У збірнику представлені матеріали Міжнародної науково-практичної конференції "The Global Challenges for Economic Theory and Practice in Central and Eastern European Countries" (11-12 жовтня 2012р., Київський національний університет імені Тараса Шевченка, економічний факультет).
Для наукових працівників, викладачів, аспірантів і студентів.

В сборнике представлены материалы Международной научно-практической конференции "The Global Challenges for Economic Theory and Practice in Central and Eastern European Countries" (11-12 октября 2012г., Киевский национальный университет имени Тараса Шевченка, экономический факультет).
Для научных работников, преподавателей, аспирантов и студентов.

Conference proceedings of international conference "The Global Challenges for Economic Theory and Practice in Central and Eastern European Countries" (11-12 October, 2012, Taras Shevchenko National University of Kyiv, Economic Faculty) are presented.
For scientists, teachers, post-graduates and students.

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LITHUANIAN CAPITAL MARKET: CHALLENGES OF ATTRACTING THE INVESTMENTS

Хоча нормативно-правова база литовського ринку капіталу є добре збалансованою і відповідає вимогам ЄС, орга-ни нагляду за ринком ефективно функціонують, Вільнюська фондова біржа інтегрована в систему торгівлі NASDAQ, основна мета ринку капіталу, яка визначається як накопичення коштів для інвестування в малі та середні підприєм-ства, не реалізована. Тому метою даної роботи є аналіз факторів, що впливають на розвиток литовського ринку капіталів, та визначення шляхів підвищення його ефективності.
Ключові слова: ринок капіталу, інвестиції, біржа, фактори, розвиток.

Хотя нормативно-правовая база литовского рынка капитала является хорошо сбалансированной и отвечает тре-бованиям ЕС, органы надзора за рынком эффективно функционируют, Вильнюская фондовая биржа интегрирована в систему торговли NASDAQ, основная цель рынка капитала, которая определяется как накопление средств для инве-стирования в малые и средние предприятия, не реализована. Поэтому целью данной работы является анализ факто-ров, влияющих на развитие литовского рынка капиталов, и определение путей повышения его эффективности.
Ключевые слова: рынок капитала, инвестиции, биржа, факторы, развитие.

Although the regulatory framework of Lithuanian capital market is well balanced ant meets the requirements of EU, market surveillance authorities are effectively functioning, Vilnius Stock Exchange is integrated into the NASDAQ trading system, the main objective of capital market, defined as accumulation of funds to investments into SMEs, is not implemented. Therefore the objective of this paper is to analyze the factors influencing Lithuanian capital market development issues and identify the ways to increase its efficiency.
Keywords: Capital market, investments, stock exchange, factors, development.

The problem is illustrated by recent statistics. In 2011, Lithuania marked a significant intensification of the private capital markets: positive business results, and three new Lithuanian private sector players coming to market in 2010, contributed to a significant initial investment growth. Meanwhile, the additional investment (called add-on) value was much lower: in 2011, Lithuanian private capital market has not been fulfilled with anyone portfolio company sale or set up of a new fund [1]. Foreign investors in Lithuania also did not make any of this type of transactions during the last year, except only one of EUR 1.5 million value of the portfolio company sale in the 2010. The vast majority of transactions have been initiated by local private equity firms, so as seen from the foreign perspective, Lithuania still remains a rela-tively untapped market [1]. In the year 2011 Lithuania's pri-vate equity sector has not created any new fund, while in 2010 with the JEREMIE initiative it was set up three new EUR 48.2 million value funds – Lithuania SME Fund I (Balt-cap), Business Angels Fund I and I LitCapital [1]. Comparing data of the year 2010 and 2011, a conclusion could be drawn about loss of market share of the mutual fund regis-tered in Lithuania, competing with foreign funds. It means that necessary for business development funds are leaving the country, limiting the credit to capital markets.

Another inefficient private funding instrument is the pension funds. In 2011 in Lithuania there were invested 31.72% (1.29 billion LTL) of II tier pension fund assets, meanwhile abroad – 68.28% (2.79 billion LTL) of them. In 2010 investment was respectively 28.04 and 71.96% of the II tier pension fund assets [3]. Guiding people's financial resources (savings), focusing on accounts of credit institu-tions or institutional investors (pension and investment funds) portfolios, the recent statistics show little investment of Lithuanian business companies, others by targeting for-eign business finance.

The paper confirms the problems observed in Lithua-nian businesses: lack the financial resources to lead the initial public offering, shares abroad (Warsaw) Stock Ex-changes cases (eg, Avia Solutions Group, Agrowill Group). Warsaw Stock Exchange by concentrating large-capitalization companies, which attracts many foreign in-vestors, issuers, creates favorable conditions for success-ful underwriting and financial resources to attract. Mean-while, the potential loss of the Vilnius Stock Exchange is-suers reduces liquidity and attractiveness of the large in-ternational institutional investors, impairing functioning and development of local capital market.

The inclusion of the international capital into the market consequences the local capital (local reduction in the capital by investing in foreign funds, foreign capital in the country and the lack of a mixed capital company) and highlights the complex factors and conditions that determine the situation in the capital market, the need of analysis and offers for more successful absorption of local and foreign capital.

Economic theory identifies the purpose of capital mar-ket as long-term debt, which matures for more than one year. Capital market – a market that is designed to provide long-term investment for businesses, consumers and gov-ernment. Capital market development depends on the total environment, from the country risk assessment and internal conditions affecting this market.

There are no uniform country risk assessment meth-ods. In most cases taken into account:
• social;
• political;
• macroeconomic;
• specific economic factors.

Political risk is determined depending on the country's preparations for the implementation of international com-mitments to allow foreign investors, providing them with a variety of conditions. Economic risk is assessed by its po-tential to fulfill these obligations and in accordance with its economic and financial dependence on other countries. Social factors are employment, inflation, criminal situation. Inflation – the decrease in the value of real money, operat-ing and investment.

Capital market development is characterized by:
• Foreign capital and its influence as a major factor leading to the capital markets and economic development;
• the influence of globalization – a wider and easier ac-cess to capital;
• Foreign investment growth;
• Effective use of local capital and redistribution;
• capital market institutions and roles;
• Education of local investors and others.

The participation of foreign equity and its influence is one of the key factors that determine the national capital market and all the country's economic development. The level of foreign capital investment shows the country's eco-nomic and political attractiveness and its potential.

Foreign capital positions in Lithuania can be defined in several ways:
• total investment in the economy of Lithuania;
• their impact on different sectors of the economy;
• the National Stock Exchange;
• Foreign investors' share of new capital inflows.

Schröder [5], in the context of Central and Eastern European capital markets, says that the most important factors influencing the development of financial markets can be attributed to macroeconomic indicators such as economic growth, savings, productivity, inflation and state budget deficits. In his view, a significant impact on the capital markets is done by foreign investors, who affect supply and demand balance.

Teresienė [6], analyzing the Lithuanian stock market, examines the factors that determine the stock price fluctuations. One of the major factors drew investors' psychology.

Rafael and Tvaronavičienė [4] distinguish three main groups of factors affecting stock price fluctuations: political and economic, social and psychological conditions. The authors identify factors such as gross national product or industrial production volume index, as important factors in the share and its profitability growth.

Jasienė ir Paškevičius [2] say that one of the most important determinants of stock prices changes is the rate of competitive investment instruments such as government securities, bank deposits and others.

This paper aims to break down all other authors' identified indicators into 6 groups: globalization, macroeconomic, organizational, financial, social, psychological.

Table 1. Capital market development and interference factors

Group	Factor
Globalization – G	Foreign investors coming into the market (g1), foreign direct investment (g2), cross-border transactions (g3), domestic firms issue on foreign exchange (g4);
Macro-economic – Q	Economic growth (GDP) (q1), savings (q2), labor productivity (q3), inflation (q4) and the state budget deficit (q5), industrial production index (q6), the business cycles (q7), the domestic debt (q8), the foreign debt (q9);
Organizational – H	Vilnius Stock Exchange performance (h1), the number of shares, (h2), the number of government securities issues, the number of foreign investors (h3), capital marketparticipants (h4);
Financial – F	Interest rate of overnight transactions (f1), government securities (f2), bank deposits (f3), broad money (f4), balance of payments (f5) and foreign status (f6), average annual interest rate of deposits in litas (f7), average annual interest rate of loans in litas (f8), the European Central Bank interest rate (f9);
Social – Z	Employment (z1), unemployment (z2), level of living (z3);
Psychological – X	Investors' expectations (x1), market confidence indices (x2);

Source: Schröder 2001, Teresienė 2009, Rafael ir Tvaronavičienė 2005, Jasienė ir Paškevičius 2010.

Conclusion. To conclude with, there is a variety of factors, which are more o less essential for the functioning and development of capital market. Different authors highlight different aspects. In order to confirm or refute the theoretical considerations of the relationship between the determinants of venture capital market and impact of interference issues on capital market development and expansion, a complex analysis should be enforceable: correlation, multiple regression and multiple analysis.

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EXTERNAL SHOCKS ON ECONOMIC GROWTH OF UKRAINE: THEORETICAL BACKGROUNDS AND EMPIRICAL TESTING

У статті розглядаються впливи зовнішніх шоків на економічне зростання в Україні. Розглянуто основні зовнішні шоки зростання в Україні. Побудовано економетричну модель для тестування впливу зовнішніх шоків на економічне зростання в Україні.
Ключові слова: економічне зростання, світова економічна криза, макроекономічні шоки, економетричне моделювання.

В статье рассматриваются воздействия внешних шоков на экономический рост в Украине. Анализируются. основные внешние шоки роста в Украине. Построена эконометрическая модель для тестирования влияния внешних шоков на экономический рост в Украине.
Ключевые слова: экономический рост, мировой экономический кризис, макроэкономические шоки, эконометрическое моделирование.

In the article the external shocks impact on economic growth of Ukraine is analyzed. The main external shocks on the Ukraine's growth are considered. The econometric model of external shocks impact on economic growth of Ukraine was built.
Keywords: economic growth, world economic crisis, macroeconomic shocks, econometric modeling.

Research urgency. The world economic crisis of 2007-2010 years had a significant negative impact on the economy of Ukraine. The current state of global economy is characterized by increasing risks of recurrence of the global

recession. The source of these risks is primarily economic processes in the developed countries – the U.S. and the EU. Nowadays as managing Director of International Monetary Fund Christine Lagarde admits, "the world is more closely-

knit than ever before. An infinity of little interconnections dances across the fabric of global society, transforming millions of fragmented images into one dazzling mosaic" [1]. Taking into account Ukraine's economy dependence on the economy of developed countries, it's important to analyze and model the linkages between Ukrainian economic indicators and main external factors that may cause Ukraine's economic growth fluctuations.

The degree of problem research. The issue of external shocks influence on the economy of Ukraine, especially related to the global financial and economic crisis, was researched by many Ukrainian scientists . Among them are: Y. Belinska, V. Vorotin, Z. Varnaliy, V. Heyets, J. Zhalilo, V. Litvitskiy , V. Muntian, V. Parnyuk, O. Paskhaver, A. Sukhorukov, L. Yaremko, and many others. However, the problem of modeling of this impact on the economy of Ukraine is still scarcely explored.

The purpose of the paper is to analyze and model the impact of the global financial crisis on the economy of Ukraine.

Introduction

Many international experts evaluate the likelihood of recurrence of recession in the U.S. in 30 – 50%. And it's obvious that the economic processes in developed countries are outside the management possibilities of Ukraine as a country with a small open economy. Thus, Ukraine is unable to avoid a global recession. Therefore, priority of the anti-crisis policy should be primarily an effective monitoring of trends in the global economy and development of measures to mitigate the effects of global recession in Ukraine in case of attack. Uncertainty about the future of the world economy and the high probability of a global recession in the short run negatively affect the prospects of Ukraine and other countries that have large export part in GDP. Given the high degree of export dependence of the national economy and high perception of international investors country credit risk (as defined by all major rating agencies international debt obligations are rated Ukraine as sub-investment and high-risk), the impact on Ukraine's new global recession will be significant [2, p.45].

By the IMF the global economy is not delivering the growth the world needs. The IMF estimates global growth to be about 3½ percent this year, but much weaker in advanced economies–a mere 1½ percent, including a mild recession in the euro area. Among the advanced economies, the output gap–the difference between what an economy *is* producing and what it *can* produce–remains close to 4 percent this year on average. The emerging markets and developing countries are holding up much better, with expected growth of 5¾ percent. Turning to the financial side, financial markets in the euro area have seen some relief, thanks in part to recent European policies, but conditions remain volatile [3].

The major risk factors that affect the dynamics of the global economy in the short-term and medium term are:

- Excessive economic growth in developed economies, primarily in the U.S. and EU.
- Threats to financial stability of the euro area as a result of sovereign crisis in Greece and the debt crisis risks of a number of other European countries (Portugal, Spain, Italy, Ireland), the possible failure of the anti-crisis measures across EU countries and the ineffectiveness of anti-crisis emerging institutions.
- Slowing growth in demand in countries – new centers of growth, particularly in countries of BRICS (Brazil, Russia, India, China, South Africa).
- Rising prices for energy resources, agricultural products and other commodities which will strengthen inflation in many countries.
- The risks of the consequences of fiscal policy (government action to reduce state costs and increased tax burden could slow economic growth and have significant negative social consequences) [4, p. 5].

Analysis of external shocks influence on economic growth of Ukraine

According to ICPR forecasts, in Ukraine economic growth in 2012 will slow to 3% compared with 5.2% in 2011. Thus, according to ICPR in the first quarter of 2012, GDP growth decelerated to 2.5% year over year due to the deterioration of external conditions. Over the next quarter, the experts of ICPR expect some recovery in external demand, which should accelerate growth in industrial production. However, factor of Euro 2012 won't have any impact on the main economic indicators of Ukraine. During the years 2013-2014, GDP growth will accelerate to 3.5% and 4.2% respectively. Thus, the economy will grow at a rate below its potential.

Now Ukraine is becoming vulnerable to external shocks by increasing imbalances in the economy:

• To increase the popularity the government can resort to higher than planned in the budget increase of benefits before the elections, which will increase the budget deficit.

• Inability to attract sufficient funds to finance the budget deficit and debt service will increase pressure on the National Bank to buy government bonds on the secondary market, which may cause hryvna emission rate and a surge in inflation and/or a sharp devaluation.

• Rising of the current account deficit of balance of payments increases the pressure on the exchange rate.

• Unusual winter 2011-2012 years can cause a large deviation from the forecast level of yield value, because agriculture remains critically dependent on weather conditions [5].

So firstly, let's analyze the category "economic shock". Thus, economic shock as a phenomenon should have the following essential features: first, an extraordinary stimulus, expression of which in the economic sphere is a sudden change in economic conditions, causing jumps in the dynamics of one or several economic indicators, and secondly, it must cause destabilization of a particular economic entity (company, market, a particular region or sector of the economy or economic system as a whole).

Thus, the "economic shock" can be defined as sudden change in economic conditions, leading to destabilization of the economic object development.

Thus, the term "macroeconomic shock" can be defined as a real sudden change in economic conditions, which brings the economic system from a state of equilibrium or deepens the nonequilibrium state of the economy [6, p.45-46].

Macroeconomic shocks may be divided on internal and external ones.

The internal shocks relate to changes in economic conditions in the country and may be due to changes in legal and governmental events (shocks in aggregate demand, specific supply shocks, inflation shocks, monetary shocks, shocks of liberalization of capital account, credit shocks, etc.). They also include internal political processes, technological disaster and so on [6, p. 47].

External shocks are caused impulses arising outside particular country. These shocks are changes in external demand, cost of individual resources on the world market, terms of trade, world interest rates, flows of international mobile financial capital and more. Weather conditions also should be included to the external shocks that affect the development of agriculture and natural disasters.

Negative shocks of external sector of the economy affect the current account (will decrease revenues from exports, increase the cost of imports and net interest pay-

ments to non-residents) or on account of capital transactions and financial transactions (will increase outflow of capital), which negatively affect the balance of payments of country and lead to rapid growth of foreign currency demand [6, p. 47].

To built the correct model of external shocks influence, the analysis of possible macroeconomic transmission channels is necessary.

According to the State Statistic Committee of Ukraine increase in direct investment (equity) for 2011 amounted to 4556.3 million dol. USA (in 2010 – 4753.0 mln.dol. USA) [7]. The dynamics of FDI is presented on Figure 1.

Major countries-investors of Ukraine are Cyprus – 12645.5 mln.dol. (25.6%), Germany – 7386.4 mln.dol. (15.0%), Netherlands– 4822.8 mln.dol. (9.8%), Russian Federation – 3594.5 mln.dol. (7.3%) (Figure 2).
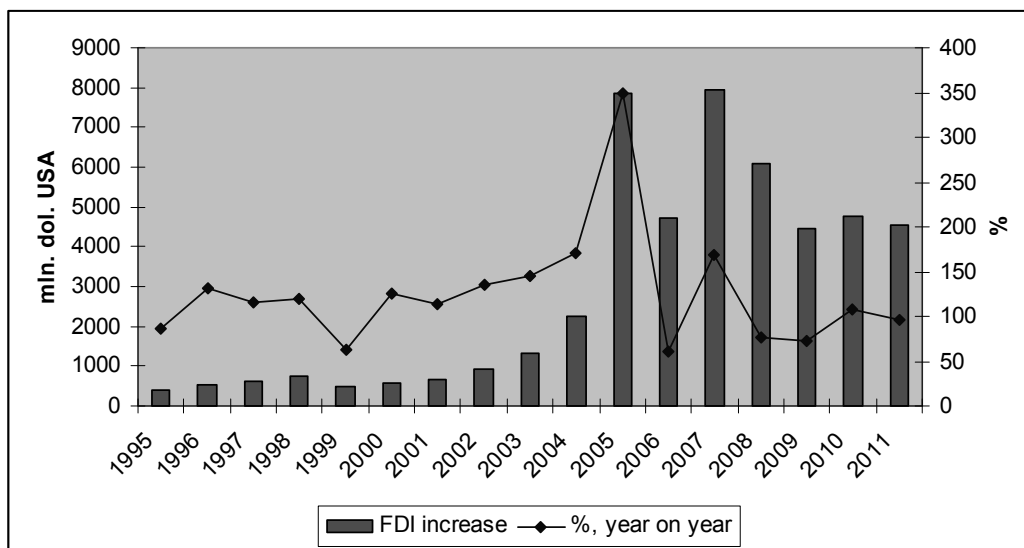
Fig. 1. Dynamics of foreign direct investments in Ukraine

Source: State Statistic Committee of Ukraine [7]

By State Statistic Committee Ukraine carried out foreign trade transactions of goods with partners from 219 countries. In 2011 Ukraine has exported to the CIS countries 38.3% of all goods, to EU countries – 26.6%. But Russia remains the largest trade partner of Ukraine (29.1% export and 35.6% imports) [7].
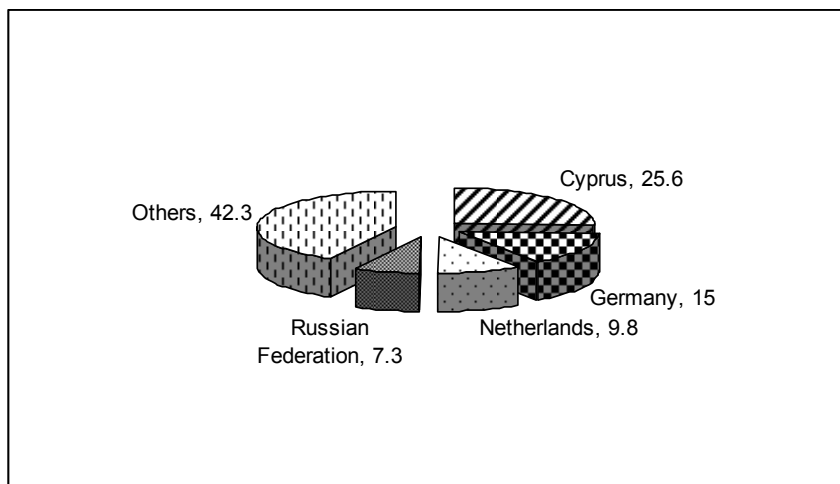
Fig. 2. Main countries-investors of Ukraine

Source: State Statistic Committee of Ukraine [7]

The export of goods to all major partner countries has increased as follows: to China – by 66.2% (due to the supply of ores and concentrates, organic chemicals, fats and oils of animal or vegetable origin), to India – by 62% (by supplies of fats and oils of animal or vegetable origin, ferrous metals, fertilizers), Poland – by 58.9% (due to the supply of ferrous metals, ores and concentrates of iron, steel, electrical machinery), Russian Federation – by 48.7%, Italy – to 29.5%, Turkey – by 28.8% and Belarus – by 4.8%.

From the CIS countries in 2011 were imported 45.4% of all goods, from EU countries – 30.9%.

The imported supplies have increased (compared with January-November 2010) from Belarus – by 64.8% (due to the supply of mineral fuels, oil and refining products, vehicles, except rail, mechanical machines), Germany – by 50.9% (due to mechanical machinery, vehicle insurance other than railway, electric cars), USA – by 48.9% (due to mineral fuels, oil and refining products, vehicles, except

rail, mechanical machines), Italy (42.4%), China (37.3%), the Russian Federation (34.8%), Poland (14.9%).

In total imports the share of mineral fuels, petroleum products and refining, mechanical and electrical machinery, vehicles, except rail, has risen. The share of plastics, polymers, pharmaceuticals, paper and cardboard decreased.

The dynamics of main export-import indicators is presented in Table 1.

Table 1. **Growth rates of increase (decrease) of trade volume of goods and services,% year on year**

Year	Export	Import	Balance, mln. dol. USA
2003	124.1	134.7	2836.7
2004	139	126.9	6918.6
2005	106.3	125.8	1291.8
2006	113.7	124.8	-2884.5
2007	127.2	134.5	-7263.6
2008	134.9	140.3	-13294.7
2009	62.6	55	-1312.6
2010	128.1	130.8	-3025.3
2011	130	134.2	-6747.5

Source: State Statistic Committee of Ukraine [7]

The economy of Ukraine as last financial crisis has showed is sensitive to the interest rates in EU and Russia.

So, as major external shocks that may cause the economic growth of Ukraine we'll consider: foreign direct investments, consumer prices increase in developed countries, growth rates in USA and EU, interest rates in euro zone and Russia [7] - [10].

The test for stationarity of series was conducted using the Augmented Dickey-Fuller (ADF) Unit Root Test. It showed that series in levels were nonstationary, but their first differences appeared to be stationary which gave the grounds for further model building. Based on the empirical research the linear regression model was constructed [11]. In the model such variables as foreign direct investments, GDP growth rate in USA and interest rates in EU and Russia appeared to be non significant.

We also have included the dummy variable that depicts crisis in the model, but it is appeared to be non significant.

So specification of model is as follows (in brackets there are t-statistics values):

$$\Delta GDP\_UKR_t = 16.77\Delta CP\_OECD_t / CP\_OECD_{t-1} + 2.94 GDP\_EU_t + 0.001\Delta BOP\_\_UKR_t - 2.36 + \varepsilon_t$$

$$(3.32) \qquad\qquad (7.56) \qquad\qquad (3.00)$$

$R^2 = 0.78$,

ΔGDP_UKR_t – differences of Ukrainian GDP growth rate,

ΔCP_EU_t – differences of OECD consumer prices growth rate,

CP_EU_{t-1} – lagged variable of OECD consumer prices growth rate,

GDP_EU_t – GDP growth rate of EU countries,

$\Delta BOP\_\_UKR_t$ – differences of Ukraine's current account balance,

ε_t – residuals of the model.

The built model was also tested for the presence of residuals heteroscedasticity and autocorrelation, correctness of specification. The obtained results have revealed the presence of residuals autocorrelation which caused the necessity of application of Newey-West covariance matrix.

Conclusions

Thus the results of the research have showed huge Ukrainian economy dependence on external factors. Among them the most significant one is inflation import from developed countries. We have situation when export products and "real" foreign money are going out of the country. Residual foreign liabilities are not able to increase commodities capacity in country. Accordingly, the commodity content of the national currency turns out to be smaller than that of foreign currency, and so, the national currency is less popular.

According to Russian economist Sergey Glaziyev, by exporting raw materials and buying high-tech products the country imports inflation [12]. It leads to the vulnerable dependence from developed countries that was clearly shown up during the last financial crisis.

So, if these processes keep in the future, Ukraine will be unable to avoid a global recession with severe consequences to overcome.

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INFLUENCE OF ECONOMIC GROWTH INTO INSURANCE MARKET DEVELOPMENT OF LITHUANIA AND UKRAINE

Метою даної статті є оцінка кореляції між економічним зростанням і розвитком литовського та українського ринків страхування. Автори оцінюють, які чинники економічного розвитку країн впливають на розвиток страхового ринку Литви та України. Також розраховано кореляцію між цими факторами, і надано прогнози для майбутнього розвитку обох ринків.
Ключові слова: ринок страхування, розвиток, економічне зростання, кореляція, показники непрямого страхування.

Целью данной статьи является оценка взаимосвязи между экономическим ростом и развитием литовского и украинского рынков страхования. Авторы оценивают, какие факторы экономического развития стран оказывают влияние на развитие страхового рынка Литвы и Украины. Также рассчитывается корреляция между этими факторами, и даются прогнозы на будущее развитие обоих рынков.
Ключевые слова: рынок страхования, развитие, экономический рост, корреляция, показатели непрямого страхования.

The aim of the article is to evaluate the correlation between economic growth and development of Lithuanian and Ukrainian insurance markets. The authors tend to make an assessment which factors of countries economic development has an influence to insurance market development of Lithuania and Ukraine. Also it is calculated the correlation between these factors, and are given the prognosis for the future development of both markets.
Keywords: insurance market, development, economic growth, correlation, non-direct insurance indicators.

In the market economy insurance is an effective tool for protection against possible risks, which insures socio-economic stability in the community. Insurance companies are dominated investors on the world financial market. Insurance markets of Ukraine and Lithuania are still in their primary development. It is interesting to evaluate Ukrainian and Lithuanian insurance markets and compare their level of development as both of these countries start their development after the downfall of Soviet Union. It is meaningfully to evaluate main macroeconomic indexes both of these countries and find a relationship how these indexes influence for the development of insurance market and which factors has the biggest effect.

The research based on combination of systematic and analytical approach. Method: using secondary data and correlation analysis. The correlation analysis made between development of insurance markets and economic development to show the relations between them and to give the prognosis for the future development of this markets. Fulfilling the task of research authors used main macroeconomic indexes in Lithuania and Ukraine in 2000-2010 and direct and non-direct indicators of evaluation insurance market the same period.

There were some difficulties with statistical data. The period of research was chosen 2000-2010 as before data the statistical report was in other accounting base and is available only in Lithuania.

Evaluations of indicators of Lithuanian and Ukrainian insurance market

Insurance market activity may contribute to economic growth, both as financial intermediary and provider of risk transfer and indemnification, by allowing different risks to be managed more efficiently and by mobilizing domestic savings [1, p. 2]. During the last decade, there has been faster growth in insurance market activity, particularly in emerging markets given the process of liberalization and financial integration, which raises questions about its impact on economic growth.

The insurance activity, both as a provider of risk transfer and indemnification and as an institutional investor may contribute to economic growth in the following ways:

∗ promoting financial stability;

∗ facilitating trade and commerce (the most ancient insurance activity);

∗ risk transfer (bearing risk for other economic agents which might stabilize their income streams, dampen volatility and enhance economic activity) [2],

∗ substitute savings (broadening the investment range might make intermediation more efficient and thus aid in economic growth),

∗ allowing different risks to be managed more efficiently encouraging the accumulation of new capital;

∗ investment (e.g. increasing over-all investment volumes and deepening capital markets), institutional spheres of influence (e.g. bancassurance) and possible sources of contagion and repercussions to the economy.

∗ fostering more efficient allocation of domestic capital [3].

In addition, there are likely to be different effects on economic growth from life and non-life insurance (property / liability) given that these two type of insurance protect the households and corporations from different kind of risks that affect the economic activity in different ways and also because life insurance companies facilitate long-term investments rather than short-term investments as it is the case of non-life insurance companies.

If to show the mechanism of dependency between economic growth and insurance market it can be shown:

Growth of GDP →Growth income→Increase of average wages→

Increase purchasing power→ Increase insurance premiums.

National insurance markets have evolved to suit each country's particular environment. The interaction of supply and demand forces determines market structures. Price and innumerable economic, social and cultural factors influence the demand for insurance. Insurance supply is molded by price and, to a great degree, by a market's risk-bearing capacity and government regulation. Some influences are logically predictable. For example, we would expect comparatively lower demand for insurance in the least developed countries, with the demand increasing with economic development. Similarly, we would expect developed market-economy countries, which rely more on private sector operations, to exhibit a correspondingly higher demand for private insurance [4, p. 26].

For all necessary calculations of correlations needed for the aim of research we cover the main macroeconomic indexes and insurance indicators, which can be dividing into direct and indirect. Macroeconomic indicators also called as gross indicators and they are: GDP, inflation rate, unemployment level, middle salary, migration. There are a lot of direct indicators used in insurance practice for estimation insurance markets, all this indicators is shown in balance of insurance activity. To maintain a correlations we

estimate such direct insurance indicators as the number of participant of insurance market; written premiums as it really shows the a reflection of the demand for insurance services and reflection of social need for them, on the one hand, and on the other hand it is the reward the insurance companies receive, taking on responsibility for risks; claims paid is equally important factor, which reflect the activities of insurers; number of insurance contract show the current activity of insurance company or amount of future premiums if this contract is negotiated for a future period; and the share of life and non-life insurance in the market.

Another three indicators those are used worldwide for evaluation of insurance market and belong to category non-direct indicators are insurance density, insurance penetration and insurance exploration. Even these indicators are so called indirect – shows us correlation between insurance activity and country's economic growth more precisely, so we look at its in detail here.

The analysis of the data in the Figure 1 shows, both countries indicator were growing in the researched period. But it is necessary to point out that growth of this indicator in Lithuania is much bigger than in Ukraine.
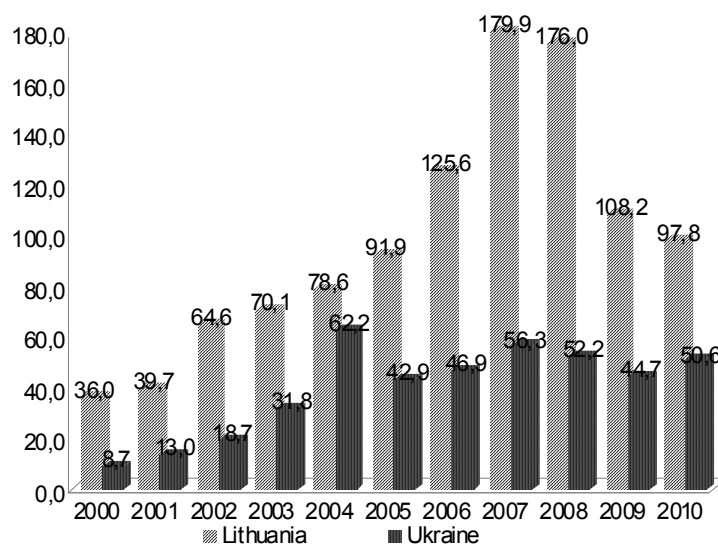
Fig.1. Density of insurance market in Lithuania and Ukraine, euros

Source: compose by authors, Insurance in Lithuania, annual overview 2000 – 2010, www.dpk.lt, State Commission on Regulation of Financial Services of Ukraine http://www.dfp.gov.ua, Department of statistic in Lithuania and Ukraine http://db1.stat.gov.lt/,http://ukrstat.gov.ua

During all years the amount of money per capita spent into insurance services was growth in both countries. It proves a constant development of insurance market. But still the density index in Ukraine is comparatively low, in was three times smaller than in Lithuania in 2007 and is 56,3 euros rather in Lithuania it is 179,9 euros per one inhabitant. The situation in post-crisis years (2009-2010) changed dramatically these indicators and as we can see, mostly for Lithuanian insurance market – it decreased till

97,8 euros, also the gap between Ukraine and Lithuanian indicators shortened, but still remained double – 50,6 euros in Ukraine.

Another important index is insurance exploration that shows the number of insurance contracts per capita. This index was very low for both countries at the beginning of the period. Only in 2003 in Lithuania was 1, 04 contract per capita. In Ukraine this index till 2010 is small and is only 0, 58 contracts per capita.
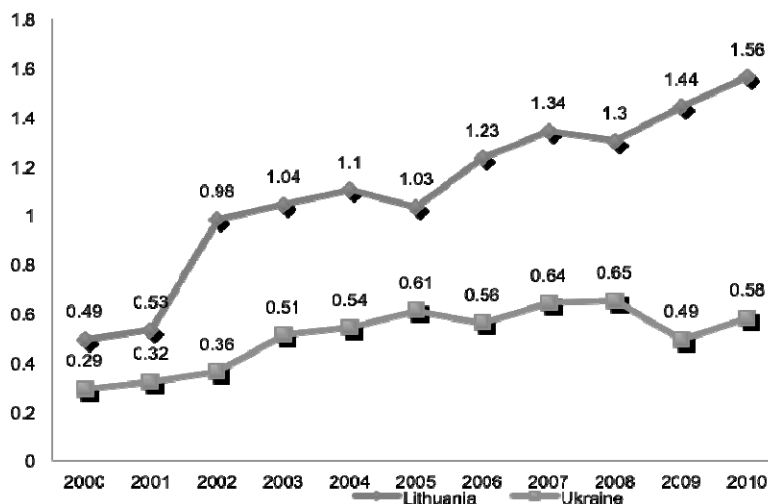
Fig.2. Insurance exploration of insurance market in Lithuania and Ukraine, contracts

Source: compose by authors, Insurance in Lithuania, annual overview 2000 – 2010, www.dpk.lt, State Commission on Regulation of Financial Services of Ukraine http://www.dfp.gov.ua, Department of Statistics in Lithuania and Ukraine http://db1.stat.gov.lt/, http://ukrstat.gov.ua

It means that the market is not developed as in developed country this index is minimum three contracts per one inhabitant. It means that all population is slight involved into the process of insurance.

Another important index is insurance penetration, which shows proportion of gross direct premiums and main mac-

roeconomic index of country. It is shown in the Figure 3. During period this index also is growing, but in both countries it is low, in Ukraine the situation is a little bit better, but not so much.
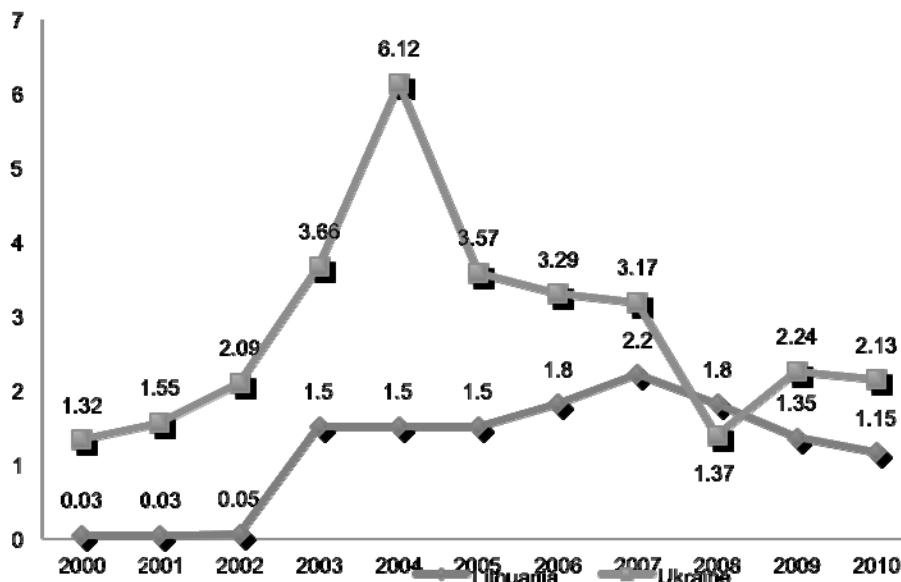
Fig.3. Penetration of insurance market in Lithuania and Ukraine, %

Source: compose by authors, Insurance in Lithuania, annual overview 2000 – 2007, www.dpk.lt, State Commission on Regulation of Financial Services of Ukraine http://www.dfp.gov.ua, Department of statistics in Lithuania and Ukraine http://db1.stat.gov.lt/,http://ukrstat.gov.ua

Since the 2000, the share of insurance premiums in the country's GDP was not considerable, in Lithuania it was 0,03%, in Ukraine 1,32% what shows that sphere of insurance services was in the very low stage of development. In 2002 in Ukraine this index begin rise, because of sharply growth of insurance premiums. In Lithuania this index was stable during three years (2003-2005), after 2005 begins to growth, but from 2007 was decreasing constantly and became lower than in 2003. If to analyze the insurance penetration by the types of insurance it is also the same as previous index. It means that the share of life insurance premiums in both markets, Ukrainian and Lithuania is too small. Insurance penetration of Ukrainian insurance market has a little bit higher meaning, than in Lithuania, but in comparison with other European country or middle European average – 7-8%, this index is very low. For example, before crisis years, in France in 2005 it was 7,04% for life insurance and 10,18% for the whole types of insurance, in Belgium 8,49% for life insurance and 11,28% for the whole types of insurance [9, p. 13]. In comparison with Lithuania and Ukraine this index for life insurance in 2005 was 0,6% and 0,83%. Still both markets have a big potential, because in spite of the banking sector insurance sector is not so developed, that's why it is a greater possibility to develop it.

Correlation between insurance market activity and economic growth

It is simple approximate mechanism of bidirectional relation between countries economic growth and its insurance market. If country has a stable development and main countries macroeconomic indicators have a tendency to growth especially GDP and GDP per capita, the highest level of this indexes means the highest prosperity, it's

cause the growth of income which cause increase of average wages. This increase gives people possibility to choose how they want to invest money, or save it, or buy insurance services. The growth of demand of insurance causes the growth of insurance premiums, which develop insurance market. Also there are some other factors that influence for people's behavior; if interest rate is high they will put money into deposit account. But if to think for a future insurance is a good mechanism for accumulating money, especially life insurance. If to take a case of entrepreneurs, the increase of their income causes the increase of their investment, which is insured from financial risk. All this mechanism can be used to Lithuania and Ukraine. The strength or the dependence between two or more variables shows the coefficient of correlation.

If to evaluate the effect of insurance variables on economic growth within the context of the statistical coefficient of correlation the results is shown in the table 2.7. It is shown the correlation between GDP per capita and insurance density (insurance premiums per capita), also correlation between density and average wages.

T a b l e 1. **The coefficients of correlation between economic growth and development of insurance market in Lithuania and Ukraine**

Lithuania		
Meaning	GDP per capita	Average Wages
Insurance Density	0,89	0,85
Insurance Density life insurance market	0,76	0,99
Insurance Density non-life insurance market	0,80	0,98
Ukraine		
Meaning	GDP per capita	Average Wages
Insurance Density	0,72	0,63
Insurance Density life insurance market	0,76	0,97
Insurance Density non-life insurance market	0,71	0,72

Source: compose by authors, Department of Statistic in Lithuania and Ukraine http://db1.stat.gov.lt/, http://ukrstat.gov.ua

The coefficient of correlation has high meaning in Lithuania and in Ukraine. It means that it is high dependence between economic growth and development of insurance market. And this dependence is bilateral. The economic growth, growth of main country's macroeconomic indicators gives impulse to developing insurance market. In the other side, the development of insurance market gives new possibility to country's growth. But still it is some differences between these indexes.

