2.

Economics and Financial Markets

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THE MOST SIGNIFICANT FACTORS THAT WILL AFFECT THE DEMAND FOR REAL ESTATE MARKET OBJECTS IN LATVIA IN THE NEAREST FUTURE

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Abstract. This paper describes the factors that influence and will influence in the future the demand for dwelling space in Latvia. The real estate market and its various segments develop cyclically. The length and deepness of these cycles is influenced by factors like the country’s economic situation, employment, income level, commerce bank crediting, country’s demographic situation and its development, as well as other factors. This paper outlines the possible link between these factors and the dwelling space market. Qualitative and focused identification and determination of these connections gives an opportunity to forecast the possible directions of development in this sector and can help inhabitants, real estate developers and the government in decision making.

Keywords: real estate market, real estate economics, real estate market forecast, real estate market cyclical structure.

Introduction

The real estate market in Latvia has developed very rapidly already since the end of nineties. During this time real estate market has gone through different scenarios of development including rapid price growth, rapid price drop, development of new real estate objects and increasing activity of commercial banks, and other activities. In the last decade the real estate market in Latvia has gone through a full cycle of real estate market development starting from growth phase, then reaching the peak, followed by recession phase which led to the lowest point and then returned to the growth phase again. The cyclical development of the real estate market, the length and depth of these cycles depend on the actual environment in which the real estate market operates. This environment determines the market price as it influences where the demand and supply equilibrium is located.

The real estate market is a significant sector of the national economy. Real estate objects are used daily by all inhabitants, thus the latest developments in the real estate market affect the society as a whole, as well as the economic situation and business environment in the country. In year 2010 real estate transactions constituted to 18.9 % of GDP, which only partly shows the significance of this sector.

This paper examines the market of dwelling space or dwellings in Riga. Although, the dwellings market also could be further divided into segments like flats in apartment houses, private houses, and terraced houses, for the purpose of data analysis authors have chosen only block apartment market in Riga. However, the market price and development trends are similar in all the segments.

Authors describe the possible effect on the dwellings market of various factors including income level, employment, crediting, demographic situation and the government policy.

The aim of this paper is to draw attention to the factors that influence the real estate market dwellings sector, and to the fact that understanding these influences could facilitate a qualitative and sustainable development of the dwellings market, and be useful in decision making both in private investing, and at the state level, as well as could increase the understanding of the Latvia’s real estate market among stakeholders.

This paper is a scientific report of the studies which were performed during doctoral thesis about the factors that are influencing the real estate market in Latvia.

1. The cyclical structure of real estate market and factors influencing it

The real estate market includes different market segments one of the most important of which is dwelling space market. The real estate market has a tendency to develop cyclically which is also the case with the dwelling space market. However, a more important aspect than cyclical development is a tendency to react to changes in the macro environment. Such changes can cause this cyclical development in the real estate market. Cyclical fluctuations can be influenced either by one factor or a group of factors which suppress or on the contrary reinforce each other. The cyclical fluctuations in the real estate market draws attention with the fact that price fluctuations can be significantly more volatile than changes in the factors that influence these fluctuations. Prices in the real estate market have a tendency to overreact: in optimistic circumstances they tend to be noticeably higher than the optimal price while in pessimistic moments they tend to be much lower than the optimal price.

The optimal market price can be taken as the fundamental price or real estate replacement price which would ensure demand and supply equilibrium. In reality the real estate market can not react fast enough to changes in demand that cause price fluctuations. Real estate market participants can not react fast enough to these changes because developing a real estate object can take years. Hence, there is no supply and demand equilibrium during this time and it is likely that insufficient supply will be replaced by overheated supply.

Many researchers of the real estate market have tried to determine the factors that influence real estate market prices, though there is not a one right formula or answer to this question as each region has its specific features, which can influence supply and demand factors. To determine which factors will influence the real estate market in the future one can analyse the factors that have influenced real estate price fluctuations in the past. However, there is a possibility that historical factors can have little or no influence at all in the future. Possible scenarios of the real estate market development have to be considered in a context with the overall economical development as well as the fact that economics at the state level develops as one whole and changes in one of the factors to some extent will definitely affect the overall situation.

By investigating the development of the real estate market in Latvia together with the factors that influence it, conclusions were drawn that the most significant factors that influence the prices in the real estate market in Latvia were the amount of issued mortgage loans, income level, employment, government decisions and policy, inhabitants’ expectations and others. Although, in the previous years no direct correlation between the real estate market prices and demographic situation in the country can be observed, it does not mean that demographic situation does not affect this market. It shows that other factors have been stronger. In the future the influence of this demographic factor can become more apparent.

