, analogy, analysis and synthesis, induction and deduction).*

**Keywords:** budget, budget revenues, budget expenditures, economic efficiency.

*În prezent, România face eforturi considerabile pentru menținerea cursului dezvoltării naționale pe vectorul constituirii unei economii inovative. De aceea, cercetările orientate spre evaluarea calității direcțiilor de dezvoltare în concordanță cu posibilitățile propriului buget, definirea priorităților guvernului, iar apoi și formarea, planificarea cheltuielilor bugetare pe anumite perioade, precum și evaluarea ulterioară a eficienței executării lor sunt relevante. Studiul de față își propune drept obiectiv de bază evidențierea unor elemente de abordare sistemică privind evaluarea eficienței bugetare, care va fi mai revelatoare și potrivită pentru a formula concluzii și recomandări privind ajustarea activității tuturor instituțiilor statului, în vederea asigurării condițiilor necesare pentru stimularea creșterii economice pe termen lung. Metodele principale aplicate în prezentul studiu științific sunt fundamentate pe o abordare sistemică a studierii conceptelor și a situației domeniului analizat. Pe parcursul cercetării au fost utilizate următoarele metode tradiționale: metoda sistemică, metoda logică și cea dialectică (abstracția științifică, analogia, analiza și sinteza, inducția și deducția).*

**Cuvinte-cheie:** buget, venituri bugetare, cheltuieli bugetare, eficiență economică.

*В настоящее время Румыния предпринимает значительные усилия для поддержания курса национального развития на векторе формирования инновационной экономики. Поэтому, исследования оценки качества направлений развития в соответствии с возможностями собственного бюджета, определение приоритетов правительства, а затем формирование, планирование расходов бюджета на определенные периоды, а также последующая оценка эффективности их применения актуальны. Целью исследования является выделение отдельных элементов системного подхода в оценке бюджетной эффективности, более показательной и подходящей для формулирования выводов и рекомендаций по регулированию деятельности всех государственных учреждений в целях обеспечения необходимых условий для стимулирования долгосрочного экономического роста. Основные методы, применяемые в этом научном исследовании, основаны на системном подходе к изучению понятий и ситуации в проанализированной области. В ходе исследования были использованы следующие обычные методы: системный, логический и диалектический (научная абстракция, аналогия, анализ и синтез, индукция и дедукция).*

**Ключевые слова:** бюджет, бюджетные доходы, бюджетные расходы, экономическая эффективность.

**JEL Classification:** H68, H61, H72, H60, H87, E63.  
**CZU:** 336.14(498)

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**Introduction.** The main objective of the fiscal-budgetary policy in Romania is represented by the increasing absorption capacity of the Romanian economy of available resources both from the collected taxes from the budget and from grants received from the European Union. In order to ensure economic stability and structural reforms, Romania has to direct all efforts towards reducing the level of ineffective budgetary spending, which will change dynamically the selection of priorities of the state budgetary policy.

This fact tells us clearly about the simplified approach in assessing the size of the public sector, realization of tasks on different articles of the budget, etc., finding the fact that increase or decrease of the coefficient for the time period accepted for consideration is defined as the ratio of budget expenses actually incurred by the amount of change in GDP during the same period. Inadequacy of such a method is not only in the fact that besides simplified calculation government transfers will remain out of GDP, but especially that remains unclear in this case, not only differentiation of results in certain (specific) groups, articles and directions of budgetary expenditures but, and most important, hidden causes of inefficient use of budget funds can not be identified. As a result, there will be difficult the search for effective tools that could eliminate this inefficiency. However, the state should not adopt the solution that costs the least, nor the one that produces the most, but the one that provides the greatest difference between revenues and costs evaluated in money [1].

**Methodological issues regarding the evaluation of efficiency of budgetary expenditure.** In other news, the projection of fiscal-budgetary policy in the medium term is based on its anchoring in several important key economic and institutional milestones: the macroeconomic balance, fiscal-budgetary responsibility and financial discipline. The balanced conduct is continued, it began in the second half of 2012, with the sustainable fiscal consolidation and, in this context, the economic recovery.

Among the fundamental objectives related to taxes mentioned in the Government Program 2013-2016, there can be mentioned simplification of taxation and creation of a predictable fiscal-budgetary environment, stimulating for the development of private and public economic environment.

*Measures to increase the efficiency of public spending and investment promotion:*

- a) cash deficits and ESA stand at 1.4% of GDP for the period 2015-2016;
- b) structural deficit in 2017 is estimated at 1% of GDP;
- c) limiting the structural deficit promoted by the *Treaty on Stability, Coordination and Governance in the Economic and Monetary Union* signed by Romania on March 2, 2012 drives slowly to a fiscal discipline, responsible spending of public money, which for a country like Romania, given the negative historical experience, can be a significant advantage;
- d) *shifting the emphasis in fiscal policy after 2012 on targeting structural balance* allows to play a role in stabilizing the economic cycle, being possible by installing the institutional framework required by the New Treaty Tax – important tool for strengthening fiscal discipline and development of policies [2].

In these circumstances, now it is necessary to develop a systematic approach to assess the effectiveness of the budget that will be most revealing and suitable to formulate conclusions and recommendations on adjusting the activity of all state institutions, in order to ensure the necessary conditions for stimulating long-term growth. To achieve these objectives, the analysis of efficiency of budgetary expenditure and procedure of formation of priority development directions are crucial.

In this context, we would like to bring to the fore the example of Finland, which showed the world a successful historic leap from raw material economy to an innovative and competitive high-tech economy. Meanwhile, it placed as a first issue the problem of accelerated development of national human capital through productive changes in education, science, health, etc. Finish economy currently holds the top positions in the world in innovation and competitiveness. There is no need for specific evidence that effective development and the quality of economy, reduced to innovative development and growth, requires an efficient public administration, budget and institutional regulation.

The literature reveals that for each direction of budget expenditure, three parameters are important. They are:

- The value of financial investments – government spending according to a budget heading (direction, sector, etc.);
- Investment period, after which repayment begins (or will appear another effect), with a breakdown of finances in the steps of obtaining and use of budget funds;
- Total revenue value obtained based on the results of distribution activity of budgetary funds (public expenses) and income (result) for each specific area of expenditure. Of course, fiscal policy

includes the so-called financing of non-market services (public administration, defense, education, health and others), but mainly these spheres are also providing results, contributing to the creation of GDP.

One of the necessary principles, but certainly not sufficient, which can be used to assess the effectiveness of the budget is a comparison between expenses and income (cost-benefit) for some period of time and for the whole period of budget planning.

It is necessary to take into account that increase of budget spending depends entirely on GDP growth of the country and on the possibilities to make loans – foreign and domestic [3]. Also, internal borrowing depends also on GDP and its dynamics from previous acts of lending and dynamics of real income of population.

But a simple comparison on chapters of expenditure and the obtained results will not provide an accurate assessment of the effectiveness of budgetary spending, not to mention the fact that, based on such an evaluation, there cannot be determine whether funding should be increased or reduced on some chapters and in what amount. Moreover, the budgetary expenditure on different chapters – economic development directions are also investment flows in various fields, interacting with each other, strengthening or diminishing the result after one or the other priority of development.

The economic models of investment (classical) decision-making process, evaluations of results and their effectiveness either does not work or fit poorly with the conditions, which represent the economic practice. A big problem of patterns designed to explain economic growth and provide scenarios for recovery is to implement these models. There are large gaps in knowledge transfer between those who develop models (academics, researchers) and those who should ensure the smooth running of the economy (both governments and businesses). Therefore, in order to develop approaches for analyzing the efficiency of budgetary expenditure, there is appropriate to apply the principles of separation and synthesis known from the field of technological development of the economy [4].

Since budget spending lead to different distributional effects on wellbeing, their assessment is required, as well as the impact of budget expenditure programs. Impact assessment aims to improve the quality of information available to decision makers, people that should correctly understand the consequences of taking or not taking a particular policy: costs, benefits and distributional effects of their decisions [5].

Budget expenditure should be spread over the main areas and groups, with the development of an evaluation algorithm for each group, and then forming a specific "portfolio" of certain areas of budgetary financing like the investment projects, which enable the application of already known tools and methods of optimization the investment portfolio and well known analysis algorithms. But such units are not very suitable for carrying out evaluations of efficiency of budgetary expenditure and look for necessary algorithms of systemic analysis, because in each area mentioned there are a number of similar economic subjects according to some commonalities [6].

Consequently, the areas identified for further consideration can be divided into groups of subjects, to which funds are allocated within each area. A similar procedure is used in some way in budget planning, but its impact on power efficiency of budgetary expenditure and effectiveness of operating of objects that receive finance is underestimated.

The subsequent systematization of economic agents who receive budget funding, despite of the source of obtaining finance, because it is important to review the efficiency of spending, relies in the selection of similar items within each group of spending based on the principle of "destination" of budget funds allocated to them. The embodiment of such a destination (one of the possible) is the so-called public procurements.

Before the selection phase and the formation of similar groups of expenditure, it is necessary to define the basic characteristics and principles of such selections, allowing to assess the efficiency of budget spending in the future. Of course, it would be wrong to put the task of analyzing the efficiency of state budget spending in some absolute coordinates, taken in isolation from the direction of investment and time of their appointment, and the system status during the examination and evaluation of its potential changes. Moreover, it seems inappropriate to achieve such an analysis, without solving the problems of the establishment of corrective measures, which have a positive impact on the economic growth. An important factor is time – track after economic changes associated with the capitalization of allocated budgetary funds.

In this respect, the basic constants of a systematic approach to the evaluation process of the effectiveness of the budget should be [7]:

a) Evidence of the budget process dynamics: comparison of assessment of the expected effect within the investment direction at the moment of decision making on the level and the need for funding, with the assessment and relevance of this direction at time of the analysis of result;

b) Invariability of accepted criteria to assess the effectiveness at the beginning and end of the period of the carried out assessment;

c) The cycling of the efficiency evaluation process after each corrective action on the system, being necessary to monitor changes in the level of efficiency of budget expenditures;

d) Budgetary expenditures incurred should not be a reason for growth or expansion of financing, in case when the direction finished the development;

e) Qualitative assessment of the effectiveness of budget expenditures destinations, highlighting the immanent values of spending, whose reduction is not possible for social considerations.

Given the cyclical nature of the processes associated with the formation, planning and execution of budget expenditures, ie the presence of the starting point – the beginning of the process, just relying on accepted priorities of the state development, may propose some primary criteria necessary for evaluation: necessary characteristics, budgetary criteria for future projects of any orientation.

Thus, it becomes appropriate to develop a general evaluation criteria system, which must remain immutable, at least at the beginning and end one of the examined periods of cycle of planning, budget allocation and actual recovery. Strategic development objectives ensure the formulation of objectives, which establish the necessary administrative decisions that also determine and assess the effectiveness of budget expenditures tactics.

The aim to assess the effectiveness is to develop and optimize the budget, ensuring the minimization of inevitable losses in the public sector [8].

### **Conclusions**

However, taking into account the strategic objectives of budgetary policy, we can point out several milestones that could be effective for a period of perspective:

1) Transition to strategy to boost the economic growth where budget financing instruments and development of state regulation will be subordinated to the task of keeping the potential to increase the efficiency in all areas, with an increase in the state's rate, at least in the key sectors of the economy;

2) Giving up on the heavily import in high-tech areas, an active process of import substitution, with the proper positioning of finances in the country's budget;

3) The concentration of investments in a new national product, proceeding exclusively from the presence in it of a key parameter of competitiveness on the domestic and foreign markets.

In order to achieve strategic objectives, management of budget processes should be based on:

- Efficiency of planning procedures, distribution and exploitation of budgetary resources, increasing efficiency of the executors interaction with government customers, subcontractors and partners, a high level of implementation of budgetary projects.

- The unconditioned execution of contracts and contractual obligations within the determined terms.

- Activism, continuously improvement of quality management system operation; maintaining and increasing product quality indicators produced for budgetary needs; compliance of products and projects of international standards.

- The steady growth of labor productivity; reducing production costs and other costs and expenses of manufacturing.

Formation of future financial conditions for increase in production, taking into account future development projects, with the attraction to their development of national organizations of advanced research.

The listed factors required for the efficient use of budget, outlines the general operational circle of questions, algorithms whose solutions are fairly well known and familiar to companies and organizations involved in projects implementation from the budget. Their condition and prospects should be the object of evaluation in the allocation of budgetary funds.

However, budgetary policy will support the economic reform program and macroeconomic stabilization through maintaining the budget deficit at a prudent level, improve collection and increase revenues.

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**PRIORITY DIRECTIONS OF INCREASING  
THE INVESTMENT POTENTIAL OF THE CREDIT  
SYSTEM OF THE REPUBLIC OF MOLDOVA**

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*Actuality of the research is determined by the need to increase the efficiency of investment lending activity. The aim of this article is to study and identify opportunities for increasing the investment potential of the credit system. For research there were applied general scientific methods, and particularly statistical method, the method of extrapolation, analogy, institutional analysis. As a result, based on the performed studies there are determined some priority directions to increase the investment potential of the credit system of the Republic of Moldova. Thus, for the investment potential improvement of the credit system of the Republic of Moldova it is required to complete the legal and normative framework which controls the investment lending activity; creation and widening of long-term credit resources; improvement of investment lending mechanism in the real sector of the economy; absolute development of investment lending system by creating investment banks.*

**Keywords:** *investment potential, credit system, investments credit, real sector of economy.*

*Actualitatea cercetării este determinată de necesitatea eficientizării activității de creditare a investițiilor. Scopul acestui articol constă în studierea și identificarea posibilităților de creștere a potențialului investițional al sistemului de credit. Pentru cercetare au fost aplicate metodele științifice generale, în special metoda statistică, metoda de extrapolare, analogie, analiza instituțională. Drept rezultat, în baza studiilor efectuate sunt determinate unele direcții prioritare de creștere a potențialului investițional al sistemului de credit al Republicii Moldova. Astfel, pentru sporirea potențialului investițional al sistemului de credit al Republicii Moldova este necesară perfecționarea cadrului legislativ-normativ ce reglementează activitatea creditării investiționale; crearea și lărgirea bazei de resurse creditare de lungă durată; perfecționarea mecanismului creditării investiționale a sectorului real al economiei; dezvoltarea completă a sistemului de creditare a investițiilor prin crearea băncilor investiționale.*

**Cuvinte-cheie:** *potențial investițional, sistem de credit, creditarea investițiilor, sectorul real al economiei.*

*Актуальность исследования определяется необходимостью повышения эффективности деятельности по кредитованию инвестиций. Цель данной статьи состоит в том, чтобы изучить и выявить возможности для повышения инвестиционного потенциала кредитной системы. Для исследования были применены общие научные методы, в частности, статистический метод, метод экстраполяции, аналогии, институциональный анализ. В результате, на основании проводимых исследований, были определены некоторые приоритетные направления для повышения инвестиционного потенциала кредитной системы Республики Молдова. Таким образом, для увеличения инвестиционного потенциала кредитной системы Республики Молдова необходимо совершенствование нормативно-правовой базы, регулирующей деятельность инвестиционного кредитования; создание и расширение ресурсной базы долгосрочного кредитования; совершенствование механизма кредитования инвестиций реального сектора экономики; полное развитие инвестиционной кредитной системы путем создания инвестиционных банков.*

**Ключевые слова:** *инвестиционный потенциал, кредитная система, кредитование инвестиций, реальный сектор экономики.*

**JEL Classification:** *E22, E51, G24, O16.  
CZU: 336.581.2(478)*

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**Introduction.** The globalization of economic processes requires urgent need of making structural changes in the economy of the Republic of Moldova. In the current conditions, investments are the main driver of economic growth, within the close interaction between credit system and the real sector of the economy. Demand for long-term loans does not coincide with the offer from commercial banks, and the level of profitability of enterprises of real sector of economy does not allow attracting necessary the investment volume. Further development of the economy depends on the structure and size of the investment potential of the credit system, which is largely determined by the presence of investment resources in combination with the efficient management of these resources.