The correlation between insurance density and GDP per capita in Lithuania is 0,89. For Ukraine this coefficient is 0,72. It is a little bit, smaller than Lithuania but still mean a high relation between sizes of main macroeconomic index and premiums per capita. If to compare the correlation between GDP per capita and premiums per capita of life insurance is the same in Lithuania and Ukraine and is 0,74. The same meaning correlation but for non-life insurance is very high and for Lithuania is 0,80 and in Ukraine is smaller and is 0,72.

The correlation between insurance premiums per capita and averages wages in Lithuania is 0,85 and in Ukraine 0,63. If to compare the correlation between life and non-life insurance density and average wages, than we can see that in Ukraine it is bigger correlation between life insurance density and average wages. It means that the higher level of average income gives possibility to buy extra services for example insurance. So, the coefficient of correlation, between GDP per capita that shows countries development and insurance premium per capita which explain the main tendency of insurance market, is very high. That means that between countries development and development of insurance market is a relation. Macroeconomic growth cause the development of the integral part of whole economy – insurance market, and the development of the insurance market for it's part also cause the future economic growth.

Conclusions

The bigger effect for insurance market development in Lithuania has average wages. It means that the growth of average wages for 1% cause growth of insurance premiums for 2,69%. This explained that the growth of average wages, gives for people more possibility to spent money for another than first necessity goods. If to take into consideration that fact that the level of average wages in Lithuania growth yearly for 12%, it means that it cause the 32% of growth of insurance premiums. Other factors of economic development have very low influence for insurance market development.

For Ukraine the situation is similar to Lithuania, two main factors have a biggest effect: GDP per capita and also average wages. The biggest influence to insurance premiums growth in Ukraine has GDP per capita. The growth of this measurement for 1% leads to growth of insurance premiums for 5, 3%. If to take into consideration that average yearly changes of GDP per capita growth is 6%, we can say that it cause the growth of insurance premiums for 31,8%. This can be explained by the chain of changes, growth of GDP means that the economy has tendency to development, that countries welfare is growing and this cause growth purchasing power. Average wages has also big influence to the development of insurance market. The coefficient is 4,755 what means that the increasing of average wages for 1% cause the growth of insurance premiums for 4,755%. Other coefficients have very low meaning that shows that it is very low relationship between impacts of these factors into dependent variable Y (insurance premiums).

So, we can come to conclusion that country's economic development has direct impact to the development of insurance market. As in both countries in Lithuania and Ukraine average wages have a biggest impact for insurance premiums it means that there is a direct relationship between countries welfare and development of it integral part – Insurance market. First of all it is necessary to have good economic conditions where it is satisfied first time needs and after when purchasing power of populations increase with average wages they will buy insurance services.

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MACROEOCONOMIC ANALYSIS OF FINANCIAL CRISIS: DO MONETARY UNIONS MATTER?[1]

Недавній аналіз фінансової кризи призвів до деяких дискусій про роль економічної політики, зокрема, про наслідки різних режимів грошової політики. Тим не менш, на рівні теоретичного аналізу моделі відкритої економіки досліджують тільки два полярних випадки гнучкого та фіксованого обмінного курсу, тоді як валютні союзи ще не достатньо досліджені. У цій статті ми проаналізуємо, як економічна політика сприяла компенсації зниження темпів зростання ВВП після фінансової кризи. Наш основний внесок полягає у розширенні стандартного підходу, що дозволяє отримати макроекономічну модель, яка описує діяльність валютного союзу.

Ключові слова: фінансова криза, економічна політика, валютні союзи.

Недавний анализ финансового кризиса привел к некоторым дискуссиям о роли экономической политики, в частности, о последствиях различных режимов денежной политики. Тем не менее, при теоретическом анализе модели открытой экономики исследуют только два полярных случая гибкого и фиксированного обменного курса, тогда как валютные союзы недостаточно исследованы. В этой статье мы проанализируем, как экономическая политика способствовала компенсации снижения темпов роста ВВП после финансового кризиса. Наш основной вклад заключается в расширении стандартного подхода, что позволяет получить макроэкономическую модель, которая описывает деятельность валютного союза.

Ключевые слова: финансовый кризис, экономическая политика, валютные союзы.

The recent experience after the financial crisis has led to some debate on the role of economic policies; in particular, the implications of monetary policy regimes. However, at a theoretic analysis level, open-economy models only show the two polar cases of flexible and fixed exchange rates, while monetary unions are not properly described. In this paper, we will analyze how economic policies responses have contributed to offset the decline of GDP growth after a financial shock. Our main contribution will be to extend the standard approach providing a macroeconomic model that describes a monetary union.

Keywords: financial crisis, economic policies, monetary unions.

The recent experience with the problems generated by the economic and financial crisis has led to some debate on the role of economic policies. In particular, to which extent a particular monetary policy regime would impose a restriction to policymakers. The greater is the degree of openness and economic integration, the greater are the effects of the interaction among the involved economies. Those effects depend on the international linkages or channels of transmission, being structural interdependence one of the main implications of integration with partner countries. Finally, the interdependence derived from the economic interaction among economies produces externalities which can turn to be counterproductive when having domestic policy decisions.

The recent financial crisis is considered to be the worst crisis since the Great Depression of the 1930s. After the collapse of financial institutions there has been a decline in economic activity and an increase of unemployment that have contributed to a global economic recession. There are several explanations for such a big crisis (see Reinhart and Rogoff (2009) for a survey of financial crises, and Carmona-González and Díaz-Roldán (2012) for an historical perspective of economic crises), but there is no consensus about how it could be avoided.

Macroeconomic models do not seem to capture specifically the role of financial markets. As far as we know a financial crisis is generally modelled as a monetary negative shock. Therefore, the main goal of this paper is to study the consequences of monetary (financial) shocks under alternative monetary agreements (and/or different exchange rate regimes). We will study two simple and alternative cases: a flexible exchange rate regime, and a fixed exchange rate that we will characterize as a monetary union. In this way, and through a simple two-country model, we will analyse the effects of monetary shocks on the involved economies when there are no restrictions in using the exchange rate and monetary policy as instruments. Next, we will examine the consequences of such kind of shocks when there is neither an independent monetary policy, nor an exchange rate policy, and the domestic authorities are constrained by the fiscal discipline imposed by the monetary agreements of a monetary union.

Establishing a monetary union has been suggested as an alternative to a system of fixed exchange rates. As is well known, recent experiences (such as the speculative attacks on currencies in the European Monetary System in 1992-1993, the default on Mexican debt in 1994, the devaluations and the banking crises across Asia in 1997-1998, the Argentine crises in 2001 and the recent financial crisis of 2007 followed by a global recession) have shown the increasing difficulty for a country to build the reputation needed to sustain a fixed exchange rate system. The ultimate reason is the spectacular growth of world capital markets, following the continuous liberalization and deregulation of capital movements that occurred in last years. So, if a government's compromise of maintaining a certain exchange rate is not believed as credible by financial markets, huge speculative attacks at such a massive scale would occur. All this has led to some authors (e.g., Obstfeld and Rogoff, 1995) to suggest that, in the near future, the choice faced by a country would be either maintaining a flexible exchange rate or adopting a common currency, rather than a fixed exchange rate, with other related countries. Moreover, from a macroeconomic point of view it

is clear that a system of fixed exchange rates (and full capital mobility) implies that there is only one system-wide monetary policy. National currencies would become perfect substitutes through the irrevocable fixing of exchange rates if they became equally appropriate for the three classical functions of money, namely: unit of account, store of value and medium of exchange.

The Economic and Monetary Union (EMU) that started in Europe in 1999, displays a novel economic policy framework. A single monetary policy is the sole competence of an independent and supranational central bank, the European Central Bank (ECB), whilst other economic policies (budgetary and structural policies, as well as wage determination) generally remain the responsibility of the member states. The ECB formulates its policy in the light of developments in the euro area as a whole. Monetary policy is therefore well placed to respond, if necessary, to any symmetric shocks that might affect the currency area. By contrast, and in line with the subsidiarity principle, national governments are in a position (subject to certain common rules) to deal with their respective economies, e.g., in the case of country-specific shocks. However, the 2007 financial crisis spread into a global economic shock and it was transmitted to the EMU. In 2009 the Eurozone growth became negative.

The macroeconomic policy responses have focusing mainly in short-term actions such as expanding money supplies and implementing large fiscal stimulus packages. Both the U.S. Federal Reserve and the European Central Bank have done the largest monetary policy action in world history. Regarding the long-term responses, none significant measure has been implemented. Particularly, the lack of fundamental changes in banking and financial markets is one of the main concerns of some contributions to the International Monetary Fund publications (see Blanchard and Milesi-Ferreti (2009) and Merrouche and Nier (2010), among others).

In the EMU, the degree and the mechanism for coordination differ according to how convincing the economic rationale for coordination is in the particular policy area. The large risk posed by fiscal imbalances to any mone-

tary area stability justifies close rules-based coordination in budgetary policies. For those reasons, we first develop a simple two-country model in order to analyse in strategic terms how the authorities can deal with monetary shocks, and, second we compare the results with the case of a monetary union. When modelling the monetary union we will consider a common money market equilibrium condition, and alternatively a common monetary policy rule; as well as the fiscal limitations imposed by the monetary agreements.

The paper is structured as follows: the two alternative macroeconomic models are presented in section 2; the possibility of policy coordination is studied in section 3; section 4 shows the results; and, finally, section 5 concludes.

1. The macroecomic models

1.1. The model of flexible exchange rates

The starting point will be the standard two-country Mundell-Fleming model, extended to incorporate the supply-side. The countries are symmetric; we assume flexible exchange rates and perfect capital mobility. The variables are defined as rates of change.

The set of equations for country 1 is as follows, and a similar setup holds for country 2:

$$y_1 = -a\,r + b\,(e + p_2 - p_1) + d\,y_2 + f_1 \tag{1}$$
$$m_1 + q_1 - p_1 = -q\,y_1 - y\,r \tag{2}$$
$$p_{c1} = (1 - m)\,p_1 + m\,(p_2 + e) \tag{3}$$
$$w_1 - e\,p_{c1} = f\,prod_1 - h\,u_1 + z_1 - v_1 - t_1 \tag{4}$$
$$p_1 - w_1 = f\,prod_1 - j\,u_1 \tag{5}$$
$$y_1 = n_1 + prod_1 \tag{6}$$
$$u_1 = l_1 - n_1 \tag{7}$$

(1) and (2) are the goods market and the money market equilibrium condition respectively, (3) to (7) describe the aggregate supply of the economy, following Layard, R., Nickell, S. and Jackman, R. (1991)

Solving the model given by equations (1) to (7) and their counterparts for country 2 (see Díaz-Roldán (2004) for details), we obtain the reduced form:

$$y_1 = M_y m_1 \pm M'_y m_2 + M_y q_1 \pm M'_y q_2 + F_y f_1 \pm F'_y f_2 - S_y s_1 - S'_y s_2 - S_y t_1 - S'_y t_2 \tag{8}$$
$$y_2 = M_y m_2 \pm M'_y m_1 + M_y q_2 \pm M'_y q_1 + F_y f_2 \pm F'_y f_1 - S_y s_2 - S'_y s_1 - S_y t - S'_y t_1 \tag{9}$$
$$p_1 = M_p m_1 \pm M'_p m_2 + M_p q_1 \pm M'_p q_2 + F_p f_1 \pm F'_p f_2 + S_p s_1 + S'_p s_2 + S_p t_1 + S'_p t_2 \tag{10}$$
$$p_1 = M_p m_1 \pm M'_p m_2 + M_p q_1 \pm M'_p q_2 + F_p f_1 \pm F'_p f_2 + S_p s_1 + S'_p s_2 + S_p t_1 + S'_p t_2 \tag{11}$$

Where s captures the supply-side shocks: $s = z - v - (1/\lambda l - (1/\lambda)\,prod$, with $\lambda = 1/(\eta + \varphi)$. Notice that a negative supply shock ($s > 0$), leads to a fall in output and a rise in prices in both countries. And a positive demand shocks ($q, f > 0$) lead to positive effects on the output and prices of the country of origin of the shock, but when transmitted to the other country the effects depend on the channel of transmission.

When a country's aggregate demand increases, also increases foreign goods' imports, and the result is the called "*locomotive*" effect, i.e., the effects on the output and prices of the country of origin of the shock are transmitted to the other country with the same sign.

When changes in the real exchange rate prevail, the result is the "*beggar-thy-neighbour*" effect, i.e., the effects on the output and prices of one country are transmitted abroad with the opposite sign. The reason is that a real

exchange rate depreciation (appreciation) in an economy means an appreciation (depreciation) in the other, which leads to an aggregate demand expansion (recession) in that economy, and to a recession (expansion) in the other.

1.2. The model of fixed exchange rates: a monetary union

Establishing a monetary union has been suggested as an alternative to a system of fixed exchange rates (e.g., Obstfeld and Rogoff, 1995). As mentioned in the introduction, recent experiences have shown the increasing difficulty for a country to build the reputation needed to sustain a fixed exchange rate system.

From a macroeconomic point of view, a system of fixed exchange rates (and full capital mobility) implies that national currencies would become perfect substitutes through the irrevocable fixing of exchange rates, so there would be

only one monetary policy, and therefore, a monetary union would guarantee the credibility of the system

Next, in order to characterize a fixed exchange rate, we will develop the extreme case of a monetary union. For simplicity, we will develop a model for a small mone-

tary union. The set of equations for countries 1 and 2 are modified as follows: the nominal exchange rate is made equal to zero and both countries replace each individual money market equilibrium condition by a common equilibrium condition:

$$m + q - (1/2)\, p_1 - (1/2)\, p_2 = (\theta/2)\, y_1 + (\theta/2)\, y_2 - \psi r \qquad (12)$$

where m denotes the union's money supply, and q a common monetary (or financial) shock.

Notice that, since all the variables are in rates of change, the variables of the monetary union are equal to the weighted sum of the member countries' variables, so that for any variable x: $x = (Y_1/Y)x_1 + (Y_2/Y)x_2$, where x, x_1, x_2 are the rates of change of a particular variable for the union. Y, Y_1, Y_2 are their levels of output, and $Y_1 + Y_2 = Y$.

For simplicity, we will assume the symmetric case $(Y_1/Y) = (Y_2/Y) = 1/2$.

In a similar way to the two-country model, (see Díaz-Roldán (2004) for details), we obtain the reduced form for the monetary union's member countries:

$$y_1 = M_y m + M_y q + F_y f_1 \pm F'_y f_2 - S_y s_1 - S'_y s_2 - S_y t_1 - S'_y t_2 \qquad (13)$$
$$y_2 = M_y m + M_y q + F_y f_2 \pm F'_y f_1 - S_y s_2 - S'_y s_1 - S_y t - S'_y t_1 \qquad (14)$$
$$p_1 = M_p m + M_p q + F_p f_1 \pm F'_p f_2 + S_p s_1 + S'_p s_2 + S_p t_1 + S'_p t_2 \qquad (15)$$
$$p_1 = M_p m + M_p q + F_p f_1 \pm F'_p f_2 + S_p s_1 + S'_p s_2 + S_p t_1 + S'_p t_2 \qquad (16)$$

For a negative supply shock, we also find an output fall and a rise in prices in both countries. Regarding demand shocks, a shock that affect the goods market may lead again to the "*locomotive*" effect or the "*beggar-thy-neighbour*" effect, when transmitted to the other country. However, in contrast with the two-country model, a monetary union does not allow for country-specific monetary shocks.

2. Macroeconomic policy coordination

In the two country model, we assume that countries 1 and 2 are represented by their authorities, which face the problem of minimizing their loss functions:

$$L_1 = y_1^2 + \pi_1 p_1^2 \qquad (17)$$
$$L_2 = y_2^2 + \pi_1 p_2^2 \qquad (18)$$

The target variables are: the rates of change in both output (y_1, y_2) and prices (p_1, p_2), and we assume $\pi_1 \neq \pi_2$ (i.e., we consider asymmetric preferences). The authorities could use as their policy instrument: the money supply (m_1, m_2), the budget deficit (g_1, g_2), or a supply-side variable (t_1, t_2). Given the quadratic form of the loss functions, they will be minimized when the target variables are equal to zero.

In the monetary union, the loss functions are now:

$$L_1 = y_1^2 + \sigma_1 g_1^2 + \pi_1 p_1^2 \qquad (19)$$
$$L_2 = y_2^2 + \sigma_2 g_2^2 + \pi_1 p_2^2 \qquad (20)$$

Where assuming that the disciplining effects of a monetary union imply some restrictions on fiscal policy, we include the budget deficit (g_1, g_2) as a target variable, and we consider asymmetric preferences ($\sigma_1 \neq \sigma_2$) again. An example of this situation is the EMU, where each member country has to fulfil the budget deficit requirements of the Pact for Stability and Growth.

In both cases (the two-country model and the monetary union) the countries' authorities are subject to the restrictions imposed by the international economic framework, which is given by the reduced form of the model.

By solving the optimization problem of each country, we obtain the policy reaction functions of the authorities; and the competitive or Nash solution will be the intersection of these functions. A well known example of international policy conflict arise from currency depreciating policies under flexible exchange rates, just as they emerge from the use of devaluation under fixed exchange rates. However if the

authorities decide to cooperate they will minimize the weighted sum of their individual loss functions, obtaining the cooperative solution.

In order to avoid the spillover effects of their policies, the countries' authorities will identify stabilization with avoiding changes in the policy instrument. So, the authorities will choose the solution (competitive or cooperative) that requires the lowest change in the policy instrument. When solving the optimization problems (playing Nash or the cooperative solution) from the first-order conditions of the social planner problem, we find that the cooperative solution internalizes the externalities. When the externality has the same sign than the shock, the cooperative solution reinforces the effect of the shock. In those cases, the cooperative solution requires a greater change of the policy instrument than the Nash solution; therefore, cooperation became counterproductive or non desirable. Given that, the desirability of coordination can be determined by comparing the effect of the shock in the reduced form equation (given by its mathematical sign), with the externality derived from the policy instrument when the authorities try to offset the shock in a coordinated way (cooperative solution). The cases where cooperation would be undesirable are those in which the externality derived from the change of the policy instrument reinforces the effect of the shock. On the contrary, the cases where cooperation proves to be desirable are those in which the externality from the policy instrument offsets the effect of the shock, so that the coordinated solution implies a lower change in the policy instrument.

3. Results

Solving the optimization problems we would be able to derive the conditions under which macroeconomic policy coordination could be desirable (see Díaz-Roldán (2004) for further details). Table 1 shows the main findings. When using monetary policy to deal with financial shocks in a flexible exchange rate regime, it does not matter to coordinate or not. Regarding fiscal policies, coordination would be desirable only for financial shocks transmitted through the real exchange rate and leading to the "*beggar-thy-neighbour*" effect.

The effectiveness of demand policies, depends on the money supply process under the particular exchange rate regime (Recall that in a two-country model, the relative effectiveness of demand policies under flexible exchange

rates is the opposite to that obtained under fixed exchange rates). In a two-country model, flexible exchange rates insulate the economy from isolated foreign autonomous spending disturbances but not from a general coordinated disturbance by a group of foreign countries.

When using the budget deficit as policy instrument, fiscal policy coordination proves to be useful only when shocks are transmitted leading to "*beggar-thy-neighbour*" effect. If a negative financial shock leads to an decrease in output in both countries simultaneously, cooperation would result desirable since it requires a lower change in budget deficit in both countries. On the contrary, it can be proved that for the "*locomotive*" effect, externalities have the same sign than the shock. Because of that, cooperation is undesirable since it reinforces the effects of the shock and requires a greater change in the budget deficit.

If we look at the case of supply-side intervention, it would be desirable only to deal with financial shocks transmitted through the real exchange rate and leading to the "*beggar-thy-neighbour*" effect. When using a supply-side variable as a policy instrument, for the case of a negative financial shock leading to an output reduction in both countries, cooperation would be undesirable because requires a greater change of the policy instrument. That case corresponds to the "*locomotive*" effect, so that the shocks would require the same policy response in the countries involved. Therefore, it would be preferable not to coordinate. In contrast, different results would appear when a negative financial shock in a country translates into a expansion in the other country. In this case, when the "*beggar-thy-neighbour*" effect prevails, the shock would require a different policy response in the countries involved. In other words, cooperation would prove to be desirable.

Finally, under a fixed exchange regime (the model for a monetary union), since the countries have lost their independence in the use of the exchange rate and monetary policy, we only consider the use of fiscal and supply-side policies. Solving the optimization problems, we have found that the best solution is not coordinate.

T a b l e 1. **Desirability of macroeconomic policies coordination when dealing with financial shocks**

Policy	Two-country model	Monetary union
Monetary	Indifferent	
Fiscal	- Locomotive ND - Beggar-thy-neighbour D	- Locomotive ND - Beggar-thy-neighbour ND
Supply-side	- Locomotive ND - Beggar-thy-neighbour D	- Locomotive ND - Beggar-thy-neighbour ND

Note: Results show that macroeconomic policies coordination may be "desirable" (D) or "non desirable" (ND). Those results depend on the way of transmission of the shocks: the *locomotive* effect or the *beggar-thy-neighbour* effect.

4. Conclusions

In this paper we have analysed how economic policies responses could contribute to offset monetary (financial) shocks under alternative exchange rate regimes. In particular, to which extent a specific monetary policy regime would impose a restriction to policymakers.

We have studied two simple and alternative cases: first, a flexible exchange rate regime within a two-country model; and second, a fixed exchange rate characterized as a small monetary union. In this monetary union, the domestic authorities are constrained by the fiscal discipline imposed by the monetary agreements of a monetary union. Finally, we have shown the desirability of macroeconomic policy coordination within the monetary union (provided that the countries suffer some restrictions also in the use of fiscal policy), and we have compared it with the case in which countries have a flexible exchange rate regime, and run independent monetary policies.

Particularly, when using monetary policy to deal with monetary shocks in a flexible exchange rate regime (the two country model), coordination proves to be indifferent. Regarding fiscal and supply-side policies in the two-country model, coordination would be desirable only for monetary shocks leading to the "*beggar-thy-neighbour*" effect, being this result independent of the exchange rate regime. Finally, the coordination of fiscal and supply-side policies in a monetary union would not be advised. Notice that the results for fiscal and supply-side policies are identical.

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SOME APPROACHES TO GOVERNMENTAL REGULATION
OF LABOR FORCE MIGRATION IN UKRAINE

Посилення міжнародних міграційних процесів є однією за найпомітніших рис глобалізації та інтернаціоналізації світового господарства. Враховуючи значне збільшення кількості міжнародних мігрантів, особлива увага приділяється державному регулюванню міжнародної міграції. В останні роки державне регулювання міжнародної трудової міграції зазнало численних змін та вдосконалень. Майже в усіх провідних країнах обов'язковою є процедура отримання дозволів на роботу і проживання. Крім цього для іноземців створюються перешкоди в отриманні роботи, такі як надання переваги місцевим працівникам та працівникам з країн Є.С., необхідність підтвердження професійної кваліфікації при отриманні дозволу на роботу. В Україні також необхідно зробити певні корективи в державному регулюванні міжнародної трудової міграції, вдосконалити програми із заохочення місцевих підприємців до використання українських працівників та стимулювати діяльність вітчизняних науковців та інших носіїв НТП. Іншим завданням державної політики з регулювання міжнародної міграції є мінімізація негативних ефектів від імміграції для економіки країни. Одним з варіантів вирішення даної проблеми є впровадження сертифікату трудового мігранта.

Ключові слова: Міграція робочої сили, державне регулювання, безробіття, сертифікат трудового мігранта.

Усиление международных миграционных процессов является одною из наиболее заметных черт глобализации и интернационализации мирового хозяйства. Учитывая значительное увеличение количества международных мигрантов, особое внимание уделяется государственному регулированию международной миграции. В последние годы государственное регулирование международной трудовой миграции испытало многочисленные изменения и усовершенствования. Почти во всех ведущих странах обязательной есть процедура получения разрешения на работу и проживание. Кроме этого для иностранцев создаются препятствия в получении работы, такие как оказание предпочтения местным работникам и работникам из стран Е.С., необходимость подтверждения профессиональной квалификации при получении разрешения на роботу. В Украине также необходимо сделать определенные коррективы в государственном регулировании международной трудовой миграции, усовершенствовать программы поощрения местных предпринимателей к использованию украинских работников и стимулировать деятельность отечественных ученых и других носителей НТП. Другой задачей государственной политики по регулированию международной миграции является минимизация негативных эффектов от иммиграции для экономики страны. Одним из вариантов решения данной проблемы является внедрение сертификата трудового мигранта.

Ключевые слова: Миграция рабочей силы, государственное регулирование, безработица, сертификат трудового мигранта.

An intensification of the labor force migration is among the main features of globalization and internationalization. According to the great growth of total number of international migrants, governmental regulation of labor force migration became the one of the most important problems nowadays. In the last several years governmental regulation of labor force migration faced many changes and upgrades. In almost all leading countries the work and residence permits for foreign worker are indispensable. Also there are many barriers for foreigners in job achieving, such as giving preferences to local and into-EU workers, necessity to prove your qualification level for getting a work permit. In Ukraine it is also necessary to make some correctives in governmental regulation of labor force migration and to develop governmental programs inspiring national enterprises to use local workers and to stimulate the progress of national scientists and brainpower. Also the aim of governmental is a minimization of bad effects of immigration. The possible way of the salvation of this problem is an implementation of the migrant's certificate.

Keywords: Labor force migration, governmental regulation, unemployment, worker's certificate.

One of the most important features of globalization is an intensification of international labor force migration. The total number of international migrants has increased over the last 10 years from an estimated 150 million in 2000 to 214 million persons in 2010 [1]. If the migrant population continues to increase at the same pace as the last 20 years, the stock of international migrants worldwide by 2050 could be as high as 405 million [2]. Most countries in the world (and not just in the developing world) have a lack of capacity for effective management of the international mobility of persons today. Despite a temporary decrease during the last economic crisis, global migration will soon reach the pre-crisis levels. That is why the need for good management of international migration will be still actual.

The World Migration Report 2010 identifies six broad priority areas for intervention (labor mobility, irregular migration, migration and development, integration, environmental change, and migration governance) that are expected to undergo significant transformations in the coming years as the dimensions and dynamics of international migration change [2].

The participation of Ukraine in this process is getting more and more significant. The development of governmental regulations of labor force migration will give Ukraine a chance to improve quality of the workforce, that come from abroad and to avoid quitting of scientists and experts, making them able to be employed in Ukraine. Also changes in migration policy will help to decrease an unemployment rate in a country. Besides, clever formed international policy in a sphere of labor force migration will positively influence an international image of Ukraine and becomes an important step to EU-membership for our country.

The processes of international labor force migration in Ukraine are poorly studied and the attention of scientists and government should be paid to them. In the same time there are worldwide-known models of regulation of international labor force migration (M. Abella [3], P. Martin [4], K. Zimmermann [5,6], A. Zaiceva [7], D.G. Papademetriou [8], M. Fix [9], E. Collett , R. Münz [10], M. Kahanec [11], C. Dustmann, T. Frattini [12]).

The most part of major characteristics of labor force migration were studied and described by Ukrainian researchers E.Libanova, O. Poznyak [13], S. Pirozhkov [14], A. Gaidutskiy [15], O.Chernyak [16] but there are some important aspects like evaluation of influence of labor force flow on main economical figures, the implementation of foreign experience in governmental regulation of those processes, solving problems of regions, influenced by labor

force inflow and outflow, development of informational and statistical support system that must be taken into account.

An estimated 72.6 million migrants in 2010 lived in Europe and Central Asia – a figure 5.1 million higher than the migrant stock in 2005. One in three of all international migrants in the world live in Europe. Migrants represent 8.7 per cent of the total European population [1, 2].

The net amount of migrants increased across Europe in the period 2005–2010, compared to the previous decade. Instead of countries from other regions and subregions, Western and Central European countries have faced an increase in net immigration. The region's most affected countries are Cyprus, Luxemburg, Spain, Iceland and Ireland. Eastern European, Central Asian and new Member States of the EU have experienced a reduction in their net emigration, with the vast majority of them reporting a net migration rate between -1.5 and 0 per 1,000 population cent in 2000–2005. The "sending" countries also remained in this region. These are countries, such as Albania, Georgia, the Republic of Moldova, Lithuania and Tajikistan [1, 2].

The most important country of origin and the most popular country of destination in Europe is the Russian Federation. There are over 12 million people, that were born in the Russian Federation, now living abroad and approximately the same number of foreign-born living in the Russian Federation. As a country of destination, the Russian Federation is followed by Ukraine (5.9 million), the United Kingdom (4.2 million), Germany (4.1 million) and Kazakhstan (3.6 million) [1, 2].

Four of ten global remittance corridors have their origins in Europe. These corridors are: Russian Federation–Ukraine, Ukraine–the Russian Federation, Turkey–Germany and Kazakhstan–the Russian Federation [17].

Facing the global crisis, most European countries have seen a sharp increase in unemployment rates, setting governments to introduce measures to protect domestic labor markets. Combined, the measures have amounted to new immigration restrictions aimed at reducing the inflow of migrants and encouraging their return. A significant reduction in labor demand, reinforced measures against employers of irregular migrants, return programs, stricter enforcement of residence laws, enhanced border management and rising unemployment rates in EU Member States have done little to counter the increasing negative public opinion regarding migrants and migration in Europe.

80 per cent of the international migrants in the region are hosted by 3 main destination countries: the Russian Federation (12.3 million), Ukraine (5.3 million) and Kazakhstan (3 million) (see Fig.1) [1, 2].

The number of foreign migrants in Eastern Europe and Central Asia increased to 8.6 per cent, with almost no change since 2005 suggesting that the decrease in the total stock of international migrants took place within the context of population decline in these countries. The tenth part of population or even more are represented by migrants in such countries as Kazakhstan (19.5%), in Ukraine (11.6%), the Republic of Moldova (11.4%), Belarus (11.4%) and Armenia (10.5%) (see Fig.2) [1, 2].
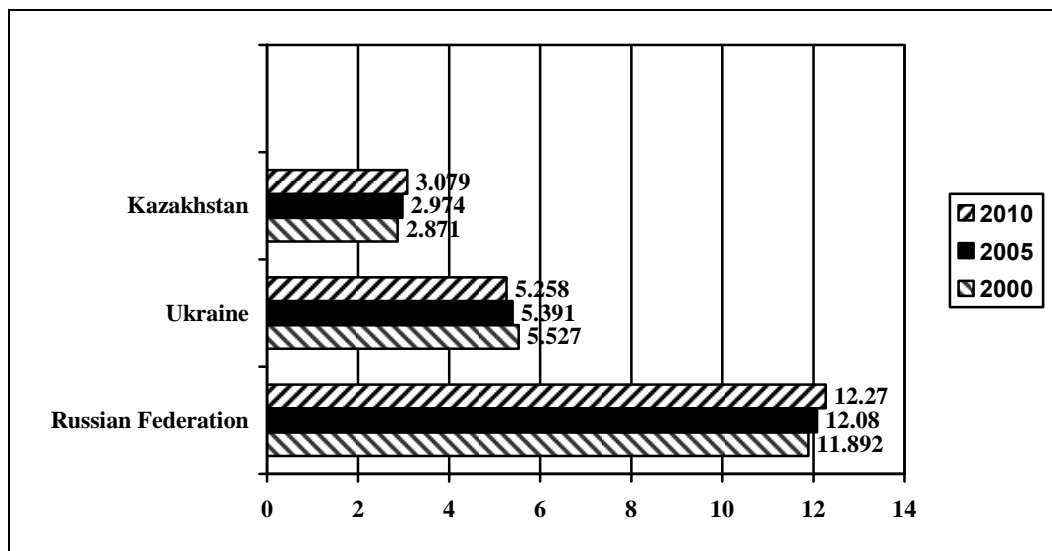
Fig. 1. Stock of migrants (in thousands).

Source: UNDESA [1], WMR [2].
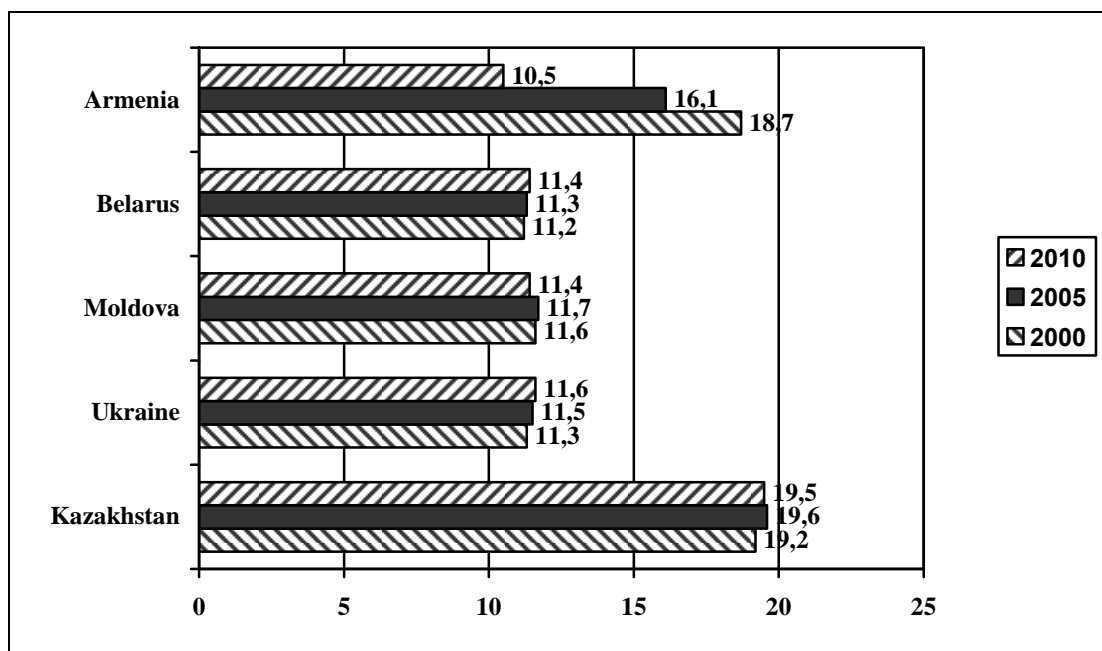
Fig. 2. Stock of migrants in some countries of Eastern Europe and Central Asia as a percentage of the total population

Source: UNDESA [1], WMR [2].

Some of the most popular migration corridors worldwide have an Eastern Europe and Central Asia location, including the route between the Russian Federation and Ukraine and the Russian Federation and Kazakhstan, with migration flows in both directions, as well as migration flows from Belarus to the Russian Federation and from Uzbekistan to the Russian Federation [18].

The World Bank's estimation, which was done in 2009, showed the amount of USD 27.1 billion in remittances, received by the region (Eastern Europe and Central Asia). This figure presents a 14 per cent decline from 2008. The top five countries in the region, in terms of remittance inflows, are: the Russian Federation (USD 5.5 billion), Serbia (USD 5.4 billion), Ukraine (USD 4.5 billion), Bosnia and Herzegovina (USD 2.6 billion) and Tajikistan (USD 1.8 billion) [2]. They received over 70 per cent of the remittances sent to Eastern Europe and Central Asia [18]. The depreciation of the Russian rouble (the currency of the main destination country for migrants in the region) against the US dollar was one of the main reasons of such decrease in the remittance flow [19].

Most European countries are trying to reach new and to develop their old policies in labor force migration to cut the inflows of migrants. Some of them provide tougher conditions for admission under labor force migration programs or make some reduction in quotas (as is the case in the Czech Republic, Italy, Lithuania, Spain, the Russian Federation). Other countries make their market tests stricter (Estonia and the United Kingdom), decrease opportunities to change status and/or to renew work permits (Italy) [20, 21]. In December 2008, Italy set a cap of 150,000 for entries after receiving 700,000 applications the year before. However, the new 2010 decree on immigration flows and quotas has been registered by the Corte dei Conti (State Auditors' Department). This year, contrary to expectations, there will not be a quota for regular workers but only 80,000 seasonal workers (for tourism and agriculture), which also include 4,000 self-employed workers.

The increase in force return measures have been taken in France, Italy and Ukraine [21, 22]. The increasing number of returnees was several times reported by Ukraine, the Republic of Moldova and Italy. On other hand, Latvia, Serbia and the former Yugoslav Republic of Macedonia reported declining numbers of returning migrants. Also sometimes it is not available to identify the type of migrant's return (forced or voluntary return) [2, 21].

Now we will consider will cover the main peculiarities of migration policies in the leading European states.

Sweden. All foreign workers in Sweden should have work permits; any staying in Sweden for more than three months are required to have residence permits as well (Sweden's Migration Board: www.migrationsverket.se). But, on other hand, Sweden also is on the way of liberalization. According to the new law the Swedish Public Employment Service can no longer block the employment of a foreigner based on the argument that there is an alternative match in Sweden, another EU or EEA (European Economic Area) country, or Switzerland for the position. It is also emphasized that all terms of employment comply with Swedish standards, as established by collective agreements, including salary and insurance protection. The list of foreigners, that have no necessity to achieve a work permit, was also extended. Now in will include certain high-skilled occupations, such as company representatives; visiting researchers or teachers in higher education (maximum duration of three months within a twelve-month period); performers, technicians, and other tour personnel; and specialists employed by a multinational corporation who will be working in Sweden for a total of less than one year [11].

France. France also issues the work permits to foreign workers. But to get the permit for foreigner, employer must prove that no worker in France or the EU is able to do the job. There are two types of work permits in France: temporary secondments and full work permits. Temporary secondments serve foreign companies posting their employees onsite with their clients in France. To receive this type of permit a foreign worker should earn a gross minimum of €3,835 per month. Full work permits are required for any company to employ non-EU or EEA workers in France. They have no time limits. The candidates should be generally with high-level work experience and a university degree. Also they must earn more than an equivalent French

worker, at least €3,835 per month. To obtain a permit as a self-employed foreigner, applicants must be able to demonstrate serious intent and the ability to generate revenue in the country [11].

Germany. The process of achieving the work permit for foreign worker in Germany is hard and complicated. The work permits are usually issued only in connection with a specific job position and only in cases when no German or other EU (or EEA) national is able to fill the position [6, 11,23, 24]. Also foreigners must obtain consent from the Federal Employment Agency to work in Germany, unless an exemption is granted by an international treaty. At first, work and residence permits are temporary. They can be transferred into unlimited ones only after a minimum stay of five years. If a migrant has a bad knowledge of language and culture he can also be required to attend special integration courses. Of course there were some steps toward more liberalized access for high-skilled, non-EU labour immigrants, scientists with special professional knowledge, high-ranking teachers and researchers, and specialists or senior executives with specific professional experience and a salary at least equal to the contribution ceiling of the public-pension insurance (€63,600 in 2009).

The United Kingdom. The immigration system was upgraded in 2008. The main was an implementation of a points-based system for immigrants from outside the EU, EEA, or Switzerland (UK Border Agency, "Working in the UK": www.ukba.homeoffice.gov.uk/workingintheuk). According to the new system, all the migrants are divided into 5 tiers. Tier one includes high-skilled immigrants, entrepreneurs, investors, and graduate students. Migration of the

qualified workers, who have job offers, belongs to tier two. Tier three is for less-skilled workers who fill temporary shortages in the labor market. Migration of students is covered by tier four. And the tier five was developed for regulating youth mobility and temporary workers. Applicants for immigration need to score a determined number of points to demonstrate they meet all the requirements of the particular tier. Each tier has an own specific grading system [11].