The economic and demographic factors that affect the level of demand are as follows:
1. Net household formation;
2. Age composition of the household;
3. Household income;
4. Credit conditions;
5. Prices of substitute units;
6. Ownership costs;
7. Expectations about the future;
8. Seasonality.²

The real estate market is not influenced only by the factors that are connected with country’s economic situation. Another very important factor which affects acquisition of real estate is the mood and future expectations of inhabitants. Real estate is a durable and essential good at the same time, but unlike with other essential goods people buy it only when they have positive expectations about their future income. The real estate market depending on its type and value can be also a luxury good. Different real estate react differently to the macro environment but in the long run the real estate market can be influenced by the society as a whole, culture, climate and also other factors which are not directly connected with the economic environment.

In a way the decision making body influence of the government and local authorities is unpredictable or at least hardly predictable on the real estate market, as their decisions can be completely unexpected as well as restrictive or on the contrary growth stimulating with an aim to adjust or change completely the direction in which the sector is developing. It can be unpredictable because the previous possible directions of development where forecasted using the policy of the government and local authorities at that exact time. Impor-

tant decisions at the state level that are incorrect can strongly damage sector’s growth opportunities and have a significant impact on the industry’s profitability indicators.

It can be very useful to know which factors and in what way influence the development of the real estate market for various stakeholders in the real estate sector. It can be beneficial for developers who have to decide where to invest based on forecasted investment profitability indicators. Prices of objects in the real estate market are very important for consumers, the main users of these objects because they directly affect the amount of money spent on acquiring some particular real estate. If we look at one individual, the price of a particular real estate object will not affect the sector overall, however, the average price in all real estate market can leave a significant impact on the national economy. If we look from a perspective to have a sustainable development of the national economy, it is desirable to have prices in the real estate market close to their fundamental values. Too high volatility can lead to bankruptcy of some households or increase the probability of insolvency. However, real estate market investors earn from these price fluctuations, hence high volatility ensures good profitability. All stakeholders in the real estate market benefit or on the contrary are made worse off from these price fluctuations, thus they all will be interested to know how the sector will possibly develop.

2. Real estate market in Latvia

Latvia as well as other Baltic countries does not have a long-lasting tradition in the real estate market. It has been just twenty years since they regained their independence and only in this time one can talk about the development of the real estate market which had a more rapid growth since the late nineties. During this time restarted its development filling the market with new dwelling spaces, yet it is still just a small part from all real estates.

Since the end of nineties and more actively since the second half of 2004 after Latvia entered the European Union, Latvian real estate market was flooded with additional financial resources. The strong competition between commercial banks and activity in mortgage crediting provided citizens in Latvia with cheap loans which ensured an increasing demand for dwelling spaces. Dwelling space supply could not absorb the rapid demand growth, hence prices increased. In some months they increased by around 5% summing up to a 60% yearly price growth in several real estate sectors.

Real estate prices grew in all dwelling space market sectors. For example, block apartment market prices in the period from 2000 to April 2007 when this market segment peaked, increased sevenfold from 250 euro per square meter in 2000 to 1720 euro per square meter in 2007. After they peaked real estate prices dropped again and reached the lowest point in September 2007 starting to gradually grow again. In September 2009 the average price of block apartments in Riga was 480 euro per square meter, now it is around 600 euro per square meter. In other real estate market segments the price development was similar.

![Fig.1. Commercial banks’ credit portfolio given to households, credit portfolio changes](image-url)

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Mortgage lending development in Latvia cannot be seen as the only factor that influenced dwelling space market prices and demand in the sector; mortgage lending was more a tool that allowed it to happen. Of course, without mortgage lending it would not have happened. The main reasons that created demand for dwelling space were improvements in the standard of living, increase in the average salary, which only partly shows in the official statistics as at the same time happened a sizeable income legalization, decrease in unemployment rate, more optimistic expectations about the future as well as overall improvements in the economic situation at the country level.

The desire to improve life conditions was well grounded when the income level increased and crediting became more accessible as large part of all dwelling spaces consisted of deteriorated buildings that did not meet the preferred level as well as the average level in the European Union by their standards and dwelling space per square meter. In Latvia there is around 27 m$^2$ of dwelling space per inhabitant. That is 30% less if compared to the old EU member states where dwelling space per inhabitant is around 40 m$^2$. In order to increase the average dwelling space to 40m$^2$ per inhabitant the total dwelling space in the country should increase by 50% which is around 30 million square meters. To compare, from 2000 to end of 2009 total dwelling space increased by 7.6 million square meters. However, the amount and quality of dwelling space in old European Union member states is not a factor that stimulates demand for additional dwelling space. The emphasis is on the fact that people in Latvia live in relatively smaller dwellings which is marked by the desire to increase life conditions in the previous years. Still, the recent economic crisis has changed priorities of inhabitants which reflect in the real estate market prices.