Internationally, the issue of efficient functioning of the credit system has been in the focus of researchers and economists for decades. According to researcher Igonina L.L., the banking system institutions are focused on a considerable investment potential, which unlike many other institutions have exclusive possibilities of use of funds [1].

Growth opportunities of the investment potential were discussed by local researchers and economists [5-14]. In the sphere of investments in the Republic of Moldova, along with positive trends, negative phenomena are taking place, as well as contradictions in relations among population, traders from different branches of the economy and the state, contradictions aimed at the formation, mobilization and use of investment resources, both at macro and micro levels. On the one hand, there is the chronic lack of full financing of investment needs of enterprises from the main branches and other branches of the economy and, on the other hand, there is the existence of considerable investment resources that are not attracter in the investment process, mainly, due to the lack of appropriate investment market instruments and mechanisms of, and first of all, by the transformation mechanisms of household savings into real investments [5, p. 61].

Defining the investment potential of the credit system requires *mobility to invest efficiently, quickly and with a variety of options to use all available resources, skills and capabilities*. The main direction of financial and economic analysis of the investment potential of credit system represents a financial review, which corresponds to the economic content of economic and financial processes within the credit institution [2]. Investment potential of the banking sector is an important feature in the macroeconomic analysis of the banking system [3]. Economic and financial analysis in the sphere of credit is scientific and practical work that covers the collection, processing, interpretation of data on financial and economic processes, objective and subjective factors, under whose influence some risks occur and results of the activity of the credit system appear.

The purpose of economic and financial analysis of investment potential of the credit system comprises:

- Multi-objective evaluation of the performance of credit system, the current and future situation;
- Identification of growth stocks of the market value of the credit system, a more efficient use of internal resources of the credit system;
- Development of management decisions options on increasing the efficiency of activity and fulfillment of strategic objectives and tasks of development of the credit system.

Economic and financial analysis allows assessing the results and the effectiveness of investment potential use of the credit system, which serves as the basis for assessing the credit system management. Thus, the essential feature of economic and financial analysis is the ability to study and assess not only the activity of the credit system, but the management effectiveness of the credit system [4].

**Analysis and assessment of investment potential of the credit system of the Republic of Moldova.** Situation analysis of the credit system of the Republic of Moldova during the years 2007-2015 (table 1) shows a trend of decrease in the main indicators, in particular the reduction of ratio of total assets of the banking sector to GDP from 78.9% in 2013 to 56.7% in 2015, decrease of rates of return on assets from 3.91% in 2007 to 1.66% in 2015, and return on equity from 23.97% in 2007 to 9.06% in 2015.

During 2016, due to the fraud in the banking sector, which took place in 2013-2014, Republic of Moldova faced very tough monetary conditions with very high interest on the grounds that the economy was tried to be adjusted to the fraud. The effect produced is characterized by significantly reduced level of economic activity, the economy as a whole being located at the lower limit of development. The biggest influence of negative processes in the banking sector and in economy as a whole occurred in the **investment sector**. According to the National Bureau of Statistics data (table 2), in January-December 2015 investments in national economy accounted for 21123.3 mil. lei (current prices). Compared to the respective period of 2014, this amount was reduced by 9.4% (in comparable prices). Construction and



assembly works were recorded amounting to 10130.4 mil. lei, which is with 15.5% less than in 2014 (in comparable prices).

In the first semester of 2016 the volume of investments in long-term tangible assets totaled about 5.4 billion lei, with a decrease of 21% (in comparable prices) compared to the first semester of 2015. Of these, construction-assembly works constituted about 2.6 billion lei and decreased with 17.7%, respectively. This decrease was due to some negative expectations of economic agents and the general public about the economic and political situation in the country, especially due to the high cost of credit. Although the credit volume given to economy during the study period increased, reaching a value of 42593.3 mil. lei in 2015, the ratio of loans to GDP declined in comparison with 2013 from 44.29% to 35% in 2015 (the GDP value in 2015 calculated in current prices). Also, there was observed a decrease in the ratio of monetary savings to GDP of individuals from 42.4% in 2013 to 35% in 2015 (the GDP value in 2015 calculated in current prices). During ten years (2007-2015), money transfers from abroad to individuals amounted to 13978.76 mil. USD. It was expected that these funds to be recovered at a high efficiency. But today we can see that these funds have not been used effectively. Analysis of the made calculations on growth rates of GDP, loans and bank deposits of individuals, shows a lack of correlation between these indicators.

Table 1

**Situation of the Moldovan banking sector during the years 2007-2015**

| Indicators   | 2007    | 2008     | 2009    | 2010    | 2011    | 2012    | 2013    | 2014     | 2015     |
|--|---------|----------|---------|---------|---------|---------|---------|----------|----------|
| Gross Domestic Products, mil. lei                            | 46096,3 | 57 617,2 | 59152,8 | 64716,7 | 76784,8 | 81744,7 | 96521,3 | 105327,6 | 121851,0 |
| Total assets of the bank system, mil. lei                    | 31978,7 | 39122,7  | 39915,0 | 42302,9 | 49282,0 | 58168,5 | 76184,0 | 59978,6  | 69095,6  |
| The ratio of total assets of the banking sector to GDP, %    | 69,9    | 67,9     | 65,5    | 67,4    | 64,2    | 71,1    | 78,9    | 56,9     | 56,7     |
| Loans to economy, mil. lei                                   | 20883,8 | 25122,6  | 23884,1 | 26915,5 | 30962,9 | 35948,3 | 42632,7 | 41273,0  | 42593,3  |
| The ratio of credits to GDP, %                               | 39,1    | 45,3     | 40,4    | 41,6    | 40,3    | 44,0    | 44,2    | 39,2     | 35,0     |
| The balance of bank deposits of individuals - total mil. lei | 14214,0 | 17242,0  | 16610,0 | 18465,0 | 21277,0 | 25257,0 | 31433,0 | 34444,0  | 35098,0  |
| The ratio bank deposits to GDP, %                            | 30,8    | 30,0     | 28,1    | 28,5    | 27,8    | 31,0    | 32,6    | 32,7     | 29,0     |
| Money transfers from abroad to individuals (net) mil. USD    | 1660,09 | 1660,09  | 1182,02 | 1244,14 | 1443,47 | 1494,23 | 1608,98 | 1612,96  | 1129,36  |
| Profit, mil. lei   | 1093,5  | 1219,6   | -164,5  | 188,8   | 806,9   | 753,7   | 1151,4  | 923,7    | 1442,7   |
| Return on assets, %  | 3,91    | 3,49     | -0,39   | 0,54    | 1,8     | 1,1     | 1,56    | 0,85     | 1,66     |
| Return on equity, %  | 23,97   | 19,91    | -2,51   | 3,04    | 10,6    | 5,6     | 9,42    | 5,86     | 9,06     |

Source: According to the National Bank of Moldova and National Bureau of Statistics data [19, 20].

Table 2

**Main indicators of investment activity during the period 2007-2015 mil. lei**

|   | 2007     | 2008     | 2009     | 2010     | 2011     | 2012     | 2013     | 2014     | 2015     |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Investment in long-term tangible assets | 15 335,8 | 18 224,8 | 11 123,6 | 13 804,8 | 16 449,5 | 17 153,9 | 19 132,3 | 21 158,5 | 21 123,3 |
| Construction-assembly works             | 8 630,0  | 10 233,3 | 6 047,1  | 7 078,8  | 7 950,3  | 8 784,6  | 9 881,2  | 11 103,8 | 10 130,4 |
| Putting into operation of fixed assets  | 11 210,6 | 14 138,8 | 11 374,9 | 13 156,0 | 15 384,3 | 14 566,3 | 16 891,0 | 19 111,5 | 18 942,9 |

Source: National Bureau of Statistics [19].

Due to the insufficient development of the domestic banking system, a key issue of the Moldovan economy is in noncompliance of real investment with the level that will ensure the large-scale modernization of the national economy.

Based on the performed analysis, creation of an advanced credit system in the Republic of Moldova, increase of the share of financial services in GDP, including investments, sustainable economic

development, increase of the quality requirements of services provided by credit institutions require the need to increase the investment potential of the credit system, including the establishment of priority directions.

### **Priority directions of growth of investment potential of the credit system of the Republic of Moldova**

In order to increase the investment potential of the credit system of the Republic of Moldova is necessary to take actions in the following priority directions.

**1. Improvement of the legal framework governing investment lending activities, implementation of the best practices and modern standards in the field.** According to the strategy for implementing Basel III in the Republic of Moldova under the European legislative framework (Decision of the Executive Committee of the NBM no. 94 of 07.04.2016), based on analyzes performed within the NBM, a number of problems have been identified including [15]:

1) The existent normative base of NBM largely does not meet the current European standards. To succeed to cover the currently unregulated areas, NBM undertakes attempts to amend and supplement the existing regulatory framework to solve the existing issues. A modern regulatory framework similar to the European one would create prerequisites of sustainable development of financial institutions, open to strategic investors from abroad and the recognition of equivalence of the Moldovan framework by similar authorities from abroad.

2) Insufficient institutional capacity of the NBM in the context of exercising its banking supervision functions: NBM does not have all the tools to prevent problems in the banking system and the processes of modernization and development of the existing tools and techniques of supervision do not provide the increase of quality of performed activities in this respect and promotion of prudent behavior from the supervised entities.

3) Opaque quality and transparency of the organizational structure of institutions: the area is negatively evaluated by specialized international organizations, and in most of cases, their recommendations are aimed at improving the given situation.

Thus, eliminating the mentioned shortcomings, and applying the most modern techniques of supervision by the NBM will significantly contribute to improving the current positions of financial institutions in the Republic of Moldova.

It is also necessary to mention that the provisions of the National Development Strategy "Moldova 2020" stipulates that the *existent deficiencies in collateral management will be removed and the instruments of hedging will be developed so that excessive liquidity in the financial system to be targeted in an effective way to crediting the real sector of the national economy* [16]. By Government Decision no. 511 of 25.04.2016 there was approved the National Strategy for attracting investment and promoting exports for 2016-2020 and the Action Plan for its implementation [17]. Situation from the banking sector and the real economy shows the lack of ways of targeting excess liquidity for investment lending of the real sector of economy.

### **2. Long term creation and broadening of the lending resource base.**

Increasing the desire of population to save money and place them in banks requires:

- improving the reliability of banks and other financial institutions by their capitalization, improvement of prudential supervision, expanding refinancing instruments;
- financial education of the population;
- creation of new financial instruments for population, development of the collective investment field;
- development of the insurance risk system, including ensuring accountability for financial intermediaries, the formation of guarantee funds and compensation, the development of the derivative financial instruments market.

### **3. Improving the mechanism of investment lending of the real sector of the economy.**

Improving the mechanism of lending will comprise several phases including credit and investment resource forecasting, lending process, monitoring of use and repayment of loans.

Issues of further development of the lending mechanism, as part of the management system of banking activity, are closely related to economic development issues. For efficient operation of the banking system by the monetary authority (NBM) the following steps can be taken: stimulate lending by commercial banks to the real sector, create conditions for the development of new forms of lending, development of investment operations, providing facilities to banks that credit the real sector enterprises.

The most important and necessary condition for improving the credit mechanism is to extend the lending process and increase the competitiveness of credit institutions.

#### **4. Development of the business environment and improvement of the investment climate.**

For an effective and dynamic economic growth it is necessary to improve the mobility of capital in the economy by promoting sound macroeconomic policies.

#### **5. Complete development of the credit system of investment by creating investment banks for providing credits in medium and long term.**

Two types of investment banks activate in the modern credit system. First type of banks provide services exclusively related to the sale and placement of securities, and the banks of the second type – the provision of medium and long-term loans. Investment banks of the first type were developed in England, Australia, Canada, USA. These banks are prohibited from accepting deposits from the public and companies, their resources being formed by auto emission of activities securities.

Investment banks of the second type have been seen in a range of countries of Western Europe (Italy, Spain, Netherlands, Norway, Portugal, France, Sweden) and in developing countries. The main tasks of these banks consist in lending in medium and long-term of different branches and sectors of the economy, the realization of various specific projects in advanced technologies filed and government programs to stabilize the economy and socio-economic development. These investment banks activate in various operations in the capital market, the accumulation of savings of individuals and legal entities, performing loan granting in the medium and long term for companies. It should be noted that in some countries, investment banks perform the functions characteristic for both types of investment banks. In England, Canada, US investment banks of the second type do not exist, and long-term lending is carried out by other types of financial and credit institutions. A feature of investment banking activity is their targeting to mobilize long-term capital and making it available through the issuance and placement of shares, bonds, other securities, including long-term loans.

According to Government Decision no. 1015 from 01.10.98 on the creation of the Bank for Investment and Development of Moldova [18], the Government, jointly with the National Bank, had the intention to create a bank for investment and development. With great regret, this bank was not created, while the intention remained only on paper and the governmental document is in effect until today.

#### **Conclusions and recommendations:**

As a result of the conducted study on the priority directions of increasing the investment potential of the credit system from the Republic of Moldova, the following conclusions may be exposed.

1. The investment potential of credit system is one of the main factors of economic growth, stimulation and lending of the real sector of economy.

2. Investment potential was not fully utilized over the analyzed period, thus reducing the investment opportunities in the real sector of the economy and the competent entities failed to create the necessary prerequisites and conditions.

3. Although in the last years serious violations were admitted in the activity of the credit system, which affected the economic situation of the Republic of Moldova, overall, the investment potential of the credit system remains one of the major factors of economic growth, being necessary to make urgently profound structural changes in the economy of the Republic of Moldova, including in the banking sector.

4. In order to redress this situation, the competent bodies are to take concrete action on priority directions of increasing the investment potential of the credit system of the country, including improvement of the legal framework governing investment lending activity, creation and broadening the lending resource base in long term.

5. A decisive role in solving problems related to increasing the investment potential of the credit system of the Republic of Moldova lies in creating a development and investment bank.

The impetus for the successful realization of investment potential of the credit system is to create a developed infrastructure of the market economy, serving the sphere of investment lending to the real sector of the economy. For this purpose, it is necessary to perform the following actions.

1. Establishment of a flexible and efficient interaction system between the banking sector and the enterprises from the real sector, which would allow both to establish a correspondence between the required resources and available credit investments and their structure. This would enable the banking sector to carry out the organization of investment lending activities, involving a large number of enterprises.

2. The use of complex financial instruments, to reduce real interest rate on investment loans through the optimal combination of available range of financial products by the banks. High access to resources creates a higher demand, while the existing investment potential is being used more efficiently.

3. Creation of an effective system of stimulating investment activity by the state.

Creating a favorable investment climate through the actions described above is a macroeconomic condition important for the efficient use of the existing potential of the credit system that would allow achieving the goal on the development of investment credit system in the medium and long term, in competitive and efficient ways, able to ensure a high level of investment activity in the economy.