The above review was done to show that national and EU-level migration policies have trend of providing changes aimed to attract high-skilled immigrants. But, on other hand, these policies also involve a number of institutional and administrative barriers for non-EU and, sometimes, for intra-EU migrants. It is also important, that most of work permits have temporary nature. That means that the future of immigrants in a foreign country, even when they get a temporary permit, is not so clear. Also, a respect to any future right to citizenship in the host country is not guaranteed.

Now we consider the labor force migration in Ukraine. In 2010 the amount of labor force, that entered Ukraine was 30,8 thousands of people, in 2011 – 31,684 thousands of people (Table 1). Among top source countries are the Russian Federation, Belarus, Kazakhstan, Uzbekistan, Moldova, Azerbaijan, Georgia, Armenia, Tajikistan, the Kyrgyz Republic. Other statistic figures, which covers data about the labor force, that comes to our country illegally, informs, that the amount of foreign workers in Ukraine increased in the same period on 44 thousands of people. The most part of these workers are employed by enterprises with low financial funds. Usage of those kinds of workers helps entrepreneurs to cut costs on wages and salaries.

Table 1. Labor force inflow in Ukraine

Year	2007	2008	2009	2010	2011
Labor force inflow in Ukraine, thousands of people	46,5	37,2	32,9	30,8	31,684

Source: http://www.ukrstat.gov.ua/operativ/operativ2011/ds/mr/mr_u/mr0911_u.html

Early mentioned figures are also mirrored in an unemployment rate statistics. The amount of unemployed in Ukraine in last 2 years increased on 500 thousands of people. The number of foreign labor force in the same period increased on 300 thousands of people. It is easy to surmise, that one of the main reasons of the job loss is an increased competition on a labor force market, caused by labor force inflow.

The main aim of development of the governmental policy in a sphere of labor force migration is to conquer mentioned failings of international migration. The government should make several steps to stimulate the usage of local labor force instead of cheap and unqualified foreigners by national enterprises. First step is to provide the "quality rate" of the foreigner to be employed. An example of such kind of measure is a worker's certificate of the labor migrant, that should include information about the level of professional skills, work experience, worker's professional achievements. Entrepreneur can't employ a foreign worker in a case of a lack of this certificate or without the information about worker's skills, needed to occupy the position, in it.

The second step is a governmental support of enterprises, that will act according to mentioned rules and will carefully regard the professionalism of employees. Such enterprises should receive subsidies or, for example, competitive advantages in governmental tenders.

The governmental regulation of labor force migration is an important part of country's image. An elaborated regulation of international migration and country's comparative closeness for unqualified workers are among the main rea-

sons of the "elite" image of such countries like USA and Great Britain.

Poor quality of regulation of the labor force migration results in a lack of high-class managers and specialists in different branches of activity. In that case "brain drain" happens. For Ukraine is typical, that specialists go to Canada, USA and Germany. The solution of that problem for Ukraine is to achieve investments in research centers and to provide governmental support of young scientists and giving grants to the gifted specialists.

The precondition of getting a certification for regular residing in Ukraine is a gaining of permission for immigration in Ukraine. Permission for immigration is a solution of central legal authority that is responsible for immigration and the subordinate authorities, which are giving the permission for immigration to foreigners and persons without citizenship. But this is not enough for regulation of international labor force migration in modern world. The worker's certificate for immigrants must be provided.

The worker's certificate should include two paragraphs. In a first paragraph of a certificate the detailed data about the worker should be presented. The data must content worker's age, sex, marital status, information (if it exists) about chronic diseases and the group of physical inability. That paragraph's data will give the possibility to identify migrant's working capacity and to decrease the risk of additional governmental social payments on those person's working capacity loss. Also, according to country's current unemployment rate, defining the ideal migrant's age is also very important. The most attractive group of workers for

employer is a segment of migrants aged from 24 to 40 years old. These limits will give the opportunity to select workers with a high school education, which are far from the age of retirement. Some data should be checked by sending requests to the migrant's country of origin. That will give an opportunity to check a reliability of information about an absence of cases of law breaking and criminal prosecution by the migrant.

The second paragraph should include the data about migrant's school and high school education level. According to the trends of modern Ukrainian economy, the preference to technical specialists must be given. Also those specialists and the specialists in modern technologies provide an increase in a Ukrainian hi-tech potential.

Specific invitation should be the main pretext for giving permission for job in Ukraine. This invitation indicates that the migrant arrives for a concrete job that cannot be occupied by local worker, because of lack of qualification. In a case of the absence of invitation, the foreign worker should receive a temporary visa (for a month, for example). If the foreigner did not find the job, that is appropriate to his professional skills, until the visa expired, he should be deported from the country. The mentioned limits must allow stopping the uncontrolled inflow of low-qualified workers from Africa and Asia to Ukraine.

It should be mentioned, that the quantity of labor force with high education, that enter the country and its percentage in the total migrants inflow are the indices of country's development level. These migrants are bearers of technological progress and their knowledge will help to improve country's main economic indices

Conclusions. The main options of governmental demographical policy were analyzed in the work. Country's safety, improvement in economical growth and an increase in population's welfare should be among them. The national labor force market should also be defended by the government. The skills of workers on national market must be the main point of development programs.

Nowadays the list of main aspects, that are influencing international labor force migration, is formed and specified. It is a country's unemployment rate, country's international brand image, quality of workers and managers in a country. It is also important to mention and measure influence of migration capital on country's economy.

In the last several years governmental regulation of labor force migration in leading European countries faced a lot of upgrades, changes and innovations. The work and residence permits for foreign worker are indispensable in almost all of these countries. Foreigners face many troubles and barriers in job achieving, such as giving preferences to local and into-EU workers, necessity to prove your qualification level for getting a work permit. It is also important, that most of work permits have temporary nature. That means that the future of immigrants in a foreign country, even when they get a temporary permit, is not so clear.

The development of governmental regulations of labor force migration will give Ukraine a chance to improve quality of the workforce, that come from abroad and to avoid quitting of scientists, making them able to be employed in Ukraine. Also changes in migration policy will help to decrease an unemployment rate in a country. In Ukraine it is also necessary to make some correctives in governmental regulation of labor force migration and to develop governmental programs inspiring national enterprises to use local workers and to stimulate the progress of national scientists and brainpower. Also the aim of governmental is a minimization of bad effects of immigration. The possible way of salvation of this problem is an implementation of the migrant's certificate.

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THE THEORETICAL ASPECT OF SOCIAL COMPETITIVENESS
OF NATIONAL ECONOMY IN THE CURRENT ECONOMIC CONDITIONS

Стаття присвячена сутності конкурентоспроможності національної економіки. Розкрито сутність категорії конкурентоспроможність національної економіки в залежності від торгової концепції, концепції продуктивності, інвестиційної та інноваційної концепцій. Охарактеризовано соціальну конкурентоспроможність національної економіки.
Ключові слова: конкурентоспроможність національної економіки, конкуренція, концепція конкурентоспроможності, концепція продуктивності, торгова концепція, інвестиційна та інноваційна концепції, соціальна конкурентоспроможність.

Статья посвящена сущности конкурентоспособности национальной экономики. Раскрыта сущность категории конкурентоспособности в зависимости от торговой концепции, концепции продуктивности, инвестиционной и инновационной концепции. Охарактеризована категория социальной конкурентоспособности экономики.
Ключевые слова: конкурентоспособность национальной экономики, конкуренция, концепция конкурентоспособности, концепция продуктивности, торговая концепция, инвестиционная и инновационная концепции, социальная конкурентоспособность.

The article is devoted to the description of the national economy competitiveness nature. The essence of the competitiveness as a category is considered depending on the trading concept, the concept of productivity, investment and innovative concepts. The social competitiveness of national economy is characterized.
Keywords: competitiveness of national economy, competition, concept of competitiveness, productivity concept, the concept of trade, investment and innovative concept, social competitiveness.

Research urgency. Modern economic realities strongly suggest that the pace and overall direction vector of social and economic progress of the national economy is largely dependent on the country's competitiveness. The objective of social competitiveness in the economy is to provide economic processes with social content and return economy with "a face-to-human". It's a measure of needs satisfaction and ways of implementation of all members of society and ensuring social security, sustainable and effective development through integration of efforts of government, business and civil society.

The degree of problem research. To date the profound theoretical framework of the national economy competitiveness is established. However, further research on the competitiveness of national economy is needed, especially the social aspect. In particular, there is no generally accepted approach to the interpretation of the competitiveness of national economy and its social component. Also there aren't identified key factors of social competitiveness ensuring and developed ways of improving this competitiveness that suit modern conditions.

The problem of social competitiveness of Ukraine's economy is considered in the works of such Ukrainian scientists as L.Antonyuk, Y.Bazylyuk, Z.Varnaliy, A.Halchynskyy, Z.Halushka, V. Heyets, Y.Zhalilo, E.Libanova, B.Kvasnyuk, I.Mansurov, H.Filyuk, B.Havrylyshyn, T.Gayday, O.Hrishnova, P.Yeshchenko, Y.Zaitsev, V.Ilyin, I.Mazur, I. Malyy, V.Mandybura, B.Paskhaver and others.

The purpose of the paper is to analyze the nature of modern conceptions of "competition" and "competitiveness of the national economy," reveal the theoretical and methodological basis of determination of these economic categories, to show the importance of national economic competitiveness in the transformation economy and to describe such category as social competitiveness of national economy.

The economic category "competitiveness of the national economy" entered the economic turnover in the 1980's, due to increased competition between countries, although there were earlier mentions of the term. The issue of competitiveness has attracted the attention of many economists, prompting mixed views and fierce debates. In our opinion, in the broadest sense the competitiveness is the result of competition and means the property of the object as the degree of goal achievement in comparison with the best similar objects (meeting of specific need, getting a profit, growth of welfare, etc.). Thus in modern economic literature term "competitiveness" is used concerning various objects, including the national economy.

The study of foreign and domestic economic thoughts makes it possible to select four main concepts of national economic competitiveness, which consider the essence of this category, its key processes and factors. Let's consider these concepts in detail to identify the one that corresponds in best way with current trends in global competition and the realities of economic development.

The first concept that interprets the competitiveness of national economy as the effectiveness of trading activity of the country is traditional and still supported by many economists (B. Balassa, A. Bolto, R. Harris). This concept originated in the works of classical political economy school as a theory of absolute advantages by Adam Smith. According to this theory the international trade will be profitable, when two countries sell goods, which each country produce at the lowest cost [1]. As the theory of absolute advantages of Adam Smith does not explain why countries trade with each other, even in the absence of absolute advantages D. Rikardo formulated the theory of comparative advantages that theoretically justifies the effectiveness of trade for countries with lower productivity at the expense of imports, the domestic cost of which are higher than those goods, exports of which compensates for the payment of such imports [9]. The country becomes more competitive, if as a result of price or non-price factors its ability to sell on foreign or local markets increases. This situation makes it possible to select the price and non-price competitiveness of national economy.
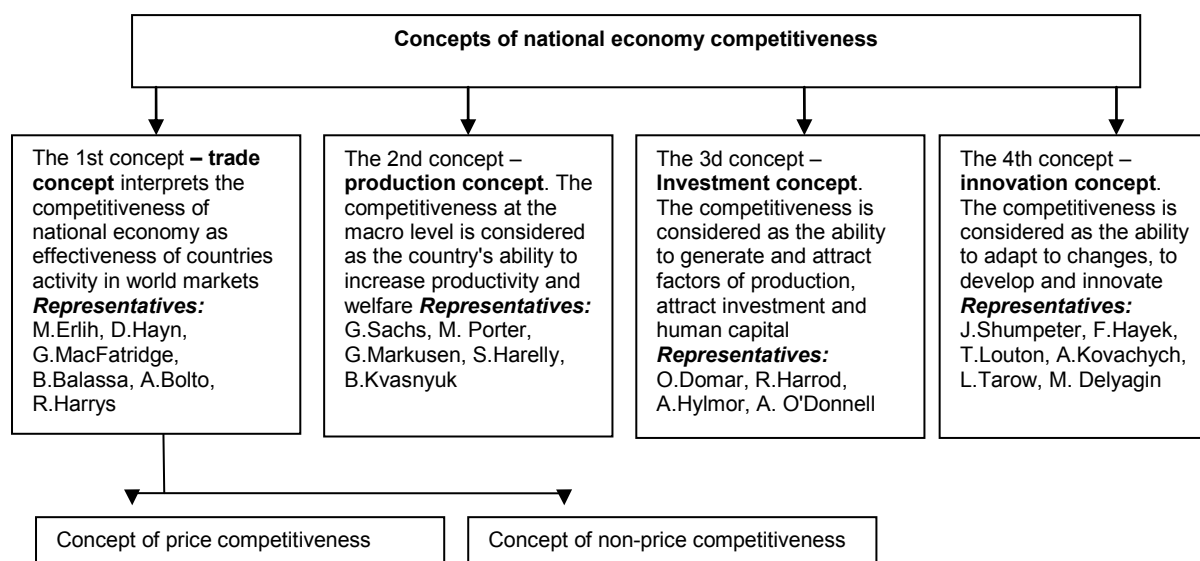
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│              Concepts of national economy competitiveness                 │
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The 1st concept **– trade concept** interprets the competitiveness of national economy as effectiveness of countries activity in world markets ***Representatives:*** M.Erlih, D.Hayn, G.MacFatridge, B.Balassa, A.Bolto, R.Harrys	The 2nd concept – **production concept**. The competitiveness at the macro level is considered as the country's ability to increase productivity and welfare ***Representatives:*** G.Sachs, M. Porter, G.Markusen, S.Harelly, B.Kvasnyuk	The 3d concept – **Investment concept**. The competitiveness is considered as the ability to generate and attract factors of production, attract investment and human capital ***Representatives:*** O.Domar, R.Harrod, A.Hylmor, A. O'Donnell	The 4th concept – **innovation concept**. The competitiveness is considered as the ability to adapt to changes, to develop and innovate ***Representatives:*** J.Shumpeter, F.Hayek, T.Louton, A.Kovachych, L.Tarow, M. Delyagin

Concept of price competitiveness	Concept of non-price competitiveness

Fig.1. Concept of national economic competitiveness

Price competitiveness depends on the relative cost of labor for goods production, ie the ratio of export and import prices and also on the real exchange rate of the country's currency. So theorists, who support this idea, consider that if the national companies have problems with the sale of goods on international markets, the national currency should be devalued. It will change the situation because product prices on domestic producers' goods will be lower for foreign clients. In this context, one of the indicators of price competitiveness of the country is the real effective exchange rate (REER), which is determined by changes of inflation and exchange rates of countries – major trade partners.

Basic fundamentals of non-price competitiveness concept and the first theoretical ideas of competition between countries as a whole were grounded by mercantilists. They believed that the success of the country in international competition depends on its efficiency in international trade. Modern representatives and supporters of the concept of non-price competitiveness believe that the competitiveness of national economy depends on the current account balance and the share of countries in the world market. The indicator that reflects the non-price competitiveness is Revealed comparative advantage index. It was introduced in the work of B. Balassa "Trade liberalization and revealed comparative advantage", and applied to a large number of research studies, including the report of the United Nations about industrial development "International review: comparative advantage in the industry: change in trade and resource profiles of countries," in World Bank report "China: reforms in export trade" and others.

Representatives of the second concept, the industrial concept of competitiveness of the national economy, actually identify it with productivity. They focus on the research of results of the national economy performance (M. Porter, G. MacFatridge, L. Bad) [4]. Thus a number of authors believe that it is necessary to examine separately the concept of competitiveness as the level of productivity and the concept of per capita income.

The category of "productivity" refers only to one of the inputs, so it cannot be considered as illustrative indicator of national economic competitiveness. The income per capita depends on the total factors productivity. According to the second concept indicator of national economic competitiveness is the GDP per capita, which, indeed, is very illustrative, because it takes into account all measurable material things. But this approach does not take into account

intangible benefits. Also we should note that high GDP does not necessarily mean the welfare of the nation, as problem of uniformity of income distribution is not taken into account and etc.

Production concept of competitiveness is laid in the basis of the calculation and ranking the competitiveness of countries by the International Institute for Management Development in Lausanne.

Each country is evaluated by analyzing 331 criteria in four main areas: the economy, government efficiency, business efficiency and state of infrastructure as well as several other factors that reflect the key economic indicators. However, the system of indicators of competitiveness is, first of all, applied function, as has been developed and used by national authorities for monitoring the competitiveness of the national economy. Thus ranking does not pursue the goal of summing of multidirectional indicators into the one index, but rather seeks to achieve the goal of identifying areas to improve competitiveness. The disadvantage of this system of indicators is its eclecticism, and what it covers and measure simultaneously all the areas that may be relevant to national competitiveness, and focuses on the important factors of modern development.

The third concept of competitiveness of national economy is based on the ability of countries to attract mobile factors of production (investment, human capital), ie on the attractiveness of the country. The economic prosperity of countries, according to representatives of this concept (A. Kovachych, O. Hilmore, D. O'Donnell), due to their ability to generate economic activity. This approach is used by some international organizations in the formation of specific competitiveness ranking based on opinions of entrepreneurs about the most attractive countries for business. Ideas of this concept are largely based on Keynesian theory postulates, the leading idea of which is the need to create conditions for economic growth through the formation of mechanisms of investment attraction [10]. J.M. Keynes believed that the increase in investment causes growth of consumer demand, which in turn leads to increased employment and national income. Further development of theory of investments is found in the research of British economist Robert Harrod and American economist O. Domar. R. Harrod showed that the rate of economic growth is directly proportional to the ratio of investments (savings) [11]. The most important indicator of national economic competitiveness, according to the investment

concept is foreign direct investments, as investors in choosing the investment object, look for the largest returns and reliability, as the country with the highest possible returns will attract more investments, and thus, according to supporters of this concept, will be more competitive.

The latter concept of competitiveness is based on the country's ability to adapt quickly to changes, to develop and implement innovation, so it is based on the functional concept of competition, which involves contest on the basis of finding new information, implementation of scientific and technological progress, and more. So according to J.Shumpeter main bust capitalist economy gets from the production of new products using new technologies, entering new markets, adoption of new forms of organization [3]. The ability to adapt to changes and innovation in post-industrial economy is a critical factor in ensuring competitiveness.

The concept of innovation competitiveness is based not only on the theory of Y.Shumpeter, but also on alternative theories of international trade, such as the technological gap theory, the theory of product life cycle model of high technology specialization and others.

The innovative concept of competitiveness was used by representatives of the World Economic Forum in the process of determination methods of the Global Competitiveness Index. The disadvantage of this ranking is that countries are recommended to develop factors depending on the stage at which it is, that countries with low GDP per capita should focus on basic factors of production. However, we believe that in this era of globalization and post industrialization for such countries it will be increasingly difficult to compete on world markets, because increased competition based on innovation is the main trend of modern global markets.

In addition, the share of innovative factors in the Global Competitiveness Index, even for developed countries does not exceed 30%. We believe that innovative factors much greater impact the competitiveness of these countries. Most calculations performed for the second half of the twentieth century, show that the contribution factor of scientific and technological progress is or exceed 50% in developed countries [12, p.18]. Therefore, in the context of the innovative concept of competitiveness it's needed to increase the share of innovative factors. It leaves the logic of calculations and also changes the priorities of economic development in strengthening the innovative factors. In turn, focus on innovation factors will contribute to more rapid strengthening of counties' competitiveness.

Each of the discussed concepts of competitiveness of national economy though differently interprets its nature and focuses on one or another key factor is not contrary to each other. In addition, the indicators that measure the competitiveness of the various concepts are interrelated. Thus the value of investments and exports are included in GDP, and most modern competitiveness ranking (both general and special) use common indicators, although they give different degree of attention.

Based on research of competitiveness concepts and synthesis of different views of scholars on the nature of this category it is proposed to treat the essence of economic category "competitiveness of the national economy" as the ability of national economic subjects to compete in world markets through the creation of such conditions of economic performance to ensure subjects the opportunity to increase innovative activity and performance, and as a result achieve a high level of prosperity and national security.

Based on experience of market economy reforming post-socialist countries have shown that social transformation is complex, ambiguous, often very controversial. During the market transformations it was defined social priorities of state policy. Also it was formed the national model of social protection. Market organizational culture develops through the formation of various forms of ownership, liberalization of economic relations, democratization of management systems, increasing the social responsibility of business entities. Under the influence of science and technology the content and nature of work are changing, the quality of human capital is improving; the intellectual property is getting the great importance. Citizens are increasingly aware that social status and welfare define the knowledge, skills, experience, intellectual capacity and social values. Now social values are fairness, social responsibility, collective solidarity, social capital, economic culture of business. But along with the positive signs are negative trends in social processes, for example forced unemployment, poverty, stratification, threatening income differentiation; restrictions for certain categories of people to access to public goods, the rights of possession, use and disposal of property, corruption, shadow economic relations, inefficient system of social protection.

Level of human abilities and human capital formation, which turns a man on a main value and the efficiency factor of social and economic development, is getting the great importance.

Place and social role of government, business and civil society in the regulation of social and economic processes is changing – there is a sharp restriction of social and regulatory functions, partial denial of social security in favor of social insurance, limiting the scope of state influence on the processes of distribution and redistribution of GDP, improving the degree of autonomy of local authorities and civil society in addressing social problems.

Conclusions. Thus, basing on the conducted research we may conclude that social competitiveness is an integrated category which is to provide economic processes with social content. It measures the needs satisfaction and ways of realization of all members of society for sustainable and effective development of national economy through the integration of efforts of the government, business and civil society and creates conditions for realization of creative abilities, welfare growth, ensuring social security and social stability in society.

Its basic nature is determined by effective guarantees of employment and opportunity to generate income sufficient to provide material and spiritual needs and growth of welfare, compliance of minimum incomes for minimum standards, reliable social security system and social ensuring, stability of social life, protection of property rights, civil and political rights; freedom of choice of activities, features self-identity and the principles of social justice.

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BUSINESS INTELLIGENCE TECHNOLOGY: CAPABILITIES, APPLICATION AND FEATURES IN UKRAINE

Статтю присвячено застосуванню новітніх аналітичних інструментів, що сприяють підвищенню конкурентоспроможності суб'єктів економіки. Особливу увагу приділено вивченню ринку BI-систем, визначено його тенденції та основні гравці. Проаналізовано особливості та перспективи реалізації BI-технологій в Україні.
Ключові слова: BI-технологія, ринок BI, BI-інструменти, конкурентоспроможність.

Статья посвящена применению новейших аналитических инструментов, способствующих повышению конкурентоспособности субъектов экономики. Особое внимание уделено изучению рынка BI-систем, определены его тенденции и основные игроки. Проанализированы особенности и перспективы реализации BI-технологий в Украине.
Ключевые слова: BI-технология, рынок BI, BI-инструменты, конкурентоспособность.

The article is devoted to the application of new analytical tools to help improve the competitiveness of the economic agents. Special attention is paid to BI market, its trends and the main players are defined. The features and prospects ofimplementation of BI technology in Ukraine are analyzed.
Keywords: Business Intelligence (BI) technology, BI market, BI tools, competitiveness.

The process of making complicated managerial decisions in the constantly changing environment of real economy functioning mechanism is a very difficult task that requires the profound situation analysis. All real processes taking place in modern social, economic and business systems are dynamic and can be described with enormous data arrays only. The key issue for the stable development of a system is the processing of this data and getting new knowledge about its capabilities and potential. Therefore it is reasonable to make optimal managerial decisions with the help of scientific methods that reflect the specific character of system performance. Under such circumstances the development of holistic decision-making mechanism becomes crucial. The basis for such mechanism would be the principles of proactive system management, and the data mining would be the primary tool.

Analytical applications and databases intended to implement the intelligent way of business management (Business Intelligence, BI) are the most promising tools offered on the market of data processing and visualization technologies used for managerial decision-making. BI tools are intended for business performance measurement and managerial decisions assessment with an aim of securing the effectiveness of decision-making process. The origin of BI technology inspired the origin of information analysis systems of new generation that include different data mining tools.

There are many publications devoted to the development of BI technology and applications used in applied economics including specialized journals, such as "Information Technologies for Management" [1] and "Management Systems and Machines" [2], scientific publications [3-5], publications in the Internet, for instance PC WEEK/UE [6-8], "Computer Review" [9-11], "CNews Analytics" [12], and websites (portaltele.com.ua [13], si.ua [14], ain.ua as well as websites of the companies present on the BI market – Citia BTC [15], RBC Group, BIT-Impulse, TComTech, Intellect-Service – stand out). Generally the main attention in such publications is paid to the usage of BI system tools for solution of specific applied problems.

There are several main premises for the development of such holistic decision-making mechanism that will take into account modern requirements for quality of managerial

decisions. They are as follows: development of theoretical, methodological and instrumental levels of such mechanism, synthesis of relevant economic and mathematical models, and securing the realization of proposed methods through application and development of information technologies and systems. Hence the research connected with the analysis of capabilities and perspectives of modern BI systems and technologies, BI tools market, quantitative and qualitative indicators of BI technology application. In this respect the research of international experience, world BI market trends and their manifestation in Ukraine is particularly topical. The application of latest analytical tools that support decision-making by individual economic agents must become an important step to increase their competitiveness and form development strategy that will have a strong impact on the increase of Ukrainian economy competitiveness.

The objectives of this research are: investigation of BI systems features (in comparison with other corporate software) that enable the application of the management mechanism on the basis of data mining; estimation of Ukrainian companies automation level as well as the level of BI tools application for decision-making process support; analysis of world, Russian and Ukrainian BI market trends and obstacles for BI systems development in Ukraine. All that will help analyze informational support for efficient business strategies for the agents of Ukrainian economy.

There is no unified classification of BI systems. The main approaches are formed by studies of three companies investigating the BI market: Gartner (functional approach), Forrester (two groups of systems: those aimed at transformation of raw data into valuable relevant information used for decision-making and those aimed at data preparation and usage in analysis, reporting, productivity management and information delivery) and IDC (two groups of systems: QRA (end-user query, reporting and analysis) systems and advanced analytics systems) [1-3, 5].

Summarizing the information concerning BI components and their functions [1-4, 6, 14], one can define multilevel BI architectural stack (Table 1).

According to classification by Gartner, BI tools must perform at least the functions of information integration,

presentation and analysis [5]. Main categories of BI software tools are just the same as in IDC classification (QRA tools and advanced analytics software). The capabilities of products of both categories define their application for management mechanism on the basis of data mining.

Table 1. **Business Intelligence Architectural Stack**

Category						Right-side spanning columns
Delivery	Desktop gadgets	Office suites	Mobile	Disconnected		Industry vertical applications / Appliance / Strategy / Methodology
	Portals	Interactive voice response, ATM, point-of-sale				
Reporting	Dashboards	Alerts	Advanced data visualization			
	Search	Geospatial	Reporting – ad hoc, analytical, production			
Performance management	Metrics/KPIs	Planning	Scorecards			
	Strategy/objectives management					
Supporting applications	Collaboration	Life-cycle mgt.	Localization	QA	Version control	BI SaaS / SP/application outsourcing / S
	Metadata – integration repositories		ECM	eLearning	MDM	
Analytics	Data/text mining	Guided decisions	NLP	Guided search		
	Time series	OLAP	Operational DSS	Predictive analytics		
	Usage analytics	Statistical analysis	Web analytics			
Discovery and integration	Accelerators/query optimization		Adapters/tool kits			Enterprise applications: ERP, CRM, SCM, ERM
	BAM/CEP	BPM/BRE integration	Discovery accelerators			
	DQ – cleansing, profiling	EAI/SQA	EII	ETL/CDC		
	Integration – third party applications					Hosted BI SP) / Center of excellence / Governance / BPO
	Operational data stores (ODS), data warehouses (DW), data marts (DM)					
	Report mining	Services registry and repository				
Data	Columnar DBMS	Hierarchical/XML	In-memory DBMS			
	Multidimensional OLAP	Multivalue DBMS	RDBMS			
	Streaming DBMS	Search DBMS				
Infrastructure	Network	Services	Storage			

Source: Forrester Research, Inc. [1]

The modern BI systems market offers a wide range of products that support decision-making. This is one of those few markets that have not suffered from the global financial crisis, but on the contrary became stronger. This fact can be explained by increased attention to all the tools that help save money during the slump in economy, and that is one of the key functions of BI systems [10, 14].

Different companies operate actively on the BI systems market; there are both the vendors of BI products only and the manufacturers of complex corporate software that often can merge BI systems vendors and integrate their products into own systems. BI products can be divided into two groups: "horizontal", i.e. easily scaled and incorporated into different existing systems due to the standard set of tools they include, and "vertical", i.e. used for specific purposes that can hardly interact with third-party software [6].

70% of the world BI systems market is occupied by major vendors, such as SAP (BI product SAP BusinessObjects), IBM (IBM Cognos 8 Business Intelligence), Oracle (Oracle Business Intelligence), SAS (SAS Enterprise Business Intelligence), and Microsoft BI. In 2011 SAP was still a market leader (with the market share of 23.6%), followed by Oracle (15.6%), SAS (12.6%), IBM (12.1%) and Microsoft (8.7%). BI systems market is growing very rapidly, as the growth rate in 2011 equaled 16.4%, and the market size reached the level of $12.2 billion according to Gartner research (by IDC methodology the market size is bigger, reaching $33.9 billion in 2012, and Oracle is the market leader with 20% market share). Modern market structure is the consequence of mergers of small companies by large vendors in 2007-2008 (SAP with BusinessObjects, IBM with Cognos and Oracle with Hyperion).

The structure of Commonwealth of Independent States (CIS) BI systems market and, in particular, Russian market differs from the world market's one. Market dynamics is 5-7 years behind (e.g. BI has already been popular all over the world in 2000, and in Russia the growth rates started increasing in 2005). An important role is played by the local vendors, whose products have various advantages: they require no localization, take market specific needs and business environment conditions into account, and are cheaper on the whole. However, the drawback of such products is a comparatively low quality and few benefits from usage, as well as fragmentariness of problem solving process. Universal BI systems manufacture requires much investment in research and development area, therefore Russian vendors are just advancing towards extension of BI systems capabilities from mere analysis of accumulated data to prediction and modeling of different scenarios. BI systems are viewed in CIS chiefly as a comfortable reporting means, while in developed countries the understanding of these systems main tasks is more profound.

Generally Russian BI market development is dynamic, the main branches of implementation being trade, financial sector, public sector, fuel-energy complex, pharmaceutics and telecommunications industry. The "pure" BI market size equals about $200 million (IDC estimate for 2011), and twice as much together with BI tools supplied with other corporate software. The annual sales growth rate reaches 35% and is three times bigger than the world market growth rate. Furthermore, the segment of mobile BI tools develops even more rapidly (annual growth rate up to 100%), taking into account that Russian vendors will hold monopoly position for 2 or 3 years before European and American vendors enter this segment of the market). Market leaders in 2011 were "Prognoz" – BI system from the local vendor (62 implementations resulting in 26.61% market share), Qlikview (40 implementations, 17.17% market share), IBM (35 and 15.02% respectively), SAP BusinessObjects (24, 10.3%), Microsoft BI (6, 2.58%) [12-13]. BI systems remain the third most popular corporate software products after ERP and CRM systems in Russia. However, the figures mentioned represent the public implementation projects, and the share of non-disclosed projects is estimated to be 4 times bigger. For instance, "Prognoz" announced to have fulfilled 504 projects embracing therefore up to 50% of Russian BI market ("Prognoz" is present on Ukrainian market as well; State Tax Service of Ukraine,

State Committee on Water Management of Ukraine and NEC "Ukrenergo"). A clear trend is to be defined on the Russian BI market: the public sector prefers Russian vendors (sometimes due to state security considerations), and financial sector, trade and real estate prefer European and American vendors [12, 13].

When examining Ukrainian market, one should note that Ukrainian companies automation level is still far behind the world one, therefore the world market trends appear later in Ukraine. The differences between Ukrainian market trends and the world ones are caused by differences in levels of competition on BI markets, enterprise scales and internal requirements for service level and product quality.

BI systems belong to high-technology products, therefore there are mainly foreign products manufactured by world market leaders in this area present on the Ukrainian BI market. There also products of Russian vendors, such as "Prognoz", "BaseGroup Labs", "Sitronics", "Microtest", "TopS BI", "Columbus IT Russia" and "BARS Group". BI functionalities are to some extent included in "1C" and "Galaktika" products that are popular with CIS market.

The most popular BI tools in Ukraine are Reporting & Analytics tools, including dashboards, ad-hoc reporting tools, budgeting and consolidation solutions and data mining tools. SaaS technologies, BI mobile applications and combination of planning, predicting and analytical reporting tools are viewed as interesting, yet not widespread innovations.

Such examples of successful BI systems implementation in Ukrainian companies stand out: Microsoft BI and SQL 2008 implementation in Fozzy Group; large Oracle BI projects in National Bank of Ukraine, "Prominvestbank", as well as "Eurochem" where administrations costs were reduced by 20%; SAP BusinessObjects implementation in MTS, "Kyivstar", "Ukrsibbank", "Alphabank", "Deltabank", TAS insurance company, etc. [7, 15].

Many Ukrainian companies cooperate with European and American vendors, for instance, SAP BusinessObjects is implemented by 12 SAP partners. RBC Group, the main Qliktech partner, whose system is used by 30 Ukrainian companies ("Velyka kyshenya", "Novaya liniya", "Agromat", "Farmak", "Darnytsya", "Gerkules", "UniCredit Bank", "Sandora", "Novus", etc.) and became popular due to in-memory technology and data discovery tools, cooperates with Oracle and IBM as well. Overia company with headquarters situated in Dnipropetrovsk is one of the main Microsoft parners, along with Lime Systems (with headquarters in Donetsk) that produces its own software, includine Lime Business Intelligence system. Lime Systems is active mainly in banking sector, one of its clients being, for instance, EBRF (European Bank of Rational Financing), where Lime BI has been implemented. Ukrainian company TComTech is a partner of Info-Suite A\S – BI systems vendor with research and development department working in Ukraine [15].

One of the most significant Ukrainian companies active in the areas of BI systems manufacture and consulting is BIT Impulse with headquarters situated in Lviv. AVK, "Halychyna", "Biola", "Comfy", "Cosmo", "Eldorado". "Brocard", distribution networks "Barvinok" and "Nash krai" are among its clients. The main product of this company is BAT Enterprise – the system of analytical reporting and BI for large and medium enterprises, as well as BAT Desktop intended for report visualization for individual users.

Ukrainian company "Intellect-Service" produces IS-PRO ERP system that includes several BI tools. This ERP system is used by 6,500 enterprises in Russia and Ukraine.

Main Ukrainian manufacturer of corporate software for banking sector and insurance companies is CS company (with headquarters in Kharkiv). Its main product is ABS B2 system, used by the third of Ukrainian banks, but this company produces CS::BI system as well. This system uses Oracle Database 11.2 owing to partnership between Oracle and CS and was implemented in 4 banks over 3 years ("Kredobank", "Sich", VTB and "Daughter Bank of "Sberbank of Russia") [8].

Generally BI market of Ukraine is a perspective niche market, entered by new vendors (e.g. DBMS Vertica), that develops constantly, yet slowly. The problem lies in attitude towards BI system as something collateral that is convenient for some internal processes of the company; in lack of understanding of all possible benefits from BI implementation; and in lack of readiness to revise the conventional scheme of working with information that results in lower labour productivity than that of foreign companies. Shadow activities of Ukrainian companies, small volumes of activity and accounting information, unsolved problem of poor data quality (according to some estimations, from 15% up to 40% of yearly budget of banks is spent unreasonably due to poor data quality) – all these factors lead to lower actuality of BI tools for Ukrainian companies.

The main trends of world BI systems market due to which the newest systems are viewed as BI 2.0 and 3.0 (2nd and 3rd generation, it being considered that 3rd one is the nearest future perspective involving joint decision-making and increasing role of social networks) are as follows [1, 5, 9, 11, 15]:

1. BI tools standardization. Some Ukrainian companies have not encountered this process, because of lack of understanding of BI systems importance that is still characteristic feature of domestic enterprises. Other will certainly encounter this problem, as they have already been using different tools of BI and other corporate software.

2. Cloud BI and SaaS (Software as a Service) BI spreading. Taking into account that cost minimization is particularly topical for Ukrainian companies (owing to large taxes, etc.), this tendency could have appeared on Ukrainian market as well, but it is practically impossible as Ukrainian businessmen treat new technologies with mistrust, shadow activities become impossible or very hard to perform, legislative obstacles for transmission of information about clients to third party, global vendors are suspicious of Ukraine, etc.

3. Open-source BI applications (i.e. applications with open source code) spreading. Large companies, still being the major clients of BI applications vendors, especially in Ukraine, are ready to pay more for security guarantees from renowned brand products vendors. However, the global financial crisis promoted the growth of attention to open-source BI applications (e.g. manufactured by Actuate, Jaspersoft, SpagoBI, Pentaho, Infobright, Ingres), as their usage optimizes company's expenses. Thereby open-source BI applications have good perspectives in Ukraine as BI technologies are spreading and penetrating into the domestic market, however they are currently used just by small companies as an experiment.

4. BI tools application for company's operating activities. Operational BI is mostly an evidence of high level of company's BI system development, therefore it will be spreading in Ukraine as traditional BI tools will be applied by more and more Ukrainian companies.

5. BI technologies application in service-oriented architecture (SOA) that is useful namely for operational BI. This trend is very topical for global vendors, such as IBM, SAP or Oracle that manufacture more and more various products based on SOA that are already well-known on the Ukrainian corporate software market.

6. BI in-memory tools spreading. Such tools do not use database management systems (DBMS), loading data directly to internal memory (RAM). Qlikview, TIBCO Spotfire adhere to this trend and focus on small and medium businesses (SMB), which not very often use BI tools in Ukraine. However, these are the tools that will occupy in the coming years up to 30% of world BI tools market and that will lead to their spreading in Ukraine. Acctiva is the company that has already entered Ukrainian BI tools market and distributes such tools in Ukraine.

It should be noted that BI market research both in Russia and especially in Ukraine cannot be called objective and do not include all the information, because they rely just on the data provided by companies themselves that can overstate and understate the real situation. The market itself is rather fuzzy, as BI solutions may be included in various systems. That is why the market size can hardly be estimated. The first such estimations appeared in Ukraine in 2003 – at that time it was just $0,69 million. Now the market size increased by several digits, but it is still problematic to estimate it with precision, as there was no research of it has been conducted yet.

On the basis of analysis of modern state of BI technologies application all over the world and particularly in Ukraine one may come to such conclusions as follows.

BI tools play an important role in securing the competitiveness of modern enterprises. A growing number of companies understand the necessity for BI tools usage with an aim of decision-making process optimization bearing in mind all the consequences of the global financial crisis, unstable state of the market and necessity for rational funds usage.

BI systems market develops very rapidly over the latest years, as the actuality of BI tools being a way to save money during the crisis has increased immensely. Russian market of BI tools is already a developed one; domestic vendors are major rivals of global vendors. Russian market growth rate is three times bigger than the world one, and that is an evidence of Russian market's good perspectives.