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**IFRS 9 APPROACH WITHIN THE  
„REGULATORY-ACCOUNTING” MIX**

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*The actuality of the present article is argued that once with the global financial crisis a serious problem in the process of managing risks in the banking sector appeared. This paper focuses on the main innovative elements introduced by IFRS 9. The key element is represented through the model based on expected credit losses, which replaced the incurred loss model of IAS 39. The model was designed to counteract one of the shortcomings revealed by the financial crisis – risk of impairment losses on loans. The purpose of the article is to familiarize stakeholders with major milestones and concepts related to IFRS 9. In the article the following research methods were used: the logical method of analysis and systemic synthesis, comparative method, classification method, the method of deduction, etc. The paper pointed out the technical details under which banks should consider the significant increase of credit risk. The paper stressed the need for an innovative model which could forecast potential losses from credit risks.*

**Keywords:** IFRS 9, impairment, credit risk expected loss, provision.

*Actualitatea prezentului articol este argumentată de faptul că odată cu criza financiară mondială a apărut o problemă stringentă în gestiunea riscurilor în sectorul bancar. Această lucrare se concentrează pe principalele elemente inovatoare aduse de IFRS 9. Elementul cheie este reprezentat de modelul bazat pe pierderile așteptate a creditului, care a înlocuit modelul de pierderi suportate IAS 39. Modelul a fost conceput pentru a contracara unul din neajunsurile relevate de criză financiară – riscul pierderilor din deprecierea creditelor. Scopul articolului este familiarizarea celor interesați cu principalele repere și concepte ce țin de IFRS 9. În articol au fost utilizate următoarele metode de cercetare: metoda logică de analiză și sinteză sistemică, metoda comparativă, metoda clasificării, deducției etc. Lucrarea a subliniat detaliile tehnice în baza cărora băncile ar putea evalua creșterea semnificativă a riscului de credit. Articolul a arătat necesitatea utilizării unui model inovativ care ar putea prognoza eventualele pierderi cauzate de riscuri de credit.*

**Cuvinte-cheie:** IFRS 9, depreciere, pierderea riscului de credit de așteptat, provizionare.

*Актуальность данной статьи аргументировано тем, что всемирный финансовый кризис выявил проблему связанную с управлением риска в банковском секторе. В данной статье рассматриваются основные инновационные элементы, принесенные моделью МСФО 9. Ключевой элемент представлен этой моделью основанной на ожидаемых потерь кредита, которая заменила модель понесенных потерь IAS 39. Модель была задумана для того, чтобы противодействовать одному из недостатков, выявленных в результате финансового кризиса – риск убытков после обесценения кредитов. Целью данной статьи является ознакомление заинтересованных лиц с основными этапами и концепциями, связанных с МСФО 9. В статье автор использовал следующие методы исследования: логический метод анализа и синтеза, сравнительный, метод классификации, дедукции и т.д. В работе подчеркнуты технические детали, в соответствии с которыми банки могут учитывать значительное увеличение кредитного риска. В статье показана необходимость использования инновационной модели, которая могла бы прогнозировать возможные потери от кредитных рисков.*

**Ключевые слова:** МСФО 9, ухудшение, кредитный риск, ожидаемый убыток, предоставление.

**JEL Classification:** E51, F34, H81.  
**CZU:** 330.131.7:336.77+006.44(100):657

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**Introduction.** The new IFRS 9 framework brought material changes in the area of impairment. The key element is represented by the expected credit loss model that replaced the IAS 39 incurred loss model. The model was conceived in order to counteract one of the drawbacks revealed by the financial crisis; the incurred loss model determined a delayed recognition of credit risk losses since no loss was recognized until a loss event occurred. The new expected credit loss model applies in principle to debt instruments recorded at amortized cost or at fair value through other comprehensive income. This model envisages to ensure a timely recognition of expected losses and a better distinction of the financial instruments that have significantly deteriorated in credit quality.

The model was conceived in order to counteract one of the drawbacks revealed by the financial crisis; the incurred loss model determined a delayed recognition of credit risk losses since no loss was recognized until a loss event occurred.

The key point of the new model is represented by the dual loss measurement: banks are obliged to recognize:

- a 12 months Expected Credit Loss (Stage 1) that applies to all financial instruments from the initial recognition in the context where there is no significant deterioration in credit quality;
- a lifetime Expected Credit Loss (Stage 2 and 3) that applies in case a severe intensification of credit risk intervenes either on an individual or collective basis.

There is an important difference concerning the recognition of interest rate revenue corresponding to Stage 2 and Stage 3; in case of stage 2, there is a total separation between interest recognition and impairment while interest revenue is computed based on the gross carrying amount.

Stage 3 determines the calculation of interest revenue based on amortized cost<sup>1</sup>.

The new framework eliminates the obligation for a credit event to have occurred before the credit losses are recognized. The new expected credit loss is based on three key concepts: probability weighted outcome, time-value of money and reasonable information that is available without triggering any effort or cost.

The new framework must be adopted from 1 January 2018 with early application permitted if the other IFRS 9 requirements are adopted at the same time.

## **1. Overview on IFRS 9**

### **1.1 Scope of IFRS 9 framework**

IFRS 9 applies to the following financial instruments:

- financial instruments representing debt instruments (loans, debt securities, bank deposits, trade receivables) that are valued at amortized cost;
- financial assets that are debt instruments valued at fair value through other comprehensive income;
- lease receivables<sup>2</sup>;
- contract assets<sup>3</sup>;
- loan commitments and financial guarantee contracts that are not measured at fair value through profit and loss.

### **Calculation of expected credit losses: presentation of key variables**

According to IFRS 9, credit loss is the difference between all contractual due cash-flows and all the cash-flows that an entity expects to receive, discounted based on the Effective Interest Rate. The calculation of expected credit losses is underpinned by a series of key variables:

- all contractual terms of the financial instrument over the expected life of the financial instrument<sup>4</sup>;
- cash-flows determined by the sale of the collateral or by other credit enhancement that is foreseen in the contractual terms;
- probability weighted amount that is determined based on a range of possible outcomes;

<sup>1</sup> Gross carrying amount net of impairment allowance

<sup>2</sup> As per IAS 17

<sup>3</sup> As per IFRS 15 (Revenue from contracts with customers)

<sup>4</sup> In case the expected life of the financial instrument cannot be reliably estimated, the entity is required to use the remaining contractual term of the financial instrument.



- time value of money;  
 - reasonable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions.

The expected credit loss is computed as a weighted average of credit losses where default risks represent the relative weights. In essence, the expected credit loss set forth by IFRS 9 is similar to the concept of „expected loss” promoted by Basel framework. The major difference in comparison with the Basel prudential framework is represented by the fact that the IFRS 9 expected credit loss is a „point in time” loss while the regulatory expected loss is a „through the cycle loss”.

Actually the 12 month expected credit loss is a part of the lifetime expected credit loss that will be generated if a default occurs within the 12 months after the reporting date (or a shorter period if the expected life of the financial instrument is shorter than 12 months), weighted by the default probability.

In order to compute a probability weighted expected credit loss, banks are required to estimate a range of possible scenarios, with the corresponding losses and the relative probabilities.

Banks are required to compute the expected credit losses based on discounted amounts. The discount rate must approximate the **Effective Interest Rate** of the asset. There is a series of principles that govern the Effective Interest Rate:

- in case of fixed rate financial assets, banks must use the Effective Interest Rate corresponding to the initial recognition of the instrument;
- in case of floating rate financial assets, banks must use the current interest rate;
- for a purchased or originated credit-impaired financial assets, banks must compute any changes in the expected credit losses using the credit adjusted Effective Interest Rate determined on the initial recognition of the financial asset;
- for loan commitments, banks must use the Effective Interest Rate of the asset that will result once the commitment is drawn down<sup>1</sup>;
- for financial guarantee contracts, banks are required to use the risk free rate;
- in case of lease receivables, banks must discount the expected credit losses based on the same discount rate used in the measurement of the lease receivable.

In order to compute the expected credit loss, banks have the flexibility to use a model according to their discretion. The main challenge is represented by the balance between historical information and forecasts of economic environment. As an example, banks have the optionality to implement a quantitative model linking economic fundamentals (GDP growth, inflation rate, interest rate, unemployment rate, real estate prices) to loss rate. In addition, it is mandatory for banks to review on a permanent basis the evolution of macroeconomic fundamentals in close correlation with the level of expected credit losses. This implies inclusively the recalibration of the expected credit losses based on back-testing methodologies and the review of estimation methodology.

In order to streamline the practical dimension of the current research, we consider a numerical example highlighting the specific case of a bank; this bank is characterized by the following statistics regarding the potential defaults:

Table 1

**Computation of provision for credit risk according to IFRS9**

| Reference date | Default risk over the next 12 months % | Default risk over the next 16/36 months % | Loss in case of default (in monetary units) |
|----------------|--|---|---|
| 01- Jun-14     | 5%                                     | 7%  | 150   |
| 31- Dec-15     | 7%                                     | 9%  | 230   |
| 31- Dec-16     | 2%                                     | 3%  | 19  |

Source: Author's research.

On the first reference date, the bank should recognize a credit loss provision reflecting 12 months expected losses corresponding to Stage 1:  $5\% \times 150 = 7.5$  monetary units.

On the second reference date, the bank assesses whether the credit risk has increased significantly in

<sup>1</sup> In case the Effective Interest Rate of the asset cannot be determined, banks must use the current risk free rate.

comparison with the first reference date. On the first reference date, the total credit risk as reflected in the total default risk amounted to 12% while on the second reference date it amounted to 16%. This upsurge proves that credit risk increase was significant. This triggers the recognition of a Stage 2 loss provision based on lifetime expected loss:  $16\% \times 230 = 36.8$  monetary units

On the third reference date, the credit risk has decreased in intensity since the total default risk amounts to 5%. In this context, the credit risk provision should reflect again the expected loss corresponding to Stage 1:  $5\% \times 19 = 0.95$  monetary units

This numerical example illustrates the dynamic computation of expected losses credit provisions, based on the evolution of default risk. The main challenge for the bank consists of applying a consistent set of criteria underpinning the assessment of the significant credit risk increase.

#### **Assessment of significant increases in credit risk**

An important aspect of the new impairment framework as per IFRS 9 is represented by the assessment of a potential increase of the credit risk since the initial recognition of the financial instrument. This is equivalent with a more severe credit risk profile, determining the obligation to estimate the expected credit loss over the lifetime of the financial instrument. The standard brings forward the necessity to estimate the lifetime expected credit loss before the item is impaired or defaulted.

The key variables underpinning the assessment of credit risk increase consist of:

- default risk specific to the financial instrument as at the reporting date;
- default risk specific to the financial instrument as at the initial recognition;
- expected life of the financial instrument;
- reasonable and supportable information that is available without undue cost or effort that might impact credit risk.

The standard does not bring forward a prescriptive approach/methodology concerning the assessment of credit risk increase. The assessment implies a holistic approach, focusing on various qualitative and quantitative factors. The standard brings forward an indicative list of factors/indicators based on which the assessment process can be conducted:

- significant changes in internal price indicators such as credit spreads;
- changes in the rates or terms of the financial instrument that would be significantly different if the instrument was newly originated or issued (i.e. more stringent covenants, more collateral, higher coverage ratio);
- important changes in the external market indicators of credit risk for a particular financial instrument or similar financial instruments with the same expected life (i.e. credit spread, credit default swap prices, changes in the price of a borrower's debt and equity instruments);
- actual or expected material change in the financial instrument external or internal credit rating;
- actual or potential adverse changes in business, financial or economic conditions that might trigger important changes in the borrower's capacity to satisfy the debt obligations (i.e. increase in the interest rate, increase of the unemployment rate);
- actual or potential adverse changes in the operating results of the borrower (i.e. decrease of operational revenues, upsurge in the financial leverage, liquidity shortfall);
- credit risk increase of other financial instruments of the borrower;
- actual or potential adverse changes in the regulatory, economic or technological environment of the borrower (i.e. this might trigger a decline in the customers' demand for company's products and implicitly a worsening of the company's operational performance);
- decline/important volatility in the collateral or guarantee value;
- significant changes in the expected performance and behavior of the borrower (i.e. increase of delayed contractual payments, significant increases in the number of credit card borrowers who are expected to exceed their credit limit).

The main challenge for banks would be represented by the assessment of the significance degree of the change in the various indicators that reflect the credit risk. The standard brings forward two criteria that underpin the assessment:

- original credit risk at initial recognition a certain percentage change in the default probability of a financial instrument with a lower credit risk will be more significant than for instruments with a higher credit risk;
- the expected life or term structure.

Default risk for a financial instrument with similar credit risk increases with the expected life of the financial instrument. An example in this regard is represented by a financial instrument with an initial maturity of 10 years that has the same credit risk after 5 years. In this case, banks should consider that credit risk has increased.

On the other hand, in case of a financial instrument that involves significant payment obligations close to its maturity, credit risk has not necessarily decreased.

IFRS 9 sets forth an important simplification according to which, if a financial instrument has a low credit risk, then the bank might consider at the reporting date that no significant increase of credit risk has occurred. This simplification was designed especially for financial instruments of high quality that do not require a periodic tracking of credit risk.

The standard provides three complementary indications based on which the low credit risk can be assessed:

- low default risk of the financial instrument;
- strong capacity of the borrower to meet the contractual cash-flows obligations in the short term;
- adverse change in economic and business conditions on a long term basis that will not significantly impact borrower's ability to satisfy its payment obligations.

A further indication concerning the assessment of a low credit risk is represented by the „investment grade” rating assigned to financial instruments. This implies a rating equivalent with/better than BBB- of Standard and Poor's/Baa3 of Moody's/BBB - of Fitch. Banks might map their internal rating to the external rating based on the application of similar credit assessment criteria.

The second operational simplification provided by the standard consists of the rebuttable presumption that credit risk has increased significantly when contractual payments are more than 30 days overdue. This is equivalent with a past due status that might be combined with forward looking information in order to identify a potential material increase in the credit risk. However, the bank has the optionality not to apply in a mechanical manner the 30 days overdue rebuttable presumption but mere to judge on the grounds of detailed information if the default status is relevant.

It might be the case that the 30 days overdue status does not reflect an effective but merely a technical default.

Bushman and Williams (2015) revealed that the main challenge would consist of the development of an extensive expert judgement. This expert judgement might be based on a discretionary set of criteria reconciling the need for expert flexibility in conjunction with the need to apply a conservative assessment approach. In addition, Bouvatier and Lepetit (2015) highlighted that the estimation of credit risk losses should still be governed by conservative assumptions.

#### **The impact of IFRS 9 on banking system**

The implementation of IFRS 9 will exercise an important impact on banking system that will have to readapt several components of their systems and controls in order to ensure compliance with the new accounting framework.

The most significant impact will be exerted at the level of the governance framework. Banks will be in the position to readjust their internal controls – audit, oversight, compliance – in order to properly exert supervisory activities at the level of the IFRS implementation. The organizational framework will be significantly impacted especially in the light of the internal systems that need to be restructured in order to enable the appropriate flow of relevant information, capturing key data specific to expected credit losses, at all the organizational levels.

The internal controls will be essential in the exercise of an appropriate oversight activity taking into account the important role played by the qualitative expert judgment in the computation and internal management of expected credit losses. Internal controls will ensure an adequate re-balancing, taking into account the strong subjective component of the expert judgment and the potential human error risk.

From a governance perspective, an important impact will derive also from the obligation to ensure an appropriate management information system that will allow the adequate reporting of expected credit losses parameters to senior and middle management.

However, the challenge will consist in the development of internal models specifically designed for the computation of expected credit loss. This will imply an important investment cost for banks as well as an intensive internalization process of new parameters that influence internal governance and risk management.

Due to the new components implied by the IFRS 9 framework, a very important aspect will consist in the validation of new internal models; in this regard, the set-up of an especially designated validation unit

is considered to be essential.