While there are enough qualitative estimations and profound research for Russian market, it is hard to estimate the market size and dynamics for Ukrainian one, as no research has been conducted so far. Ukrainian market develops slower than Russian one, however global trends become topical here as well: the number of BI solutions users is growing, as well as data storage availability and number of BI mobile applications. BI solutions for SMB (SAP Edge & BO on Demand, IBM Cognos Express) are already present on the market. The income from license vending is reducing owing to the decrease in license cost and application of BI as an addition to implemented ERP systems. Global vendors try to cut the minor companies off the market by supporting these trends. The number of independent BI products vendors has decreased as well, as a consequence of aforementioned market changes. However, fast BI solutions popularity is growing rapidly that has led to an increase of the number of complex analytic systems. The number of projects on BI solutions migration and updating is also growing as the companies are paying more and more attention to license and service cost and try to reduce expenses by the integration of several different BI platform into a combined one. There are more and more "alternative" BI solutions as well, because the competition with global vendors caused the development of new highly specialized branch products. The BI systems vendors started offering solutions based on in-memory computing in order to increase the promptness of data processing (e.g, IBM solidDB, SAP HANA, Oracle In-Memory Database Cache, etc.).

A comparatively low automation level of Ukrainian enterprises, businessmen mentality, a lack of understanding of BI systems benefits, shadow activities, small volumes of activity and accounting information on the majority of companies, poor data quality – all these problems move back the BI systems development in Ukraine. However, one can say with certainty that BI tools are vitally important to support competitiveness of companies, and have already become an integral part of corporate software used by Ukrainian companies.

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BRIBING AS COOPERATIVE GAME

Схема підкупу чиновників розглядається як модель кооперативної теорії ігор. На основі вектора Шеплі обчислю-ються так звані "істинні вартості хабара". Чисельний аналіз пояснює, чому хабарі за відкриття бізнесу такі великі, і що відбудеться, якщо хабарі стануть законними, як пропонував Г. Попов (відомий російський економіст, мер Москви за часів перебудови).
Ключові слова: коаліція, вектор Шеплі, супермодулярність, ефект снігової кулі.

Схема подкупа чиновников рассматривается как модель кооперативной теории игр. На основе вектора Шепли вычисляются так называемые "истинные значения взятки". Численный анализ объясняет, почему взятки за от-крытие бизнеса так высоки, и что произойдет, если взятки станут законными, как предложил Г. Попов (известный русский экономист, мэр Москвы во время перестройки).
Ключевые слова: коалиция, вектор Шепли, супермодулярность, эффект снежного кома.

The officials bribing scheme is considered as cooperative game theory model. On the base of Shapley vector so called "true bribe values" are calculated. The numerical analysis explains why the bribes for business opening are so high and what is happen, if the bribes become legitimate, as G.Popov (famous russian economist, Moscow city mayor during perestroika) proposed once.
Keywords: Coalition, Shapley vector, supermodularity, snowball effect.

Let n be number of players in cooperative game. k<n of them are called officials and the rest n-k are called businessmen. Let all businessmen make the same activity and as a result each of them creates unit surplus value. The officials couldn't create surplus value, however, the business may be made only at the condition of their mutual permission. So, the winning of coalition, which is consist of businessmen and officials equals to

W(S)=(number of businessmen in coalition)×χ(all of the officials are in coalition). (1)

Now the supermodularity property of such function will be shown. Remind, that set characteristic function is called supermodular, if for arbitrary subsets S and T such inequality is in valid

$$W(S \cup T) + W(S \cap T) \geq W(S) + W(T).$$

The condition equivalent of supermodularity (however, as a rule, amenable to more easy check) is called "snowball effect". By the definition, the cooperative game has "snowball effect" if any player supply to bigger coalition ensue bigger or the same winning function increment, i.e.

$$(\forall L \subset K), (\forall i \notin K) \quad W(K \cup i) - W(K) \geq W(L \cup i) - W(L)$$

(it means, that "the bigger snowball is, the better new snow sticks").

It will be shown, than function (1) has snowball effect.

Let some player i be a businessman. Then for any coalitions couple $L \subset K$ one of three cases may take place.

Let All officials belong to L, hence they all are also belong to K, so

$$W(K \cup i) - W(K) = W(L \cup i) - W(L) = 1$$

Let not all of the officials belong to K, hence, not all of them belong to L either, so

$$W(K \cup i) - W(K) = W(L \cup i) - W(L) = 0$$

Let all of the officials belong to K, but not all of them belong to L, so

$$W(K \cup i) - W(K) = 1, \quad W(L \cup i) - W(L) = 0.$$

Let some player i be an official and let businessmen number at coalitions L and K (where $L \subset K$) be equal to l and k respectively, then $l \leq k$. For any coalitions couple $L \subset K$ one of three cases may take place.

Let all officials are belong to $L \cup i$, hence they all belong to $K \cup i$, so

$$W(K \cup i) - W(K) = k \geq W(L \cup i) - W(L) = l$$

2) Not all of the officials belong to $K \cup i$, hence not all of them belong to $L \cup i$ either, so

$$W(K \cup i) - W(K) = W(L \cup i) - W(L) = 0$$

3) All officials belong to $K \cup i$, but not all to $L \cup i$, so

$$W(K \cup i) - W(K) = k \geq W(L \cup i) - W(L) = 0.$$

So, in all of the cases snowball effect is in valid, what is equivalent to supermodularity condition. In it's turn, super-modularity is the sufficient condition, that core of the game is not empty and Shapley value belongs to core, so it's profitable to unite and to make so called grand coalition for all of the players.

Let's remind, what the Shapley value is and the way of it's calculation. For set of all players let some order to grand coalition joining be fixed (this order may be defined by permutation). Let for each player his deposit to grand coalition equals to winning function of subcoalition "with him" (as he just join the grand coalition) minus winning function of subcoalition "without him" (just before his joining the grand coalition). For example, let the grand coalition consists of four businessmen and two officials. Let some permutation be fixed, for example $(b_3, off_2, b_4, b_2, off_1, b_6, b_5)$. Note, that the first one, who makes deposit (which equals to the number of business-men on the left of him, here 3) to grand coalition is the official positioned the most right (here off1), and each businessman after him (here b6 and b5) also makes unit deposit to grand coalition. Deposit of all players before him (both officials and businessmen) equals to zero. Of course, another players permutation generates another set of players deposits.

For each player his Shapley value is defined as his av-erage deposit above all n! feasible players permutations. Shapley vector consists of individual Shapley values.

The total official's deposit to grand coalition is calculated as follows. Let at some permutation last (from left to right) official assume the position $k + j$, so there are j business-men and $k - 1$ officials in the left of him. The fraction of such permutations (among all $n!$) equals to $C_{k-1+j}^{k-1} \big/ C_n^k$. At all such permutation last official takes j. By taking average among all feasible j from 0 to n-k one can get:

$$S = \sum_{j=0}^{n-k} \frac{C_{k-1+j}^{k-1}}{C_n^k} \cdot j = \frac{1}{C_n^k} \sum_{j=1}^{n-k} C_{k-1+j}^{j} \cdot j = \frac{1}{C_n^k} \sum_{j=1}^{n-k} \frac{(k-1+j)!}{(k-1)! \, j!} \cdot j = \frac{1}{C_n^k} \sum_{j=1}^{n-k} \frac{(k+(i-1))!}{(k-1)!(i-1)!} =$$

$$\frac{k}{C_n^k} \sum_{j=0}^{n-k-1} \frac{(k+i)!}{k! \, i!} = \frac{k}{C_n^k} \sum_{i=0}^{n-k-1} C_{k+i}^{i} = \frac{k}{C_n^k} C_{k+i}^{i} = \frac{k}{C_n^k} C_n^{k+1} = \frac{k}{k+1}(n-k). \quad (2)$$

At sum calculation the following combinatorial identity was used. $\sum_{k=0}^{n} C_{r+k}^{k} = C_{r+n+1}^{n}$. The right hand side of (2) is the total official's deposit to grand coalition (since all officials have the same rights, then each one get the amount $\frac{n-k}{k+1}$). So, the sum, which is remaining for businessmen, equals to $(n-k) - \frac{k}{k+1}(n-k) = \frac{n-k}{k+1}$, so, each businessman get $\frac{1}{k+1}$.

Note, that each official's income equals to the total one of all of the businessmen.

It seems at first sight, that at fixed number of officials the businessmen income must increase as their number increase, cause bribes may be collected by shares among businessmen. But indeed it's not the case, and official's claim to bribe increase as number of businessmen increase at the rate, than each businessman income $\frac{1}{k+1}$ remains constant.

Conclusion. It seems that fortunately in real business bribes fraction is less, than at considered above "ideal" model. It stipulated by the fact, that corruption is still illegal and criminal punishment fear works as restriction factor. If the corruption were legitimate (or at least actually unpunishable), then it cause the situation closer to the model considered above.

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JEL classification C38

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APPLYING PRINCIPLE COMPONENTS ANALYSIS FOR MODELING INVESTMENT ACCEPTANCE OF COMPANIES

Дана стаття присвячена підходу до оцінки доцільності інвестицій за допомогою факторного аналізу. Інвестори стикаються з проблемою, як систематизувати дані, обрати основні чинники та їх конфігурації, що впливають на ціну акцій компаній. В цьому випадку метод аналізу головних компонент як один з методів факторного аналізу дозволяє вирішувати таке завдання. За результатами аналізу головних компонент були складені групи український компаній з найвищою пріоритетністю з точки зору вартості інвестицій.
Ключові слова: факторний аналіз, аналіз головних компонент, доцільність інвестицій компаній, дисперсія, факторна вага, кореляція.

Данная статья посвящена подходу к оценке целесообразности инвестиций с помощью факторного анализа. Инвесторы сталкиваются с проблемой, как систематизировать данные, выбрать основные факторы и их конфигурации, влияющие на цену акций компаний. В этом случае метод анализа главных компонент как один из методов факторного анализа позволяет решать такую задачу. По результатам анализа главных компонент были составлены группы украинских компаний с наивысшей приоритетностью с точки зрения стоимости инвестиций.
Ключевые слова: факторный анализ, анализ главных компонент, целесообразность инвестиций компаний, дисперсия, факторній вес, корреляция.

This article deals with an approach to estimation of investment acceptance by factor analysis. Investors face the problem how to systematize data, select basic factors and their configurations that influence shares price of companies. In this case Principle Components Analysis (PCA) method as one of factor analysis methods helps to solve such a task. The highest-priority groups of Ukrainian companies in terms of investment value were made according to the results of Principle Components Analysis.
Keywords: factor analysis, Principle Components Analysis, investment acceptance of companies, variance, factor's weight, correlation.

Lately investors more frequently face the task of system consideration results of Fundamental analysis, Technical analysis and Liquidity analysis in the process of making investment decision. According to every type of analysis investment object is described by the plural performances: financial ratios, performances that describe prices fluctuations on the stock market exchange, macroeconomic indicators, expert's estimations and ext. Moreover, a lot of those performances are interdependent. The professionalism of investors is expressed exactly in ability to correctly select priority factors and identify dominant configurations. In such conditions, applying factor analysis enables to determine the structure of these interconnections and provide the clench of information, explaining the plurality of indicators through a small, as a rule, number of factors. It is assumed that these factors not only provide the concentration of information but also are the most significant characteristics of investigated object. Principle Components Analysis is the most appropriate for solving such tasks.

Principal component analysis is central to the study of multivariate data. Although one of the earliest multivariate techniques it continues to be the subject of much research, ranging from new model- based approaches to algorithmic ideas from neural networks. It is extremely versatile with applications in many disciplines.

Practical application of factor analysis and directly Principle Components Analysis were researched by many prominent scientists (such as Tomashevich, 1999; Pearson, 1901; Silvester, 1889; Ayvazyan, 1989). This method was invented by Pearson (1901) and used as one of methods on diminishing data losing the least of information.

Silvester (1889) was the first who created mathematical foundation for PCA in his paper "On the reduction of a bilinear quantic of the *n-th* order to the form of a sum of *n* products by a double orthogonal substitution". Than in twelve years later Pearson (1901) proposed PCA. In many cases the "independent" variables is subject to just as much deviation or error as the "dependent" variable. Pearson (1901) observed x and y and sought the unique functional relation between them. In case he was about to deal with he supposed that the observed variables – all subject to error – to be plotted in plane, three-dimensioned or high space, and he endeavored to take a line (or plane) which will be the "best fit" to such a system of points. The method that was investigated by K. Pearson can be easily applied to numerical problems.

Nowadays the most powerful generalization of PCA was made by Mikhail Belkin (2003) and Partha Niyogi (2003) investigating laplacian eigenmaps for dimensionality reduction and data representation. One of the central problems in machine learning and pattern recognition is to develop appropriate representations for complex data. They considered the problem of constructing a representation for data lying on a low-dimensional manifold embedded in a high-dimensional space. Drawing on the correspondence between the graph Laplacian, the Laplace Beltrami operator on the manifold, and the connections to the heat equation, they proposed a geometrically motivated algorithm for representing the high-dimensional data. The algorithm provides a computationally efficient approach to nonlinear dimensionality reduction that has locality-preserving properties and a natural connection to clustering.

The purpose of this article is investigation of PCA application for the exposure of main factors that influence the investment acceptance of companies.

1. Theoretical framework

Studying the investment acceptance of companies, analysts understand that some of factors have correlation. In this case their consideration at the same time will result in some output of information but on leaving out one of attributes, the loss of important information can take place that finally will also negatively affect quality of the accepted investment decision. Application of PCA allows defining a small number of independent factors with the minimum loss of influence of others.

This method is based on assumption, that description of all attributes equals zero and the number of general factors equals the number of output attributes. In this case the transformation to a linear combination of factors means transformation to the new system of co-ordinates.

Analysis consists of a few stages, at each of them one principal component is found that the most significantly describes the phenomena and every next component holds less information than previous. The first principal component accounts for as much of the variability in the data as possible, and every succeeding component accounts for as much of the remaining variability as possible. It is limited to a few first components in practice because they are enough for complete description in the compressed type of all initial information. The percentage of the explained variance serves as criteria – the relation of summary found components to general variance of initial attributes.

Practically, if number of already found principal components is not more than half of attributes and explanatory by them variance is no less than 70% and next component adds to total dispersion not more than 5%, the factor model is considered acceptable. The value of factor at one company is named factor weight of this company. Factor weights allow ranking companies by every factor.

In practice calculation is limited to a few factor's weights by the most significant components. If factor weight is higher at one object of investment it means this factor shows up in it more strongly.

2. Estimation of shares acceptance

Our investigation is based on implementation of PCA for liquidity indicators indicators of profitability and riskiness of shares issued by Ukrainian companies listed in Table 1.

The estimation of shares acceptance is carried out on the basis of analysis of daily exchange statistics at periods (periods can be, for example, months, quarters, years). Incoming data for analysis was taken according to results of stock exchange closing range: price of buyer (Bid) and price of offer (*Ask*) of every share, number of request for demand, number of offers for supply and prices of deals. We will use the followings statistical descriptions at the analysis of samples:

- means of shares profitability;
- standard deviation;
- skewness;
- kurtosis;
- spred;
- means of Volume trade;
- means of transaction number.
- means of shares profitability:

– Means of shares profitability:

$$\overline{R(a_i)} = \frac{1}{m} \sum_{j=1}^{m} R_j(a_i) \tag{1}$$

where $R_j(a_i)$ – profitability i-share for the period j – month; m – number of months.

$$R(a_i, j) = \frac{(Bid(a_i, j+1) + Ask(a_i, j+1)) - (Bid(a_i, j) + Ask(a_i, j))}{Bid(a_i, j) + Ask(a_i, j)} \tag{2}$$

Standard deviation:

$$\sigma(R(a_i)) = \sqrt{\frac{1}{m} \sum_{j=1}^{m} \left(R_j(a_i) - \overline{R_j(a_i)} \right)^2} \tag{3}$$

Useful measure of risk must take into account probability of possible bad results and their size. The risk measure must estimate the degree of possible deviation of actual result from expected instead of measusuring probabilities of different results. Standard deviation is allows to do this. It is lately offered number of approaches based on analysis of higher moments distribution of shares profitabliness. The special attention is devoted to the analysis of asymmetry which is characterized by the third moment and kurtosis which is characterized by the fourth moment.

– Skewness:

An analysis only of standard deviation as risk measures can be insufficient. Especially,

when these values are equal for a few alternative objects (projects). In this case, it is necessary to analyze coefficient of asymmetry as a risk parameter. It is calculated on a formula:

$$Sk = \frac{\mu^3}{\sigma^3}, \tag{4}$$

where $\mu^3 = \frac{1}{m} \sum_{j=1}^{m} \left(R_j(a_i) - \overline{R(a_i)} \right)^3 \tag{5}$

If $Sk = 0$, the curve of random variable is located symmetric in relation to mean of distribution. If $Sk > 0$, the random variable has a spatial slant – a "tail" of distribution comes forward on the right. When $Sk < 0$, random variable has a left-side slant – a "tail" of distribution comes forward to the left.

Clearly, that among *n* different alternative objects (projects, strategies) is sense to choose that for which takes place:

$$Sk_k = \max_{k=1...n}(Sk_k)$$

Since unfavorable deviations from expected value located on the left the nearest to the mean of distribution (deviate less from it in an unfavorable side), and the proper (favourable) values are considerably remote from the mean of distribution (these values are located on the right).

The system of risk assessment can be built farther, using such a characteristic as kurtosis.

– Kurtosis:

$$Kurt = \frac{\mu^4}{\sigma^4} \qquad (5)$$

The kurtosis gives understanding of the oblongness of random variable curve. If $Kurt > 3$, there is oblongness of curve upward. If $Kurt < 3$, the branches of parabola are pressed to the axis Ox. The kurtosis characterizes the so-called "thick tails" of distribution. What a distributing tail is thicker, the greater probability of taking on extreme values which substantially deviate from mean. Investors negatively refer to possibility of extreme values and want to minimize the kurtosis.

We will add an index, that represents probability of that value of profitableness is higher than mean.

– Frequency of shares profitability:

$$P(a_i) = 1 - P(R(a_i) < 0) \qquad (6)$$

The most substantial index of share's liquidity is spred between prices $Ask(a_i)$ and $Bid(a_i)$. This index is calculated to every share according to results of market session:

– Spred:

$$\overline{Spred(a_i)} = \frac{1}{m} \sum_{i=1}^{m} Spred(a_i), \qquad (9)$$

where $Spred(a_i) = \dfrac{Bid(a_i) - Ask(a_i)}{\frac{1}{2}(Bid(a_i) + Ask(a_i))} \qquad (10)$

The spred characterizes liquidity not fully from the practical point of view. The sperd can be not so big but at the same time the number of deals that taking place is little or a volume of deals is insignificant. Therefore it is necessary to consider other indexes of liquidity. In particular it is important to consider the indexes of deal's volume for certain period. Such index can be presented as a volume of the real deals that were made for certain period and can be presented as an average between the volume of demand on share at price $Bid(a_i)$ and volume of offer at price $Ask(a_i)$.

– Mean of Volume trade:

$$\overline{V(a_i)} = \frac{1}{m} \sum_{i=1}^{m} V(a_i), \qquad (11)$$

where $V(a_i)$ – is the summary volume in UAH of the transactions during the month.

An index does not take into account diversification of deals in time. During a month one large deal can take place that is the indicator of small level of liquidity. So it is expedient to enter the mean number of deal's amount $\overline{W(a_i)}$ as the next index of liquidity. The more deals took place the share is considered to be more liquid.

– Mean of transaction number:

$$\overline{W(a_i)} = \frac{1}{m} \sum_{i=1}^{m} W(a_i), \qquad (12)$$

where $W(a_i)$ – the number of transactions during the month.

Moreover an amount of quotations is important indicator. In relation to the amount of quotations it is necessary to distinguish bilateral quotations (quotations on demand and on sale). The most considerable are bilateral quotations then quotation on a purchase and finally the least considerable are quotations on a sale. This fact is represented in "Rules of making ratings of securities in the PFTS" where they are differentiated with scales 10, 7 and 5 accordingly. In our model taking into account the structure of database it is possible to use such index:

– Quantity of shares quotations:

$$\overline{Q(a_i)} = \frac{1}{m} \sum_{i=1}^{m} Q(a_i), \qquad (7)$$

where $Q(a_i) = 10 \cdot Q_D(a_i) + 7 \cdot Q_S(a_i), \qquad (8)$

$Q_D(a_i)$ – number of request for demand, $Q_S(a_i)$ - number of offers for supply.

Also performances of assets profitability are included to the analysis:

• EPS (Earnings per Share)
• P/E (Price per Share/Earnings per Share)
• P/S (Market Cap/Revenues)
• Div/N (dividends per share)
• Div/P (dividends per share's price).

EPS indicator performs how good shares are protected by profits of companies.

The coefficient that estimates efficiency of investments – so-called coefficient of price – earning ratio (p/e) is founded on the basis of net income index. It shows how market estimates the results of company activity and it's prospect. The large value of this ratio specifies that these shares are quick-growing and comparatively the low value characterizes stable shares. A comparative analysis of index of P/E is a simple and effective tool for determination of the wrong appraised shares (comparison can be made a relatively middle-market or middle-branch indexes). For the developed economy it is possible to consider the average value of coefficient P/E in the range 7-9 in the period of recession and 15-18 in the period of economic growth.

The coefficient P/E can also characterize the expectations of income growth of companies. This is important especially for investors which consider expedience of long-term investments of capital.

Very often calculation of P/E index is to difficult or it does not represent the reality as a result of errors at the calculation of net income, related to the accounting features and other objective and subjective factors.

In addition different companies are characterized by the considerable degree of recurrence and by the significant variations of income. Many analysts consider that in such conditiions it is useful to use other index – so called coefficient of price – sales (P/S).

In the conditions of economic stability it is appropriate value of P/S from 0.4 to 0.8 for large companies. The value of P/S below this level indicates on underestimation of share's value (if, certainly, financial position of firm is stable enough).

Table 1. **Companies of PFTS-index**

Company (Issuer)	PFTS Ticker
KYIVENERGO	KIEN
UKRNAFTA	UNAF
INTERPIPE NYZHNYODNIPROVSKY PIPE-ROLLING PLANT	NITR
DNIPROENERGO	DNEN
DONBASENERGO	DOEN
STIROL	STIR
ZAKHIDENERGO	ZAEN
CENTRENERGO	CEEN

Applying the PCA we will select principal components in every group of factors that reflect information for all of these indexes. Basing on principal components the most significant attributes will be determined; it will give opportunity for decision making person to form his own rating.

We took first eight companies from the PFTS index and collected all data monthly aggregated for 3 years (Table 2).

Table 2. **Indicators of shares**

PFTS Ticker	$\overline{R_j(a_i)}$	$\overline{\sigma(R(a_i))}$	Sk	Kurt	$P(a_i)$	$\overline{\text{Spred}}$	$\overline{V(a_i)}$	$\overline{W(a_i)}$	$\overline{Q(a_i)}$
KIEN	0.02	0.14	-0.71	1.86	0.62	0.43	1 258	4.22	150
UNAF	0.05	0.15	2.82	9.88	0.52	0.08	1 149	12.71	217
NITR	0.17	0.68	3.97	21.29	0.54	0.70	281	3.96	89
DNEN	0.07	0.34	3.08	12.99	0.50	0.34	475	6.65	187
DOEN	0.04	0.26	1.13	2.70	0.44	0.68	144	3.12	146
STIR	0.06	0.19	1.00	0.88	0.56	0.33	367	2.86	72
ZAEN	0.05	0.18	2.50	9.08	0.50	0.28	515	6.14	179
CEEN	0.07	0.28	2.00	5.56	0.52	0.20	403	6.90	197

Realization of PCA was done in the package of Statistica 6.0. On the first step we'll apply the PCA to information of table 2 and we have got matrix of factor's weights (Table 3).

Table 3. **Matrix of factor's weights**

	Factor 1	*Factor 2*
$\overline{R_j(a_i)}$	0.92	0.18
$\overline{\sigma(R(a_i))}$	0.96	0.11
Sk	0.65	0.73
Kur	0.73	0.57
$P(a_i)$	-0.26	-0.29
$\overline{\text{Spred}}$	0.67	-0.56
$\overline{V(a_i)}$	-0.69	0.22
$\overline{W(a_i)}$	-0.39	0.89
$\overline{Q(a_i)}$	-0.52	0.72

The factor's weights of attributes stand in the columns of this matrix. Factors are always ranked by size of their contribution to total variance of attributes – the first factor is the most significant in this understanding. There are values of contribution in absolute and relative figures in two last lines of the Table 4.

Table 4. **Results of PCA**

No. of active vars: 9	*No. of supplementary vars: 0*
No. of active cases: 8	*No. of supplementary cases: 0*
Eigenvalues: 4.16759 2.68247 1.46124 0.438753 0.157293 …	
Number of factors: 2	*Quality of representation: 76.1%*

So, figure 4.16 (explained variance) means that the first factor explains 4.16 from total variance that equals 8 (8 is a number of attributes in the initial table), it is almost 46.31%.

Thus, already one first component considerably describes initial data. The second component explains almost 29.81% of total variance and together with the first one – more than 76.1%.

Let's pay attention to the most significant factor's weights (for example, those which exceed 0.75 or 0.8), they exactly specify attributes the most closely correlated with this factor. In our case the first factor is the most closely correlated with such attributes that allows us to accept the name "profitability- risk" as a working name for this component.

Risk and Liquidity attributes are the most closely connected to the second component. It is useful to consider factor's weights of objects for more detailed analysis (Table 5).

Table 5. Matrix of object factor's weights

	Factor 1	Factor 2
KIEN	-2.3277	-1.8009
UNAF	-1.8914	2.6479
NITR	4.3732	0.1880
DNEN	0.5805	1.1545
DOEN	0.4656	-1.4473
STIR	-0.2894	-2.0497
ZAEN	-0.4558	0.61106
CEEN	-0.4529	0.69625

Let's look at the matrixes of factor weights in the first column. The positive values of weights testify the showing up of factor higher middle level. As we see, the first factor has the highest weight in relation to NITR shares and some less – to DNEN and DOEN.

NITR shares are characterized by comparatively higher profitability and at the same time high risk. Negative values testify the showing up of factor below middle level.

According to the first factor KIEN, UNAF, ZAEN, CEEN have the lowest value. Other companies are approximately at the middle level, because their factor weights insignifi-

cantly deviate from zero. In accordance with this method the working name of the first factor ("a profitableness-risk") gets indirect confirmation.

Ranking of objects by the second component is quite different. UNAF has the greatest value STIR and KIEN – the lowest ones. It explains that there is factor of liquidity before us in accordance with which the highest-liquidity shares belong to company UNAF and relatively low values belong to shares of STIR and KIEN.

For generalization it is possible to classify considered companies on chart in dimension of two components (Fig. 1).
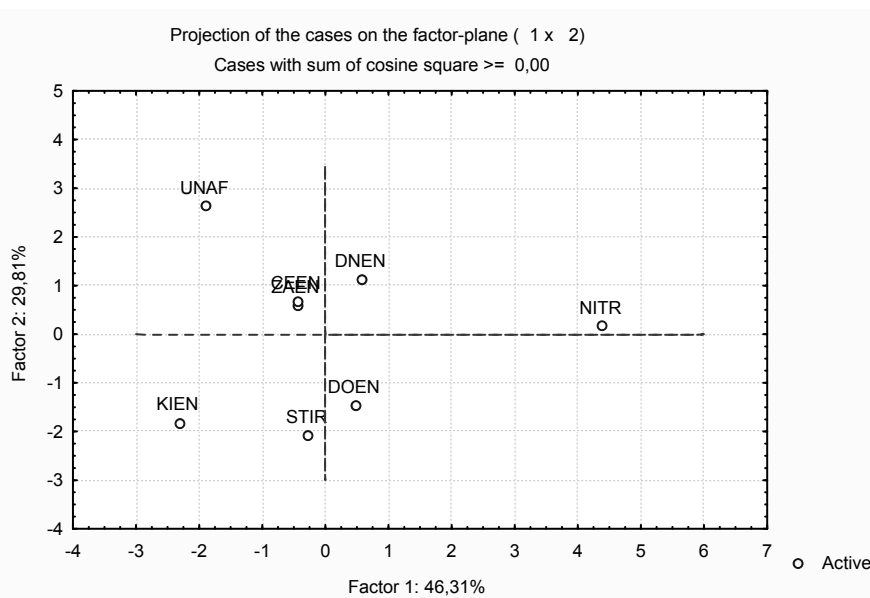
Fig. 1. Projection of the cases on the factor-plane

We'll apply the PCA to the indicators of equity (Table 6).

Table 6. Performances of assets profitability

	EPS	P/E	P/S	Div/N	Div/P
KIEN	0.011	122.73	0.48	0.0077	0.57
UNAF	3.08	6.67	2.01	0.35	1.7
NITR	0.063	44.39	0.48	0.01	0.37
DNEN	18.41	3.56	0.77	-	-
DOEN	-1.1	-4.55	0.58	0	0
STIR	1.31	9.73	1.4	0.035	0.27
ZAEN	0.092	214.4	0.82	0.038	0.19
CEEN	-0.042	-19.1	853.38	0	0

Let's select two components that explain 67.4% of total variance. As we see from the table 6 the first factor is the most closely related to the indicator of dividend payments

(Div/N) and to indicator of dividend profitability of shares. The second factor reflects information of indexes related to indicators of company earnings and current price of shares.

Table 7. **Matrix of factor's weights**

	Factor 1	Factor 2
EPS	-0.049	0.361
P/E	0.015	-0.916
P/S	-0.422	0.559
Div/n	0.953	0.212
Div/p	-0.976	0.065

It is possible to set from the matrix of factor's weights (Table 7) that the first component "dividend profitability" has the biggest weight at companies "Ukrnafta" and "Ky-ivenergo" the second one – in "Tsentrenergo", "Don-basenergo" and "Ukrnafta".

Table 8. **Matrix of object factor's weights**

	Factor 1	Factor 2
KIEN	0.085	-1.099
UNAF	3.312	0.829
NITR	-0.153	-0.344
DNEN	-0.755	0.895
DOEN	-0.653	0.028
STIR	-0.146	0.087
ZAEN	-0.193	-1.988
CEEN	-1.496	1.593

Consequently, in accordance with the indexes of equity, shares of company UNAF have absolute advantages (Fig. 2).
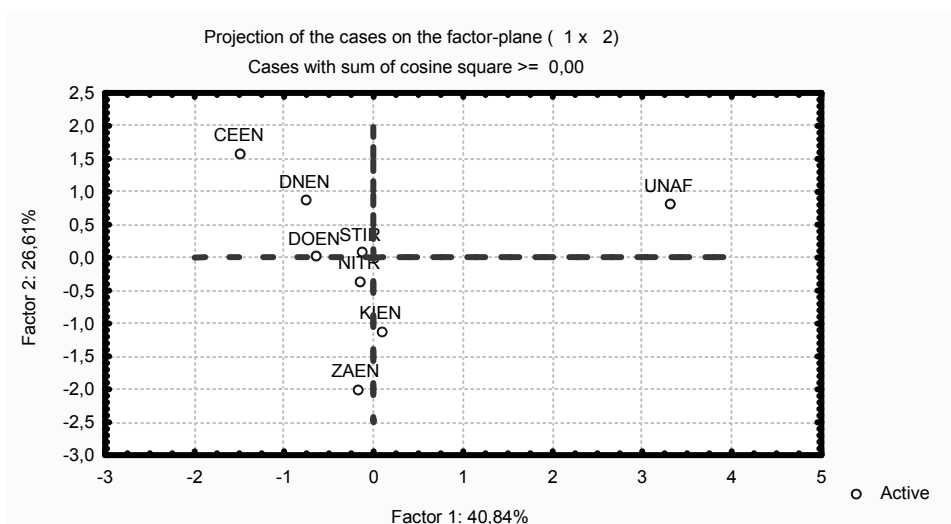

Fig. 2. Progection of the cases on the factor plane

Conclusions

Analysis of shares stock exchange statistics and equity indicators of companies that are included in the PFTS-index, gives opportunity to investor basing on PCA to form the most acceptable portfolio of companies taking into account priorities to some factors.

In accordance to component "profitableness-risk" and "liquidity" advantage must be given to the following companies: "Ukrnafta", "Zakhidenergo", "Centrenergo", in conformity to the component "dividend profitability" – "Ukrnafta", "Dniproenergo", business concern "Stirol" have leading position.

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REGULATION AND DEVELOPMENT
OF ALTERNATIVE INVESTMENT FUNDS IN LITHUANIA

Мета роботи полягає в тому, щоб проаналізувати правила, що застосовуються до альтернативних інвестицій-них фондів (АІФ), зміни за останні роки, пов'язані зі створенням АІФ в Литві. Хоча розмір капіталів АІФ в Литві зрос-тає, більшості зареєстрованих в Литві АІФ не вдалося залучити інвесторів.
Ключові слова: альтернативні інвестиційні фонди, фонди прямих інвестицій, хедж-фонди, нерухомість, законо-давство.

Цель работы состоит в том, чтобы проанализировать правила, применяемые к альтернативным инвестицион-ных фондов (АИФ), изменения за последние годы, связанные с созданием АИФ в Литве. Хотя размер капиталов АИФ в Литве растет, большинству зарегистрированных в Литве АІФ не удалось привлечь инвесторов.
Ключевые слова: альтернативные инвестиционные фонды, фонды прямых инвестиций, хедж-фонды, недвижи-мость, законодательство.

The aim is to analyse regulations applied to Alternative Investment Funds (AIF) and the changes in recent years as well as the related establishment of AIF in Lithuania. Although the size of AIF capital in Lithuania is growing the majority of AIFs registered in Lithuania are not able to attract investors.
Keywords: alternative investment funds, private equity, hedge funds, real estate, legislation.

The research on the analysed subject is relatively scarce due to the closed nature of AIFs, their poor regula-tion and dissemination of information. However, the amount of scientific research related to AIFs is lately on the increase as these funds gain a greater importance and their controlled equity continues to make up a larger share of the overall investment flows. The Financial Planning Association survey [1] shows a clear trend where in the global perspective the share of the alternative funds is con-tinually growing among the investments in general. The investors are willing to utilize them because of the weak correlation of such investments with common investment instruments (i.e. shares, bonds) and, thus, decreasing the general fluctuation of the portfolio. It has become especially relevant for the financial markets as they experience con-tinual pressure and stress while the world's economies are trying to overcome the crisis. Numerous researches were dedicated to the analysis of the effects of different types of AIFs on the economy: the works by Rankin B. [2], Rubin R. E. [3], Stulz R. M. [4] discuss the influence of hedge funds on the economy, the effects of private equity funds (further – PEF) on the economy are researched in such sources as Venture Impact [5], Phalippou L., Gottsch-lag O. [6], Metrick A., Yasuda A. [7], while the assessments of real estate funds (further – REF) can be found in the works by Bednarczyk T. P. [8], Bivainis J., Volodzkienė L. [9], Galinienė B., Bumelytė J. [10]. Despite the fact that the scientific literature is abundant with the evaluations of AIF types and activity analyses there is a lack of research with an overall systematic assessment of the entire AIF sector.

It has been believed that the AIFs (hedge funds in par-ticular) could contribute to the subprime mortgage crisis in 2007 which later evolved into a financial and economic crisis [11]. The recently growing anxiety over the AIF activities and the aspirations to put stricter regulations on these investment funds are partly related to this. The objective of this article is to analyse the regulations applied to the AIFs active in Lithuania as well as the related activities of such funds.

The methods used in this research: analysis of scien-tific literature and legislation as well as review, synthesis and interpretation of historical data.

Regulation of AIFs in Lithuania
and the global trends

On March 1, 2008 the Law on collective investment un-dertakings [12] (further – LCIU) came into force and opened the way for the registration of alternative investment funds in Lithuania. Due to the fact that the law which regulates AIFs has been operative for a relatively short time and has been constantly amended, the subject of the activity of such funds in Lithuania is still new and not sufficiently researched. The issue of regulation is also important because the investors, especially the institutional bodies, have more confidence in the regulated AIFs. Therefore, continual improvement of the regulation of alternative investments is crucial in providing security for all the parties involved.

According to LCIU, special collective investment under-takings in Lithuania are classified into the following types: 1) Undertakings for collective investment in transferable securities; 2) Real estate collective investment undertak-ings (i.e. real estate funds); 3) Private equity collective in-vestment undertakings (i.e. private equity funds); 4) Collec-tive investment undertakings investing in the units of other collective investment undertakings; 5) alternative collective investment undertakings (i.e. hedge funds). In accordance with this legal act three types of AIFs can function in Lithuania, and these three are usually associated with AIFs, even though there is no single and established view-point on which investment types can be subsumed under alternative investments. Spangler T., Paisner B. L. [13] state that AIFs can include three types of funds: hedge funds, private equity funds and real estate funds. Dönges T. [14] mentions that alternative invest-ments comprise hedge funds, private equity, currencies and raw materials. One of the distinctive features indicated to assist in classifying certain classes of investments as alternative investments is the weak correlation with com-mon investment classes (shares, bonds).

Some authors tend to include raw materials in the AIFs, however, the authors of this article (as of now) would not recommend to do so. Thorsten Dönges [14] offers one of the distinctive features allowing to classify certain classes of investments as alternative investments which is the weak correlation with common investment classes (shares, bonds). Based on calculations by Jarašius G. [15, p. 3], the price variation correlation coefficient of raw materials Dow Jones UBS Commodity Index and stock index of S&P 500 is approximately 0,58 which in turn shows a strong linear correlation. With regard to this during the period of analysis it would be advisable to class only three types of funds as AIFs: hedge funds, PEFs and REFs, i.e. those that are legal according to LCIU.

It can be stated that until the financial crisis which emerged in 2007 the AIFs were not so strictly regulated since quite often such funds are registered in the countries which are famous for their favourable policies of taxation and regulatory framework. Due to their closed nature and narrower scope of investors even in cases when AIFs were

established in the USA or the EU countries, such funds were not obligated to provide reports or other information on their activities, thus, their regulation was only nominal.

Since the start of the financial and economic crisis in 2007 all major economies of the world have become noticeably concerned with the activities and control of the financial sector, as well as AIFs, attempting to make it more transparent and clear. Initiated by the European Commission a new Directive on Alternative Investment Fund Managers was adopted in the month of July 2011 [16]. As stated in the proposal for a directive of the European Parliament and of the Council on Alternative Investment Fund Managers and amending Directives 2004/39/EC and 2009/../EC [17], the experience of the financial crisis exposed important failures, therefore, to ensure relevant regulation and supervision gaps in certain areas need to be bridged – and one of them is related to AIFs and their managers. In accordance with this directive AIF managers shall be authorized and subject to harmonized regulation standards. Even though this directive will affect only the minority of AIF managers, their assets under management will constitute approximately 90 per cent of total AIF assets registered in the EU, as only the large AIFs shall be regulated [17, p. 6]. Based on such equity requirement even when the directive is transferred to the national legal acts (until July 22, 2013) the amendments will not affect AIFs registered in Lithuania in any way, as the Lithuanian market and capitalization are small. As of the end of 2011 none of the operating funds were able to reach at least the minimum sum which makes the directive applicable (100 mn. Euros; when the initial five-year lock-in period of funds is applicable – up to 500 mn. Euros). The analysis of trends shows a weak probability of reaching this level in the near future. Choosing Lithuania as a place of registration of alternative investment funds during this period of analysis would not be sensible as the applicable restrictions are quite strict compared with other countries (e.g. the USA or "tax paradise" countries), so Lithuania would not have AIFs which would be subject to the framework of the directive.

The trends of AIF activities in Lithuania

After three and a half years since the validation of the registration of AIFs in Lithuania such funds were quite successful in establishing their position in the common investment funds' market. Picture 1 shows the data of AIF expansion in Lithuania in 2008-2011 with their relation to the major changes within the legal regulation of AIFs. The recast of LCIU was adopted in November 2007. The basic difference from the prior versions were the establishment conditions provided to special collective investment undertakings such as private equity funds, real estate funds and alternative collective investment undertakings. This recast also offered an opportunity to establish closed-end type collective investment undertakings. The law has been effective since March 1, 2008 and this event is marked as No. 1 in the timeline of the figure.
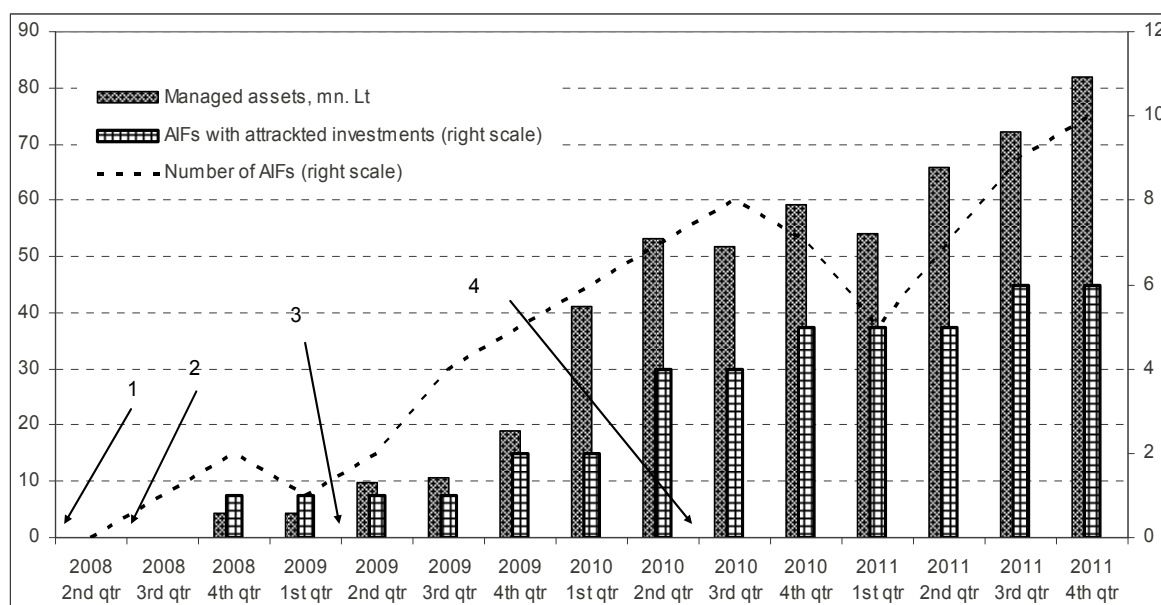

Fig. 1. AIF expansion and LCIU amendments over the period of 2008-2011

Source: compiled by authors based on [12; 21; 22]

Until the end of 2011 LCIU was amended three times, however, it did not change the regulations significantly. No. 2 in the picture is another LCIU amendment (2008, 2nd quarter) related to the changes in the definitions used in the legal act which were not related to AIFs. The first AIFs were registered in Lithuania as early as in the 3rd quarter of 2008, however, investors did not show considerable enthusiasm in relation to these funds. This is undoubtedly associated not with the insufficiently clear and attractive AIF regulation, but with general macroeconomic trends – economic recession and uncertainty in the financial markets where a more conservative and less risky investment character was prioritized.

LCIU amendments indicated as No. 3 and 4 were among other addenda related to REFs – ensuring clearer REF investment diversification principles and opportunities given to REFs to affect the issuer. The analysis of LCIU amendments with respect to the dynamics of AIF activities in Lithuania it can be stated that LCIU does not have a clear influence on the number of AIFs or the growth of the scope of assets under management. Even in case of considering the period of time needed for decisions on administrative or other procedures and circumstances to come into force and affect the previously established or future funds, LCIU amendments still do not have any impact on the number of the operating AIFs or their managed assets. The changes of the legal regulation did not show any affect

over the period of one or two quarters. It may, from the first glance, seem that events No. 3 and 4 could condition the decrease in the number of AIFs in the 4th quarter of 2010 and the 1st quarter of 2011. However, this decline was caused by two PEFs which terminated their activities as well as one hedge fund. As mentioned before, the latest LCIU amendments were related to REFs and were not to influence other types of AIFs.

Since AIFs were legalized in Lithuania in the period when AIFs were widely known and quite popular in the main financial centres (moreover, because the EU regulation was taken into consideration), the basic provisions of the law were applied in a sensible manner with regard to the new tendencies, thus, there was no need to change them to a large extent. It can be mentioned that due to such circumstances even the small LCIU amendments do not exert almost any influence on the AIF market which was formed in Lithuania.

The AIF activity in Lithuania is obviously successful. Despite the fact that these funds became legal during the very culmination of the global economic and financial crisis, since early 2008 up till late 2011 the AIF investment share in all the CIU investments grew as high as 16% and this is the largest part from the very outset of the AIF activity in Lithuania. As seen from figure 1, the absolute amount of AIF managed assets were on the increase almost continually with insignificant declines over several quarters. In view of such fast AIF growth one should note that AIFs can also cause a number of negative consequences for the economic and financial market, especially with funds acquiring more and more assets. Without a separate analysis of each AIF type it can be stated that AIF can experience difficulties due to leverage and not always liquid investments when the atmosphere on the financial markets gets worse and uncertainty rules. Problems with large AIFs can also lead to systemic risk. Therefore, it is necessary to maintain adequate AIF regulation by ensuring timely decisions and blocking the negative impact of the AIF activities.

While analysing the individual features of each type of AIFs a trend is clearly seen where the most popular type is REF both in managed assets scope and number of participants. The initial AIF activity stage in Lithuania was different – among the AIFs the most popular ones were the PEFs – 3 registered, 1 one them attracted two participants and controlled the major part of all AIF managed assets (until 4th quart. of 2009 these were the only funds which attracted investments which made up 10,96 mn litas in the above mentioned quarter [22]). However, starting from 2010 2nd quarter hedge funds and especially REFs gained popularity. For the end of 2011 according to the data supplied by the Bank of Lithuania [21] two PEFs were registered in Lithuania – both of them are not involved in any activity and have not attracted investments. Since early 2008 a total of 4 PEFs were registered in Lithuania. Thus, it can be concluded that under current conditions PEFs are not highly demanded in Lithuania, as they fail to attract the required investments.

PEFs are often presented as favourable, their effect on the economy is being analysed only through a positive prism (e.g. Alemanya L., Martí J. [18], Venture Impact [5]), that is why it could be said that the AIFs of this type were the most attractive in Lithuania as well. The assessment of LCIU regulations applied to PEFs it can also be noticed that they have relatively more advantageous conditions compared with other AIFs (less diversification requirements, wide variety of investment instrument choice and financial leverage). The activity of PEFs is mainly focused on the young, promising and developing companies and can offer funding under favourable conditions. For these reasons it could be expected to see more popularity for PEFs in the conditions of the recovering and progressing

economy. Nonetheless, by the end of 2011 there were no actually functioning PEFs in Lithuania [22]. The authors believe that this can be due to the funding provided by the EU structural funds and the recently popular risk capital financing for small and medium-sized enterprises (e.g. JEREMIE initiative which creates conditions for the allocated EU structural funds and national funds to be used for the support of SMEs via the holding funds).

The recent development is the dominating position of REF on the Lithuanian AIF market – the real estate funds attract most participants and manage the largest share of assets. Essentially there are two types of REFs authorized in Lithuania – open-end and close-end types. REFs offer a possibility for the small investors to have real estate in their portfolio not only in a customary form, i.e. by acquiring real estate, but also as non-traditional form. Moreover, the correlation of such funds with the share markets (as in case of other AIFs) is weak [19].

Based on data of JP Morgan Asset Management [20] investments in real estate are more profitable than the instruments of the money market, but in terms of risk-profit they are not as attractive as the investments in shares. Despite the fact that in the long term real estate is affected by macroeconomic variables and economic cycles, this class of assets has an insignificant correlation with the stock market. Moreover, the cash flows generated by real estate are more stable. In view of this fact it can be stated that such investments are attractive and promising. With the decrease of real estate prices in mind the recent popularity of REFs can be easily explained. As of the end of 2011, according to the data provided by the Bank of Lithuania, there were 5 REFs registered in this country. As two of them were established in the second half of the analysed period they did not attract any investments, thus, in reality only 3 REFs are marked by activity. The managed assets of these REFs as of the end of 2011 reached 75,62 mn. litas which constitute 14,8% of the total assets managed by CIUs. At this time REF is the only type of AIFs which can work successfully in Lithuania (in terms of the managed assets scope) and increase its managed assets. Despite the fact that as of the end of 2011 three hedge funds were functioning in Lithuania, and all of them have attracted investments, their managed assets as of the data of the end of year 2011 stood at 6,31 mn. litas, it makes up 1,2% of the total CIU managed assets in Lithuania [21]. Even in case of considering the possibility of AIF to use financial leverage (which for hedge funds is allowed up to 200% of net asset value, and 75% respectively for REFs [12]), it can be stated that REFs are the most attractive in Lithuania at the present period under scrutiny.

Conclusion. Despite the fact that AIFs were allowed by the legislation of Lithuania quite recently their market is fully formed and functions in a sufficiently successful way. It is proven by the ratio of the AIF managed assets and the total CIU managed assets which stand at 16%. Moreover, historical data shows that this is a growing tendency. However, the analysis of the AIF activities in Lithuania a trend was noticed where a large number of such funds (10 out of the 15 registered AIFs are currently functioning while only 6 of them have attracted investments) fail to attract investments and are finally compelled to stop their activity. Therefore, the AIF managers should not be extremely optimistic and while establishing AIFs they should consider the size of the market, its level of maturity and the willingness of investors to invest funds in AIFs.

The expansion of AIFs in Lithuania allows investors to have broader diversification opportunities and a more varied choice of investment instruments. Nonetheless, it is necessary to also consider the threats of such funds which can arise due to their investment actions, leverage, etc. Despite the fact that due to its small size and relatively

strict regulation at the analysed period AIFs do not pose any dangers to the economy and financial market of Lithuania, it is important to further analyse the AIF activities and in case of necessity to improve the legal base in order to prevent the possible speculations and other negative types of AIF activities.

As a consequence of the recent global economic decline it was decided to put stricter regulations on the non-traditional investment instruments, AIFs among others. However, due to the small market and the insignificant size of AIFs registered in Lithuania the globally accepted regulation will not affect the AIFs functioning in Lithuania during the analysed period. Despite the fact that during the short-term and intermediate period shows only a slight probability of AIFs registered in Lithuania to emerge within the framework of the newly adopted directive on AIF managers, it is important to analyse the legal AIF regulation on a world-scale and implement respective improvements in the national legal base.

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EVALUATION OF INTERNAL CONTROL: RISK MANAGEMENT IN EXTRACTIVE INDUSTRY ENTERPRISES

В даний час в конкурентному світі технології стрімко розвиваються і змінюються, змінюються і потреби ринку, бізнес-процеси стають все більш складними, та стає все більш і більш складним контролювати підприємство і здійснювати його внутрішній контроль. Мета цієї статті полягає в проведенні аналізу системи внутрішнього контролю та його системи управління. Більш того, тільки ефективна система внутрішнього контролю робить позитивний вплив на всі інші системи управління компанією, і, коли компанія має ефективну систему внутрішнього контролю, вона може конкурувати з іншими компаніями, що працюють в галузі, і прагнути нових стратегічних цілей, поставлених управлінням.

Ключові слова: внутрішній контроль, оцінювання, ризик шахрайства.

В настоящее время в конкурентном мире технологии стремительно развиваются и изменяются, меняются и потребности рынка, бизнес-процессы становятся более сложными, и становится все более и более сложным управлять предприятием и выполнять его внутренний контроль. Цель этой статьи заключается в проведении анализа системы внутреннего контроля и его системы управления. Более того, только эффективная система внутреннего контроля оказывает положительное влияние на все другие системы управления компании, и, когда компания имеет эффективную систему внутреннего контроля, она может конкурировать с другими компаниями, работающими в отрасли, и стремиться к новым стратегическим целям, поставленным управлением.

Ключевые слова: внутренний контроль, оценивание, риск мошенничества.

In the nowadays competitive world, technologies are rapidly developing and varying, market needs are changing, business processes becoming more difficult, and it is getting more and more complicated to control the enterprise and to perform its internal control. Purpose of the article is to perform an analysis of internal control and it's management system. Moreover, only the effective internal control system has positive influence on all other control systems of the company, and when the company has an effective internal control, it may compete with other companies operating within the branch, and to endeavor at new strategic goals set by the management.

Keywords: internal control, evaluation, fraud risk.

The internal control system is very important in all enterprises without any exception, be they large, medium or small [1]. This is why the purpose of internal control is to manage business risk, i.e. to find the coordinated methods and means of the system of internal control so as to minimize the risk related to business environment, to the processes happening in the enterprise, and to generate the information that would be an essential background for making business decisions. Indeterminacy of these three types are common for every business, and managing to control

them, i.e. to avoid, decrease, accept or divert them to the required direction provide the organization with the guarantee of success of its performance and a competitive advantage. It must be emphasized that only an effective internal control in the enterprise can help to ensure its productive economic performance, guarantee that the laws, subordinate legislations and the enterprise's internal rules are being obeyed, to implement proper enterprise's capital safety methods, to avoid mistakes, to reveal indulgences, etc. However in nonfiction there is often expressed another non-traditional attitude stating that an effective internal control reveals the prospects of enterprise development and helps to notice threats to its enterprise existence, and so such a control becomes an important means of risk management.

Object of the research – internal control.

Purpose of the research – to perform an analysis of internal control and it's management system.

Research methods – in order to achieve the set purpose and meet the objectives, information source and information collection, grouping, comparison, systemization and summary methods of academic literature, legal acts and methodological resources were used.

Concept of internal control

As the competition is growing in the modern world, the technologies are rapidly developing and changing together with the market demands, and as the business processes are getting more complex, it is becoming more and more difficult to manage the enterprise and perform its internal control. Therefore the managers of extractive industrial enterprises need such a control management system that would allow managing the enterprise's activity effectively and securing the implementation of the ser goals and tasks. It is noticed that the extractive industry is one of the most important and significant for the national budget of the Republic of Lithuania, thus the internal control research in this area is important and meaningful not only for the enterprises, but also for the State. According to [2, 5, 7], the resources of earth entrails are one of main driving forces of society's economic and social progress, and Lithuania is not an exception.

As the competitiveness in modern world is getting stronger, the technologies are rapidly developing and changing, the market demands are changing, and the business processes are getting more complex, it is becoming more and more difficult to manage the company and conduct its internal control. Therefore the manager of any company needs such a control management system that would allow managing company's activity effectively, and to secure the implementation of set objectives and tasks [1]. It has to be noted that as the volume of internal control, its functions and roles are constantly changing, it is quite important to form general definition of internal control and to identify the place of internal control in organization. However, it has to be stressed that despite the importance of research object, this topic is not widely analyzed among the scientists. Therefore the identification of the place of internal control in the management structure of the company is becoming an important task when it is attempted to implement or foster effective internal control so that maximal benefit was achieved [2]. The results of a detailed analysis of the internal control conception enable to state that the very different definitions of internal control, made by different authors, still involve some main goals of internal control, which are to present reliable and detailed information, to protect capital and documents, to ensure an effective economic performance, obeying the accounting principles, the presentation of reliable financial reports, obeying the laws and subordinate legislation, the established rules of the enterprise, and an effective control of risk. The analysis based on foreign and Lithuanian data of the internal control conception research enables to present a resumptive definition of internal control: an internal control system is part of the enterprise management system, which ensures the implementation of the enterprise's goals, its effective economic-commercial performance, obeying the principles of accounting, and an effective performance risk control enabling to minimize the number of intentional and unintentional mistakes and avoiding frauds made by authorities or employees in the enterprise performance process (see Fig. 1).
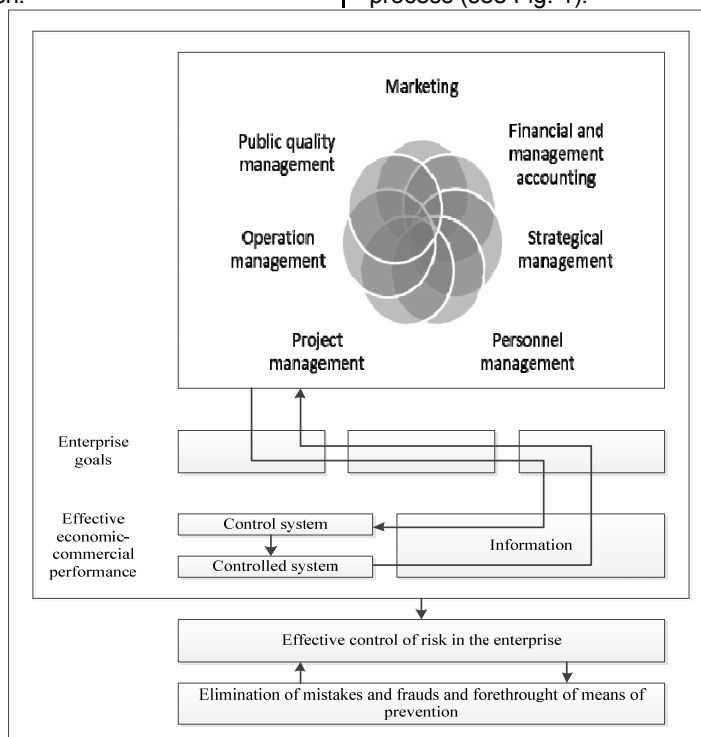

Fig. 1. The proposed structural scheme of the resumptive concept of internal control
Source: compiled by the author

Alongside quantitive indicators, in each enterprise, and especially in extractive industry, most attention must be paid to control mistakes and frauds and to project the means of prevention, they have to achieve and complete the effective and optimal internal control and accounting system. Whereas to implement aims of internal control can also be achieved by operatively applied and cherished internal control system which effectiveness guarantees not only precise goal achievement but also positioning in the market, optimizing the organization's performance effectiveness and profitability.

Risk evaluation in extractive industry companies

[6, 8] stress that only the effective internal control present in the enterprise helps to secure the productive economic activity, to guarantee that the laws, post-statutory acts and enterprise's regulations are followed, to implant proper protection methods of enterprise's property, to avoid mistakes, and to reveal misusing, etc. However, another untraditional attitude is also often encountered in the scientific literature, for example [4,7] state that the effective internal control reveals the enterprise's development perspectives, helps to notice the risk hazardous to enterprise's existence – in such a way this control becomes an important risk management tool.

It must be mentioned that in enterprises operating in extractive industry there is a specific accounting system which also influences the character of mistakes or frauds. Practice shows that the most common frauds are influenced by raw extraction specification. The accounting of

raw materials in extractive industry enterprises is quite difficult because these materials are not purchased or stored, so their amounts can be evaluated very differently. Besides, employees of extractive industry enterprises can embezzle raw materials and thus, abuse their accounting system. Accounting and its data cannot reveal such embezzlements, unlike in other types of enterprises; therefore, internal control in extractive industry enterprises is so important, and here the assessment of mistakes and frauds becomes the main task of an effective internal control [3]. To identify potential spheres of frauds in extractive industry enterprises and to project particular means of prevention so as to avoid them, it is most purposeful to ensure a good internal control; thus, identification of conditions that allow the emergence mistakes and frauds becomes a very important task of research. Foreign scientists and the International Association of Fraud Research have grouped the factors, conditions and events of the emergence and presented them in a fraud triangle. It is divided into three parts that consist of opportunities, motivation and realization. Those three elements together provide conditions for the emergence of mistakes and frauds. However, such a portraying without by the internal control system performed the assessment of risk affords little benefit. Such a portraying allows not only to identify the main fraud components of the triangle, but also to reveal their importance and place in the internal control system and more precisely in the assessment of risk, aimed to identify the conditions that favour the mistakes and frauds made by authorities or employees in of extractive industry enterprises (see Fig. 2).
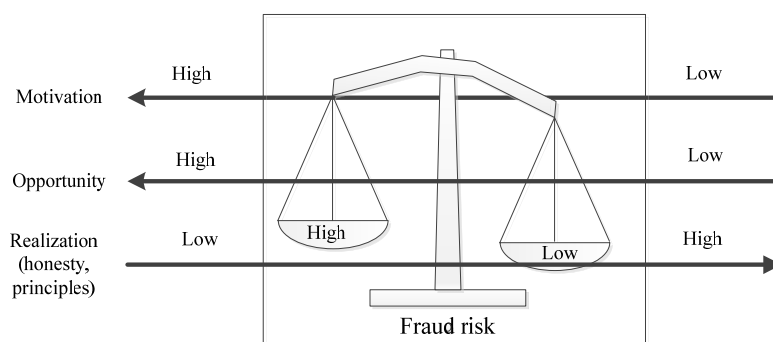

Fig. 2. Scales of assessment of fraud risk components

Source: compiled by the author

Motivation can be distinguished as the first element in the scales of fraud risk assessment. It shows whether an employee is prone to dishonest behaviour and gives the reason why the motivation normally is linked with greed and some exact life events, for example, abrupt need of financial resources caused by debts, wrong loans, drugs, alcohol or gambling, personal problems in the family and so on. The second element of the scales of fraud risk is the opportunity treated as a chance given to the employee who is planning to make a fraud. It is indicated regarding the person's position and delegation in the enterprise, access to the enterprise's capital and accounting records [5]. This is usually also related to the internal control existing in the enterprise: the more effective the internal control, the less the possibility to make a mistake or fraud. The third element in the scales of fraud risk is realization, although in the scientific works that analyse the fraud triangle and its elements it is indicated as rationalization and is treated as the ways an employee explains his dishonest behaviour.

Although the third element in the scales of fraud risk must be defined as realization, not the excusatory reasons but the employee's personal traits such as honesty or principles allow assessing objectively whether the employee is prone to make mistakes and frauds. Identifying and distinguishing the weaknesses that create conditions for mistakes and frauds enable to anticipate the limitations of some processes and also the problems arising in the internal control. To find out the problems that occur in the internal control system of the enterprise and that cannot be easily audited the essential condition becomes to evaluate the connections of assessment criteria, relations among mistakes and frauds, and weaknesses that create conditions for mistakes and frauds.

To manage risk successfully extractive industry enterprises firstly should identify and determine all the risks, that influence their performance, the types and also to assess the implemented means of risk management and their effectiveness. Supposedly, the risk management in every enterprise

must be identified with shareholders' property value increase because all enterprises without exceptions face the uncertainty and challenge to decide how much of uncertainty is acceptable to increase the shareholders' property value.

During this process the enterprise chooses the most appropriate risk assessment and management instruments, also risk management strategy that transfers risk in extractive industry enterprise to acceptable level (see Fig. 3).
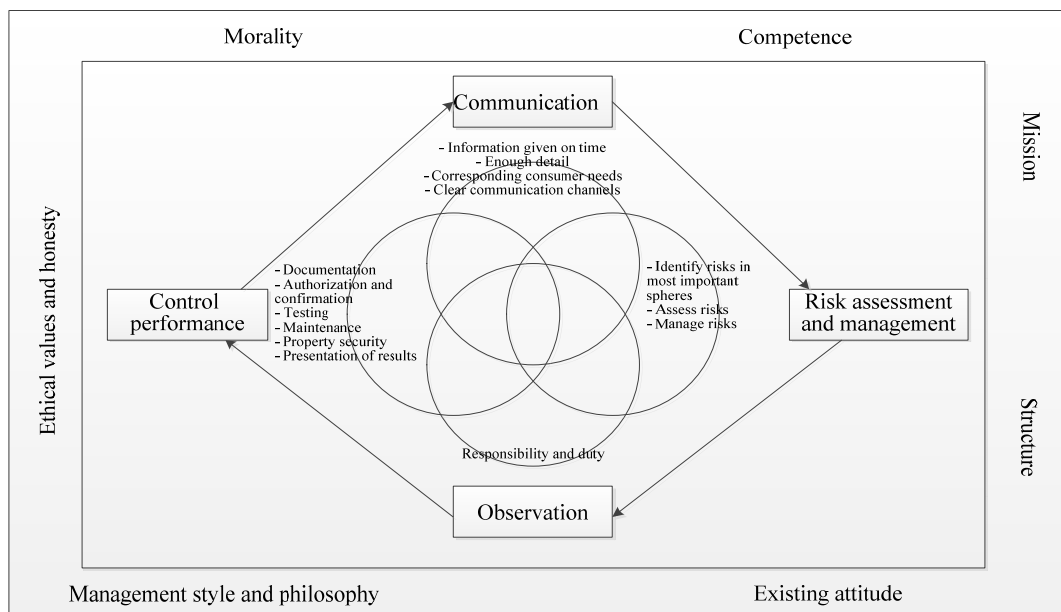

Fig. 3. Process of risk management in extractive industry enterprise

Source: compiled by the author

It must be mentioned that risk depends on many subjects thus it is usually quite difficult to assess it. This is the reason why analytics must coherently and constantly, incessantly analyse risk, its manifestation forms and probabilities while in business practise there are also formed some risk level assessment methods, formulas and rules. Their choice involves each unacceptable risk management establishment and assessment of their abilities therefore to each risk management possibility there must be made analysis of expenses – benefit.

Comprehensive analysis results of internal control enable to state that though different authors give different definitions of internal control there are still some general purposes of the system of internal control remaining, to ensure reliable and comprehensive information, to protect the property and documents, to assure effective economical performance, to ensure observation of accounting principles and presentation of reliable financial records, to assure obeying laws and executive acts, enterprise rules and to ensure effective control of risk.

The accounting particularity of the Lithuanian extractive industrial enterprises determines that the mistakes committed by the employees initiated by fraud are almost equal to frauds initiated by company or its management. Thus as the staff of the Lithuanian extractive industrial enterprises may initiate the frauds successfully, the persons executing internal control need big work experience in the enterprises of such kind, also they have to be well familiar and know the accounting particularity of such enterprises in relatively high interpretative level. The effective internal control system present in the extractive industrial enterprise may be-

come unsuitable or even ineffective when the circumstances change, thus the assessment of its effectiveness is one of the tools to improve the accounting policy, to protect the company's assets, and to secure the correct accounting and effective activity. According to the research results of extractive industrial enterprises, they have ineffective internal control system because the deliberate or unintentional mistakes are encountered in all the analyzed enterprises without any exception; the majority of analyzed enterprises encounter frauds initiated by the employees;; the present frauds and mistakes allow making the presumption that at least one or more weaknesses exist, which create conditions for development of frauds and mistakes.

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GLOBAL PROBLEMS OF FINANCING VARIOUS SECTORS
OF ECONOMIC AND THE RISKS RELATED WITH THEM

Проаналізовано соціально-політичнуу сферу України, Польщі та Італії. Виявлені загальні проблеми в цьому секторі економіки та ризики, пов'язані з ним. Було досліджено рівень безробіття в кожній країні. Розглянуті основні проблеми в державних фінансах. Проведений аналіз показав високу енергетичну залежність в більшості країн.

Ключові слова: фінансова стійкість, старіння нації, дефіцит бюджету, рівень безробіття, інвестиційна приваб-ливість.

Проанализировано социально-политическую сферу Украины, Польши и Италии. Выявлены основные проблемы в этом секторе экономики и связанные с ним риски. Исследован уровень безработицы в каждой стране, рассмотрены основные проблемы в области государственных финансов. Проведенный анализ показал высокую энергетическую зависимость в этих странах.

Ключевые слова: финансовая стойкость, старение нации, дефицит бюджета, уровень безработицы, инвестиционная привлекательность.

The social-political domain of Ukraine, Poland and Italy was analyzed. Discovered common problems in this sector of economic and risks related with it. Unemployment rate of each country was explored. The main problems in Public Finance was indicated. The analysis showed high dependence on import of energy in most countries.

Keywords: financial stability, the aging of the nation, the budget def\'icit, the level of unemployment, investment attractiveness.

In the current context of globalization and integration of economic and social processes that occur in each country and the whole world, important place acquires the prevention of risks faced by the country.

Operation of each country can be divided into several sectors, such as socio-political, economic, foreign trade, financial stability and real estate, public finance sector, energy sector and environmental sector.

Economics is designed to ensure the prosperity of the nation and its welfare as social and political sphere has a special and fundamental importance, since it is the basis for the existence of all other areas of the country.

Economic activity ensures the formation of resources used to finance social and political sphere. In addition importance is attributed to external economic relations of the state as modern integration and globalization processes not put the state in dependence from each other and from the socio-economic trends taking place in these countries.

Financial stability is the key to the country's economy, so its figures are important in the context of cooperation between different countries. Also, important are the public finances that are a source of resources for the state of its functions, maintaining the required level of life and further development.

Another significant sector of the economy are energy and environment as for economic development and manufacture of required energy storage, although it affects the environment of the country.

The most fully the these issues covered in the works of G. Alpatova and L. Krasinova, A. Zaman and other scientists, but in the context of the latest events this topic becomes particularly relevant.

Presentation of the main material. **Ukraine** has high levels of corruption and excessive government regulation of the economy are the obstacle to investment. Corruption and inefficiency of the government – thwarted an attempt to transform Ukraine into a fully democratic state and the transition to a liberal economy. The state has a significant share in key sectors, such as, for example, banking and energy. In addition, officials have personal interests in sectors of national importance, which prevents external investment and transparency in these sectors. In 2010, Ukraine was ranked 160 among 183 countries in economic freedom [1].

Reduces the number of working population is aging nation, and thus increases the pressure on the social security system. In 2010, the population over 65 years was 22.4%, and predicted to reach 26.0% in 2020. Accordingly, the pension liabilities in 2010 amounted to 17.0% of Gross domestic product (GDP), and tend to increase unless there is a reform. Lack of social security reform raises the risk of high public debt. The average age of male life expectancy is 36.6 years to 15.7% less than the average age of women's lives. In 2010, the unemployment rate was 8.1% among women and 9.0% among men.

In **Poland** the unemployment rate in 2010 was 9.6% in 2011 – 9.0%. Women's unemployment among is 10.0% in 2010. In 2010 worked only 56.8% of women that strengthens the shortage of skilled labor due to a large migration. Number of men in 2010 was 69.9%. Such a low percentage of women associated with conservative views on the role of women in society.

There is considerable income inequality among the population of Poland.

Coefficient Gini (G)for incomes in Poland amounted to 25.1% in 1990 and gradually increased to 36.2% in 2010. (The extreme limits of the coefficient of 0% characterizes the absolute equality of income, 100% – absolute income inequality (one person earns all the income). However, increasing the Gini coefficient does not lead to social tensions, Polish society is stable [2].

In Poland the significant costs of social security, due to the aging population. To Poland comes a lot of low skilled immigrants, usually from Asian countries, which leads to lack of staff.

In **Italy**, according to Transparency International's 2010 corruption perceptions index is one of the most corrupt countries in Europe. Regional and gender disparities are huge, with fewer than half of working-age women enrolled in the labour force in 2010. The proportion of foreign-born residents has increased tenfold in the years 1990-2010, and the country has seen racial violence. In the decade 2000-2010, GDP per capita increased only marginally. Italy's exports have led the modest recovery of 1.3% real GDP growth in 2010, and are expected to underpin the 1.1% growth rate that is forecasted for 2011 [3].

In Italy ranks third among countries with the oldest population. The share of population over 65 years in relation to the population aged 15 to 65 years in 2010 was 30.9%, in 2020 is projected at 35.9%.

Italy is 67th among 179 countries in economic freedom. Italy has many problems that hinder business activities, such as high levels of corruption, excessive intervention into economy and the complexity of the regulatory framework. On a scale that ranges from 10 ("no corruption") to 0 ("highly corrupt") in Italy 3.9 point. Corruption in the labor

market contributes to older workers, leading to an outflow of young professionals.

In Italy, high income inequality. Gini index is 36.3% in 2010 (o – complete equality of income, 100 – gross income inequality). For example in France the figure is 29.4%, Spain 31.2% and 34.4% in Germany.

In Italy in 2010 occupied only 46.6% of women compared with 59.0% in the whole EU.

The overall unemployment rate increased from 7.8% in 2009 to 8.4% in 2010, but below average in the euro area, where unemployment is 10.0%. Youth unemployment, however, was at the highest level in a decade, and unemployment among people aged 15 to 24 years was 29.8% at the end of 2010 [4].

Although Italy is a democracy, but the political situation is characterized by frequent crises and government reshuffles.

The share of foreign-born residents increased from 0.7% in 1990 to 7.0% in 2010, including migrants from Eastern Europe and Africa, causing unrest and tension among the population.

After analyzing the socio-political sphere of Ukraine, Poland and Italy should be noted that one of the main problems is the aging of the nation and reduce the workforce, as it increases pressure on public finance sector and requires increased spending budget. Lack of funds to finance the pension obligations of the state is one reason debt countries tend to increase. In addition, high levels of corruption and significant intervention in the economy hinder foreign investment. State has a significant share in key industries.

There is considerable income inequality. Thus, socio-political sector needs significant reforms to reduce risks in the future, especially retirement and overcome the burden, high levels of corruption.

Economics and the external sector. The growth of **Ukraine's** economy largely depends on the level of prices and exports of goods and heavy industry. There is no effective monetary policy of Ukraine, the results of which have deteriorated under the influence of the economic crisis of 2008-2009, and led to the insolvency of the banking system.

For Ukraine, the main export goods are products of steel and raw materials. When in 2008-2010, prices for raw materials dropped, revenues from exports to Ukraine were reduced by 40.6%. In turn, the fall rate of the currency led to a massive withdrawal of bank deposits, and this undermined the liquidity of the whole financial system of Ukraine.

Till 2009, the real estate prices were very high, and the mass used loans to purchase real estate. However, in 2010 the real estate sector still remains weak, although it started a lot of new construction . The share of construction in GDP has decreased by 10%.The trade balance of Ukraine has a negative value, its deficit in 2011 amounted to 9.4% of GDP. [6].

Poland, unlike of other Eastern European countries, has managed to avoid serious consequences of the global economic crisis of 2008-2009, while avoiding the economic downturn. Real GDP grew by 1.6% in 2009 and 3.8% in 2010 to 3.8% in 2011 in real terms. GDP per capita in 2010 was 12,278 U.S. dollars, occupying the seventh place in Eastern Europe.

High levels of imports and exports of goods to compensate each other, creating an economy that has kept competitive and allowed to devalue the zloty by 25.0% against the U.S. dollar during the period 2008-2010.

In 2010, exports amounted to 34.6% of GDP, 33.0% of GDP in 2009. Trade balance, nearly balanced, although there are slight variations in the expense of imports.

The main market for Polish exports are the European Union (81.5% of total exports in 2011). In Germany accounted for 26.8% of total exports in 2011. In addition, increasing exports to China from 0.7% in 2005 to 1.1% in

2011. In 2011, exports of vehicles made up 41.7% of total exports – including motor vehicles (cars, other vehicles and their parts). In 2011 Polish exports increased by 14.0% compared with 2009.

Polish imports amounted to 16.4% of GDP in 2009 and 36.4% of GDP in 2011. As with exports, mainly imported goods originating in the EU. Imports from Germany in 2011 was 29.0%, from Italy, France, the Netherlands and the UK as a whole 19.5% of total imports. Russia is Poland's largest supplier of energy and is 8.7% of total Polish imports [7].

In **Italy** the real GDP in the 2000-2010 years on average per year grew only by 0.6%, which is one of the worst in the world.

Italy was one of the leading countries worst hit by the global economic crisis 2008-2009,

The crisis revealed the existing structural deficiencies that led to nearly ten years of very weak economic growth. The main reasons for defining inflexible labor market and low competitiveness.

Real GDP fell by 1.3% in 2008 and 5.2% in 2009, as a consequence of the fall in private consumption, investment and exports. GDP growth resumed in 2010 at 1.3%, mainly due to exports. In 2011, GDP growth is also very slow, at 1.1% in 2012 forecast to 1.3%.

Italy has a large number of trading partners, but it's mostly European countries. Because of Italy does not export essential goods is very sensitive to changes in demand in Europe.

The main categories of imports are machinery and transport equipment. Therefore, the main threat to Italy is the change in energy prices that are very important for production. Italy is one of the largest importers of energy resources in Europe. [8].

So, it should be noted that among the considered countries, the least of the consequences of the crisis of 2008-2009 hit Poland, whose economy appeared stable. Most of the crisis hit Italy since the average growth rate of GDP in Italy was 0.6% per year, which is one of the lowest in Europe. Moreover, the crisis showed the weaknesses of Italian economy, financial sector losses.

Regarding foreign trade, we can say that Ukraine is highly dependent on the prices of metallurgy, which are major export commodities.

The stability of the Polish economy is attractive to foreign investment. Moreover, Poland's foreign exchange reserves increased by 36.8% in 2010 to 100 billion. USA.

Foreign investments in the Ukrainian economy during the crisis decreased by 34.7%. High levels of corruption and no certainty of economic processes in the country makes confidence of investors law.

Foreign investment in the Italian economy is relatively stable, although not large, because Italy has a low GDP growth, which is not attractive to investors. Average volume of foreign investments in Italy is 1.4% of GDP. The only relatively stable position of Italy can determine membership in the EU, even at low gold reserves Italy isolating the country from currency volatility and risks. [9].

Public finances. **Ukrainian** Public debt increased from 12.3% of GDP in 2007 to 34.6% of GDP in 2009. And in 2010 – public debt was 38.9% of GDP.

And in 2011 State domestic debt was 12,3% of GDP, State external debt was 14,9 % of GDP and Public debt to GDP 27,2%. The budget deficit increased from 1.9% of GDP in 2007 to 6.2% in 2009. The budget deficit Ukraine in 2010 was 5.6% and in 2011 budget deficit was 8,2 billions of hryvnas. [10].

Poland In 2007 had the deficit amounted to 1.9% of GDP – 2010 – 7.9% of GDP in 2011 – 5.6% of GDP in 2012 budget deficit is projected at 3.6% of GDP. Public

debt (259 billion dollars) is 55.7% of GDP in 2010 and increased by 14.9% compared to 2009.

Budget deficit in **Italy** is one of the lowest in the euro area at 4.5% of GDP in 2010, 5.3% in 2009. However in 2010 the country's public debt increased to 119% of GDP and is one of the highest in the world (in 2005 public debt was 106% of GDP). Reducing the budget deficit for 2009-2010 was due to failure of anti-crisis measures, reducing capital costs and reducing the public payroll.

Interest payments on public debt is more than 4.0% of GDP annually since 2005. This figure is unsustainable in the long run. [1].

The Italian public finances also face the burden of an aging population (increasing from 30.9% in 2010 to 35.9% in 2020), as well as associated costs. The government will have to increase revenues and/or divert spending from other areas of spending to improve health and retirement social security.

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So, Ukraine has the lowest percentage of the public debt to GDP. It should be noted that the main threat of increasing of public debt for Ukraine is to increasing the number of pensioners as pension liabilities in 2010 amounted to 17.0% of GDP and tend to increase.

Poland's budget deficit is 7.9% of GDP in 2010, despite the fact that public debt is 55.7% of GDP. It should be noted that in comparison with the Ukraine and Poland, Italy's budget deficit is not significant and in 2010 is 4.5% of GDP, but public debt in Italy is too large, amounting to 119.0% of GDP in 2010.

All those countries have the problem of aging population is a significant risk to public finances in terms of increased spending on social security and, thereby, increase the budget deficit and public debt to finance this deficit.