In this context, risk awareness strategy of the banks will automatically be impacted, generating new risk responsibilities within the organization. In addition, risk knowledge will have to be enlarged at all hierarchical levels. Management will extend its risk accountability implying additional risk expertise/knowledge.

Apart from the impact at the governance and risk strategy level, banks might have the opportunity to still leverage on some components of their activity that interfere to a significant extent with IFRS 9 framework.

Banks will valorize credit risk parameters – ratings, default history, past due status – for the purpose of the new standard as well. Ratings will be used in order to assess a potential increase of credit risk while default/overdue status serves as a back-stop measure for the significant intensification of credit risk, specific to Stage 2 and Stage 3.

Another important aspect is represented by the potential valorization of internal regulatory models for the purpose of the new standard as well; internal models used in order to compute regulatory internal risk parameters (Probability of default, Loss given default, Credit conversion factor) in case of institutions that valorize Foundation/Advanced Internal Ratings Based Approach might be reviewed for the purpose of IFRS 9. This will generate an important synergy effect since banks have the opportunity to align accounting and prudential regulatory frameworks.

However, important adjustments are needed since regulatory models have to be further reviewed in order to satisfy IFRS 9 requirements.

#### **Basel Committee principles on expected credit losses: a mixture between prudential and accounting framework**

Basel Committee issued recently a set of guiding principles concerning the expected credit losses. The principles reflect a potential bridge between regulatory and accounting expectations in the area of expected credit loss computation. A key variable is represented by the forward looking approach, including macroeconomic factors.

Basel Committee expects banks to develop macroeconomic forecasts in order to recognize in a timely manner expected credit losses. Development of macroeconomic scenarios will be performed in line with proportionality principle; banks that are significant in terms of size and complexity will be in the position to refine their macroeconomic scenarios in order to derive the impact of the most appropriate macroeconomic factors on expected credit losses.

The same expectation is incurred for banks of lower size but the complexity degree of methodological approaches is not similar to the most significant banks.

The key aspect is represented by the identification of potential and real macroeconomic events that might impact the expected credit losses. Banks should pay attention to the build-up of an appropriate set of economic hypothesis underpinning the most relevant macroeconomic factors exerting an important impact on the level and the manner of computing expected credit loss.

The documentation process is fundamental; banks should formalize the reasons justifying the set of appropriate macroeconomic scenarios selected for the purpose of expected credit losses computation.

Basel Committee brings forth 11 principles related to the infrastructure of expected credit loss computation, inclusive from the perspective of corporate governance and internal control mechanisms. More specifically, principles are structured on four main axes:

- board and management accountability in ensuring an adequate credit risk policy and provisioning;
- technical infrastructure of expected credit losses (i.e. computational methodology, rating assignment process, adequacy of allowances, robust processes and systems);
- oversight of modelling process (i.e. validation of expected credit losses models, role played by experienced credit risk expert judgment, appropriate disclosure framework concerning the relevant information relative to credit risk expected loss);
- expectations imposed on bank' supervisors responsibilities as for the assessment of banks' credit risk practices and adequacy of credit risk provisions.

Concerning the accountability of board and senior management, Basel Committee brings forward their responsibility to ensure an adequate credit risk policy and provisioning; the key focus is placed on ensuring a level of provisioning in line with three pillars: bank's policies and procedures, applicable accounting framework and relevant supervisory guidance. Basically, board and senior management

responsibility is concentrated mainly on internal control system.

Meanwhile, principles cover extensively the methodology used by banks in order to compute appropriate allowances for credit losses. The principle related to the methodological infrastructure places a special emphasis on robustness; the key aspect is represented by the assessment and quantification of credit risk in a comprehensive manner, covering all lending exposures.

Another important aspect is represented by the development of appropriate methodologies, in measure to ensure not only an adequate computation of expected credit losses but also a timely recognition.

The principle related to the assignment of an adequate rating envisages a grouping of exposures based on similar credit risk characteristics; this ensures the appropriate grounds for the computation of an adequate collective provisioning. This aspect has been highlighted extensively in the literature (Novotny-Farkas, 2011, Laurin, Majnoni, 2005). The authors brought forward that clustering of exposures based on homogenous features conditions upon the correctness of provisions.

Given the real challenge incurred by banks to develop or to readjust internal models in order to compute expected credit losses, an essential aspect will be represented by the validation activity. Basel Committee imposes to the bank the obligation to dispose from policies and procedures especially designed for the validation of internal models. In addition, the experienced expert credit judgement is specifically mentioned as a mandatory element in the context of mechanisms ensuring a proper reflection of all relevant risk components. In other terms, application of experienced credit risk judgement ensures that expected credit losses integrate relevant macroeconomic factors, following the development of macroeconomic scenarios.

The methodology shall be supported by an appropriate technical infrastructure; Basel Committee recommends banks to implement systems and processes that have the potential to streamline the effective computation of expected credit losses.

In addition, an adequate disclosure policy should be implemented by banks, enabling third parties to assess to what extent banks satisfy IFRS 9 requirements.

Apart from accountability requirements addressed to board and senior management, Basel Committee principles on expected credit losses demand bank supervisors to assess the adequacy of credit risk policies and credit risk allowances. In line with this, a special emphasis is placed on the supervisors' assessment of credit risk practices in correlation with capital adequacy. In this context, banks that practice riskier lending strategies are incentivized to capitalize adequately for the higher credit risk incurred. This need for enhanced capitalization is extremely important in the context where capital charges are designed to cover unexpected losses whereas credit risk allowances cover only expected losses. This aspect is extremely important in the light of IFRS 9 implementation: even if the switch from an incurred to an expected credit loss approach brings forward a more conservative approach in terms of provisioning, supervisors should pay attention to the manner in which capital charges are commensurate with the risks generated by lending practices (i.e. unexpected losses).

In this manner supervisors will benefit from a forecasting perspective as well; the expected losses will enable supervisors to assess future trends of credit risk. In line with these aspects, supervisors will be in the position to create a link between Point in Time and Through the Cycle losses.

### **Conclusions**

This paper elaborated on the new material changes brought by IFRS 9 framework in the area of impairment. The research pointed out the key element of the new standard – expected credit loss model that replaced the IAS 39 incurred loss model. The model was conceived in order to counteract one of the drawbacks revealed by the financial crisis; the incurred loss model determined a delayed recognition of credit risk losses since no loss was recognized until a loss event occurred.

The paper presented IFRS 9 scope of application as well as the key variables based on which calculation of expected losses is made (probability of default, loss given default, time value of money). The research concluded on the dual measurement approach introduced by IFRS 9; the conceptual differences between Stage 1 and Stage 2/Stage 3 expected credit loss models, with a special emphasis on the different calculation of interest rate revenue are brought forward.

The paper highlighted the technical details based on which banks might assess the significant credit risk increase. This is equivalent with a more severe credit risk profile, determining the obligation to estimate the expected credit loss over the lifetime of the financial instrument. The paper underlined the necessity to estimate the lifetime expected credit loss before the item is impaired or defaulted.

The paper revealed a series of challenges that banks might face in the implementation of IFRS 9.



Banks will be in the position to readjust their internal controls – audit, oversight, compliance – in order to properly exert supervisory activities at the level of the IFRS implementation.

However, the real challenge will consist in the development of internal models specifically designed for the computation of expected credit loss. This will imply an important investment cost for banks as well as an intensive internalization process of new parameters that influence internal governance and risk management.

The paper highlighted that banks might still leverage on the existing internal models used for regulatory purposes in the context of IFRS 9 implementation; the challenge will consist in the revision of the existing models in line with the methodology imposed by expected credit losses.

The paper brought forward also the mixture between regulatory and accounting framework in the context of IFRS implementation. For this purpose, a special emphasis is placed on the Basel Committee principles on expected credit losses. The research highlighted that the principles in question are structured on fourth main axis: board and management accountability, technical infrastructure of expected credit losses, oversight of modelling process and expectations imposed on bank' supervisors responsibilities as for the assessment of banks' credit risk practices and adequacy of credit risk provisions.

The paper concluded that the new standard will ensure the premises for a more risk driven approach of impairment process. This might streamline banks' risk assessment and risk management process. However, the real challenge for banks will be represented by the development of robust expected credit loss models that have the potential to ensure a proper capturing of relevant risk factors. Indeed, this will imply additional investment costs but on a long term basis banks might achieve an enhancement of their provisioning policy.

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## REFLECTIONS ON THE CONCEPT OF MANAGERIAL THINKING

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*This article addresses an issue of maximum importance for the vocational training system in the Republic of Moldova and for the management system. It describes and analyzes methods and techniques important for the development process of managerial thinking. Management methods are described in detail, being based on experiences in managerial development, characteristic features of each method, and accordingly its advantages. The investigation reveals the formation process of boundaries of thoughts and their impact on decision making (effective and ineffective). The author argues changes in experience of management standards in the new economic conditions. The author proposes a new algorithm in the analysis and improvement of managerial work. The emergence of crisis conditions requires the application of programs related to changes in all areas of activity of various economic structures. Research purposes proposed by the author aims to estimate the economic and geopolitical situation in the context of estimation of possibilities of economic entities management in solving problems occurred before a new management revolution. Research methods reflect the relationship between theory and empiric, being quite controversial and important. The methods used (analysis, management, comparison, induction, deduction, forecasting etc.) highlight certain features of the real world that are relevant to the subject of the research, explain the relationship between them, allow formulation of empirically tested propositions about these features. The main results are related to companies' success on the market, being determined by the efficient use of economic resources, the ability to fully meet customers' needs, to respond quickly to changes in the external environment. The author determines that in order to achieve success, managers have to be innovative, persistent and continuously improving, as internal and external environment of the company is variable.*

**Keywords:** *methods, techniques, experiences, development, management, economic paradigm, revolution, leader, self-development, management quality.*

*În articolul dat este abordat un subiect de maximă importanță atât pentru sistemul de formare profesională din Republica Moldova, cât și pentru sistemul managerial. Sunt descrise și analizate metode și tehnici importante ale procesului dezvoltării gândirii manageriale. Se descriu în detaliu metode manageriale bazate pe experiențe în dezvoltarea managerială, trăsăturile caracteristice fiecărei metode și, corespunzător, avantajele ei. Investigația dezvăluie procesul de formare a limitelor de gândire și impactul lor asupra luării deciziilor (eficiente și neeficiente). Autorul argumentează schimbările din experiența standardelor de gestiune în noile condiții economice. Autorul propune un algoritm nou în analiza și perfecționarea activității manageriale. Apariția condițiilor de criză necesită aplicarea unor programe vizând schimbările din toate domeniile activității diverselor structuri economice. Scopul cercetării propus de autor vizează estimarea situației economice și geopolitice în contextul estimării posibilităților managementului entităților economice în rezolvarea problemelor survenite în pragul unei noi revoluții de gestiune. Metodele de cercetare reflectă relația dintre teoretic și empiric ca una destul de controversată și importantă. Metodele utilizate (analiza, managementul, comparația, inducția, deducția, previziunea etc.) pun în evidență anumite caracteristici ale lumii reale, care sunt relevante pentru subiectul cercetării, explicitează relațiile dintre acestea, permit formularea de propoziții testabile din punctul de vedere empiric despre aceste caracteristici. Principalele rezultate se referă la succesul întreprinderilor pe piață, fiind determinate de utilizarea eficientă a resurselor economice, capacitatea de a satisface pe deplin nevoile clienților, răspunsul rapid la schimbările din mediul extern. Autorul determină faptul că, practic, pentru succes este necesar ca managerii să fie inovativi, insistenți și în continuă perfecționare, deoarece mediul intern și extern al întreprinderii este variabil.*

**Cuvinte-cheie:** *metode, tehnici, experiențe, dezvoltare, management, paradigmă economică, revoluție, conducător, autodezvoltare, calitatea conducerii.*

*Эта статья исследует вопросы чрезвычайной важности, имея значение для системы профессиональной подготовки в Молдове и всей системы управления. Описаны и проанализированы значимые методы и техники для развития управленческого мышления. Подробно проанализированы*

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методы управления на основе опыта в процессе разработки управленческих характерных особенностей каждого метода и, соответствующие, преимущества. Исследование раскрывает формирование границ мышления и его влияние на процесс принятия решений (эффективных и неэффективных). Автор аргументирует изменения в опыте использования стандартов управления в новых экономических условиях. Автор предлагает новый алгоритм анализа и совершенствования управленческой работы. Возникновение кризисных условий требует применения программ по изменениям во всех сферах деятельности различных экономических структур. Основная цель исследования, предложенная автором, состоит в оценки экономического и геополитического состояния управления в контексте возможных экономических агентов в решении управлении проблем на пороге новой экономической революции. Методы исследования отражают взаимосвязь между теоретически и эмпирически как весьма спорным и важным вопросом. Используемые методы (анализа, управления, сравнения, индукционный, дедукционный, прогнозирования и т.д.) выделяют некоторые особенности реального мира которые относятся к теме исследования, объясняют взаимосвязь между ними, позволяют формулирование тестируемых предложений с эмпирической точки зрения об этих особенностях. Основные результаты относятся к успеху предприятий на рынке за счет эффективного использования экономических ресурсов, способность полностью удовлетворить потребности клиентов, быстрая реакция на изменения внешней среды. Автор определяет что, практически, для успеха, менеджеры должны быть инновационными, настойчивыми и постоянно обучаться, так как внутренняя и внешняя среда предприятия является переменной.

**Ключевые слова:** методы, техники, опыт, развитие, управление, экономическая парадигма, революция, лидер, саморазвитие, управление качеством.

**JEL Classification:** J32, J51, H12, M54  
**CZU:** 005.2

*Good leaders rarely think in terms of boundaries:  
instead, they think in terms of opportunities  
(John C. Maxwell)[8]*

**Introduction.** Variations of changes in the socio-economic situation of the country are causing new problems that aggravate and cause management paradigms. Given the economic and financial crisis there are required appropriate changes in behavior that affect all areas of business. In the same context the difficulties of implementing changes in companies determine actions and costs involved in achieving objectives, which is the necessary steps to change the top-managers of the economic structures.

**Aim of research** is to estimate the possibilities of the management of economic entities in solving stringent problems in front of a new revolution in the context of economic and geopolitical conditions.

**The scientific approach to the topic and its presentation in the scientific literature.** The beginnings of scientific management have crystallized with the appearance of general concepts of directing production. In the early twentieth century, Frederick Taylor [3], the main representative of the so-called "traditional school" of scientific management, recognized the possibility of using scientific methods in the management and organization process in order to increase efficiency and productivity. Another important school of management is the "school of administrative management". Henri Fayol [6] and L. Urwick [12], representatives of "the school of human relations" (Mary Follett [7], Elton Mayo [2]) argue the human factor's impact on labor productivity, followed by "school of behavior" (Abraham Zalesnick, DC Peltz [14]). An important step was made by Peter Drucker [9], Alfred Sloan [1] and Ernest Dale [15] in the field of information and decisions, using mathematical methods of Wilson. The emergence and development of electronic computers allowed the construction of an efficient algorithm and software to solve some difficult problems of management. Internationally used magazines have appeared (Operations Research, Management Science, etc.) that publish mainly models and methods for solving the various problems of management.

We observe changes in the world economic order, the emergence of social and economic factors and geopolitics that cause natural questions: management is on the verge of a new revolution of management, or it is ongoing or the new paradigm have not yet triggered. The researchers note that the theory of modern management approaches as appropriate the process of self-development and self-organization of the company, which can be the basis for combining different knowledge into a single mechanism of management organization (Komarov [17] Kibanov [16], etc.). In this case, building an organization on its own is not possible without the activation of the process at all levels, from the top

management and involvement of all staff. Support for managers in improving quality control can be achieved through an understanding of development processes of a reliable mechanism in order to improve management performance. Managers must learn and understand the limits of the decision extensions.