Next very important problem, that has each of the countries dependent on imported energy. Ukraine depends on imports of Russian gas, even in spite of their own deposits of gas. Ukrainian production is not efficient use of energy. In addition, the government subsidizes the oil and gas, which leads to low prices for these energy you thus reducing the incentive to use more energy-efficient production.

Poland is also dependent on Russian gas imports. However, Poland has its own coal, which is a major energy used for Polish production.

Italy is also almost entirely dependent on energy imports. In Italy, only 6.6% for own renewable energy.

Conclusion. According to the analytical review:

• each of the the countries facing the problem of aging of the nation, increasing pressure on the pension system, causing a threat to growth in spending, and thus a prereq-

uisite for increasing the budget deficit and national debt. In Ukraine, pension liabilities in 2010 amounted to 17% of GDP. It should be noted that among the considered countries, Ukraine has the lowest percentage of the public debt to GDP. Poland's budget deficit is 7.9% of GDP in 2010, despite the fact that public debt is 55.7% of GDP. For comparison, the budget deficit Ukraine in 2010 was 5.6% and public debt 38.9% of GDP. Compared with Ukraine and Poland, Italy's budget deficit is not significant and in 2010 is 4.5% of GDP, but public debt in Italy is too large, amounting to 119.0% of GDP in 2010.

• the unemployment rate in 2010 in Ukraine was 9.0%, Poland – 9.6%, Italy – 8.4%, for comparison, the average euro area, the figure in 2010 was 10.0%. A significant level of corruption in the labor market prevents the access of young professionals in high positions that cause the outflow of specialists from these countries to other countries. I State has a significant share in key industries. Thus, only the Polish economy is attractive to investors because Poland has maintained its economic stability even in times of crisis.

• There is considerable income inequality in all countries considered. According to the Gini coefficient(G), which reflects the equality of income and has a value of 0% (absolute income equality) to 100% (income inequality), Poland in 2010 is 36.2%, for Italy – 36.3%. For comparison, in France the figure is 29.4%, Spain 31.2% and 34.4% in Germany.

• In terms of economic freedom, Poland is 68 among 179 countries, Italy – 67 place. For example, Germany for 23 place, the Czech Republic – 28, Slovakia 37. Ukraine, while 103 took place in economic freedom.

• The Ukrainian economy is highly dependent on exports, which in 2010 amounted to 36.1% of GDP. The main export categories are products of steel, steel products, which accounted for 12.9% of exports in 2010. Ukraine has a negative value balance of payments deficit which in 2010 amounted to 9.4% of GDP. The development of Ukrainian economy depends on world prices for steel products, which is a significant threat.

• The largest growth rate of GDP can see in the Polish economy (3.8%), for Italy – 1.3%, Ukraine has decreased by 3.7%.

• Each of this countries dependent on import and imported energy.

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LITHUANIAN BANKING DEVELOPMENT AND CHALLENGES IN IMPLEMENTING BASEL III

Стаття аналізує головні тенденції розвитку Литовської банківської справи, їх важливість для економіки та фінансової системи країни. Вона аналізує прямий та непрямий вплив всесвітньої фінансової кризи на банківський сектор, а також роль Банку Литви – закладу, що контролює банки, – у досягненні безпеки та значення функціонування банків. Обговорюються також виклики банків у здійсненні Базеля III, а також аспекти міжнародного співробітництва в галузі фінансової стійкості та кризового управління.
Ключові слова: фінансова криза, розвиток Литовського банківського сектору, Базель III, нагляд.

Статья анализирует главные тенденции развития Литовского банковского дела, их важность для экономики и финансовой системы страны. Она анализирует прямое и косвенное воздействие всемирного финансового кризиса на банковский сектор, а также роль Банка Литвы – учреждения, контролирующего банки, – в достижении безопасности и значения функционирования банков. Обсуждаются также вызовы банков в осуществлении Базеля III, а также аспекты международного сотрудничества в области финансовой устойчивости и кризисного управления.
Ключевые слова: финансовый кризис, развитие Литовского банковского сектора, Базель III, надзор.

The article analyses the main tendencies of the development of the Lithuanian banking, their importance to the economy and the financial system of the country. It analyses the direct and indirect impact of the worldwide financial crisis on the banking sector as well as the role of the Bank of Lithuania – the institution supervising the banks – in achieving the safe and sound functioning of banks. The banks' challenges in implementing Basel III are also discussed, and so are the international cooperation aspects in the area of financial stability and crisis management.
Keywords: (financial crisis, Lithuanian banking development, Basel III, Supervision).

The Bank of Lithuania annually publishes annual reports covering the implementation of its functions, as well as the analysis of macroeconomic and trends of banking market. In accordance with the Republic of Lithuania Law on the Bank of Lithuania, the same information is provided to the Parliament of the Republic of Lithuania. A significant importance is given to the prevention of crisis in the banking sector. The Financial Crisis Prevention and Management Plan was approved by the Resolution {7} of the Government of the Republic of Lithuania on 24November 2008. The Plan provides stages of crisis prevention, taking into account risk factors, which can lead to the financial crisis. The Bank of Lithuania adopted the same legislation in 2009. Great attention is paid to the implementation of Basel III. Discussions are on-going with banks considering that a significant part of the banks is ruled by foreign banks, the Cooperation with Authorities of Supervision of Credit Institutions and of Other State is predicted in the Republic of Lithuania legal acts. It shall have the right to conclude agreements on cooperation with the institutions of other states. Main objective is- analyses the banking system and concentration, banking activities before the global financial crisis, measures to overcome the crisis, international cooperation in crisis management and other areas is discussed. The potentiality of implementation of Basel III is detected

Banking system, Concentration. Lithuania has a number of different financial market institutions such as banks, credit unions, leasing and insurance companies, capital market players, but in the financial system in Lithuania, from the beginning of the development of banking in the country, it has been the banks that always have possessed the highest degree of significance, covering the largest part of the financial system. In recent years this share has accounted for more than 80 percent. At the end of 2011, Lithuania's banking system consisted of eight commercial banks (of which four were wholly owned subsidiaries of foreign banks), and twelve foreign bank branches [1, p. 31], which brings us to yet another feature of the Lithuanian banking system – the dependency on foreign banking, particularly that which comes from the Scandinavian countries. At the end of 2011, foreign banks owned a 87.7 percent share capital of the banking system. Foreign banks are dominating the banking system both in terms of assets, and loans and deposits, and the three largest banks' market share concentration by the end of the year 2011 had grown to more than two-thirds of the market: The assets during the year increased by 69 percent, the share of loans to 68 percent and the deposit segment to 71 percent. Foreign bank branches have been strengthening their position in all segments due to their increased competitive edge on the market, because as per EU requirements they have to satisfy fewer prudential risk-restricting requirements, because their supervision is done by the country of origin. On 1 January 2012, branches of foreign banks accounted for almost 20 percent of the banking system's assets. Furthermore, in the light of the Lithuanian banking system's evolution in 2011 it is necessary to highlight one significant event occurred on 7 December 2011: Bank SNORAS, the fifth-largest bank with a market share of about 10 percent was subjected to bankruptcy proceedings [1, p 30], which has led to foreign banks and their branches dividing up the bank's market share.
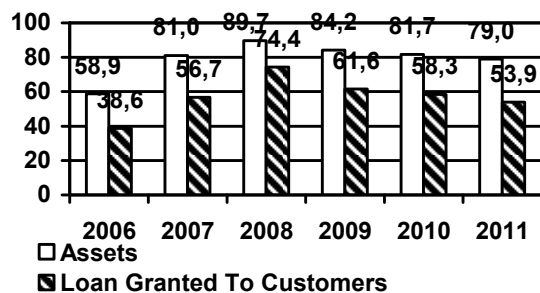

Fig. 1. Lithuanian Banking System.
Assets and Loan portfolio; in billion of Litas (created by author)
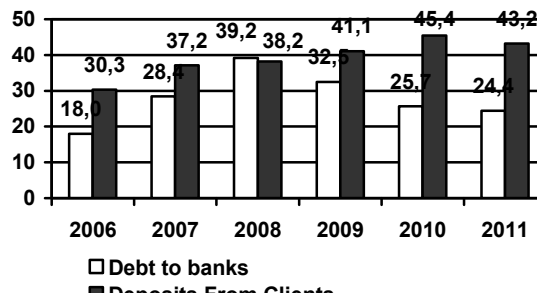*Source*: The Bank of Lithuania.

Fig. 2. Lithuanian Banking System. Main Financial sources; in billion of Litas (created by author)
Source: The Bank of Lithuania.

Banking activities before the global financial crisis. Just like in the neighboring Baltic countries, in Lithuania, too, the rapid economic growth in 2003-2007 was the result of not only the advantages of integration into the EU the favorable tax environment for investment, and the aggressive drive and risky rate at which the private sector was borrowing from commercial banks as well. Before the global financial crisis, the banking system had been growing very rapidly: during the 2003 – 2007 period, the banking system's assets rose by 37 percent on average annually, with the highest annual growth recorded in 2005, when the assets grew by 54 percent. The main sources that fuelled the growth of the banks were deposits from the clients (which in the same period increased by 26 percent annually), and financial resources from foreign banks (mostly parent companies) that during this period grew by an average of 67 percent annually and at the end of 2008 reached 47 percent of balance sheet liabilities.

The attracted money was mainly used by the banks to grant loans to customers. The banking system's loan portfolio in 2003 – 2007 grew by an average of 47 percent each year and at the end of 2008 accounted for the major portion – 80 percent – of the banking system's assets . The fastest growth was reported in the volumes of bank loans to individuals and private companies. Loans granted to private individuals within the five years rose by 12 times to 28.6 billion litas, (The official fixed exchange rate 3.4528 litas per 1 euro) with the individuals borrowing primarily for housing acquisition and real estate reconstruction. The growing real income of individuals (the increasing salaries) and sometimes inadequate decisions to take a mortgage loan (without considering potential future recessions and being too optimistic about the future real income of the family) have driven the real estate market upwards, with the prices growing drastically. Real estate development by private individuals has also influenced and stimulated, to some extent, private companies to develop more projects to provide more real estate development--related services, which has led to private firms borrowing from banks also gaining quite a big momentum. Loans to private companies over the reporting period increased by more than 4 times. Most banks were lending to companies engaged in production and real estate development [2, p 58]. In 2007, Lithua-

nia widened the gap between VILIBOR and EURIBOR (the euro zone index EURIBOR shows interest rates in euro, while VILIBOR in litas) interest, and as a result loan portfolios were dominated by loans in foreign currency (mainly in euro). Of course, even at its high pace of growth, the loan portfolio in Lithuania stood at 62 percent the GDP in early 2008, whereas in other Baltic countries it was much higher, amounted to 106 percent of the GDP in Latvia, and 98 percent in Estonia. Compared to the neighboring countries, the volume of mortgage loans issued in Lithuania was significantly lower as well. The growth of banking activity affected the growth in net interest income, which was positively influenced by the profitability of the banking system and the rate of return ratios. A record-breaking profit of 1.2 billion litas was earned by the Lithuanian banking system in 2007.

The crisis period: indirect and direct impact on the banking system. In 2008, in the light of the global financial crisis, the impact was felt in all countries, including Lithuania. In fact, many experts predicted that the direct impact of the crisis in the financial system of Lithuania would not be substantial, because the Lithuanian banks are not closely related to U.S. financial institutions, and also, the country's financial market is quite small, with shares or bonds not being significant investment sources. In addition, most of the banking market is controlled by Scandinavian banks and the global crisis in these countries was relatively small and short-lived, so that had some positive effect on the Lithuanian banking system. However, the indirect impact of the crisis came through the interest rate rise on the global markets. With the volumes of production and consumption in Europe on the decline, Lithuania was faced with a drop in export volumes. In particular, the economic downturn affected the construction and transport sectors the most. Consumption went down in Lithuania and the banks severely restricted access to credit, becoming more careful about issuing loans and tightening the lending conditions (especially on loans for land acquisition and construction financing), raising the collateral requirements for loans and the residual amount of borrowers' income after the loan has been serviced. Banks, and foreign-owned banks in particular, in late 2008 began to structure a potential impairment of the loan portfolio.

Fig. 3. Banking System Profit (Losses), Billion of Litas (created by author)

Source: The Bank of Lithuania

Fig. 4. Changes of GDP, In percentage (created by author)

Source: Lithuanian Statistics Department

The decline of economic activity, the drop in real estate prices, the increase in the number of corporate bankruptcies, the growing unemployment, the lower wages and the conservative loan portfolio have resulted in a significant deterioration in the loan quality, while the increasing credit risk of borrowers has caused the banks to structure a sizeable loan portfolio impairment (amounting to 3.5 billion litas

in 2009) [4, p. 4]. It can be argued that the assumption of risk has been underestimated and accepted by both sides – both by the lenders and the consumers of the financial services – and the consequences of the crisis were quite dire: – the Lithuanian banking sector in the years 2008 – 2009 had to endure the effects of the global financial crisis, the country's economic decline was 14.7 percent of the

GDP (2009), and the banking system reported a record of loss of nearly 3 billion litas.

Measures to overcome the crisis. The European Commission in October 2008 adopted an action plan titled *From Financial Crisis to Recovery. European Framework for Action* [9]. This document emphasizes the need to create a new financial structure, strengthen the application of the risk management and crisis prevention system, as well as to reinforce the international cooperation among the financial supervision authorities. Also, an emphasis was placed on the need to deal with the effects of the crisis on the real economy and the application of crisis prevention measures. The paper also focused quite heavily on the flexibility of employment relations to prevent unemployment. In order to overcome the crisis, many countries have spent huge sums to rescue the banking system. Meanwhile, the Lithuanian banking system has made do without government and central bank support. It had been recommending repeatedly for several years that banks should make profit allocations for the reserves to cover activities risk. Banks have carried out the Internal Capital Adequacy Assessment Process (ICAAP): they assessed the exposure to significant risks and the estimated capital requirements to cover it. Banks have set themselves a higher internal capital requirements ceiling (between 9.5 and 10 percent); when this ceiling is approached, the banks will look for ways to either raise capital or reduce the risk of the assets. In its own turn, the Bank of Lithuania has undergone a Supervisory Review and Evaluation Process (SREP) [8]. The SREP is followed by annual general and targeted inspections. In order to assess the liquidity problems of each bank better, the banks are now required to submit additional information about the changes in the assets and liabilities structure on a daily basis. If any major fluctuations in the structure of assets or liabilities are spotted, the banks are requested to explain their causes and provide measures to be taken to cover the potential liquidity risks. Lithuania has taken further steps in crisis prevention. In 2009, the Bank of Lithuania approved the financial crisis prevention and phase management setting and information exchange procedures, which involved performing and ongoing risk assessment of the banking sector. A Financial Stability Act was adopted to provide for measures of state intervention in the financial sector. The Nordic and Baltic cooperation agreement was signed, laying down detailed cooperation processes in the context of the EU memorandum of understanding on crisis management (envisaging effective communication, assessment of the situation and the financial burden-sharing), and work was carried out at the EU level to identify systematic risks and establish measures to overcome them, as well as to coordinate the support measures [3 ,p.47]. According to the Financial Sustainability Act, banks will be covered by the following financial stability arrangements: the state guarantee, repurchase of the bank's assets, public participation in the bank's capital and the taking of the bank's shares for the public needs. One important role in strengthening the confidence in the banking sector has been played by the changes in the deposit insurance system, whereby the amount of insured deposits was increased up to 100.000 euro for an indefinite period. Lately, the financial sector supervisory authorities have carried out some other important work to buffer the potential risks in the banking sector. The Bank of Lithuania has approved the Responsible Lending Requirements. The requirements include the newly established loan to value (LTV) ratio and debt to income (DTI) ratio. In order to opti-mize the regulation and coordination of processes in the financial sector and the management of systematic risks, and to apply the one-stop-shop principle across the players of the financial market, consolidation of the supervisory bodies was carried out this year. The supervision of credit institutions, insurance companies, securities markets, financial services, consumer rights now converges on one institution – the Bank of Lithuania. Also, discussing about the possibility of differentiating the system of deposit insurance by types risks is being considered. This means that the deposit amount paid by credit institutions will depend on the risk level of the specific institution.

Recently, the real GDP has been growing rapidly in Lithuania, and so the economic growth outlook was expected to remain relatively favorable in 2012. However, the recent developments call for a more careful assessment of the economic development and the uncertainty associated with the forecasts for the coming years has increased further. Most of it is due to the faster-than-expected deterioration of the situation abroad, because efforts to resolve the debt problems of some euro area countries have been futile for quite a while. The domestic demand on foreign markets is decreasing, which has led to a drop in the volumes of sales of Lithuanian products and a slower rate of increase in the amounts of both exports of Lithuanian origin and total exports. Therefore, individuals and businesses are more conservative about the next period than they were a few months ago. The SNORAS bankruptcy is another reason for the less-well regarded economic development in the coming quarters. Although, in terms of the total economy, the total amount of uninsured funds held at the bank was relatively small and the direct impact on private consumption and investments should be minimal, this still might have a potential indirect effect of a drop in the level of confidence in commercial banks. This may result in increased savings (which will reduce the public consumption), and reduced incentives for firms to invest. However, it is expected that the effect of the bank's bankruptcy on the economy will be short-lived and, considering both its direct and indirect effects, it should not thwart the annual GDP growth by more than 0.5 percentage points. The liquidity in the banking sector has also remained under constant surveillance. To reduce dependence on one source of finance, banks are not also required to diversify their sources of liquidity, carry out liquidity risk testing under potentially adverse scenarios, and, based on the results of test evaluation, prepare business continuity plans. It should be noted that the bankruptcy of the aforementioned bank has revealed certain supervisory gaps. The bank had been riddled with issues before, which were exacerbated still by the crysis. However, supervision was not adequate or done when due, resulting in negative reverberations across both the banking market, and the public.

Situation in the banking system and it prospects [5, p.1]. After one bank was declared bankrupt at the end of 2011, the country's banking system has proven to be ready and able to cope with stressful situations. Banks had accumulated enough liquid assets that could be used to repay deposits. In November 2011, when the bank was announced bankrupt as mentioned before, a drop in the deposits amount in the banking system was registered, yet in December the amount of operating assets of and deposits at banks increased. This was the result of the transfer of some 4 billion litas to the banking system as the insurance benefit for the deposit-holders of the bank gone bankrupt. About 77 percent of the funds was transferred to bank ac-

counts of private individuals and companies, and merely 23 percent was paid in cash (as indicated by the continued public confidence in the banking system). In 2011, the loan portfolio quality improved – banks viewed borrowers as less risky, reducing the volumes of provisions made the year before by 18 percent. The liquidity situation of banks improved at the end of 2011, with the liquidity ratio climbing to 44.04 percent, the peak figure for the past eighteen months (the Bank of Lithuania's requirement for the liquidity ratio is 30 percent). In 2011, banks maintained a high level of capital adequacy (on 1 January 2012, the adequacy of the banking system amounted to 14 percent). All banks based in Lithuania pursue have been operating in compliance with the Bank of Lithuania's prudential norms, but in order to prepare to face the potential risks, some banks with lower capital adequacy ratios still find the matter of bolstering their capital base quite relevant.

After the losses of 2009-2010, in 2011 banks earned a whopping 1.1 billion litas. Last year, profits were very close to the record margin that the banking sector made during the period of the economy growing back in 2007, but unlike the period of economic growth, the main catalyst for the growth in profit last year was not the growing revenue levels of banks, but rather the decrease in the cost of specific provisions (relating to revaluations of loans and investments in subsidiaries) and the drop in interest expenses.

Basel III. As mentioned before, the Lithuanian banking sector is dominated by wholly owned subsidiaries of EU countries, and cooperation with foreign supervisory agencies and membership in supervisory boards will remain to be a matter of relevance for the purposes of further bank supervision as well. The need for increasing the cooperation levels is spurred still by the implementation of the CRD IV Directive (Basel III) provisions – a priority goal. The international financial crisis has highlighted the gaps caused by insufficient supervisory regulatory, has revealed the need for systematic regulation, and therefore these changes will affect subsidiaries of foreign banks and, for branches of foreign banks, will reduce the extent of supervision on the host country's part. It is estimated that the Lithuanian banking system has a strong tier one capital, which is used to buffer operating losses, and although the new standards require that this capital should be reduced for the amount of deferred tax, the banks nonetheless stand in compliance with the new requirements: the adequacy of banks' Common or Core Tier I equity in Lithuania on 1 January 2011 stood at 7.4 percent, and the Tier I capital adequacy ratio was about 11 percent. [11] A lot of focus is being placed on the liquidity risk. CRD IV provides for two new liquidity ratios – the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). Calculation of the LCR will take account of high-quality liquid assets of banks, the projected costs and revenues over the shorter term and to meet the NSFR, banks will have to balance their asset and liability structure better and to extend their liabilities. of the new liquidity ratios, the LCR of the Lithuanian banking system currently stands at 252 percent (compared to the required value of 100 percent); based on the current figures, the NSFR of Lithuanian banks would be below the minimum requirement of 100 percent, yet there are plans to achieve it by the time the requirements of Basel III are met. [7, p.7-13].

International cooperation in crisis management and other areas. In the process of supervising the activities of banks which are doing business in different countries whilst belonging to the same financial group, the Bank of Lithuania continues its cooperation with the EU Member States' financial sector supervisory authorities, working vigorously with the supervisory authorities in Latvia, Norway, Finland as well as the Swedish Financial Supervisory Authority. In 2011, meetings of supervisory colleges focused on the assessments of different types of risks that were carried out by individual countries for the financial groups that they supervise, and on discussing the process of making the decision on capital adequacy [1, p. 31]. There is a certain amount of coordination of actions in the field of crisis management, especially with the supervisory authorities in the home countries of parent banks.

Conclusion. Before the global crisis the country's economy and banking system had been growing very rapidly. The somewhat fast growth of the lending volumes has been a factor in the formation of the real estate bubbles. The measures that were applied have prevented both in the domestic economy and in the banking sector from incurring significant losses from the crisis. In recent years, the country's economy, along with the banking sector is displaying a positive trend, but with the situation in other EU countries vague, there are still reasons to be very carefully when judging the development country's economy. The banking system is facing new challenges in meeting the Basel III requirements, yet they will be most likely be fulfilled on time through intensive preparation.

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EMIGRATION AND REMITTANCE IMPACT ON LITHUANIAN LABOUR MARKET AND ECONOMIC DEVELOPMENT

Еміграція з Литви є однією з найвищих серед країн ЄС: число емігрантів досягло 1,66% від загальної чисельності населення в 2011 році. Частка зареєстрованих грошових переказів у ВВП була 4,57% в 2011 році. У даній статті досліджується питання чи сприяє міжнародна міграція розвитку в базовій країні. Основна ідея роботи полягає в наступному: за допомогою статистичних та економетричних методів з'ясовується, чи викликає міжнародна міграція позитивний або негативний ефект для економіки Литви та її ринку праці. Результати аналізу часових рядів показують, що грошові перекази позитивно впливають на ВВП та стимулюють економічне зростання в Литві.

Ключові слова: еміграція, грошові перекази, ринок праці, економічне зростання.

Эмиграция из Литвы является одной из самых высоких среди стран ЕС: число эмигрантов достигло 1,66% от общей численности населения в 2011 году. Доля зарегистрированных денежных переводов в ВВП была 4,57% в 2011 году. В данной статье исследуется вопрос, способствует ли международная миграция развитию в базовой стране. Основная идея работы заключается в следующем: с помощью статистических и эконометрических методов выясняется, вызывает международная миграция положительный или отрицательный эффект для экономики Литвы и ее рынка труда. Результаты анализа временных рядов показывают, что денежные переводы положительно влияют на ВВП и стимулируют экономический рост в Литве.

Ключевые слова: эмиграция, денежные переводы, рынок труда, экономический рост.

The emigration from Lithuania is one of the highest among the EU countries: the number of emigrants reached 1.66% of the total population in 2011. The share of recorded remittances in national GDP was 4.57% in 2011. This paper argues if international migration contributes to the development in the labour sending country. The basic idea is as follows: using statistical and econometrical methods it is revealed whether international migration causes positive or negative effect to Lithuanian economy and labour market. The results of time series analysis show that remittances had positive impact on GDP and boosted economic growth in Lithuania.

Keywords: emigration, remittance, labour market, economic growth.

Globalisation around the world has resulted in a movement of people between labour markets. Migration from one country to another, caused by a search of better workplaces and a higher income level, has resulted in remittance flows. Remittances are private cash flows which are sent by emigrants to their relatives left in their home country. These transfers are usually periodic, nonmarket and unrequited. Remittances can be measured as a sum of three components: worker's remittances, employee compensation and migrant's transfers [7]. According to the World Bank information [9; 11] there are more than 215 million international migrants in the world. Recorded remittances flow has reached 351 billions of dollars in 2011, and it was 8 per cent higher than in 2010.

International labour migrants are ordinarily moving from the less developed to the more developed countries. For many countries in the Europe and Central Asia region, remittances are one of the most important sources of external financing following foreign assistance and foreign direct investment [8].

There is considerable debate regarding the impact of international migration and migrants' remittances to sustainable economic development and labour market of migrant sending country. Talking about empirical tests, there is no common, globally accepted model to test the impact of remittances on economic development. Despite the fact that emigrants remit only a few hundred dollars at a time, scientists believe that these flows have strong effects on economies. In addition, remittances may have both advantages and drawbacks. First of all, they can reduce poverty, the risk of income shocks, make it possible to exchange working hours into time for studies, increase consumption and investments in a receiving country. However, remittances can cause some negative effects as Dutch disease or a country's dependence on remittances [1; 7].

The aim of this paper is to find the relationship between emigration and labour market changes in Lithuania and to evaluate the impact of remittances on economic development using statistical methods.

Population size in Lithuania has been constantly decreasing in recent decades. High levels of emigration were being observed, especially since 2004 when the country joined EU. The level of emigration was highest in 2010, when it reached 2.5 per cent of total population. This increase in the number of emigrants was influenced by the obligation laid down in the Law on Health Insurance of the Republic of Lithuania for permanent residents of the country to pay compulsory health insurance contributions. At the same time, the impressive remittance flows have been recorded in a few years (see Fig.).
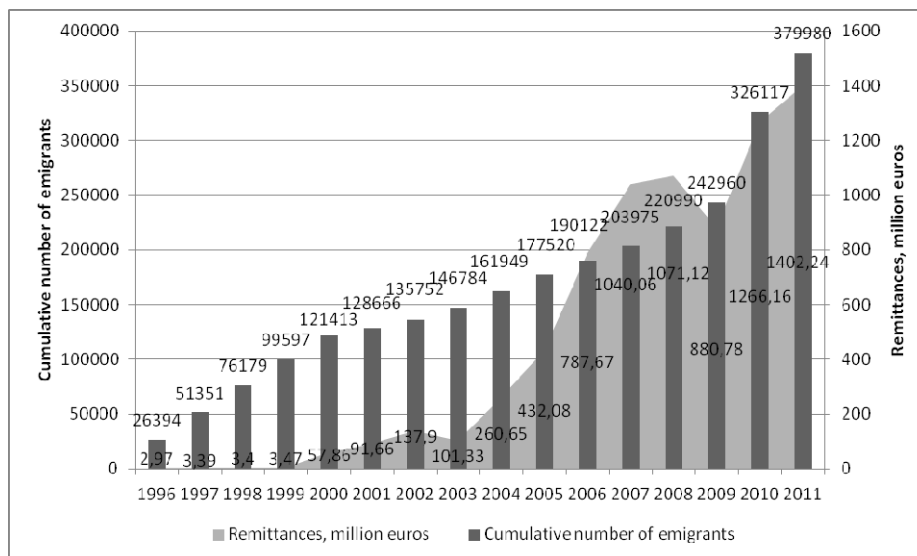
Fig. Emigration and remittances, Lithuania, 1996-2011

Source: Adapted from [0, p. 31], updated from Lithuanian Department of Statistics (http://db1.stat.gov.lt/statbank/default.asp?w=1366) and Central Bank of The Republic of Lithuania database (http://www.lb.lt/stat_pub/statbrowser.aspx?group=8022&lang=lt

Remittances reached 4.57 per cent of national GDP in 2011 thus compose 1506.26 Lithuanian Litas per capita. According to the World Bank scientists remittances are sent by cumulated flows of migrants over the years, not only by the new migrants of the past year or two [8]. This makes remittances persistent over time. If migration flow stops, then over a time period remittances may stop growing. But they will continue to increase as long as migration flows continue.

Mostly young and educated people who are highly capable and willing to work and pay taxes and also the pensions for the elderly make the decision to go abroad and search for better opportunities. Almost half of the emigrants belong to the 20-39 year age group with male to female ratio of 51:49. The largest group of people regarding education is with secondary education (59.0 per cent) followed by people with higher education (18.5 per cent). The main reason to emigrate is job seeking (for 60.8 per cent of emigrants). People move to the countries such as United Kingdom, Ireland, Norway, Spain, and Germany. So the emigration of the labour force might substantially affect the labour market in the country of origin.

In the Table 1 a correlation between emigration and remittance and labour market indicators (unemployment, wages and labour supply) is presented, using 5 per cent level significance.

T a b l e 1. **Correlation between labour market indicators and remittances, and emigration, Lithuania. 1996 – 2011, annual data**

	Unemployment (per cent)	Wages (litas)	Labour supply (amount of new workplaces)
Remittances (million of litas)	-0.26	0.96	0.55
Emigration (thousands)	0.45	0.50	0.72

Source: Lithuanian Department of Statistics (http://db1.stat.gov.lt/statbank/default.asp?w=1366), authorial computation

The results have shown that there is a strong and statistically significant positive association between emigration and labour supply (0.55), and between remittances and labour supply (0.72). Despite the fact that labour supply was rising and new work places were established, more and more people decided to leave the country. It possibly shows that the other reasons of emigration, such as, for example, wage differences between Lithuania and recipient country exist [10].

There are positive and statistically significant relationships between remittances and real average wage and emigration and the real average wage. These results of our analysis are somehow controversial, that is why it was decided to investigate emigration and remittances relationship with unemployment.

Assumption that remittances time series explains the emigration trend better was accepted. It is generally agreed: when emigration level is increasing unemployment level is decreasing, i.e. emigration reduces pressure in the labour market. Noteworthy, in 2009-2011 high unemployment level fluctuated from 13.7 to 17.8 per cent. Remittances are characterised as altruistic money inflows. We examined this feature by analysing workers' remittances, employee compensation and migrant's transfer's time series association with GDP.

The results of our analysis have shown that there are strong and positive relationships between workers remittance and GDP (0.92), and employee compensation and GDP (0.72), using 5 per cent level significance (see Table 2).

T a b l e 2. **Employee Compensation and Workers' remittances correlations with GDP, Lithuania, 1996 – 2011, quarterly data**

	Employee Compensation	Workers' remittances	Employee Compensation and workers' remittances
GDP	0.72	0.92	0.86
Business cycles			
GDP	-0.24	-0.03	-0.19

Source: Central Bank of The Republic of Lithuania database (http://www.lb.lt/stat_pub/statbrowser.aspx?group=8022&lang=lt, authorial computation)

The results of the statistical analysis are computed by taking the log of each series in percent of GDP and the log of GDP per capita. The Hodrick-Prescott filter [0] was used to evaluate business cycles of worker's remittances, employee compensation and migrants' transfers. Then a relevant correlation was computed.

The negative correlation of time series business cycles shows counter cyclicality. That supports the altruistic motivation of remittances behaviour whereby declines in a recipient Lithuania economic activity are associated with increases in remittances flows to country. This result is consistent with recent empirical support in the scientific papers of the International Monetary Fund [0].

It was mentioned above that remittances contribute to economic growth through their positive impact on consumption, savings or investment [8]. The results of the analysis conducted by [3] for 11 transition economies of Eastern Europe during 1990-1999 years period show support for the view that remittances have a positive impact on productivity and employment both directly and indirectly through their effect on investment.

Dynamic Panel Data analysis was used and a fixed-effect model was created to estimate remittance impact on economic growth. The impact of remittances on economic growth was estimated by analysing 10 countries: Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Malta, Slovakia and Slovenia in 1996-2010 years period. These ten countries had joined EU in 2004 and since the integration to EU have similar emigrations trends [0; 10].

Regression equation was constructed by OLS (Ordinary least squares) using statistical package R:

$$\Delta gdp_{it} = \beta_0 + \beta_1 gdp_{it-1} + \beta_2 rem_{it} + \beta_3 \exp_{it} + \beta_4 gcf_{it} + u_{it}$$

where i – country, t – year, gdp – real GDP per capita logarithm, rem – worker remittances to GDP ratio logarithm, exp – export of goods and services ratio to GDP logarithm, gcf – gross capital formation ratio to GDP logarithm.

We evaluated the fixed effect panel data model. The dynamic-panel investigation estimated the impact of workers' remittances on per capita GDP growth. The estimator was used in most of the sample equations of previous researches [8; 0] (see Table 3).

Table 3. **Worker Remittances and Growth: Dynamic Panel Estimation, 1996-2010**

	Estimate	p-value
Growth GDPpc (t-1)	-0.88454	0.000314
Log(remittances/GDP)	0.034796	0.002040
Log(export/GDP)	0.238962	0.001276
Log(GKF/GDP)	0.372470	0.000001
Observations	140	
R-squared	0.39943	

Source: World Bank database (http://data.worldbank.org/indicator), authorial computation

To sum up, the results of the analysis show that remittances has statistically significant impact to economical growth. It boosted 0.0348 per cent of GDB then worker's remittances' grow 1 per cent.

Conclusion. A closer look at emigration and remittances in Lithuania suggests that young and ambitious people who are a potential part of the labour force leave the country. The amount of remittances sent by emigrants to their relatives left in Lithuania reached unprecedented 4.57 per cent of national GDP in 2011.

The results of statistical analysis have shown that there are statistically significant relationships between remittances and labour market indicators, and remittances and economic development. Bigger flows of remittances have an impact on reduction of unemployment. There are positive associations between emigration and real average wage, and emigration and labour supply in Lithuania. Remittances also correlate positively having statistical significance with real wage and labour supply. It reduced tension in the labour market in the context of a recession when unemployment rate had risen.

What is more, the results of dynamic-panel estimation analysis show that remittances have a positive impact to country's GDP. Each per cent of growth of remittances boosts the economic growth by 0.035 per cent.

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FIGHTING AND PREVENTING CARTELS

Стаття присвячена теорії та практиці антимонопольних дій у виявленні та запобіганні картелів, аналізу розвитку сучасної ліберальної політики з акцентом на некласичну економіку. Виходячи з економічної теорії Шумпетера ми показали, що ліберальні програми, що супроводжуються сильними повноваженнями контролюючих органів та ефективними санкціями, підвищують внутрішню нестабільність картелів, а тому являють собою функціональний та ефективний інструмент для виявлення і покарання, а також перешкоджають утворенню антиконкурентних угод.

Ключові слова: картелі, конкуренція, ліберальна політика, Шумпетер, творче руйнування.

Статья посвящена теории и практике антимонопольных действий в выявлении и предотвращении картелей, анализа развития современной либеральной политики с акцентом на неклассическую экономику. Исходя из экономической теории Шумпетера мы показали, что либеральные программы, сопровождающиеся сильными полномочиями контролирующих органов и эффективными санкциями, повышают внутреннюю нестабильность картелей, а потому представляют собой функциональный и эффективный инструмент для выявления и наказания, а также препятствуют образованию антиконкурентных соглашений.

Ключевые слова: картели, конкуренция, либеральная политика, Шумпетер, созидательное разрушение.

The paper focuses on the theory and practice of antitrust action in detecting and deterring cartels and analyzing the development of the modern leniency policy with a focus on heterodox ecoomics. Drawing from Schumpeterian economic theory, we show that leniency programs, accompanied by strong enforcement powers and effective sanctions, increase the inherent instability of cartels and therefore represent a functional and successful tool for detecting and punishing, as well as preventing the formation of anti-competitive agreements.

Keywords: Cartels, Competition, Leniency policy, Schumpeter, Creative Desctruction.

Since cartels are secret by definition, "the greatest challenge in the fight against hard-core cartels is to penetrate their cloak of secrecy and counter the increasingly sophisticated means at the companies' disposal to conceal collusive behavior" [1]. Creative destruction is a powerful force in maintaining a homeostasis in among cartels also. In this sense, one of the most significant contributions of recent years to the global fight against cartels is leniency policy (leniency could mean any reduction in the penalty compared to what would be otherwise imposed if the cartel was detected: smaller fine, shorter sentence, less restrictive order, or complete amnesty. Leniency programs are based on particular conditions which must be achieved and respected in order to qualify for such treatment.), designed as to encourage a cartel member to confess and implicate its co-conspirators with direct evidence about their illegal activity. Though most of the national competition laws already provided an opportunity to reduce fines for companies cooperating with competition authorities during cartel investigation, but the real breakthrough in detecting and fining cartels was achieved when the existing leniency programs were changed as to guarantee to the first – and only the first – business or individual to cooperate with competition authorities in collusion prosecution, complete amnesty or immunity from sanctions for its conduct.

The fight against cartels is likely to be far more effective when a leniency program is implemented for the following reason. The success of a cartel very much depends on the cartel members trusting each other. The mere existence of a leniency program weakens a cartel as it adds an instrument for cartel members to cheat on each other. Creating more tension among its members, a leniency program may effectively hinder the existence of long lasting cartels.

The experiences of the United States and the European Commission have shown that a properly structured leniency program can dramatically increase the success of a fight against cartels.

The first country to introduce a leniency program was the United States in 1978, but there was not an immediate success. During the following 15 years it generated on average only one application per year [2]. In 1993 the US Department of Justice made some important changes, firstly, making the corporate leniency available not only in situations in which the Department had no prior knowledge of the possible cartel, as it was under the original program, but also even after an investigation had begun if the Department had not developed enough evidence to sustain a conviction for the conduct. Secondly, under the original program granting leniency was still subject to the Departments discretion, while under the new program the grant was automatic if the necessary conditions were met [3]. These changes had a substantial impact on the program: the rate of applications jumped to approximately one per month. Leniency applications were directly responsible for successful prosecutions in several high profile prosecutions by the Justice Department, including conspiracies in vitamins, graphite electrodes, marine construction and fine art auctions. From 1998 to 2002 the fines imposed in cases resulting from leniency applications totaled more than US$ 1,5 billion, and many individuals were sentenced to terms of imprisonment [4].

The European Commission first introduced its leniency program in 1996 and revised it twice, in February 2002 and in December 2006. The principal changes, comparing the 2002 revision to the original version, were to promise full (100%) immunity from fines to the first corporation to provide evidence before the Commission has begun an investigation and to drop the "decisive evidence" requirement for receiving full immunity, requiring only that it provide enough evidence to permit the Commission to initiate an investigation on the premises of suspected enterprises. The effect of these two changes was to increase both the rewards that a successful applicant would receive and the degree of transparency and certainty in the program. The improvements in the 2006 revision reflected the experience acquired in implementing previous versions and were set out to create even greater transparency and legal certainty.

Under the 1996 Leniency Notice the Commission received 188 applications for non-imposition or reduction of fines and decided either not to impose fines or to grant a very substantial reduction (from 75 % to 100 %) or a significant reduction (50 % to 75 %) in 17 cases. Under the 2002 and the 2006 Notices the Commission received 157 applications for immunity and 146 applications for reduction of fines, granting conditional immunity on 58 applications, from entry into force of the Notice on 14 February 2002 until the end of 2008. In the period from 2002 to the end of 2008, the Commission adopted statements of objections in 52 cartel investigations. 46 of these investigations started

on the basis of information received under the 1996, 2002 or 2006 Leniency Notice [5]. These numbers prove that leniency policy has been extremely effective making detection of cartels more probable and prosecution more frequent. However, the ultimate purpose of using leniency to fight cartels is to deter every company from continuing or engaging in such behavior. Miller [2009] provides evidence that leniency programs might have positive effects in this respect. His study of US cartels between 1985 and 2005 shows that the number of cartel discoveries significantly increased around the date of the introduction of 1993 corporate leniency program and then sharply dropped. Such a pattern is consistent with intensified cartel detection and improved deterrence.