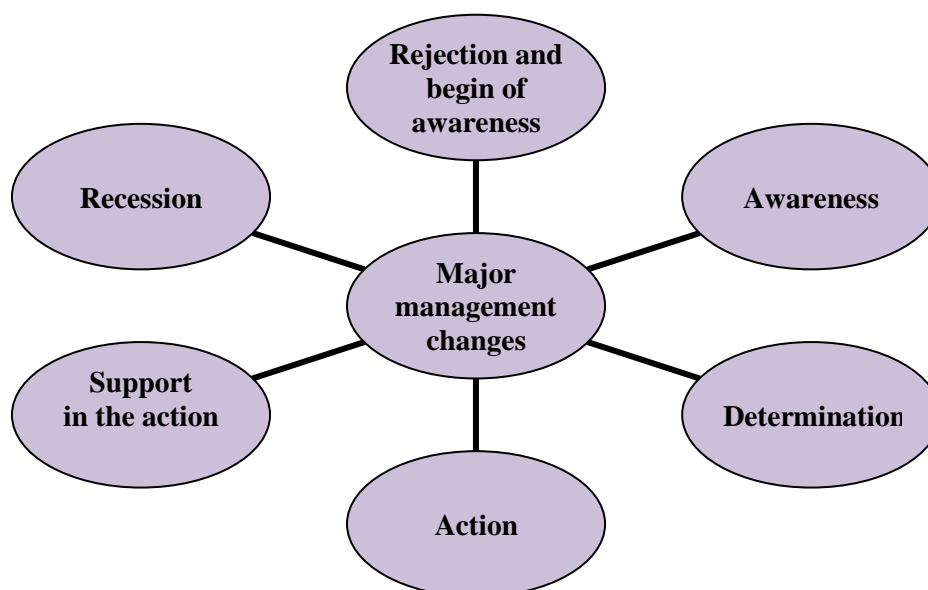
Given the topicality and unresolved issues, but important from the field, in order to argue the hypothesis, the author uses the **method** of analysis, management, comparison, induction, deduction, forecasting, etc.

**Research and analysis.** Decentralization of economies led to the improvement of consumer – entrepreneurs relations through management and marketing, based mainly on information [11] in real time using computer possibilities. On the market, both consumers and producers are facing optimum problems: the consumer has to obtain maximum enjoyment with minimum income and the producer to maximize profits while minimizing production and selling costs. In these conditions, managers are forced to look for new tools and methods for integrating activity areas by which the company will create competitive advantages against competitors and choose the optimal alternatives. To this end, many business units and international organizations use statistical methods, mathematics, cybernetics, information [11], together with methods of technical and economic applied sciences logically integrated by concepts of systems and decision theories.

According to researches, intellectualization of production will deepen; transition to a process of continuous innovation in most industries, and in most professions, marking the transition from "consumer society" to "knowledge society" in which an increased meaning will have requirements for quality of life and comfortable living environment will be present [4].

The main provisions of the future management represent a common feature to enhance cooperation and creativity of the staff in the organization for the sake of higher goals, based on mutual trust. The main challenge for management is to implement such general terms that would increase success through continuous understanding of causality in relationship management. For example, vision of the work result and responsibility for this motivation will contribute to a better performance of work.

The idea of self-management, staff and the entire organization, which forms the basis for building control system will improve the employee development, and follow the above rates of changes in information technology in environmental activities. However, each person is a combination of automatic behavior, habits, values the reactions – imprint of knowledge and experience, and has certain resources and attitudes towards resources and used skills. For these reasons, new iterative gradual changes are needed to solve the complex problems. Human resources can reveal additional development opportunities for businesses, when in the process of change will follow the paradigm approach of the humanist management. According to the findings of psychologists J.Procházka, J.Norkrossa [10] personnel changes will include six major steps, shown briefly below.

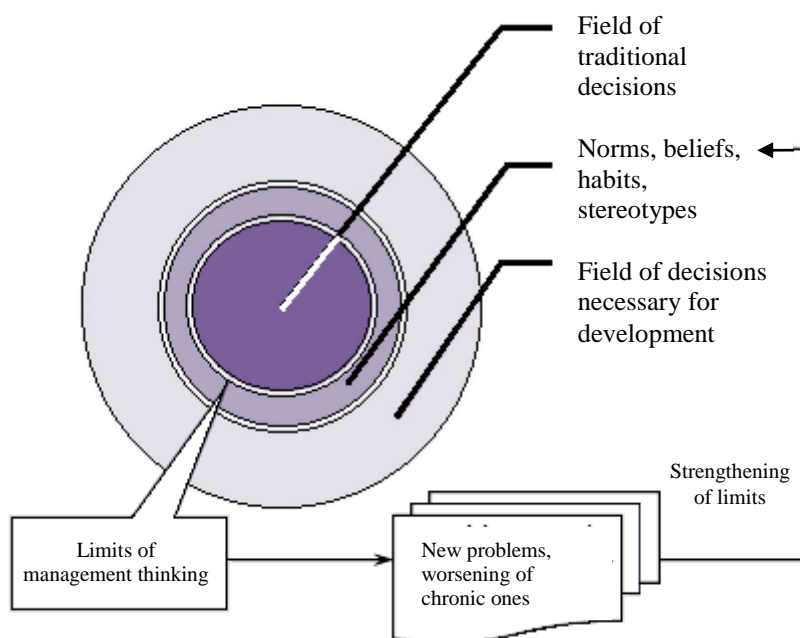


**Figure 1. Steps of major management changes related to human resources**

*Sources: Author's research based on [12].*

The investigated model reveals the typical stages of changes, reflecting the fact that people often tend to change their thinking and behavior under the influence of external factors. As a result of inertia, reorientation of thinking of top managers on the taken decisions and the influence methods on the collective are slowly performed [5]. For example, the staff must be motivated for proposals of rationalization or innovation, but in practice managers prefer the methods already approved instead of the new ones, and discussions about them are initiated by people in positions rather than innovators-professionals. Thus, the leader exercises the management influence, following an already approved pattern, admitting typical mistakes characteristic for managers. There are also applied other methods as "orders", increased burdens for the best workers, orientation towards material incentives or just moral ones. According to the author, this happens because taking decisions, discussing the situation, the manager starts unconscious from the existing available information [11] from the the last information or required information. This is explained by the fact that people can make mistakes, being under the impression of dogmas, beliefs, etc., in perceiving reality.

But the majority of rules, beliefs, habits, stereotypes existing in the leadership can not be progressive, but overwhelm the consciousness of leaders, becoming negative in thinking, putting obstacles in the effective and qualitative management [4], the perception of new management tools and creativity. Highlighting new issues or their transformation into chronic ones favors the emergence of adverse outcomes.

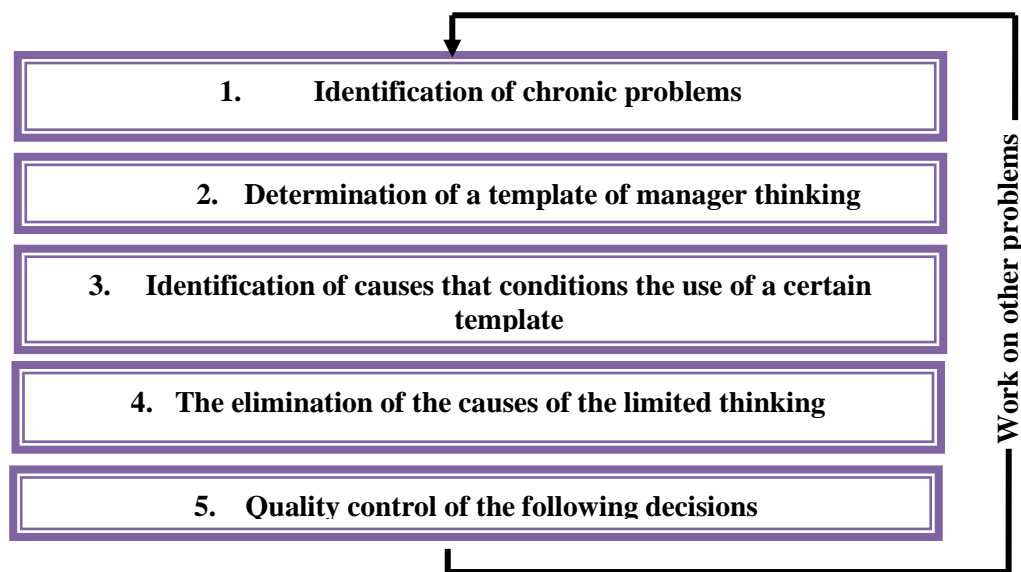


**Figure 2. The process of forming the boundaries of management thinking**

*Source: Author's research.*

Unfortunately, the existing education system rather sets strict limits of consciousness and contributes little to the development of creative thinking. According to our observations, the first year students who have received a general education are convinced, for example, that people from companies work only for money and to climb up the career ladder, and therefore to motivate them to increase the quality of work, it is only necessary to increase salaries, bonuses or advancement in the job position. Complicating the task, when finance and vacancies are not present, students are at an impasse and are not able to go beyond their own beliefs.

It is obvious that in conditions of modern dynamics, traditional tools and methods are necessary, as well as new innovative motivation methods. An effective leader, systematically, is looking for progressive methods of motivation. For this, the leader has to build the capacity to adapt to any changes. Changing stereotypes is often perceived as a catastrophe. To change the state of things, the author proposes an algorithm (figure 3). The first step is to identify recurring problems like: stagnation, supremacy of structure on function, low motivation, lack of subject, etc.



**Figure 3. The process of self-improvement of manager's activity in overcoming the limited thinking**

Source: Author's research.

Then comes the process of determining ineffective standard decisions and appreciations of templates that were used by the manager. The next step is to identify the cause why the manager stopped at a specific choice of the decision, contrary to alternatives. This activity requires the manager continuous self-improvement and strong will to achieve the goal. The fourth stage remains difficult, being related to overcoming stereotypes, beliefs, traditions, blocks that were formed during a long time, before the boundaries of thought to expand. The last stage involves focusing attention on exclusion of common errors in the decision-making process. It is necessary to determine that the limit of clichés will not leave its mark on new decisions.

It is important that the manager to put company's goals above personal ones. Thus, in this, the manager must be an example for collective [5]. Otherwise we should not rely on the delegation of functions that decisions will be taken based on the interests of the company and not the petty interests of those in office positions. The manager must not think that it is infallible, *ultimum verum* (absolute truth). Therefore, it is necessary for the problem to be investigated from various aspects, views (variis in views). Significant is the awareness of strong and weak points of the manager. An effective manager must handle well various management methods, which allow increasing the motivation degree of decisions. The manager must be able to recognize own mistakes and take immediate measures to overcome them. Tolerance culture against mistakes should be established, as under fear conditions, the staff will push for its illusions. Wrong decisions can lead to another extreme – the formation of a favorable environment for increasing organizational problems (conflicts, tensions, reduced discipline and motivation, ignoring organizational order, etc.).

#### **Conclusions and recommendations**

In conclusion, it is worth noting that company's competitiveness is a complex concept. The success of the enterprise on the market is determined by the efficient use of economic resources, the ability to fully meet customer needs, rapid response to changes from the external environment. The probability of victory in competition will be higher in the presence of significant amounts of economic resources and capacity of management systems to use them. In this respect, the internal control system is designed to provide a timely response to changes in both internal and external environment.

The explanations presented in the article regarding the frontiers of thought and self-improvement steps have a practical significance for managers at all levels. Analysis of its actions must enter into daily practice of a modern leader, to abandon outdated and inefficient models, opening the possibility for assimilation of new knowledge. Managers must know the possible tricks of the human mind, differences between these states in their thinking and must try to overcome them, including using the



recommendations presented on the analysis and proposals of self-control, work on self-perfection, expanding self-awareness, with the development of integral thinking and systemic vision on the company. The perception by managers of changing processes, determination of consistent steps that lead to the desired result and mainly the change of stereotypes and clichés are conditions for the success of changes. If the leader is willing to review its strategy and business, the team and the organization will achieve those heights that previously seemed unbelievable.

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**COMPARATIVE ANALYSIS OF FINANCING  
OF THE RESEARCH AND DEVELOPMENT ACTIVITIES  
IN THE REPUBLIC OF MOLDOVA**

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*Currently, for the Republic of Moldova, the research and development activity is one of the issues of primary importance by the fact that only oriented economy towards diffusion of innovations in the real sector can aspire to a favorable recovery. In this context, funding for research and innovation should be an essential component of managerial policy in the field of science. Currently, although the funding of science and innovation activity is carried out under the priority directions of development of science, based on a competitive system – state programs, independent projects, international and technology transfer projects, we cannot speak of an actual „market” of funding of research and development activities, since most of the funds for this activity are allocated from the budget. The carried out study comes as an attempt to highlight certain aspects of the research and development financing processes in the Republic of Moldova. The financial support for scientific activity is based on its target orientation and multitude of financial sources. The budgetary funding of science is based on a combination of financial support of scientific organizations and specific funding of projects and scientific programs, etc. In order to accomplish the research a series of specific research methods of the economic issues were used as a methodological basis, as follow: logical (analysis and synthesis), historical, systemic, comparative and classification methods. Under the head of results and conclusions we can highlight that the scientific quality of the economic development is an innovative activity which points the production improvement in order to achieve high-quality products in large volumes to boost the economic efficiency of the industry by identifying the needs in scientific and technological progresses, researches and knowledge transfer of agricultural and industrial products to the producers. The recovery of patented innovations could bring state receipts and these royalties could be used to fund other research projects which could generate incomes in the national economy.*

**Keywords:** *growth, research and development, investment, financing, knowledge economy, innovation, development strategy.*

*Actualmente, pentru Republica Moldova, activitatea de cercetare-dezvoltare este una din problemele de importanță primordială prin faptul, că doar o economie orientată spre difuzarea inovațiilor în sectorul real, poate aspira la o redresare favorabilă. Astfel, finanțarea activităților de cercetare-inovare trebuie să fie componenta esențială a politicii manageriale în domeniul științei. În acest moment, deși finanțarea activităților de știință și inovare se efectuează în temeiul direcțiilor prioritare de dezvoltare a științei, în sistem competițional pe programe de stat, proiecte independente, internaționale și proiecte de transfer tehnologic, totuși, nu putem vorbi de o „piață” reală a finanțării activității de cercetare-dezvoltare, deoarece majoritatea fondurilor pentru această activitate sunt alocate din buget. Studiul efectuat vine ca o încercare de a scoate în evidență anumite aspecte ale procesului de finanțare a activităților de cercetare-dezvoltare în Republica Moldova. Asigurarea financiară pentru activitatea științifică este bazată pe orientarea sa țintă și pe multitudinea surselor de finanțare. Finanțarea bugetară a științei se bazează pe o combinație de sprijin financiar a organizațiilor științifice și finanțarea specifică a proiectelor și programelor științifice etc. Pentru realizarea articolului științific, drept bază metodologică a fost utilizată o serie de metode specifice de cercetare a problemelor cu caracter economic, cum ar fi: metoda logică (analiza și sinteza), istorică, sistemică, comparativă și metoda clasificării. La capitoul rezultate și concluzii putem sublinia faptul, că asigurarea științifică a dezvoltării economice – reprezintă o activitate inovatoare, care vizează îmbunătățirea producției în vederea obținerii produselor de înaltă calitate și în volum mare pentru sporirea eficienței economice a industriei prin identificarea*

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*necesităților în progresele științifico-tehnologice, cercetările științifice și transferul de cunoștințe producătorilor de produse agricole și industriale. Valorificarea invențiilor brevetate pot aduce statului încasări, iar aceste redevențe să fie folosite pentru finanțarea altor proiecte de cercetare, care pot genera venituri pentru economia națională.*

**Cuvinte-cheie:** creșterea economică, cercetare-dezvoltare, investiții, finanțare, economia cunoașterii, inovații, strategie de dezvoltare.

*В настоящее время в Молдове, деятельность исследования и развития является одним из вопросов первостепенной важности в том, что только экономика ориентированная на распространение инноваций в реальном секторе, может стремиться к благоприятному восстановлению. В связи с этим, финансирование научных исследований и инноваций должно стать важным компонентом управленческой политики в области науки. В настоящее время, хотя финансирование науки и инноваций осуществляется в рамках приоритетных направлений развития науки, в конкурентной системе на государственных программах, независимых и международных проектов, а также проектов по передаче технологий, однако, мы не можем говорить о реальном «рынке» финансирование деятельности исследования и развития, потому что большая часть средств для этой работы выделяется из бюджета. Данное исследование, приходит как попытка выделить определенные аспекты финансирования деятельности исследования и развития в Молдове. Финансовая поддержка научной деятельности основана на целевой ориентации и на множество источников финансирования. Бюджетное финансирование науки основана на сочетании финансовой поддержки научных организаций и специфической финансировании проектов и научных программ и т.д. Для создания научной статьи, в качестве методологической основы были использованы ряд конкретных методов исследования экономических вопросов, таких как: логический метод (анализ и синтез), исторический, системный, сравнительный и метод классификации. Результаты и выводы. Можем подчеркнуть, что научное обеспечение экономического развития представляет инновационную деятельность, направленную на совершенствование производства с целью получения продукции высокого качества и объема для повышения экономической эффективности промышленности путем выявления потребностей научно-технических прогрессов, научных исследований и передачи знаний сельскохозяйственных и промышленных производителей. Капитализация запатентованных изобретений может принести доход государству и эти взносы используются для финансирования других исследовательских проектов, которые могут генерировать доходы для национальной экономики.*

**Ключевые слова:** экономический рост, исследование и развитие, инвестиции, финансирование, экономика знаний, инновации, стратегия развития.

**JEL Classification:** D92, F43, F65, G31, G32  
**CZU:** 336.58:001.89(478)

**Introduction.** Funding is one of the key factors that ensures the sustainable operation of the research and development field, creates favorable conditions to satisfy the need of scientific research. The opportunity of this research is motivated by the fact that the Republic of Moldova requires intelligent use of economic, financial and management opportunities of research and innovation. Scientific research, technological development and innovation are the heart of the knowledge economy, the key driver of development and competitiveness [1].

The financing of science and innovation activities is carried out under the priority directions of development of science, in a competitive system – state programs, independent (youth) projects, international and technology transfer projects. The themes of fundamental and applied scientific research, projects under state programs, technology transfer and youth projects, equipment, as well as those funded or co-funded by organizations from abroad, have been selected exclusively by competition and approved by the decision of SCSTD of ASM.

**Assessment of the process of distribution of budgetary allocations and financing activities in science and innovation.** Financial support for scientific work is based on its target orientation and multitude of financial sources. Funding of this activity is carried out through the budget, extra budgetary sources and other sources. The budget is underlying the entire budget system, which most simply is

defined as "a document which provides every year the revenues and expenditures, or as appropriate, only expenditures, depending on the financing system of public institutions [9]. Budgetary funding of science is based on a combination of financial support to scientific organizations and specific funding of scientific projects and programs as well as specific scientific-technical programs. However, the basic issue related to activities in science and innovation is the research results. For example, the Romanian legislation stipulates that the results of the research and development actions obtained under execution of a contract financed from public funds, named further the research results represent:

- documentation, studies, research, plans, schemes and others;
- patents, certificates of registration of industrial designs and models, and others;
- technologies, methods, computer products, recipes, formulations, methods and others;
- physical objects and products made within the carried out the contract.
- collections or databases containing analog or digital records, historical sources, samples, specimens, photographs, observations, rocks, shales, and others, with information necessary for archiving, retrieval and specification of the context in which they were obtained.

It should be noted that the research and development field from the RM is undersized, regardless of the fact that the quality of research is part of the European and international trend. On the one hand, this is due to limited funding. In absolute figures, the country spends on R & D per capita, almost 40 times less than the European average [pp]. On the other hand, the demand for R & D is low. The research and development turns out to be poorly connected both with business and the public in general. In these conditions, innovation in the Republic of Moldova does not represent a central factor of economic and social development.

In accordance with paragraph (5) Article 125 of the Code on science and innovation [2] budgetary resources directed mainly for research are used for:

a) organization of competitions and funding of state programs, innovation and technology transfer programs, projects within them and independent projects, selected on a competitive basis, as well as other activities of valorization the results from the field of science and innovation in line with the strategic directions;

b) funding the fundamental and applied scientific research projects of organizations – institutional members and profile members that conduct scientific research on a competitive base within the strategic directions in order to maintain and develop the technical, material and maintaining infrastructure from the field of science and innovation.

Thus, the research and technological development activities taking place in institutions through budgetary funding are conducted within projects. The same form of projects or grants is characteristic for international and European programs. Research and development carried out at the command of some beneficiaries is performed under contracts of economic research that can be considered as an alternative of projects.

Distribution of budget allocations and funding (co-financing) of activities in science and innovation from the state budget is made based on programs and projects in line with the strategic directions of the activity in science and innovation and is done by organizations from science and innovation filed of all types of property and legal form of organization, accredited accordingly, in order to ensure the development of science, sustainable economy, increased welfare and quality of life and create an environment favorable for absorbing innovations. The financing way of science and innovation organizations is stipulated in the Code on science and innovation and depends on the category of organizations.

Under the legal provisions of Art. 125 par. (4) from the Code on science and innovation [2], the state provides funding of science and innovation in the amount of 1% of gross domestic product (hereinafter – GDP), specifying the annual ceiling in the Partnership Agreement. Analysis of situation regarding the ration of the ASM budget to GDP and to the limit of funding established in the Partnership Agreement, for 2010-2015 is presented in table 1 [3; 4; 5; 6; 7; 8]. The data presented in the table reveal that financing of the budget for science and innovation sphere recorded in the period 2010-2015 a level slightly below the amount fixed by the Partnership Agreement, respectively by 0.01 percentage points in 2010. Moreover, the limit amount of the funding of science and innovation has been exceeded since 2011 from 3 percentage points to 1 percentage point in 2015.

**Table 1****The amount of state funding of science reflected in GDP (mil.lei)**

| Indicators  | 2010    | 2011    | 2012    | 2013    | 2014     | 2015     |
|---|---------|---------|---------|---------|----------|----------|
| Gross Domestic product (GDP)  | 71886,0 | 82349,0 | 87847,0 | 96200,0 | 106100,0 | 116800,0 |
| ASM budget (total, determined), including:  | 365,0   | 342,0   | 367,1   | 350,0   | 441,9    | 437,2    |
| - basic component   | 326,1   | 295,3   | 319,2   | 286,9   | 349,6    | 345,6    |
| - special means   | 38,9    | 46,7    | 47,9    | 63,1    | 92,0     | 91,6     |
| Share in GDP (2/1), total, including:   | 0.52%   | 0.43%   | 0.42%   | 0.36%   | 0.42%    | 0.37%    |
| - basic component   | 0.45%   | 0.36%   | 0.36%   | 0.29%   | 0.32%    | 0.29%    |
| - special means   | 0.07%   | 0.07%   | 0.06%   | 0.06%   | 0.07%    | 0.06%    |
| Limit amount of state funding established in GDP through the Partnership Agreement, % | 0.53%   | 0.40%   | 0.40%   | 0.35%   | 0.4%     | 0.36%    |
| Exceeding the ceiling (row 4 - row 3), pp   | -0.01   | 0.03    | 0.02    | 0.01    | 0.02     | 0.01     |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

In accordance with the legal provisions of the State Budget laws for 2010-2015, for the funding of science and innovation field 2321.4 mil. lei have been provided, of which 2244.9 mil. lei have been allocated, that is about 96.7 percent of the specified amount, their synthesis being shown in table 2 [3; 4; 5; 6; 7; 8].

**Table 2****Analysis of the basic components of the ASM budget for 2010-2015 (mil. lei)**

| Indicators              | TOTAL         |               | Including for the years 2010-2015: |              |              |              |              |              |              |              |              |              |              |              |
|-------------------------|---------------|---------------|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                         | determined    | executed      | 2010                               |              | 2011         |              | 2012         |              | 2013         |              | 2014         |              | 2015         |              |
|                         |               |               | determined                         | executed     | determined   | executed     | determined   | executed     | determined   | executed     | determined   | executed     | determined   | executed     |
| Basic component         | 1923,0        | 1904,7        | 326,1                              | 323,7        | 295,3        | 293,8        | 319,2        | 317,7        | 286,9        | 284,5        | 349,9        | 344,3        | 345,6        | 340,7        |
| Special means component | 398,4         | 340,2         | 44,7                               | 42,6         | 56,2         | 52,8         | 50,6         | 47,8         | 63,1         | 53,4         | 92,0         | 74,4         | 91,8         | 69,2         |
| <b>TOTAL</b>            | <b>2321,4</b> | <b>2244,9</b> | <b>370,8</b>                       | <b>366,3</b> | <b>351,5</b> | <b>346,6</b> | <b>369,8</b> | <b>365,5</b> | <b>350,0</b> | <b>337,9</b> | <b>441,9</b> | <b>418,7</b> | <b>437,4</b> | <b>409,9</b> |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

Thus, the data in table 3 show that the execution of the basic component ranges from 90.7% in 2010 to 98.6% in 2015 (table 3) [3; 4; 5; 6; 7; 8].

Table 3

## The level of the execution of ASM budget for 2010-2015

| Indicators \ Years |                 | Total | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--------------------|-----------------|-------|------|------|------|------|------|------|
| Unused allocations | Basic component | 48,4  | 2,4  | 1,5  | 1,5  | 2,4  | 5,6  | 27,5 |
|                    | Special means   | 10,6  | 2,1  | 3,4  | 2,8  | 9,7  | 17,6 | 22,6 |
| % of execution     | Basic component | 99.0  | 90.7 | 99.3 | 99.5 | 99.2 | 98.4 | 98.6 |
|                    | Special means   | 85.4  | 94.4 | 95.2 | 94.0 | 84.6 | 80.9 | 75.4 |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

Table 4

## Functional classification of budgetary allocations executed 2010-2015 (mil. lei)

| Indicators                      | TOTAL         |                           | 2010         |                           | 2011         |                           | 2012         |                           | 2013         |                           | 2014         |                           | 2015         |                           |
|---------------------------------|---------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|--------------|---------------------------|
|                                 | Total         | Including basic component | total        | Including basic component | total        | Including basic component | total        | Including basic component | total        | Including basic component | total        | Including basic component | total        | Including basic component |
| Fundamental scientific research | 569,0         | 508,7                     | 89,1         | 81,6                      | 84,5         | 77,2                      | 84,5         | 77,2                      | 83,8         | 76,1                      | 113,8        | 98,4                      | 113,3        | 98,2                      |
| Applied scientific research     | 1253,2        | 1033,2                    | 188,1        | 163,2                     | 201,0        | 171,2                     | 201,0        | 171,2                     | 207,3        | 157,2                     | 227,9        | 185,2                     | 227,9        | 185,2                     |
| <b>Total</b>                    | <b>1822,2</b> | <b>1541,9</b>             | <b>277,2</b> | <b>244,8</b>              | <b>285,5</b> | <b>248,4</b>              | <b>285,5</b> | <b>248,4</b>              | <b>291,1</b> | <b>233,3</b>              | <b>341,7</b> | <b>283,6</b>              | <b>341,2</b> | <b>283,4</b>              |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

During 2010-2015, ASM budget expenditures amounted for 1822.2 mil lei, where 1253.2 mil. lei (or 68.8%) have been executed for applied scientific research, followed by spending on fundamental scientific research – 569.0 mil. lei (or 31.2%). Thus, the appearance level / amount of funding of scientific research reveals the dynamic upward trend in allocated funds from 277.2 mil. lei in 2010 to 341.2 mil. lei in 2015 [3; 4; 5; 6; 7; 8].

The situation of budgetary allocations execution in the aspect of beneficiaries of allocations (institutional, profile and auxiliary members) of the basic component is presented in table 4 [3; 4; 5; 6].

Table 5

## Analysis of beneficiaries of budgetary allocations for 2010-2013 (mil. lei)

| Indicators                             | Total         |            | 2010         |            | 2011         |            | 2012         |            | 2013         |            |
|--|---------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|
|  | Amount        | Share, %   | Amount       | Share, %   | Amount       | Share, %   | Amount       | Share, %   | Amount       | Share, %   |
| Institutional members                  | 810,1         | 64.4       | 208,4        | 64.7       | 209,8        | 64.8       | 187,1        | 63.7       | 204,8        | 64.4       |
| Profile members                        | 364,5         | 29.0       | 88,2         | 27.4       | 90,5         | 28.0       | 90,3         | 28.0       | 95,5         | 30.1       |
| Auxiliary institutions / organizations | 82,9          | 6.6        | 25,7         | 8.0        | 23,4         | 7.2        | 16,4         | 5.6        | 17,4         | 5.4        |
| <b>Total</b>                           | <b>1257,5</b> | <b>100</b> | <b>322,3</b> | <b>100</b> | <b>323,7</b> | <b>100</b> | <b>293,8</b> | <b>100</b> | <b>317,7</b> | <b>100</b> |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

According to the presented data, in the years 2010-2013, in regard to beneficiaries of allocations, the major share of 64.4% belongs to institutional member's activities (810.1 mil. lei), followed by 29.0%



related to the activity of profile members (364.5 mil. lei) and 6.6% – auxiliary institutions / organizations (82.9 mil. lei).

According to Article 125 of the Code on science and innovation, state budget means for science and innovation are used for both scientific research, as well as the maintenance and development of material and technical base and infrastructure; ASM institutional maintenance, including the central library, archive, information system; organization of competitions, seminars, etc.