The success of the US and EC programs has stimulated other countries to adopt national leniency programs as an effective instrument to counter cartels. Lithuanian Competition Council, integrating the guidelines of EC Leniency Notice, introduced its leniency program in 2008 [6].

The data presented in table 1 and figure 1 shows that after implementing of Leniency Notices by European Commission (since 1998) the fight against cartels has become more efficient: the number of decisions in cartel cases increased three times. 77,9% of cartels since 1990 were detected, prosecuted and fined in the period of 2000 – 2011.

Table 1. Cartel cases decided by the European Commission since 1990

Period	Number of cartels	% total
1990-1994	11	11,6
1995-1999	10	10,5
2000-2004	30	31,6
2005-2009	33	34,7
2010-2011	11	11,6
Total	95	100

Source: calculated by the author using data from www.europa.eu.int/competition/cartels/statistics

Comparative analysis of leniency programs and their implementation experiences in the US and European Union allows conclusions to be drawn about the necessary elements of a successful leniency policy, which could be summarized as follows:

◦ Maximum motivation for a cartel member to be the first in the "race to confess"; this can be achieved by awarding complete immunity from sanctions only to the first applicant. Such provision results in a destabilizing factor within a cartel;

◦ Certainty and transparency; in general, parties are more likely to cooperate with the competition authorities when the results of their applications are predictable as accurately as possible;

◦ Possibility to apply for immunity or reduction of fines even if the competition agency already begun an investigation;

◦ Maximum degree of confidentiality permitted by law to the leniency application and the grant of leniency if it occurs, as well as to the information that is provided by the applicant; it increases the uncertainty among the cartel members about whether or when, or which one of them might have defected.

There is another, overriding aspect to a successful leniency program: there must be a credible threat of severe sanctions for participating in a cartel. Unless cartel operators are at risk for substantial punishment if their agreement is discovered and prosecuted, they will have little or no incentive to enter leniency program.
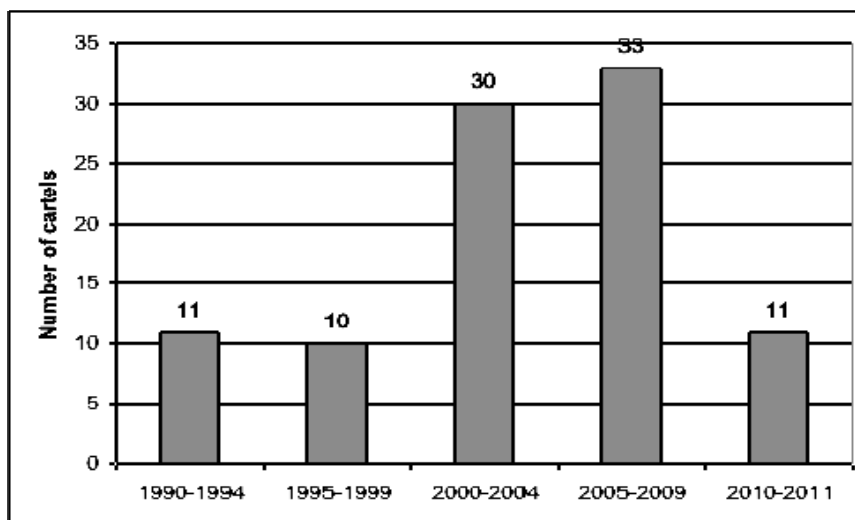

Fig. 1. Dynamics of cartel cases decided by the European Commission since 1990

Source: created by the author using data from www.europa.eu.int/competition/cartels/statistics

The statistical analysis of fines imposed by European Commission on companies that infringe EC Treaty rules, leads to the conclusion that the success of leniency policy by increasing the number of prosecuted cartels is based on the synergy created by the joint application of the Guide-lines on the method of setting fines [7], adopted by the Commission in 1998 in order to enhance transparency as to its fining policy, and the Leniency Notice. The synergies derived from the combination of a preventive and deterrent approach were further strengthened by the adoption in

2006 of the new Guidelines on the method of setting fines [8]. The revised Guidelines included three main changes: the new entry fee, the link between the fine and the duration of the infringement, and the increase for repeat offenders [9]. The implementation of these new Guidelines not only increased the total amount of fines imposed by the Commission with respect to cartel infringements in recent years compared to the previous periods (see table 2 and figure 2), but also resulted in a number of record fines imposed in separate cartel cases (see Table 3), including fines amounting to a total of EUR 1.384 billion on four companies in the Car glass cartel in 2008 and fines amounting to EUR 992 million imposed on four companies in the Elevators cartel in 2007.

Table 2. **Fines imposed by European Commission in cartel cases 1990-2011**

Period	Amount in €
1990 – 1994	344.282.550
1995 – 1999	270.963.500
2000 – 2004	3.157.348.710
2005 – 2009	8.922.838.162,50
2010 – 2011	3.482.729.432
Total	16.178.162.355

Source: calculated by the author using data from www.europa.eu.int/competition/cartels/statistics
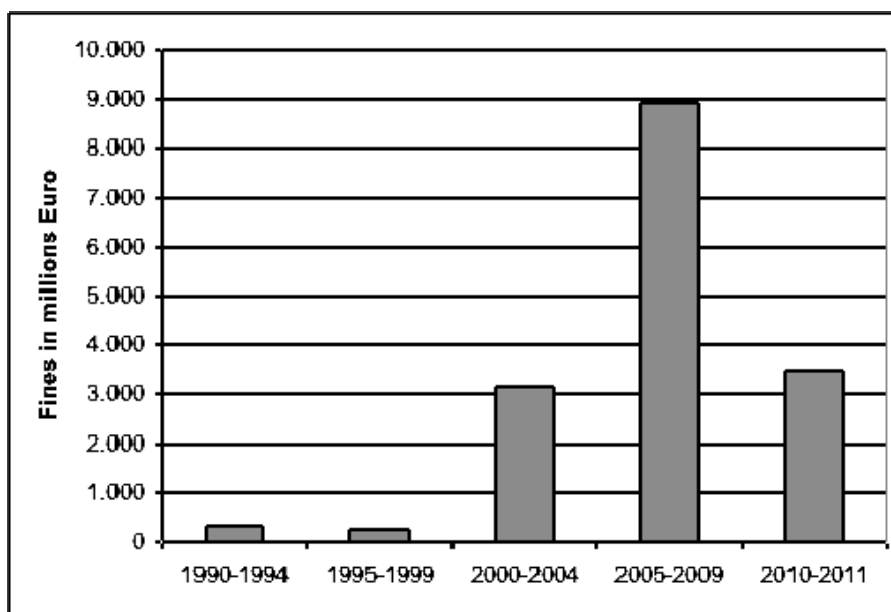

Fig. 2. Dynamics of cartel cases decided by the European Commission since 1990

Source: created by the author using data from www.europa.eu.int/competition/cartels/statistics

Table 4. **10 highest cartel fines per case (since 1969)**

Year	Case name	Amount (€)
2008	Car glass	1.383.896.000
2009	Gas	1.106.000.000
2007	Elevators and escalators	832.422.250
2010	Airfreight	799.445.000
2001	Vitamins	790.515.000
2008	Candle waxes	676.011.400
2010	LCD	648.925.000
2010	Bathroom fittings	622.250.782
2007	Gas insulated switchgear	539.185.500
2007	Flat glass	486.900.000

Source: www.europa.eu.int/competition/cartels/statistics

As we can see, nine of the ten largest fines were imposed in the period of 2006-2011, including a record fine for Car glass cartel. In this case, the European Commission imposed fines on four automobile glass manufacturers Asahi (Japan), Pilkington (United Kingdom), Saint-Gobain (France) and Soliver (Belgium) for illegal market sharing and exchanging of commercially sensitive information between 1998 and 2003. These four companies controlled about 90% of the glass used in the European Economic Area in new cars and for original branded replacement glass for cars at that time, a market worth about €2 billion in the last full year of the infringement. The Commission

increased the fines on St Gobain by 60% because it was a repeat offender. Asahi provided additional information to help expose the infringement and its fine was reduced by 50% under the Leniency Notice. These are the highest cartel fines Commission has ever imposed, both for an individual company (€896.000.000 on Saint Gobain) and for a cartel as a whole [10].

In the light of these cartels, their different probability and timeframe of working in concert with the made agreements between the competitors, applying Joseph Schumpeter's [1942] theory of creative destruction may offer insights on a broader scale. Following Schumpeter's assumption that creative destruction works for the betterment of markets, economies and – in the end – societies, a few observations can be made: traditional sectors of economy tend to progress in a manner of gradual improvements over time rather than being shaped by the disruptive force of spikes of innovation caused by a limited number of entrepreneurs. Thus, participants in these markets tend to be less creative and innovative in a Schumpeterian sense, while their longevity allows them to build lasting market structures that make them more prone to unofficial agreements between competitors. Additionally, their constant development gives them an amount of predictability that, combined with usually high barriers of entry into the market, lessens the incentives to defect from agreements made with the other actors. Secondly, we stated the trend of more mobile economic sectors to support only shorter lasting alliances with competitors due to more frequent changes in the market and its hierarchies. These markets and sectors allow more fluctuation among their participants, usually supported by lesser barriers of entry. While this absence of established market structures means un-

certainty for actors, it incentivizes disruptive innovation by creating an environment where upward mobility and the rewards are as high as the risks involved [11].

Accordingly, using leniency programs to incentivize market actors into defecting from their agreements with other actors aims at creating uncertainty and mobility among the parties of any given cartel. However, while this may not immediately lead to the breaking up of cartels, we have shown that the mere existence of leniency programs shortens the average time of a cartel's existence considerably.

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FOREIGN-EXCHANGE CRISIS IN BELARUS (2011):
INFLUENCE OF THE ACCOUNTING AND TAXATION SYSTEMS
ON THE ECONOMICS OF ENTERPRISES

Розглядаються етапи розвитку та подолання валютної кризи, яка відбулася у Білорусі в 2011 році, та призвела до девальвації національної валюти більш ніж в 2,5 рази та гіперінфляції. Вивчається вплив білоруських систем бухгалтерського обліку та оподаткування валютних операцій на формування фінансових результатів комерційних організацій на різних етапах розвитку кризи.

Ключові слова: валютна криза, бухгалтерський облік, різниця у валютних курсах, переоцінка валюти, оподаткування.

Рассматриваются этапы развития и преодоления валютного кризиса, который произошел в Беларуси в 2011 году, и привел к девальвации национальной валюты более чем в 2,5 раза и гиперинфляции. Изучается влияние белорусских систем бухгалтерского учета и налогообложения валютных операций на формирование финансовых результатов коммерческих организаций на разных этапах развития кризиса.

Ключевые слова: валютный кризис, бухгалтерский учет, разница в валютных курсах, переоценка валюты, налогообложение.

The stages of development and overcome of the foreign-exchange crisis in Belarus in 2011, which led to the devaluation of the national currency by more than 2,5 times and to hyperinflation, are considered. The paper studies the influence of the Belarus system of accounting and taxation of currency transactions on the formation of financial results of the business organizations at different stages of the crisis development.

Keywords: Foreign-exchange crisis, accounting, difference in rates of exchange, currency revaluation and taxation.

In 2011 the Republic of Belarus passed through significant disturbances, caused by the foreign-exchange crisis, the result of which has turned up 2 stage devaluation of the Belarusian ruble: in May the Belarusian ruble went down in value by 56 %, in October – still 52% more,

in general by the year the devaluation of the Belarusian ruble amounted 189% [1].

US dollar official quotation dynamics in Belarus in 2011 is presented on fig. 1.
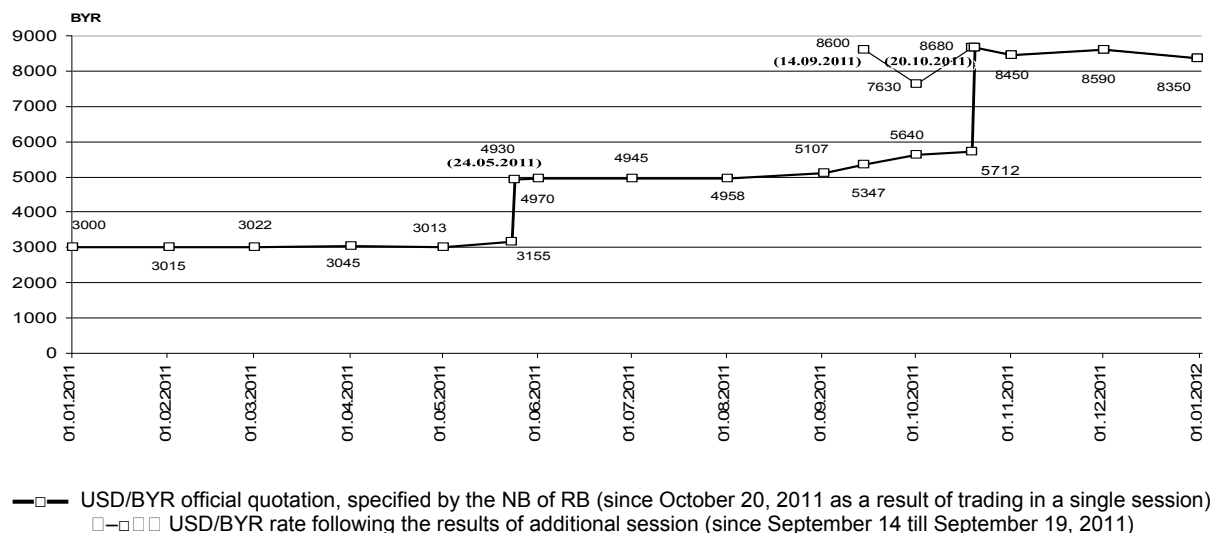
—□— USD/BYR official quotation, specified by the NB of RB (since October 20, 2011 as a result of trading in a single session)
–□   USD/BYR rate following the results of additional session (since September 14 till September 19, 2011)

Fig. 1. US dollar official quotation dynamics in Belarus in 2011

Source: in-house development on the basis of data of the National Bank of the Republic of Belarus (http://www.nbrb.by/statistics/rates/ratesDaily.asp)

Devaluation of the Belarusian ruble towards foreign currencies, high level of inflation, amounted 108,7% in total for the year 2011, caused the significant growth of the refinance rates, specified by the National Bank of the Republic of Belarus (hereafter – the NB of RB).

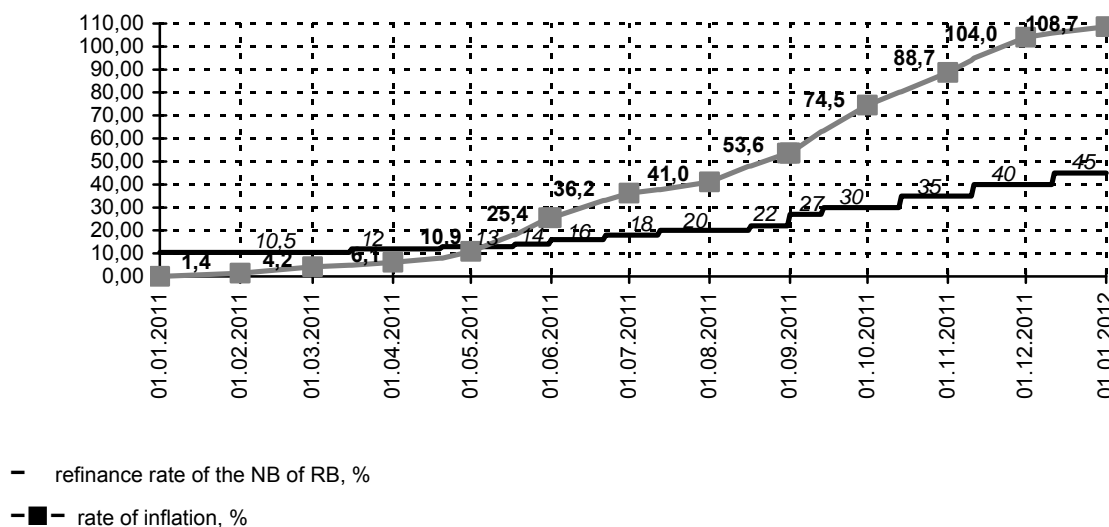Dynamics of refinance rate and rate of inflation in Belarus in 2011 is presented on fig. 2.

—   refinance rate of the NB of RB, %

—■—   rate of inflation, %

Fig. 2. Dynamics of refinance rate and rate of inflation in Belarus in 2011, %

Source: in-house development on the basis of data of the National Bank of the Republic of Belarus and the National Statistics Committee of the Republic of Belarus (http://www.nbrb.by/statistics/sref.asp, http://belstat.gov.by/homep/ru/indicators/pressrel/prices_base.php)

It should be noted that, the foreign-exchange crisis of 2011 had a significant impact on the final results of work of business entities and, consequently, on their financial well-being. In this connection the impact the crisis on the financial results was different at different stages.

Totally in the dynamics of development and foreign-exchange crisis overcoming can be distinguished the following stages:

– **pre-crisis stage** – till March 22, 2011 (currency rate is relatively free, it is possible to sell and buy currency free);

– **beginning of the crisis** – since March 22, 2011 – banks sell to the population only the currency that is sold by the population to the exchange offices. Whereas almost nobody sell the currency to the banks, it is almost impossible to buy it at the official quotation the NB of RB. Buying of the currency in cash is going on at the "black" market; in this case the buying rate significantly exceeds the official quotation the NB of RB. Commercial organizations have restricted access to buying currency;

– **development of the crisis**:

• **March 29, 2011** – banks are allowed to sell foreign currency to the commercial organizations at the rate that 10% exceeds the official quotation. Whereas the currency to be sold is not enough, the companies importing goods are looking for the possibilities to buy currency from the third parties so that to make contra-asset and barter transactions, to make payments for the goods upon receipt and so on;

- **May 16, 2011** – it is allowed to make the exchange rate in the exchange offices free. The population does not sell the currency to the exchange offices. Buying and selling of currency is going on primary at the "black" market;
- **May 23, 2011** – was held the official devaluation of the Belarusian ruble (since beginning of the year the devaluation amounted 56%);
- **May 23 – September 14, 2011** – the official quotation of the foreign currency is growing insignificantly. To buy currency at the official quotations have access restricted number of business entities (as a rule, government institutions, buying foreign currency to pay for the energy resources and other strategical goods). Organizations, which have no access to buy currency at the official quotations, are searching the possibilities to buy if from the non-residents (through different schemes of payments and loans). Organizations, self-cost of which does not allow to buy currency at market rate, either hold up their activity, or significantly increase the prices for their goods (works, services);
- **September 14, 2011** – the rate of the ruble towards the main foreign currencies started to establish in the results of the trading on the additional session of the "Belarusian Currency and Stock Exchange" OJSC. The business entities obtained the possibility to buy currency at the market rate. There appeared opportunity to get rid of "grey" and "black schemes" of buying currency from non-residents, banks and other currency owners. As before, some business entities have access for buying currency at the official quotation of the NB of RB, which is about 60% lower than stock exchange quotation;
- **September 14 – October 20, 2011** – remains unchanged the significant "break off" between official and market rates of foreign currency, that essentially misrepresent the financial results of business entities, having access to buy foreign currency at the official quotation and organizations, buying currency at the market rate;
  - **the crisis overcoming**:
- **October 20, 2011** – introduction of the single currency exchange rate – the second devaluation (at 52%). Since the moment of the adoption of the single rate for all business entities, carrying out transactions with foreign currency, are there created the equal conditions of access to the buying currency;
- **October 20, 2011 – May 2012** – the currency is sold and bought free. The rate has been growing at first, almost reaching its maximum on the 11 of November 2011, then it was going down, having reached its minimum on March 20, 2012.

According to the results of the analysis, prior to the introduction in October 2011 of the single currency exchange rate, a number of business entities had access to foreign currency at a lower rate than the rate at which the currency was sold first to the "black" market, and then (after September 14, 2011) at the additional trading session.

It is obvious that the company having had access to "cheap currency" used significant preferences against those organizations that did not have such access.

Totally, the embedded component of the benefit holder companies was formed at a lower rate of foreign currency, which made it possible to show good results in the reporting of their high work efficiency. The companies that bought the currency at the "black rate", more than twice exceeding the official quotation specified by the NB of RB, the embedded component was rapidly growing that in the process of formation of currency earnings at the official quotation led to a sharp deterioration in their financial circumstances. First of all, it affected those businesses, currency earnings of which did not cover their costs and that carried out obligatory sale of foreign currency at the official quotation of the NB of RB in the amount of 30% of the amount availed received in foreign currency.

Certain problems in forming of the financial results have just appeared at the time of devaluation of the national currency. In connection with caused by the legislation necessity for revaluation of currency indebtednesses and assignment of the amount of revaluation to the financial results, the importing companies that had at the moment of the devaluation of the outstanding debt owed to suppliers, the financial results have deteriorated sharply. The financial results of the exporters, on the contrary, have increased significantly. In consequence of relevant for the of the country prevailing imports over exports, the devaluation at the moment of its implementation has led to the deterioration of economic indicators in general over the republic.

In order to prevent developing negative trends the Council of Ministers of the Republic of Belarus on June 03, 2011, by the document No.704 "On some matters the of assets revaluation and obligations in foreign currencies," [2], entered into force on May 24, 2011, allowed to the commercial organizations:

- include the costs associated with the buying of foreign currency amounting to the difference between the purchase rate of foreign currency and the quotation of the NB of RB to increase the value of the purchased for the currency raw materials, goods;
- attribute exchange rate differences arising from May 24, 2011 while the revaluating the assets and liabilities in foreign currency,
- on the debtor indebtedness for the goods shipped, works performed, services performed, in advances provided by the suppliers and contractors for the purchase of raw materials, goods, works,
- on the creditor indebtedness to make payments to the suppliers and contractors for raw materials, goods, works, services performed, as well as for credit, loans and interest thereon, advances received from customers and clients,
- for deferred revenues (deferred expenses) and mark off as on extraordinary revenues (on extraordinary expenses), accounted for taxation in the manner and terms established by the head of the organization, but no later than December 31, 2014.

The introduced procedure, unfortunately, did not affect the amount of the revaluation of the currency available at the accounts of the business entities at the moment of devaluation, that by the inclusion of such amounts in extraordinary revenue of the organizations directly at the moment of the revaluation led to the necessity to pay income tax from it and, accordingly, to the "washout" of current assets of the enterprises.

Just in February 2012 exchange rate differences, formed in 2011 while revaluating foreign currency at the accounts at the moment of devaluation was allowed to refer to the deferred revenue followed by write-off up to December 31, 2014 – on the extraordinary revenue to be considered for taxation (decree of the Council of Ministers on February 07, 2012, No. 126 [3]). This solution allowed to carry out recalculation of the amounts of income tax, payable to the budget at year-end 2011, and, consequently, improved the financial situation of enterprises. However, this improvement should be considered as a temporary phenomenon, in the current situation the question is to tax deferment, the transfer of amounts reducing the income tax in the category of deferred tax liabilities.

With the introduction on September 14, 2011 of the additional trading session at which businesses have the opportunity to buy and sell currency at "the rate of demand and sup-

ply", also significantly different from the official, there arose a problem of taxation of income generated by selling the currency. The essence of the problem consisted in the fact that the sold currency received by organizations from the sale of goods (works, services) for export, should be recorded at the official quotation of the NB of RB, while it was sold at a higher rate – the rate of "demand and supply". The arising in such a way difference in accordance with tax legislation should be liable for income taxes. As a result, exporters start to hold up the sale of foreign currency, which significantly reduced its flow-in in the additional session and, consequently, reduce the possibility of decrease of speculative rate prevailing before the interbank market.

A number of large exporters initiated the question of exemption from taxation for the difference between the amount of the proceeds from the sale of foreign currency in an additional session, and its value at the quotation of the NB of RB. However, the decision on this issue was not made.

As a result, exporting enterprises were forced to pay excessive amounts of income tax, reducing in the end its current assets necessary to purchase raw materials at new prices, formed with taking into account the growth of foreign currency rate.

Break-offs in the rates had also led to the creation of visibility of the financial well-being of business entities which had access to "cheap" currency (underestimated costs), as well as exporters implementing through various schemes the possibility of selling the foreign currency received at the market rate.

The situation was dramatized by the fact that to the costs of industrial enterprises were written off previously accumulated in the warehouses materials on their purchase price before the crisis or during the access to "cheap currency", and the revenues from the sale of products shipped (works fulfilled, services performed) is reflected already at increased sale prices.

Essential preconditions for exchange rate stability and alignment of economic conditions for organizations working with the currency appeared there only on October 20, 2011, when was the introduction to the single foreign exchange rate set by the results of trading on the Stock Exchange.

The end of 2011 and the beginning of 2012 were marked by the release of a relatively stable exchange rate of Belarusian ruble and foreign currency. During this period, from our point of view, began to form more or less real financial results of all business entities. Alongside with that, by taking into account the previously accumulated deviations due to a variety of exchange rates, as well as the transfer of amounts of written off revaluation of currency and foreign exchange liabilities to the later accounting period, it is still problematic to speak about the transparency of financial reporting of organizations working with foreign currency.

Totally it should be recognized that the possibility of forming a monetary cost at a lower official quotation of the NB or RB, as well as changes in the crisis conditions of the system of accounting and write-off amounts of exchange rate changes, contribute to the fact, that in general, in extremely difficult economic situation the republic's economy – if follow the accountancy data – has been developing quite successfully.

So, as a result of 2011, the GDP growth amounts 5.3% [4], the profitability of sales in the industry reached 12.8% (against 6.9% in 2010) [5], the number of unprofitable enterprises in November 2011 was 6,5% (against 10.4% of unprofitable institutions in follow-up of the first quarter of the same year) [6], the registered unemployment rate at the end of December 2011 was 0.6% (the end of December 2010 – 0.7%) [7].

In this regard the average salary in foreign currency terms decreased from 513 U.S. dollars in April 2011 to 280 U.S. dollars in November of that year [8], and the inflation rate, as it was already noted above, reached 108.7%, exceeding all the criteria that characterize the economy as hyperinflationary.

It stands to reason that in December 2011 the world's largest accounting firms – PricewaterhouseCoopers, Deloitte, Ernst & Young, KPMG – recognized as hyperinflationary the economy of Belarus, which automatically specify the necessity to reporting under IFRS based standards taking into account norm IFRS 29 "Financial reporting in hyperinflationary economy".

This standard, in particular, specifies that in conditions of hyperinflation the reporting on the results of operations and financial position in the local currency without the revaluation does not make sense. Money loses purchasing power at such a rapid pace that a comparison of the amounts resulting from transactions and other events that took place at different times, even during the same reporting period is often impossible.

The current situation in Belarus is characterized by distortion of the reporting performance estimated in conditions of hyperinflationary at actual costs, creates a substantial risk of inadequate solutions for different categories of users of accounting reporting.

The well-known methodologist of the accounting in the post-Soviet territory Professor Paliy V.F. [9, p.568] identifies in conditions of hyperinflation the following main misrepresenting effects on the financial statements, which should be considered by users of this report:

• the selling prices are underestimated. Continue the manufacturing of unprofitable goods;

• the self-cost is incommensurable with sales revenue;

• the value of proprietorship is understated;

• the profitability of an organization and, consequently, taxable base on the income tax is overestimated;

• the income tax is taken out from the part of the company's ownership capital and so on.

Absolutely the same manifestations came across the economy of Belarus in 2011.

Conclusions. Step-by-step development of the foreign-exchange crisis and the accompanying this crisis non-system and largely delayed measures, in particular to introduce the single currency exchange rate, as well as adjustments to the existing system of accounting currency transactions resulted in fundamentally different financial results for different groups of business entities and a significant distortion of their financial statements.

It is obvious that at a high level of inflation, as well as a significant devaluation of the national currency should be used such mechanisms of revaluation of assets and liabilities of organizations that would allow, on the one hand, to keep the current assets of enterprises by means of reducing payments to the budget from the amounts to the revaluation of foreign currency assets and liabilities, on the other hand – to ensure the reliability of accounting (financial) reporting of the organization. As one of such measures would be the abolition of taxation for currency revaluation amounts in the accounts and amounts of foreign exchange revaluation of the buyers and the customers.

The consequences of a foreign-exchange crisis of 2011, which, from our point of view, is just one of manifestations of the general economic crisis, will have a significant impact on the financial condition of commercial organizations in Belarus, not only in 2012, but in subsequent years, due to:

a) accumulation in the accounts of deferred revenue accounting of significant amounts of deferred tax liabilities

regarding the amount of exchange rates differences, formed because of the revaluation of foreign currency available at the accounts of the organizations at the time of devaluation, which will gradually (up to December 31, 2014) written off on financial results and consequently, will be liable for income taxes that will lead to washout of current assets of enterprises;

b) high refinance rates, which cannot fall below the forecast inflation level for 2012 at a rate of 19-22%, that will significantly reduce the level of credit loans from banks and thus redouble the problem of lack of current assets of enterprises that are required not only for investment but also for the current business activities;

c) substantial lag behind of the inflation level from the existing in the 2011 devaluation of the national currency. In the presence of a negative balance of foreign trade balance the inflation level seems to aspire to be achieved in the 2011 devaluation of currency (unless it is ensured alignment of the foreign trade balance of exports and imports).

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JEL classification C81

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BUSINESS PROCESSES IN "CLOUDS"

В цій статті досліджуються економічні аспекти застосування хмарних обчислень для управління бізнес-процесами. Доцільність такого підходу зумовлено намаганням знизити операційну і експлуатаційну вартість, зменшити час прийняття рішень і оптимізувати витрати. Така мета досягається за рахунок широкого використання сервіс орієнтованої архітектури і хмарних технологій, які збільшують цінність для бізнесу за рахунок гнучкості при експлуатації, здатності до швидкої реакції на зміни економічних умов, інформаційного оточення та широкими можливостями повторного застосування.

Ключові слова: бізнес аналіз, управління бізнес процесами, хмарні обчислення, сервіс орієнтована архітектура.

В этой статье исследуются экономические аспекты использования облачных вычислений для управления бизнес-процессами. Целесообразность такого подхода обусловлена стремлением снизить операционную и эксплуатационную стоимость, уменьшить время принятия решений и оптимизировать затраты. Такая цель достигается за счет широкого использования технологий сервисов, которые увеличивают ценность для бизнеса за счет гибкости при эксплуатации, способности к быстрой реакции на изменения экономических условий, информационного окружения и возможностями повторного использования.

Ключевые слова: бизнес анализ, управление бизнес процессами, облачные вычисления, сервис ориентированная архитектура.

The paper studies economic aspects of cloud computing for business processes management. The expediency of such approach is caused by aspiration to lower operational costs, to reduce time of decision-making and to optimize expenses. Such purpose is reached due to wide use of service oriented technology and cloudy computing, which one increase the value to the business through flexibility in the operation, the quickly react ability to changes of economic conditions, information environment and opportunities for reuse.

Keywords: business analysis, business process management, cloud computing, serves oriented technology.

The global crisis and recession have dramatically reduced the availability of cheap financial resources. Accordingly, in the absence of sufficient funding the role of governance as a cheap alternative to grow business has increased. This explains the desire of managers to focus more attention on improving of the business processes management which is based on extensive use of computer management systems.

In this paper an economic aspects of service oriented technologies and cloud computing (CC) for business processes management (BPM) are investigated. The purpose of the analysis is the estimation of prospects for introduction of CC in BPM by criteria of value for business. Opportunities of the cloudy management are considered in a direction to increase of economic efficiency and market competitiveness, the analysis of information technologies features and innovations.

In conditions of production curtailment and finance limitation the illusion about a modern economy, for which one the efficiency of business is not important ostensibly, but very important any intellectual and technical parameters of business computer control systems and scope ranges of their control functions, has disappeared. For example, they are not a depth of business processes modeling, automation of a lot of management functions, introduction of modern expensive systems of types ERP, CRM, SCM, etc. It became clear, they are foreground return of investments, careful expenses analysis and possession cost of business process management technologies. That is those ways which are really capable to raise efficiency of business dealing and to ensure the profit.

The expediency of such approach to management of business processes is caused by aspiration to lower operational costs, to reduce time of decision-making and to optimize expenses on information structure of the enterprise. Such purpose is reached due to wide use of services technologies which are attractive to business due to flexibility at operation, abilities to fast reaction to changes of economic

conditions, full functions of an information environment, and also wide opportunities of a reuse.

Cloud computing. The cloud computing concept represents services as some virtual tanks which one contain universal program resources and data storage places. Using these resources it is possible to take computing services and data services through the Internet for creation own processes of business management.

Cloudy technologies and the concept of service oriented architecture (SOA) in the automated systems raise value for business due to flexibility of management structure and relative cheapness of technical decisions. They allow to break usual business – applications into separate business – functions and processes which are represented as services and then to connect them through well certain interfaces and contracts. Interfaces are defined in neutral style. That is irrespective of a platform of computing means, operational system and the programming language on which this service is realized. Such approach allows services which were created for work in different systems; it is easy to cooperate among themselves under uniform universal protocols.

Such decisions allow the companies to study closely expenses, planned schedules, resources, technological processes and other factors which influence efficiency and viability business processes, to define the most effective ways of their change and improvement.

The next logical directions of development of technologies of management business by processes on basis SOA was the decision of a problem of creation of a working environment for new services.

The companies have restrictions in budgets on support in working state their existing complex information structures. Therefore introduction of new services cannot be frequently quickly executed by efforts of the own IT personnel. It is necessary to invite specialized IT companies for performance of such works. This way is not fast and not cheap.

More attractive alternative of the decision of these problems is to use of modern cloudy technologies. According to the concept of "clouds", the company refuse own development and possession of necessary services for management of the business by processes. They take these processes in a mode of real time in rent from the specialized companies on granting cloudy services and only for that time while they are necessary need. In this case own personnel requirements becomes simpler and the payment expenses are decreased considerably because an abonent payment made as a tariff time and only for time use of services necessary to the company. Cloudy calculations are services on demand.

Principles SOA naturally assume for clouds transformation of all supporting technologies into services, in that case any application, starting from the elementary office and up to corporate business of SCM, CRM, ERP types can be placed somewhere in a cloud and be delivered through the Internet.

Generally, cloud computing services are on-line applications, access to which is provided by means of usual internet browser. There is no special difference what that is, or already good familiar for us entertaining services are, or the specialized business applications for business processes realization are. They have one essence: the user does not need to possess powerful computers and networks, it is not necessary to buy licenses for the specialized software for start of the specific program applications. It is enough to him, the user addresses through the Internet to a provider and he pays on demand services simply. In an ideal case, it is possible to receive these services free-of-charge, but thus there can be advertising from the provider as a kind of payment. Everyone use such conditions of the provider resources and it is already good to them have got used. For example, it is such familiar to us services as e-mail.

Services of cloudy technologies are the way to organize and simplify an information environment. They allow understand IT without borders, delete barriers in fast statement of new services, expand opportunities of economic efficiency and market competitiveness of the companies.

Occurrence of cloudy model became the objective phenomenon, which one connected to the global tendency. Both on individual level, and at a corporate level there is a displacement of performance business processes in online.

Cloud computing represent dynamically scaled way of access to external computing resources as a service, which one is given by means of the Internet. Thus it is not required to the user of any special knowledge of an infrastructure of a cloud or skills of management by this cloudy technology.

The cloud is meant not as the Internet, and it is all that set hardware and a software which provides processing and execution of client applications on the side of the provider. That is even the simplest action by means of the Internet, for example, inquiry of page of a site, to some extent represents an example of cloud computing. The Internet, as a matter of fact, also has arisen to give the removed access to various computing resources.

Also we shall note technologies which do not concern to cloud computing. These are independent calculations (local computing) where the user independently establishes and maintains hardware, the software, keeps results on the local resources. Further, it is custom-made calculations (utility computing). Here services of execution of complex calculations, storages of data files it is ordered on the party. And it is so-called collective calculations (grid computing). The big computing problem, for which performance significant resources are necessary, it is distributed between computer sets, which are connected in virtual network in computing clusters.

The modern company has the information environment which covers all sides of business and will consist of various information actives and technologies. All of them demand essential staff of experts and the significant budget.

All employees should be provided with fast access to IT resources. They are scaled dynamically. As against dominating today in BPM client – server technologies, CC have simple scalability, self-service on demand, fast access to a network, the distributed location of virtually incorporated resources. These characteristics are key to receive an optimum and effective cloud, and for the end user to receive the maximal value for business.

Between components of any information systems it is possible to distinguish interaction on management and interaction under the information.

Now days there are some basic cloud models of integration principles. Someone declare integration at a level of applications and program services. At this matter, the integration is given as program resources by providers, but own program resources of users are supposed too.

Other companies offer integration at an infrastructural level with use of programs of intermediaries which usually name Cloud Services Brokerage (CSB). In this case it is realized a virtualization of any cloudy resources and the binding of the consumer to the concrete provider. That is such undoubtedly market advantage to carrying out of any business – the right of a free choice.

According to recommendations of the National institute of standards and technologies cloud computing is a model for enabling convenient, on-demand network access to a

shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [1, p. 2-3].

This cloud model promotes availability and is composed of three service models (Cloud Software as a Service (SaaS), Cloud Platform as a Service (PaaS), Cloud Infrastructure as a Service (IaaS)); five essential characteristics (On-demand self-service, Broad network access, Resource pooling, Rapid elasticity, Measured Service); and, four deployment models (Private cloud, Community cloud, Public cloud, Hybrid cloud). Service models:

1. SaaS – model of a cloud for the so-called finished products which the consumer cannot independently modify. The opportunity of use of the applied software of the provider working in a cloudy infrastructure and accessible from various client devices by means of the program interface is given him. The control and management of the basic physical and virtual infrastructure of a cloud, including a network, servers, operational systems, data storages, or even individual opportunities of the applications is carried out by the cloudy provider.

As an example it is possible to result post services well familiar to us, on-line services of computer viruses search or on-line language translators.

2. PaaS – model of a cloud in which the opportunity of use of a cloudy infrastructure for accommodation of own, developed to order or got duplicated applications developed to order is given the consumer. The structure of such platforms includes tool means of creation, testing and performance of the applied software – control systems of the databases, the binding software and environments of execution of programming languages. These tools are given by the cloudy provider who reserves the control and management of the basic physical and virtual infrastructure of a cloud, including networks, servers, operational systems, files of storage of the information, except for the developed or installed applications, and also, whenever possible, parameters of a configuration of a platform.

As examples of similar services for developers scaled and automatically controlled resources of hosting App Engine from Google, Windows Azure from Microsoft and WebSphere Cast Iron from IBM can serve.

3. IaaS – hosting of virtual machines. In this case the opportunity of use of a cloudy infrastructure for resource management of processing and storage of data files, managements of networks and computing resources independent is given the user. The consumer can install and start own software which can include operational systems, the platform and applied software. It can supervise operational systems, virtual systems of data storage and the established appendices. The control and management of the basic physical and virtual infrastructure of a cloud, including network, servers, types of used operational systems, systems of storage is carried out by the cloudy provider.