Dynamics of expenditures for science and innovation in the field of fundamental and applied scientific research (in dependence of types of scientific projects) in 2010-2015 is presented in the table below [3; 4; 5; 6; 7; 8]:

**Table 6**  
**Dynamics of expenditures for science and innovation in the field of scientific research, mil. lei**

| Project types  | Years        |              |              |              |              |              | Total         | Share in total, % |
|--|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-------------------|
|  | 2010         | 2011         | 2012         | 2013         | 2014         | 2015         |               |                   |
| 1  | 2            | 3            | 4            | 5            | 6            | 7            | 8             | 9                 |
| <b>Total scientific research, including:</b>   | <b>244,8</b> | <b>238,8</b> | <b>248,4</b> | <b>233,3</b> | <b>312,8</b> | <b>283,8</b> | <b>1561,9</b> | <b>100</b>        |
| Fundamental  | 81,6         | 74,6         | 77,2         | 76,1         | 98,4         | 98,2         | 506,1         | 32.4              |
| Applied  | 163,2        | 164,2        | 171,2        | 157,2        | 185,2        | 185,2        | 1026,2        | 67.6              |
| √ <b>Institutional projects</b>  | <b>207,6</b> | <b>207,4</b> | <b>221,5</b> | <b>213,8</b> | <b>304,1</b> | <b>265,8</b> | <b>1420,2</b> | <b>90.9</b>       |
| Fundamental  | 75,0         | 69,5         | 73,8         | 72,1         | 102,7        | 95,2         | 488,3         | 31.3              |
| Applied  | 132,6        | 137,9        | 147,7        | 141,7        | 201,4        | 170,6        | 931,9         | 59.6              |
| √ <b>State programs, including:</b>  | <b>9,7</b>   | <b>5,8</b>   | <b>5,5</b>   | <b>1,4</b>   | <b>3,4</b>   | <b>3,5</b>   | <b>29,3</b>   | <b>1.9</b>        |
| Fundamental  | 1,1          | 0,6          | 0,6          | 0,5          | 0,4          | 0,5          | <b>3,7</b>    | 0.2               |
| Applied  | 8,6          | 5,2          | 4,9          | 0,9          | 3,0          | 3,0          | <b>25,6</b>   | 1.6               |
| √ <b>Independent projects (for young researchers)</b>                                | <b>5,2</b>   | <b>3,5</b>   | <b>3,0</b>   | <b>3,0</b>   | <b>2,8</b>   | <b>2,9</b>   | <b>20,4</b>   | <b>1.3</b>        |
| Fundamental  | 2,0          | 1,4          | 0,9          | 1,1          | 1,7          | 1,7          | 8,8           | 0.6               |
| Applied  | 3,2          | 2,1          | 2,1          | 1,9          | 1,1          | 1,2          | 11,6          | 0.7               |
| √ <b>Technology transfer and development of innovational infrastructure projects</b> | <b>13,8</b>  | <b>11,0</b>  | <b>10,0</b>  | <b>8,7</b>   | <b>7,5</b>   | <b>7,7</b>   | <b>58,7</b>   | <b>3.8</b>        |
| Applied  | 13,8         | 11,0         | 10,0         | 8,7          | 7,5          | 7,7          | 58,7          | 3.8               |
| <b>International projects, including:</b>  | <b>7,7</b>   | <b>6,7</b>   | <b>4,4</b>   | <b>6,2</b>   | <b>4,0</b>   | <b>3,9</b>   | <b>32,9</b>   | <b>2.1</b>        |
| Fundamental  | 3,5          | 3,1          | 1,9          | 2,3          | 1,1          | 1,1          | 13,0          | 0.8               |
| Applied  | 4,2          | 3,6          | 2,5          | 3,9          | 2,9          | 2,8          | 19,9          | 1.3               |
| <b>Projects for procurement of scientific equipment</b>                              | <b>0,8</b>   | <b>4,4</b>   | <b>4,0</b>   | <b>0,2</b>   |              |              | <b>9,4</b>    | <b>0.6</b>        |

Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.

The analysis shows that under the regulation the targeting of funding for science and innovation and institutional maintenance, the major share of 90.9% (1420.2 mil. lei) of total expenditures on scientific research of 1561.9 mil. lei belongs to institutional projects, followed by technology transfer projects and creation of innovative infrastructure – 3.8% (58.7 mil. lei), state programs – 1.9% (29.3 mil. lei), international programs – 2.1% (32.9 mil. lei), independent projects (for young researchers) – 1.3% (20.4 mil. lei), etc.

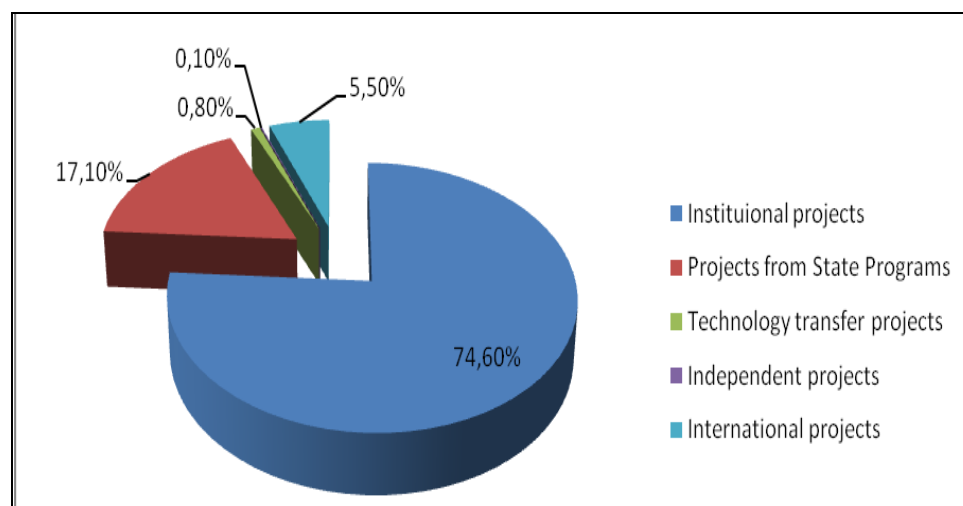
Thus, the division of allocations for science and innovation is directed as a priority for funding the institutional projects, which mostly represents maintenance expenses for science and innovation institutions and other types of projects being funded solely within the remaining resources.

For the analysis of distribution and performance of expenses related to scientific research, the following institutions have been analyzed: Institute of Electronic Engineering and Nanotechnologies "D. Ghitu", Cardiology Institute and the University of Medicine and Pharmacy, which have two sources of funding: the state budget in terms of functional classification of budget spending and special means in

terms of revenue sources. The structure of budgetary and special expenditures according to destinations was made in accordance with the budget classification and Regulation on the management of special means of public institutions financed from the budget.

In the last 5 years of activity, institutions have received funds from the state budget allocated to: institutional projects – 103.1 mil. lei, projects under State Programs – 5.1 mil. lei, technology transfer projects – 0.7 mil. lei, independent projects – 1.4 mil. lei, projects under international, bilateral programs – 3.1 mil. lei.

Of the total expenditures, the largest share, about 54.0 per cent belong to personnel expenses, 18.2 percent – purchase of scientific equipment, 15.1 percent – payment of utilities and other expenses, 1.5 percent – spending for travel. The share of execution of allocations on activities to the total amount provided in the budget for respective period is shown in the figure below [3; 4; 5; 6; 7; 8]:



**Figure 1. Share of execution of allocations on activities**

*Source: Developed by the author based on reports on scientific and scientific-organizational activities of the Academy of Sciences of Moldova.*

**Conclusions and recommendations.** Based on the above mentioned, there can be concluded that the scientific assurance of the economic development represents an innovative activity, aimed at improving production in order to obtain high quality and high-volume products, to increase economic efficiency of the industry by identifying needs in the scientific-tehnological progress, scientific research and knowledge transfer to producers of agricultural and industrial production.

In the same concept, along with public finance, accounting of public institutions does no longer serve the consumer state, but occurs when the state handles the technical and financial levers to ensure the economic macro-stability and social peace [10].

Comparing the research and innovation funding in Moldova and Romania, as a representative of the European Union, we can conclude that currently funding of research and innovation is a key element in the growth and sustainability of any country. Therefore, we find that there are a number of impediments in funding research and innovation, namely: insufficient financial resources, the imperfect regulatory framework, low request for research and development, lack of integrated systems for accounting in public institutions, weak link of research and development sector with business, etc.

According to the author, it is appropriate to highlight the MTBF development objectives and priorities, namely:

- monitoring and evaluation of scientific, managerial and financial organizations in science and innovation, based on individual and collective performance indicators by field of research;
- increase the impact of research in the socio-economic development of the country;
- a transparent and efficient governance of the innovation system;
- creation, deployment and ensure the functionality of scientific-technological parks and innovation incubators to support the productive sectors of the economy;
- accelerating technology transfer and encouraging partnerships with companies and production sectors;

– encouraging public-private partnerships for implementing projects and research in order to develop national capacity for producing and assimilation of innovation, etc.

We seem appropriate that the funding of research activity in the Republic of Moldova to be supported and supplemented by the creation by the state of a venture capital fund, through which research projects that could bring benefits for the state will be financed. Once patented inventions, such as those of the Institute of Electronic Engineering and Nanotechnologies "D. Ghitu" that we mentioned above, we believe that the state could collect royalties by valorization of these inventions, and these royalties may be used to fund other research projects that can generate income for the national economy.

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## RISK MONITORING OF BANKS' PARTICIPATION IN THE PROCESS OF MONEY LAUNDERING

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Actuality of this article is argued with the fact that together with the dynamic development of the economic situation and creation of new financial products, a series of illicit activities of money legalization and laundering have been triggered. The assessment of money laundering process has become a problem of the international community, which currently imposes stringent development of prevention and compensation methods of its negative manifestations. Thus, we aim to analyze this negative phenomenon and determine the measures of suppression and minimization of processes of legalization of income from illegal activities. The following research methods have been used during the process of writing this article: logical method of systemic analysis and synthesis, comparative method, classification method, method of deduction, etc. Referring to the results and conclusions, we can emphasize that the banking sector's activity on combating money laundering is constantly jeopardized by certain vulnerable situations, thus being required a constant monitoring for decision making of minimizing and suppression of risks timely. The external environment of the banking sector was always favorable for forming new risks involving banks in illegal money laundering schemes. In this context, the identification of these risks is possible through implementation of new technologies in the banking system, tools and techniques for financial and banking monitoring, along with the application of good management of staff in the banking practice.

**Keywords:** globalization, financial-banking sector, bank, risk, monitoring, money laundering.

Actualitatea prezentului articol este argumentată de faptul că, odată cu dezvoltarea dinamică a stării economice și crearea noilor produse financiare, au fost declanșate un șir de activități ilicite de spălare și legalizare a banilor. Evaluarea procesului de spălare a banilor a devenit o problemă a comunității internaționale, care, actualmente, impune cu stringență elaborarea măsurilor de prevenire și compensare a manifestărilor sale negative. Scopul studiu constă în analiza acestui fenomen negativ și determinarea măsurilor de suprimare și minimizare a proceselor de legalizare a veniturilor provenite din activități ilicite. În procesul de scriere a prezentului articol științific au fost utilizate următoarele metode de cercetare: metoda logică de analiză și sinteză sistemică, metoda comparativă, metoda clasificării, metoda deducției etc. Cu referire la rezultate și concluzii putem sublinia faptul că activitatea sectorului bancar cu privire la combaterea spălării banilor a fost periclitată în permanență de anumite situații vulnerabile, ceea ce necesită o monitorizare permanentă la luarea deciziilor de minimizare și suprimare a riscurilor în timp util. Mediul extern al sectorului bancar întotdeauna a fost favorabil pentru formarea unor noi riscuri ce implică băncile în scheme ilegale de spălare a banilor. În acest context, identificarea acestor riscuri este posibilă prin implementarea în activitatea bancară a noilor tehnologii, instrumente și tehnici de monitorizare financiar-bancară, de rând cu aplicarea în practica bancară a unui management performant al personalului.

**Cuvinte-cheie:** globalizare, sector financiar-bancar, bancă, risc, monitorizare, spălarea banilor.

Актуальность данной статьи утверждается тем что параллельно с динамичным развитием экономической ситуации и созданием новых финансовых продуктов, был вызван ряд незаконных действий по отмыванию и легализацию денег. Оценка процесса отмыwania денег стала проблемой международного сообщества и в настоящее время строго налагает разработку мер профилактики и компенсирования своих негативных проявлений. Целью данного исследования является анализ этого негативного явления и определение мер пресечения и минимизации процессов легализации доходов, полученных преступным путем. В процессе

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написания этой научной статьи в качестве методов исследования были использованы: логический метод системного анализа и синтеза, сравнительный метод, метод классификации и дедукции и т.д. Результаты и выводы. Банковская деятельность по борьбе с отмыванием денег постоянно находится под угрозой некоторых уязвимых ситуаций, что требует постоянного мониторинга для принятия решений по своевременной минимизации и подавления рисков. Внешняя среда банковского сектора всегда была благоприятной для формирования новых рисков, вызывающих банков в незаконной схеме отмывания денег. В связи с этим определение этих рисков возможно путем внедрения новых технологий в банковской деятельности, инструментов и методов для финансового и банковского мониторинга наряду с применением в банковской практике эффективного управления персоналом.

**Ключевые слова:** глобализация, финансовый банковский сектор, банк, риск, мониторинг, отмывание денег.

**JEL Classification:** D81, F6, G32, E42

**CZU:** 336.71.078.3+336.225.68

**Introduction.** Currently, the state of the global economy is under a considerable pressure of the movement of financial resources flows, which has a visible impact on the socio-political status from worldwide. According to international practices, during the globalization process, fluctuations in the volume of inflows or outflows are considered, on the one hand, as catalysts for development, and on the other hand – a real threat to socio-economic tasks.

The dynamic development of the economy and creation of new financial products triggered an active request from criminal groups of new opportunities for expansion of investment fields through the mechanism of money laundering and legalization.

In this regard, identification of processes of legalization of income is essential for maintaining the stability of the financial-banking system. Or, evaluation of the process of money laundering has become a problem for the international community, whose aim is to study this phenomenon, which would allow the development of preventive and compensation measures of its negative manifestations. Thus, understanding the consequences of development of this negative phenomenon has forced the international community to focus its efforts on the development of suppression and minimization measures of the processes of legalization of income from criminal activities.

A leader in this field now is the International Financial Action Task Force (FATF). The International Financial Action Task Force was established by the G7 Summit in Paris in 1989, being an inter-governmental body that sets international standards, develops and promotes policies to combat money laundering and terrorist financing. FATF monitors the progress of its members in the implementation of the necessary measures, review of terrorism financing techniques and counter-measures, as well as promotes the adoption and implementation of appropriate measures globally. Currently, FATF includes 34 members, respectively 32 countries and governments and two international organizations, and more than 20 observers from which the five regional bodies of the FATF type and over 15 other international organizations or bodies. FATF has developed 40 +9 recommendations forming the international framework of fight against money laundering and terrorism financing. Recommendations are updated periodically in view of developments and trends of the two global phenomena. This international organization aims to develop and implement international standards in the field of combating laundering and legalization of income from crime and terrorism financing [10].

In February 2012, the FATF adopted new standards, which set a precedent regarding the need for a national assessment of the risks of income from criminal activity laundering. FATF recommendations urge member states to implement an approach based on risks evaluation, directed towards the detection, analysis and elimination of these threats.

Also, there was imposed the need to develop an effective risk minimization system and mitigation of possible consequences through rational management of financial resources. According to this approval, states should create a toolkit that will be able, in each concrete case to identify and establish the key criteria to determine and assess an existing or potential risk of legalization of income from crime. As a result, bank institutions that hold a key role in combating legalization of income from illegal activities become subject to an increased surveillance from the state and correspondent banks.



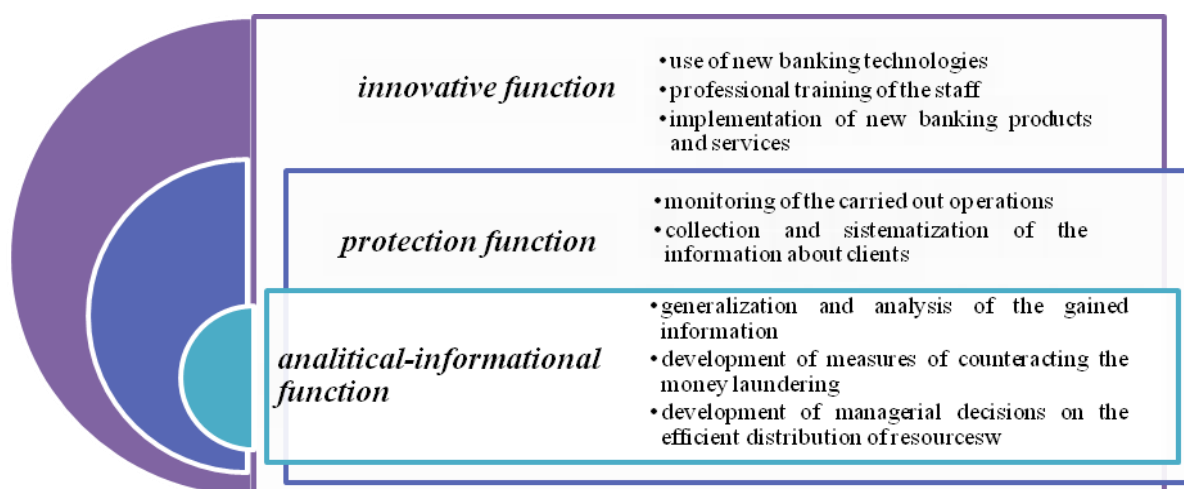
**Functional analysis of the risk event of bank's participation in schemes of legalization of dirty money.** Given the above mentioned, the prerequisites for economic and institutional environment modernization have gained a great social significance. Criminal groups in order to gain control over the economic activity in the area, invest in companies and then acquire control over them. On the other hand, banks, in order to obtain loans repayments, begin to use the help of these "investors". In turn, the last ones, obtaining these powers and using illegal methods, force bank customers to honor their debts. Thus, the financial-banking system becomes vulnerable vis-a-vis the laundering of income derived from illicit activities by certain criminal structures. The emergence of these vulnerabilities creates premises that the bank will later become a complicit in the process of legalization of illegal income. To minimize this fact, there is necessary to intensify the financial monitoring mechanism of the banking institution directed towards countering the money laundering.

One of the key principles of risk occurrence that involves participation of the banking sector in the process of money laundering is corporate governance. This principle is very important, because in the process of application of financial monitoring tools, the qualified personnel takes into account only personal responsibility, which is considered a key factor in accumulating the necessary information.

Thus, the consequences of including the financial-banking institution in the illegal schemes of income laundering, lead to the appearance of other risks in the activity of the mentioned institution, such as the risk of reputation loss, which ultimately will lead to loss of trust of partners, including the foreign ones, as well as to the diminish of the capitalization level, lowering of the price of own shares, etc.

After defining the concept of participation risk of the bank in the process of legalization of income obtained from illicit activities and for the development of measures on the establishment of an effective model for monitoring this risk from the bank's side, it is appropriate to classify this risk according to certain features and criteria.

For a better study of the essence of the risk event of the bank's participation in fraudulent schemes of legalization of income obtained illegally, we illustrate its functions as follows (see figure 1):



**Figure 1. Functions of the risk of bank participation in the money laundering process**

Source: Developed by the author.

Given the specificity of money funds laundering, the banking sector currently faces with achieving of the innovative function of the studied risk. This function is manifested by the continuing need to improve the level of knowledge of bank employees, with the aim of qualified and qualitative assessment of possible threats and their elimination in the short term through the bank's internal control mechanisms.

The innovative function allows the bank to implement financial mechanisms to reduce this risk in the safest way, based on a skilled and motivated assessment of the external and internal environment, thus ensuring a progressive and stable development of the banking activity.

Money laundering is regarded by the financial-banking institution as an opportunity that contributes to the establishment of the management strategy of banking operations by implementing the regulatory functions of the investigated phenomenon. Thus, it is required the awareness of the fact that obtaining illicit income can significantly increase the liquidity of the banking institution. Namely

the possibility of getting extra profit is often the reason why top managers of the bank participate in illegal money laundering schemes.

Bearing in mind that banking sector activity depends on external factors, as well as on internal ones, there always remain a high probability for it to be involved in illegal schemes to legalize monetary funds. Therefore, at this stage, the protection function of the studied risk is done by enhancing the internal control over operations conducted by the bank, and by taking immediate decisions of detection and minimization of the risk.

Thus, the efficiency of application of the protection function depends on the internal control structures, which will focus on activities to counter legalization of income from illegal activities.

In the process of monitoring the risk of participation of the banks in money laundering, a particular importance is given to informational support that is supported by analytical-information function. This function of the risk of bank participation in fraudulent schemes of legalization of illegal income is manifested by the need to collect and process information on possible threats and vulnerabilities in order to carry out a normal activity of banking institution.

Based on this analysis, we find that banks often classify risks for the participation of the bank in fraudulent schemes to legalize the money according to certain specific criteria, valid namely for the bank. These criteria are used to implement the policy of suppressing these risks. In addition, risk monitoring mechanism for the participation of banks in the money laundering aims at preventing, detecting and minimizing the risks. The analytic-information risk function is the most important in the monitoring process, as its qualitative implementation ensures the performance of subsequent measures in the process of suppression of money laundering activities. At the same time, by accumulating information resources, the analytic-informational function has the ability to create new risk management technologies and techniques. Also, this function creates possibilities for evaluating the potential risk events in the distribution of financial resources and requires an effective tactic in making management decisions.

It should be noted that the risk of involvement of the bank in the process of legalization of funds derived from illegal activities affects different components of the banking activity. Competent assessment of this risk helps to form an effective internal control model that includes monitoring tools of the risk of participation of banks in the process of money laundering, aimed at prevention, detection and suppression of vulnerabilities of the researched phenomenon.

**Vulnerabilities characteristic for the Republic of Moldova's banking sector.** Referring to the Republic of Moldova, in the context of the carried out investigations, we find that currently the banking sector represents the core of the financial market of the Republic of Moldova, while the other elements are underdeveloped (capital market), have a small share (microfinance and non-bank lending institutions, leasing), or are virtually non-existent (investment funds and venture capital) [3, p. 220].

The banking system is one of the most deeply embedded sectors in the national economy due to its lending activity, as well as collection and aggregation of savings of the population and companies. Therefore, it is the most sensitive to changes in the macroeconomic situation and expectations, showing a pro-cyclical behavior.

The crisis from the banking system underpins all the economic problems that the Republic of Moldova is facing at present, these being the biggest challenges to economic security of the country since 1991. The current conjuncture is caused by weak and easily influenced by obscure interests state institutions that allowed the spread of the deep crisis from the banking system and the economic downturn in the region. So, during 2014 and early 2015, the Moldovan banking system was disrupted by a series of bank frauds of historic proportions, which risks to undermine not only economic perspectives, but also those of European integration of the country [3, p. 248].

The main vulnerabilities that characterize the Moldovan banking sector in 2015 (in relation to the three financial institutions – C.B. „Unibank” J.S.C., C.B. „Banca Sociala” J.S.C., C.B. „Banca de Economii” J.S.C., being since 2014 under special administration) are:

- the high level of bad loans in a negative dynamic conditions of crediting of the real sector;
- liquidity and solvency were not placed in the appropriate levels;
- negative implications for the quality of the loan portfolio of domestic banks caused by increased depreciation pressures on the national currency [6, p. 51].

The fact that for about 1.5 years, three systemically important banks have committed a fraud of about 13.3 billion MDL or 950 million USD (12% of GDP) is a real failure in the regulatory activity of the

NBM [5, pp. 11]. Although the crisis of the 3 banks did not have systemic repercussions or origins, however, this has caused a considerable and sudden increase of inflation.

In the context of these events that were a direct threat to the economic and social security of the state, it is important to understand what the risks, legislative gaps and institutional vulnerabilities were that allowed decapitalisation of the respective banks and what will be done to transform the banking system from threat to opportunity of economic security and development.

The critical situation of the three banks was caused by a series of frauds aimed at de-capitalization of banks through offering credits in large proportions, with the involvement of offshore companies, local companies, foreign banks and perhaps, with the assistance of officials from state institutions. BEM, BS and UB were brought to bankruptcy by the artificial rise of liquidity indexes through interbank deposits and masking the bad loans, by assigning them to offshore companies. The ultimate goal was to artificially increase the lending capacity of the 3 banks and emits huge volumes of loans to a group of affiliated companies [9].

However, in 2015, despite the increase in non-performing loans and exchange market volatility, high levels of bank profitability were registered. In June 2015, banks' profit in the entire system amounted to 605.4 mil. MDL, up to 23.2% compared to the same period of 2014. This increase is due to the main component of the operational activity – interest income with 22.3% compared to the end of June 2014 had shown a positive dynamic. However, two commercial banks under special administration have recorded losses amounting to 302.4 mil. MDL: Banca de Economii – 166.8 mil. MDL and Banca Sociala – 135.6 mil. MDL. It should be noted that the population in the republic prefers loans with maturity of 2 to 5 years [8].

According to reports published by the NBM, the total volume of lending by commercial banks amounted to 2272.76 mil. MDL in June 2015, with 29.3% less than in June 2014. Loans in the national currency with the term 2 years to 5 years are granted at an average interest rate of 13.35%, and respectively, in foreign currency – at an average interest rate of 6.97% [6]. For comparison, in Romania, credits in national currency with maturity up to 5 years are granted at an average interest rate of up to 10% and in foreign currency – at an average interest rate of 5% [1].

Based on the carried out research, we support to the experts in the field opinion that state that the embezzlement of funds from BEM, BS and UB was based on fundamental factors such as:

1. The financial position of BEM has been undermined by acquiring the assets and payment liabilities of Investprivatbank (bank that went bankrupt in 2009) and the intensification of imprudent lending since 2013. In spring 2015, a significant package of shares became in the property of some companies from offshore zones which afterwards, have been transferred to companies from the Russian Federation. Subsequently, the critical situation of the BEM served as the main reason for transfer of the state a majority stake to Russian investors, with a doubtful reputation. Soon, some shareholders of BEM used shares in the bank to guarantee loans obtained by other companies from BS [2, p. 239].

2. Violation of the basic principles of corporate governance at BEM, BS and UB. Apparently, the new shareholders acted in concert, determining the management of banks to extend credit volumes for a number of companies affiliated to shareholders, violating all possible prudential rules [7].

3. Delayed and inadequate reaction from BNM and other relevant institutions. The fact that three banks of systemic importance during about 1.5 years defrauded the banking system with about 13.3 billion MDL, without essential constraints, denotes the failure of NBM in terms of regulation and supervision of the banking system [2, p. 240].

In other way, due to reduced transparency of the Moldovan banking capital, it is quite difficult to assess the actual situation on foreign investment chapter. Except for major „real” foreign investors' (Group Societe Generale in Mobiasbanca, Gruppo Veneto Banca in Eximbank, ProCredit Holding in ProCredit Bank, Erste Bank/BCR in BCR Chisinau), the other „foreign investors” are off-shore companies. Thus, four licensed banks have fully foreign capital – C.B. „EXIMBANK – Gruppo Veneto Banca” J.S.C.; C.B. „ProCredit Bank” J.S.C.; BCR Chisinau J.S.C.; C.B. „COMERTBANK” J.S.C., followed by C.B. „Mobiasbanca – Groupe Societe Generale” J.S.C. that holds 96.69% and B.C. „EuroCreditBank” J.S.C. - 98.84% [6].

According to the latest analyzes of NBM and NIER foreign direct investment remain weak for the national economy, while their need is felt more and more. Or, in the context when a set of reforms and public projects are awaiting external financing and business environment requires major investments to increase competitiveness, other domestic financing sources are compromised. In the pre-crisis period,

financial results of enterprises progressively worsen; access to credit becomes more difficult under the progressive tightening of monetary policy in this year; budgetary constraints are high and availability of businesses support is very small. All these create prerequisites for worsening of the existing economic situation, delaying the implementation of initiated reforms, mainly the Association Agreement with the EU, which without persistent and continuous efforts may result in a major failure.

**Estimation of the macroeconomic risks of participation of banks in the process of money laundering.** Thus, given that about 12% of GDP disappear from the banking system, and 3 banks whose assets are totaling about 35% of the assets of the entire banking system, the risks for the macroeconomic situation and the state of the entire country are obvious [5]:

1. *Country risk.* In the situation when the 3 banks will not be able to return the money (the probability is quite high because of the deplorable financial situation), the guarantees will be transformed into state debt. According to IMF forecasts, this will lead to a substantial increase in the level of indebtedness of the government: the share of public debt in GDP could increase from 32% in 2014 to 48% in 2015 and 51% in 2016. Against the backdrop of budget deficit and the risks for the national currency, the increase of debt is fueling the country risk [5].

2. *The risk of national currency depreciation and inflationary effects.* The period after the special administration within BEM, BS has coincided with the rapid depreciation of the national currency: from November 2014 to May 2015, the Moldovan leu has lost around 17% of its value [4, pp. 149-152].

Thus, the carried out analysis indicates that the critical condition of the local banking system is still actively influenced by the risk of participation of certain banks in illegal schemes of laundering of funds.

The lack of transparency of financial flows in the banking sector leads to emergence of risks of participation of the bank in money laundering. This also indicates on the occurrence of certain opportunities in the monitoring stage of the risk of participation of banks in the money laundering and obtaining reliable information about the client in order to identify potential threats and suppression of probability of their appearance.

**Results and conclusions.** Activity of the banking sector on combating money laundering is constantly jeopardized by certain vulnerable situations, which requires a constant monitoring for decision making of risk minimizing and suppression timely. The external environment of the banking sector was always favorable for the formation of new risks that involve banks in illegal money laundering schemes. In this context, identification of these risks is possible through implementation of new monitoring financial and banking technologies, tools and techniques in the banking activity.

The intense occurring of frauds in the Moldovan banking system during 2012-2015 was appropriate for appearance of the risk of participation of banks in such illegal schemes that ultimately led to inflation increase and jeopardize of the economic growth. In such cases it is very important the qualitative accounting which will enable the development of effective measures to combat money laundering in the banking activity.

Thus, the national economic experts recommend NBM to identify policies aimed at resolving the crisis in the banking system and eliminate regulatory gaps, as well as institutional vulnerabilities that allowed the deterioration of situation at BEM, BS, and UB in order to prevent future occurrences of similar practices. There is required the recovery of all deposits of individuals and legal entities, the responsibility of persons and institutions involved directly or indirectly in the frauds and reform of banking supervision and regulation system. We emphasize that the main challenges to financial stability for the next period are: resumption of lending in sustainable conditions, proper management of the quality of bank asset, including by providing a functional balance between the costs and benefits of various solutions for managing non-performing exposures, etc.

Elimination of institutional vulnerabilities that allowed the embezzlements from BEM, BS and UB must be an immediate priority for the authorities. In particular, it is necessary to increase the level of professional independence and personal protection of the NBM officials, who are directly responsible for the regulatory act. At the same time, NBM's independence has to be substantially strengthened to eliminate any excuses of regulatory failures. In this regard, it is necessary to remove the possibility to suspend the NBM decisions related to the regulation of the banking sector by any court.

In addition, the Administration Board of the NBM must be filtered from any political interference, and its members must not have direct or indirect political affiliations. Strengthening the independence of the NBM should take place in parallel with increasing its responsibility. In particular, it is necessary to



establish a mechanism to evaluate the performance of NBM by a foreign counterparty. This will ensure responsibility and allow an independent assessment of the institution, especially in crises conditions similar to the ones at BEM, BS and UB. It is important to ensure the independence of the NBM, while the financial sector should play an important role in the economic growth.

Finally, we emphasize that the attenuation of the state control along with tightening of contradictions between the social-economic and outdated regulatory framework became a good catalyst for corruption, which led to the development of illegal financial activities and widespread use in practice of various economic schemes of money laundering. Thus, there is required the total civic intolerance towards participation of the banking system in the legalization of income obtained illegally schemes.

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## REREGULATION of the publication of scientific articles in the journal "Economy and Sociology" B category

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