Company IBM to these models adds one more model. Business Process as a Service (BPaaS) – a cloudy environment for creation of full business processes [2, p. 10]. In this case all components of business processes can be present at a cloud. The provider suggests their consumers for creation of structure of management on demand.

For all models of cloudy calculations the obligatory set from five essential characteristics is declared.

Self service on demand, the consumer independently defines and changes his own computing needs, such as server time, speeds of access and data processing, volume of the stored data without interaction with the representative of the supplier of services.

Broad network access, services are accessible to consumers of a data transmission networks without dependence from the used terminal device. Convenience and universality of access is provided with wide availability of services to different classes of devices: personal computers, mobile terminals, tablets.

Resource pooling, the supplier of services unites resources for service of the big number of consumers in a uniform pool for dynamic redistribution of capacities between consumers in conditions of constant change of demand for capacities. Thus consumers supervise only key parameters of service. For example, the volume of the data and speed of access, but actual distribution of resources which are given the consumer, carry out the supplier.

Rapid elasticity, services can be given, expanded, narrowed at any moment and without additional costs on interaction with the supplier, as a rule, in an automatic mode.

Measured service, the supplier of services automatically estimates the consumed resources at the certain level of abstraction (for example, volume of the stored data, throughput, quantity of users, quantity of transactions), and on the basis of these data estimates volume of the services given to consumers.

For the provider, due to automatic procedures of updating of allocation of resources, expenses for service of subscribers are essentially reduced.

For the consumer it is possible to receive services with a high level of availability (high availability) and with low risks not serviceability to provide fast scaling the computing system due to elasticity without necessity of creation, service and modernizations of own hardware infrastructure.

Principles of use are defined by deployment models. There are some models.

Private cloud. An infrastructure intended for use by one organization, including some consumers. For example, branches, departments of one company. The private cloud can be in the property, management and operation of the company, the foreign organization or their combination. Can physically exist as inside, and outside of a zone of management of the owner.

Community cloud. The kind of an infrastructure intended for use by concrete community of consumers, which are the organizations, having the common problems. For example, missions, safety requirements, a policy according to various requirements. The community cloud can be in the joint property, management and operation of one or more of the organizations of community or the third party, or their any combination. It can physically exist as inside, and outside of jurisdiction of the owner.

Public cloud. An infrastructure intended for free use by general public. The public cloud can be in the property, management and operation of the commercial, scientific and governmental organizations or their combinations. The public cloud physically exists in jurisdiction of the owner, which is the supplier of services.

Hybrid cloud. It is a combination of private, public or community two or more various cloudy infrastructures. They remain unique objects, but connected by among themselves standardized or individual technologies of data transmission and appendices.

Expenses. When cloud computing technology is used, consumers of information technologies can lower capital charges essentially: on construction of data-processing centers, purchase of the server and network equipment, hardware and software decisions on maintenance of processes for a continuity and serviceability. These charges are absorbed by the provider of cloudy services. Besides long time of construction and commissioning of large objects of an infrastructure of information technologies and their high

initial cost limit ability of consumers flexibly to react to requirements of the market. Cloudy technologies provide alternative and, the main thing, rather cheap decision of these problems. There is a real opportunity practically instantly to react to increase in demand at computing capacities.

For manufacturers of the software who sell the products in the markets with a high level of a piracy, cloud computing is the model extremely attractive for business because it reduces a level of a piracy in many times.

When cloud computing technology is used, expenses of the consumer are displaced aside operational expenses. Payment of cloudy providers services are classified as charges on an abonent payment.

For an explanation of an economic component of cloudy approaches to calculations of expenses the analogy to electro supply services of consumers is used frequently. For an explanation of an economic component of cloudy technologies the analogy to granting services on electro supply of consumers frequently is used. Suppliers independently create a necessary infrastructure of power generating capacities and networks of delivery which are readily available for consumers and services are paid on the fact of their use. It is easy to compare expenses of the consumer for our example: regular, but rather insignificant rent, or problems of creation of the own power stations and power networks.

To cloudy applications, except for declared advantages, the certain problems are inherent. Among them it is necessary to note problems in speed of work, reliability of storage and data transmission.

Business management efficiency of the company is defined substantially by creation and use of effective cloudy technologies of management which should have good competitive characteristics. Among them: decrease in expenses for licenses for use of the software, comprehensible cost of possession, efficient control the resources, a guaranteed degree of service of users and a comprehensible level of safety.

Safety of the data. According to models of expansion of clouds the consumer can bear the part of the responsibility independently or pays services of the provider of services which guarantees the share of the responsibility for safety of the data of the client. The ideal does not exist. Losses can be at any variant of delimitation of the responsibility. The customer only minimizes the risks and cost by criterion price – quality. Any system of safety is the compromise, and it is important only that it was intelligent.

The organization of system of the data protection can be based on several principles: principle of successful business – the supplier of cloudy services is interested in a safety of the client data, which are processed in his date center. That is safety of the client data is the important consumer quality and the basic requirement of the services buyer. For this reason realization of a principle of information security in cloudy systems creates a basis for successful business dealing and economic prosperity. Principle of legality of business dealing – in the market of cloudy computing suppliers and consumers of services make out legal agreements as license or contractual conditions of granting of services where mutual relations of the sides and a degree of their responsibility are detailed. Principle of additional protection – consumers can use additional levels of safety which are built in the Internet applications. It can be systems of authenticity, enciphering, safe data transmission, reliable differentiation of the given various users and their rights, and also other mechanisms.

Concepts of leading players of the CC market are approximately identical. Nevertheless, variants of its realization strongly differ. On the one hand, the companies consider a network the Internet as a cloud, whence users will receive all necessary resources. Already such services as Google Apps and Microsoft Azure function today. They allow transferring problems of office applications (that is e-mail, office packages) in date centers of providers.

On the other hand, some companies suggests to receive services on demand from a foreign cloud only at deficiency of own resources. If the set criteria of quality of services in an internal cloud cannot be executed, for example, because of overloads then there is a dynamic migration of virtual machines on the side of the cloudy provider. When loading falls down, they come back in the data-processing centre.

According to company Forrester Research, 44 % of the companies (basically, average and large business) are interested in creation of internal clouds [3]. Advantages and lacks of these two approaches are obvious enough. In the first case advantages is absence of high capital expenses for purchase of the equipment and the software. It is not necessary to care neither of reserve copying, nor about fault tolerance of a data-processing centre, even about its installation and adjustment. All this qualities are given by the reliable cloud provider.

Lack will be that the strong binding of the user to the concrete services provider is created. If it is necessary to commission the new applications from other provider there can be technical and financial difficulties as providers compete with each other.

The second variant also has pluses and the minuses. On the one hand, there is a guaranteed access to the infrastructure even in case of breakage of a liaison channel, reliability and safety of data storage, a predicted level of availability and known capacity of hardware capacities are provided. Thus is absent bindings to the concrete external provider. Necessary capacities can be received on demand from any other supplier.

It is possible to relate the big investments to lacks. Both initial and operational are. For an external cloud parameters of quality of service can be fixed in service level agreement and are the financial responsibility of the provider of services.

Results

The analysis of prospects of development of cloudy technologies and their opportunities in perfection of management technologies, decrease in capital and operational expenses can be executed on the basis of forecasts of the market of cloudy technologies from leading three of analytical companies Forrester, Gartner, IDC.

According to research Gartner the segment of the market of cloud services brokerage (CSB) by 2015 will reach the size 100 billion dollars [4]. Such forecast is based on ability CSB considerably to speed up distribution of cloudy technologies due to three main advantages of CSB technologies:

1. CSB will relieve cloudy technologies of doubt in safety, which today still is the certain obstacle of their wide use.

2. Cloud computing become accessible to the enterprises of small and average business due to wide development of hybrid clouds. Thus a break existing between the private clouds created by the large enterprises and public clouds with which end users work will be overcome.

3. The enterprises of small and average business which are guided by hybrid clouds as the compromise between big and small, the needs through effective can realize "service of one window" for services which are given by different providers. It will allow removing a rigid binding to one provider.

Forrester analytics predict that there will be certain transitive a period from models of simple cloud broker

models up to a level of full brokers. Such automatic brokers (fixer) will be capable to solve problems independently.

By estimation of the IDC Company the market of public cloud computing in 2009 has made $17 billion or about 5 % from all market of information services [5].
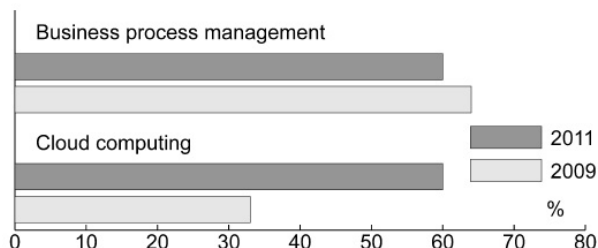

Fig.1. Prospects IT technologies for business

Source: authorial calculation

JEL classification C53, C45, G01, G17

Among IT technologies for increase of business efficiency CC show the best dynamics of development. More than 3 000 global Chief Information Officer responded in the IBM CIO 2011 study and it showed that 60% of organizations view cloud computing as a way to grow their business and increase their competitiveness, as depicted in Fig. 1 [2, p. 2].

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MODELING OF EUROPEAN STOCK INDEXES RETURNS USING WAVELET ANALYSIS

Проведено кластеризацію доходностей європейських фондових індексів за допомогою методів вейвлет-аналізу. Запропоновано модифікований метод прогнозування доходностей фондових індексів на основі вейвлет-декомпозиції, нейронних мереж та методу SSA.
Ключові слова: вейвлет-аналіз, прогнозування, дохідності фондових індексів.

Проведена кластеризация доходностей европейских фондовых индексов при помощи методов вейвлет-анализа. Предложен модифицированный метод прогнозирования доходностей фондовых индексов на основе вейвлет-декомпозиции, нейронных сетей и метода SSA.
Ключевые слова: вейвлет-анализ, прогнозирование, доходности фондовых индексов.

The paper considers the clustering of European stock indexes returns using the methods of wavelet analysis. The modified method of forecasting of stock index returns based on wavelet decomposition, neural networks and SSA method, is proposed.
Keywords: wavelet analysis, forecasting, stock indexes returns.

Analysis of the financial crises of 90 years of the twentieth century shows that the dynamic of crises displaying in structurally different macroeconomic systems has certain common features. Typically, they are characterized by universal mechanisms of emergence and system instability source. The character of the progress of world crises has some local features at the level of individual national economies. The research of these features allows to estimate the stability of economic systems under exogenous shocks and the ability to quickly recover after the crisis. Systemic problems of economies significantly influence on the behavior of stock markets that is expressed in nonlinearity and non-stationary of stock index time series.

Effective modeling of such time series assumes the application of modern methods of nonlinear dynamics, including the techniques of wavelet transform of signals with complex structure. Wavelet functions are compact waves localized in the time. The decomposition coefficients of waves store the information about the drift parameters of approximated function.

R. Gencay [1], E. Capobianco [2], H. Lee [3] and P. Crowley [4] used the methods of wavelet analysis in the research of behavior of financial markets. The papers of M. Gallegati [5], A. Subbotin [6], K. Minu [7] and T. Kravets [8] are the latest researches of wavelet analysis.

The goal of this paper is to analyze the dynamic of stock indexes in Ukraine, Poland, Russia, Germany, France and the UK using wavelet technology, to localize and describe the identified crises in time and scale, and to forecast stock index returns using a modified method.

The object of the research is returns of European stock indexes such as UX, WIG20, RTSI, DAX30, CAC40 and FTSE100. Research methods are the discrete wavelet transform (DWT), neural networks and Singular Spectrum Analysis (SSA) method.

Time-frequency analysis of the wavelet theory is the fundamental tool to research the frequency domain characteristics of nonstationary signals. Wavelet analysis involves the projection of a signal onto an orthogonal set of components named wavelets. A wavelet fluctuates around zero, the fluctuations of a wavelet's function go rapidly down to zero and they are localized in time and space. Wavelet representations have finite energy over the entire real line. The functions used in wavelet analysis have wide support. More importantly, they are not necessarily homogeneous over time. Hence, wavelets are a very powerful tool in handling dynamic patterns that may change rapidly over time.

Wavelet decomposition of the signal allows to delete a noise and to make a forecast. Neural networks and SSA [9,10] method are used to make the forecasts in the considering research.

A number of assumptions and significant simplifications, demonstrating the properties of the study through the experience, generalization, getting significant data from the redundant information are made in the process of neural networks definition. Neural networks can change their behavior depending on the state of their surrounding environment. After analyzing the input signals, the neural networks can self-adjust and train to provide the correct response. The trained network can be stable to some deviations of output that allows the correct identifying of the image that contains a variety of barriers and distortions.

The basic version of SSA method is to convert a one-dimensional time series in the multivariate one using one parametric procedures of the shift and to research the received multidimensional procedure using the method of

principal components (singular decomposition) and reduction (approximation) of a series by selected principal components. Thus, the result of the method is the decomposition of time series into simple components: slow trends, seasonal and other periodic or fluctuation components and noise components. The resulting decomposition can be a basis for the forecasting of both the time series and its individual components.

The research was conducted by analyzing non-stationary time series of logarithmic stock index returns for the period from 08/01/2007 to 11/01/2011 (1200 points). Stock index returns were calculated on the basis of closing prices, their absolute values were used as a measure of volatility. There was experimentally obtained, that the dis-

crete wavelet transform in the application of wavelet sym2 with 5 level of decomposition defines the best phase transitions of systems.

As a result of research, indexes were grouped into two clusters depending on the amplitude and characteristic features of the wavelet decomposition components. The first cluster includes indexes DAX30, FTSE100, WIG20 and CAC40, their approximation series amplitudes (except DAX30) are in the range from -10 to +10. Figure 1 presents the components of signals recovered by the approximation coefficients after the decomposition DAX30, CAC40, FTSE100 and WIG20 returns using wavelet sym2(5). There is a small instability zone of specified indexes in late 2007, followed by an abrupt sharp decrease of returns in mid-2008.
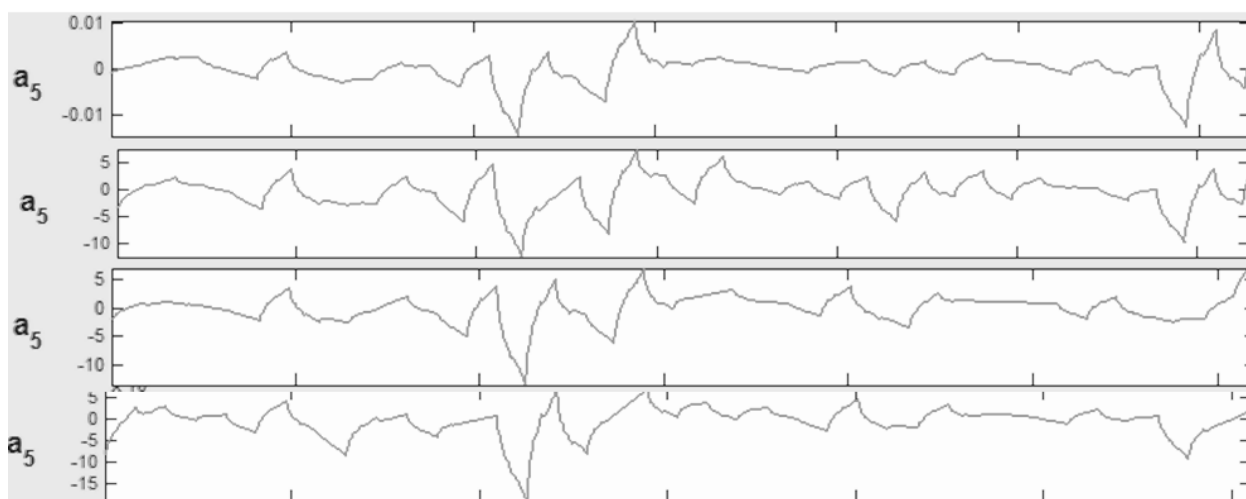

Fig. 1. Trend charts of DAX30, CAC40, FTSE100, WIG20 returns, recovered by the approximation coefficients at the 5th level of decomposition

Source: authorial calculation

Let us characterize the local features of individual indexes. FTSE100 index has a more international character than DAX30. Therefore, FTSE100 is over DAX under the condition of cheap pound sterling, falling interest rates, low levels of economic growth and decline of world stock markets. It is well known that DAX has more volatility than FTSE100, but the amplitude of fluctuations of FTSE100 returns is greater than the scale of fluctuations of the German index returns (from -10 to 5 and from -0.01 to 0.01, respectively). This result does not contradict the general trend, because there is an increased volatility of decomposition com-

ponents recovered by detail coefficients at different levels. In addition, the indexes repeat trends of each other with some slight time lags. Usually DAX is more cyclical than the FTSE100, since its dynamics is highly dependent on German exporters and the European Bank policy.

The second cluster consists of Ukrainian UX and Russian RTSI. The German index has added to the graphs in Figure 2 because of the similarity in the amplitudes of the fluctuations of trend component. In this case UX and RTSI have some similarity, namely, the Ukrainian index follows the trend of Russian index with a certain time lag.
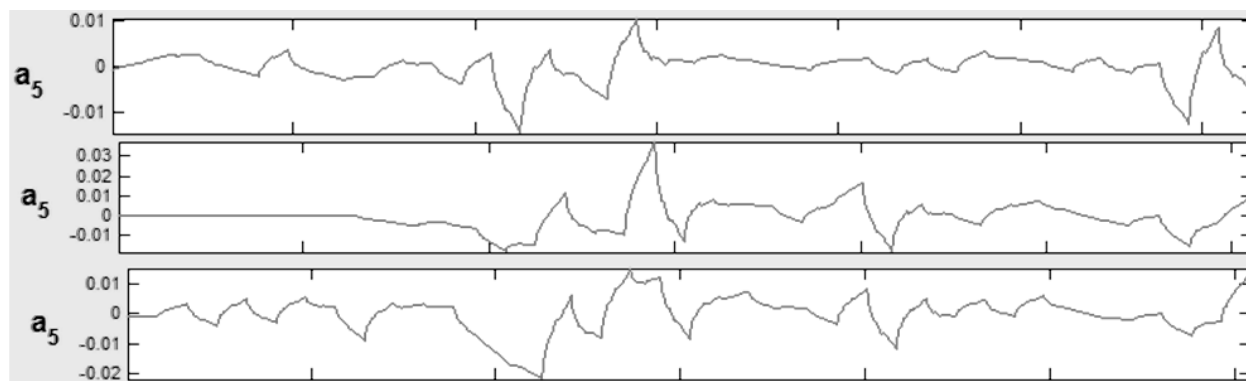

Fig. 2. Trend charts of DAX30, UX, RTSI returns, recovered by the approximation coefficients at the 5th level of decomposition

Source: authorial calculation

UX and RTSI are beginning to fall sharply in the summer of 2008. Besides, the decrease of RTSI returns is deeper than the decrease of UX returns and held before. This is a consequence of sharp decline of oil prices, which is the engine of the Russian economy, and of oil prices attaining a 12-month minimum in October 2008. In March 2010, a small returns decrease of both indexes also was observed, that coincided with the Parliamentary elections in Russia and political instability in Ukraine.

The application of the method of window transformation at all scale levels by DWT of research signals confirms the conclusions made above about the nature and characteristics of the identified crises' waves in the stock markets. Figure 3 presents the dynamics or volatility of returns of FTSE100, DAX30, CAC40, WIG20 on the third level of decomposition. The dynamics has a clearly defined variance wave for all indexes and another zone of instability for the CAC40 and DAX30 with further sharp increase of variance for all indices at end of period. A similar picture is observed at other scale levels.
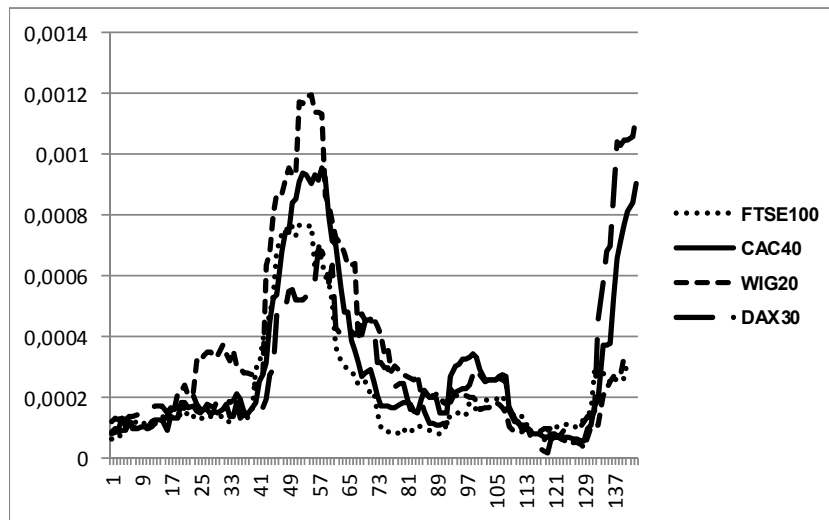

Fig. 3. Smoothed squares of detail coefficients at 3-rd level of decomposition for indexes DAX30, CAC40, FTSE100, WIG20

Source: authorial calculation

Figure 3 represents the time frame match of the first wave of crisis in all countries of the cluster that became apparent in March 2008. It should not be considered the first fluctuation of the Polish index, which was held in July 2007. The fluctuation was a result of Poland and Ukraine declaration as the two countries for Euro 2012 that greatly improved the investment expectations.

A similar analysis was performed for the second cluster together with the Polish index to compare the effectiveness of economic policies of the last 20 years. The dynamics of volatility returns of UX, RTSI, WIG20 on the third level of decomposition is presented in Figure 4.
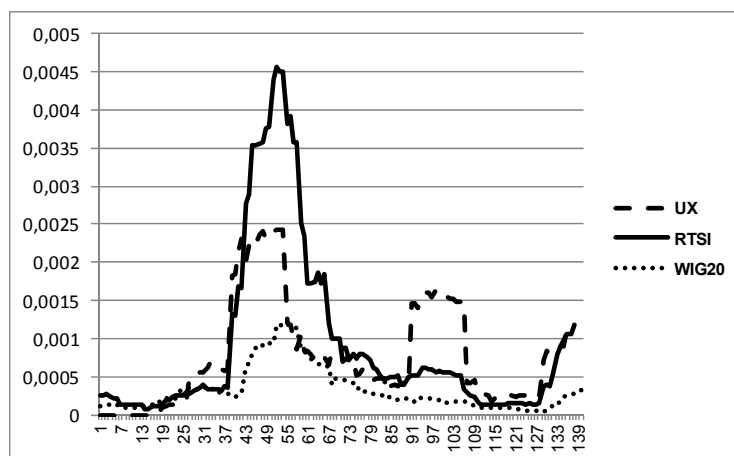

Fig. 4. Smoothed squares of detail coefficients at 3-rd level decomposition of UX, RTSI, WIG20

Source: authorial calculation

Figure 4 shows that neither Poland nor Russia had clearly expressed the second wave of crisis. In the Polish case it is due to its successful economic reforms. The lack of significant instability in the Russian market is a result of the strong dependence of the Russian economy on the current prices of commodity (oil and gas). The second wave of crisis in Ukraine started in mid-September 2010, the increase of consumer prices and high debt economy were observed in this period.

The modified method of forecasting of stock index returns based on wavelet decomposition, neural networks and SSA method are considered. Calculations were performed using the package Matlab, Alyuda NeuroIntelligence 2.2 (577), CaterpillarSSA 3.4.

In the first forecasting case, the maximum scale of the historical time series was selected to build the forecast of closing price for the next day. The maximum scale of the time series influences on the forecasted value, which has reserve of 32 trading days. Multiple scale wavelet analysis was conducted for the sliding window of length of 32. The selection of components of the vector of wavelet coefficients, which most affect the predicted value, was conducted on the base of calculations of the absolute value of the corresponding linear correlation coefficient. The neural network with one hidden layer was used to make the forecast. The most significant wavelet coefficients were the input of network, and the forecasted value of returns was obtained as an output.

In the second forecasting case, the noise component was deleted from the signal using the selected wavelet in order to forecast the returns of stock indexes. The procedure of noise deleting was performed by filtering the coefficients of wavelet decomposition and further recovery of series using significant coefficients. Then the denoised signal was processed by SSA.

German index DAX30 has been selected to demonstrate the proposed forecasting method. Experimentally it was found that wavelet db4 with two levels of decomposition was the best for this case. There is a forecast of DAX30 returns based on sym2(5) and db4(2) decomposition to demonstrate the need of informed wavelet and level of decomposition.

Figure 5 shows the graph of the dynamics of DAX30 returns and different forecasting results of the application of neural networks and SSA method.
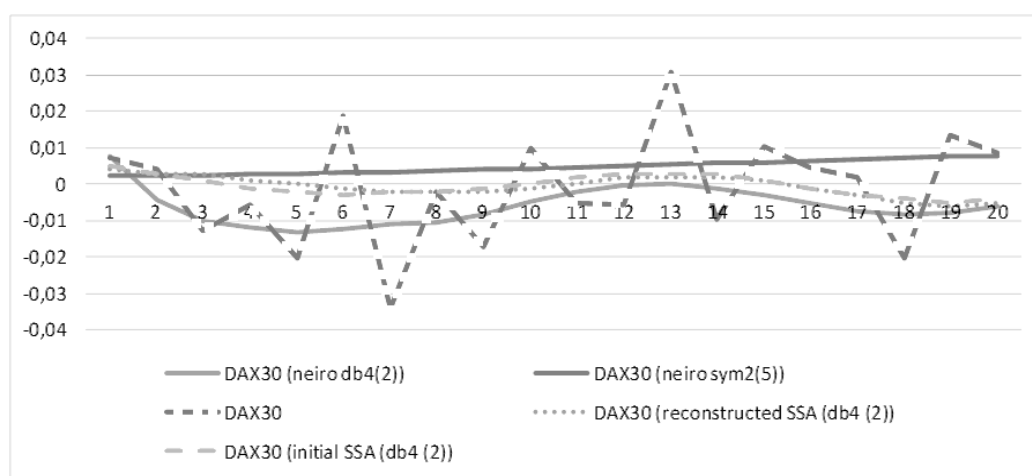

Fig. 5. The dynamics of DAX30 returns and forecasting results

Source: authorial calculation

Figure 5 shows that the using of sym2(5) wavelet gives a less accurate value than the decomposition by wavelet db4(2) in the process of neural networks forecasting. A similar result is observed when SSA is used. The best forecast, in comparison with real data, was obtained by using of neural networks for the signal, which if free of noise under wavelet db4(2).

We live in an era when the astronomical amount of speculative money turns at the world market. This process is based not on fundamental but on technical analysis, which is hardly affected by macroeconomic indicators. Therefore, fluctuations of stock indexes (including their returns) ceased to be reliable indicators of macroeconomic processes.

The question of the second wave of global crisis is urgent, because the situation at the financial sector of the world economy does not only not improving, but rather continues to deteriorate in some areas. There are reasons to believe that these problems are the result of superficiality and lack of the stated reforms. At the same time there is the tendency of correction of the foundations of economies, which wavered, without using of cardinal measures.

The conducted research focuses two clusters of stock indexes that are similar by the returns dynamics. The first cluster includes DAX30, CAC40, FTSE100, WIG20, and the second cluster includes RTSI and UX. It should be also noted that the local characteristics of each stock index are clear defined despite the close relationship between the considerable indexes.

The paper considered a comprehensive application of wavelet transform and neural networks of the problem of stock index returns forecasting. The best results are obtained by using the forecasting capabilities of neural networks, the input of which is time series, previously deprived of the noise component using properly chosen wavelet transform. The obtained results allow to forecast the value of stock index returns in the short term under very high accuracy.

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GOVERNMENT DEBT MANAGEMENT IN UKRAINE: IMPACT OF EUROPEAN DEBT CRISIS

Остання глобальна економічна криза, дуже повільне віднослення та поточна боргова криза в Європі підняли фундаментальні питання в сфері макроекономіки та економічної політики. Наслідки, з якими заткнулися всі країни, вимагають нових теоретичних підходів для їх подолання. Це означає, що традиційні теорії не можуть надати нам рецептів для розвітку ефективної макроекономічної та фінансової політики. Стаття присвячена ідентифікації ступеню впливу поточної боргової кризи в Європі на процес управління державним боргом в Україні. Необхідно визначити ступінь впливу фінансових проблем в ЕС на економіку України, що дозволить нам актуалізувати підходи управління держборгом.

Ключові слова: глобальна криза, Європейська криза заборгованості, економіка України, своп кредитних дефолтів, основні показники заборгованості, вплив боргової кризи на економіку, міжнародні інвестиції, міжнародна торгівля, дефіцит бюджету.

Последний глобальный экономический кризис, весьма медленное восстановление после него и текущий кризис задолженности в Европе подняли на поверхность фундаментальные вопросы в сфере макроэкономики и экономической политики. Последствия, с которыми пришлось столкнуться всем странам, требуют новых теоретических подходов для их преодоления. Это означает, что традиционные теории не могут предоставить нам рецептов для развития эффективной макроэкономической и финансовой политики. Статья посвящена идентификации степени влияния текущего финансового кризиса в Европе на процесс управления государственным долгом в Украине. Необходимо определить степень влияния финансовых проблем в ЕС на экономику Украины, что позволит нам актуализировать подходы управления госдолгом.

Ключевые слова: глобальный кризис, Европейский долговой кризис, экономика Украины, своп кредитных дефолтов, основные показатели задолженности, влияние долгового кризиса на экономику, международные инвестиции, международная торговля, дефицит бюджета.

The last global crisis and the weak recovery that has followed, the current debt crisis in Europe raise fundamental questions concerning macroeconomics and economic policy. The complications of the recent outcomes require new theoretical approaches to cope with them. It means that traditional theories will not give us the recipes and will not allow developing efficient macroeconomic and financial policies. The paper is devoted to identification of the depth of recent financial crisis in Europe onto the government debt management in Ukraine. It is necessary to identify the level of impact of the financial problems in European Union on to the Ukrainian economy, which will allow us to update the main patterns for the government debt management.

Keywords: Global crisis, European debt crisis, economy of Ukraine, credit default swaps main debt indicators, impact of debt crisis on economy, international investments, international trade, budget deficit.

The last global crisis and the weak recovery that has followed, the current debt crisis in Europe brought up fundamental questions concerning macroeconomics and economic policy. Complexity of the recent outcomes requires new theoretical approaches to cope with them.

It means, that traditional theories will not give us the recipes and will not allow developing efficient macroeconomic and financial policies.

The paper is devoted to identification of directions and size of impact of recent financial crisis in Europe on the government debt management in Ukraine. It is necessary to identify the level of impact of the financial problems in European Union on to the Ukrainian economy, which will allow us to update the main patterns for the government debt management.

There are a huge number of theoretical and practical researches have studied spillovers from the financial system to the economy in general using models with financial imperfections. A subset of researches focuses on the "financial accelerator" and argues that the amplification and propagation of a credit shock operates through information asymmetries between lenders and borrowers and a balance sheet effect.

An increase in asset prices pushes up the net value of firms, wealth of households or countries, and improves the capacity to borrow. Through general equilibrium effects, this dynamic then leads to further increases in asset prices. In this way, strong balance sheets in boom periods may lead to lending against inflated values of collateral. In a recent contribution that does not include a financial accelerator. Mendoza (2010) studied how fluctuations in asset prices can affect the value of collateral required for international funding. Output falls when the economy becomes overleveraged and access to working capital financing is reduced.

Of course there are additional reasons why credit growth and quality are pro-cyclical aside from a financial accelerator.

The main impacts of the European debt crisis on the Ukrainian economy are the following:

Trade impact

• Reduction of the volumes of international trade. As far as EU is one of the main trade partners of Ukraine.

• Deterioration of the trade balance as the results of export reduction, which is the consequence of Euro depreciation, decrease of purchasing power in EU.

Investment impact

• Reduction of investments in Ukraine both foreign direct investments and portfolio investments. Investments in Ukraine were of high risk even before, and the risk aversion of European investors will be even higher. European Union accounted 78,9% of foreign investments in 2011. So, any reduction from the EU investors will have a negative impact on the further development of Ukrainian economy.

• Activity of European based banks in Ukraine became more conservative, which is cased by a number of reasons where one of them

Current forecast for the second wave of the global recession would have a significant affect on the Ukrainian economy. The main reasons were the dominating market trends, which similar to those ones, which had been observed I 2008. However, the source for the financial crisis in 2008-2009, were the excessive private loans in USA, but in the current situation the reason is the governmental debts in European countries [3].

IFM changed the assessments of world economy development indicators to reduce the numbers: from 4,4% in April to 3,8% by the end of the 2011. International rating agencies reduced the credit rating for many European

countries and in August 2011 Standard & Poor's reduced the credit rating of the USA from the top AAA to AA+ with negative prognoses [1].

Debt problems of developed countries, slow down of rates of world economy development and significant deterioration of future expectation, determined the instability on international financial markets and outgoing trends of capital flows from the developing countries into the developed countries.

Limitation of accessessability to the financial resources on the international capital markets is combined with costs of borrowing for any type of borrowers. For example, Italy placed the 10-years bonds at 7%, and 3-years notes at 8%. However, in June 2011 the Ukraine (Ministsty of Finance of Ukraine) manged to place 5-years bods of 1.25 billion USD at 6,25% with the format "144A/Reg S" [4].

Table 1. Debt Indicators of EU Countries, %

Рік	Debt to GPD Ratio, in euro	Debts in other currencies (other then euro) to GDP	Residents debts, in the GDP	Non Residents debts, in GDP
2011	77,9	0,8	36,6	42,2
2010	68,6	0,7	32,5	36,8
2009	65,4	0,5	32,1	33,9
2008	67,7	0,6	33,8	34,4
2007	69,1	0,9	35,5	34,6
2006	68,6	0,8	37,5	31,9
2005	68,1	0,9	39,3	29,8
2004	66,7	1,3	39,9	28,0
2003	66,7	1,5	41,8	26,4
2002	67,4	1,8	44,0	25,2
2001	69,9	2,0	48,7	23,3

Source: Created based on ECB data [4]

In EU countries and other countries, similar to Ukraine who invest a lot of money to save their banking system the debt pressure on the govenrment finance increased dramatically. Lack of ability to pay off the mandatory debts payments (interest plus loan) with the reductiona of ability to re-structurize the debts causes the increment of bods' yields and costs of insurance via credit default swap contracts.

The highest ratio of Govenment debts to GDP were in Greece (145 %) and Italy (118,4 %). The bigggest budget deficit to the GDP had Ireland (–31,3 %) and Greece (–10,6 %). Also, 14 out of 27 EU countries and 12 out of 17 countries of euro zone exceed the Maastriht's criteria of convergension.

Financing of budget deficit via the loans increase the debt pressure on the EU countries and, as a result forces investors to re-estimate their risk tolerance to the government bonds investments. For example, by the November 2011 the yield of 10-years bond in Greece increased by 2 times and reached 31%, Portugal – 12,1%, Ireland – 8,33%, Italy – 6,24%, Spain – 5,53% ("PIIGS" countries). Bods issued by those countries have the highest yield but they have the biggest problem with their debts services.

Along with the government bonds yields the spreads for credit default swap (CDS) also increased and as a result the indicator of probability of default. In the case of 5-years CDS the difference of 10 ppt in the cost covering of 1 mln USD loan will costs 10 thousands USD.

The main indicators of health of world economy are the stock market indicators. Reduction of exchange indices is claimed to be the first attribute of the future second wave of crisis. And pre-default state of Italy, Spain, Greece, Portugal and others just support this thesis. USA is also in the difficult position in respect to the lowering of its rating, which affect the all US businesses. China might be significantly affected due to lowering purchasing power in EU and US. This will causes a lot of problems for any country, which depend on their market, including Ukraine [1,4].

Traditionally Ukrainian stock market trends tend to emulate the US or EU trading flows, but the fact the size of Ukrainian market is quite insignificant means that any reduction in developed countries minimizes the volume of trade in our country. So, it will have a negative effect on Ukrainian companies, particularly on public ones.

European debt crisis causes the depreciation of euro. This fact will reduce the competitiveness of the countries, whose export is EU oriented, also, the value of euro transfers to Ukraine (for example, from migrants) is also decreasing.

The next negative effect will be caused by the fact the largest investor in Ukraine is EU. The volume of FDI from EU to Ukraine on the 01.01.2011 was 35,2 bln USD, which is accounted 78,8% of the total volume of FDI Main investors (accounted 82% of EU investments) are Cyprus, Germany, Netherlands, Austria and France. The positive fact is that there are no countries with the greatest debts problems among main investors.

European banks are already reduce their activities in Ukraine, which they explain with the debt crisis in EU. However, this is not the only reason, among others they name the low level profits or even losses they had in Ukraine, unclear prospects of the economy, complex legislation and corruption in justice system, which speed up the migration out of Ukraine by European banks.

In the same time ECB prognosis the prime refinancing rate for 2012-2013 at 1%, which is relatively safe and its stability reduces risks and allows making other forecasts.

Table 2. Main economic indicatior of EU coundtries

	1Q12	2Q12	3Q12	4Q12	2011	2012	2013
Real GDP growth, %	(0,7)	(1,1)	(0,5)	0,0	1,5	(0,6)	1,2
CPI	2,6	2,5	2,6	2,2	2,7	2,5	1,7
Budget Deficit (% GDP)					(4,4)	(2,5)	(2,2)
Unemployment level, %	10,7	10,9	11,1	11,3	10,2	11,0	11,5
Re-finance rate of ECB, %	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Yield of Germain Govenment 10-years bond	1,75	1,65	1,50	1,75	1,83	1,75	2,50
$/euro	1,25	1,20	1,23	1,25	1,31	1,25	1,30

Source: create based on Nomura Global Weekly Economic Monitor 23rd March, 2012 [5]

In the second quorter 2012 the rate for the GDP growth will be the lowest and will be 1,1%, and will be 1,2% in 2013.

Such prognisis directs us to the conclusion that 2013 will the the year of enhancement of the situation with debts of some countries in Europe.

The crisis in EU will affect both trade and investment areas and as a result will have a negative effect on the hyrivna's exchange rate. However, EU remains the main strategic partner for Ukraine.

Negative implications of government debts on the economy can be grouped into the following blocks:

1) Dependency of national economy on countries – lenders, international organizations and non residents, who are buying govenmental bonds. Such problem is important as far as it is hard to predict non residents' behaviour, financila system became dependant on the lenders requirements (cut down of social programs, level of budget deficit, etc.) and can case the inbalance of financial system.

2) Existing of significant governmental debts. Such problem is related to the necessity of serving the foreign debts. Annual increment of outgoing payments, which are financed by the tax income, will cause either the reduction in other govenmental programs financing, such as isocial and economic programs or increase of tax rate. Such situation can impalance the budget system.

Positive impact of foreign debts will be caused by the ability to use them as a source of investments under effetive budget mechanizm, which implaies considering of exchange rate dynamic and purchsing parity assessments on the local and foreign markets.

Conclusions. Consiquences of foreign debts impacts on the macroconomic of Ukraine proove the necessity incorporate the ratio of government debts along with other indicator under development of balanced strategy of economic growth. There are 2 groups of indicators: indicators, which reflects flows and indicators, which reflects balances.

Crisis in EU does have a significant negative effect on the current and future development of Ukrainian economy. Investments in Ukraine were quite risky even before crisis in Europe and it became even less attractive for most of European investors, who do not want to take such risks. Cutting down of foreign investments will cause the deterioration of economic growth and this will cases the living standards in Ukraine. However, EU remains to be the main partner, but the role of each country must be defined by its possibilities for mutual beneficial cooperation.

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