A study made by Eurostat shows that 57.7% from all inhabitants in Latvia live in narrowness, comparatively 49% in Lithuania and 41.2% in Estonia, while for example in Ireland this indicator is 3.7% and in Germany 7%. Relatively high number of people living in narrowness is also in Rumania 55.3%, Poland 49.1%, Bulgaria 47%, Italy 23.3%, and Greece 25%. A satisfactory dwelling space standard is set to be: one shared room in the household, one room for each couple living in the household, a separate room for each person that is of full age, and a separate room for each child (though, it is also allowed that children of one sex that are younger than 12 can share one room). In Latvia 25.7% of all inhabitants live in a dwelling with inappropriate hydro isolation, 10.9% life in dwellings with insufficient lighting, 16.6% do not have flushable toilets, and 18.2% dwellings do not have a bath or a shower at all.

If we look in European Union context, in Latvia more inhabitants than anywhere else live in apartment houses – 66% of all inhabitants, 29% live in private houses while 4% live in terraced houses or twin houses. The most similar situation in this aspect is in Lithuania and Estonia where around 65% of all inhabitants live in apartment houses.

The relatively high number of people that live in narrowness together with the relatively lower indicators of life quality is one factor that in the future could positively affect the demand for dwelling space when income level and future expectations will improve.

3. Factors that influence the real estate market

As mentioned beforehand the cyclicality of the real estate market and the turning points as well as the length and depthness of these cycles can be affected by various economic, social, and other factors. The influence of each of these factors at every single moment depends on how the real estate market reacts.

3.1. Income of inhabitants

Objects in the real estate market and their dwelling space are among the goods or services that are bought by households or certain individuals. Household income consists of wages, social benefits, pensions, and other payments from the state budget, as well as dividends, percentage payments and others. All these types of income together form distributable income that each household possesses. However, we have to remember that there are also unregistered flows of money and also shadow economy. A large part of inhabitants still earn their income on hand without paying taxes but still allocate them for buying consumer goods and real estate or paying rent. When evaluating the real estate market as a whole an important factor is the amount of money that inhabitants are ready to spend for usage of dwelling space and acquisition of real es-

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5 Visciešā kopdzīve – Latvijā. Lietušā Diena.2011, No. 11 (201)
6 Eiropieši dzīvo – vizuālais stāsts. Lietušā Diena.2011, No. 9 (199)
The total amount of money can affect the overall demand, hence an increase or a decrease in the income level have inverse effects on real estate objects.

The income level and changes in it currently is and will continue to be a significant factor that will affect demand for dwelling space because acquisition of real estate is a substantial purchase which is usually done when a person is sure about his/her income. The person also has to consider whether it will be possible to financially maintain the obtainable object. Such factors as public utilities payments, real estate taxes and other expenses connected with maintaining a property also affect the demand. By analysing income level relation with the real estate object price one can see a clear relation between the average market price of one square meter and the average salary in the region. The income level is connected with the ability to obtain a mortgage loan as well as the maximum amount that one can borrow. In this way average income level in the society affects the amount of money that is invested in real estate objects through mortgage loans which are provided by commercial banks. There is a significant correlation between the average wage and block apartment prices in Riga approving the influence of this factor on the real estate market.

3.2. Employment and unemployment

Unemployment is a notable social and economical problem of the national economics. Unemployment can affect economic and social processes in the country; hence it is an important factor which can affect people behaviour under certain circumstances. Unemployment affects decisions and actions of individuals as well as the society as a whole. Inhabitants connect employment and unemployment with their welfare. Unemployment also affects the social state and mood of inhabitants.

When people make decisions in everyday circumstances they base their decisions on their beliefs and the unemployment level or employment of an individual can be the key factor in making a decision. The desire to buy goods that would require a considerable amount of individual’s financial resources depends on the individual’s psychological state. High unemployment rate in the country psychologically negatively affects people mood, hence they could avoid purchases of expensive and unnecessary goods or considerably delay the acquisition of these goods as well as base their decisions on other aspects using price as the main factor in determining demand. Such pessimistic economical state that results from unemployment can lead to decreased demand for a certain group of goods in the country.

“Unemployment is the main problem of economics that causes widespread social and political resonance. Unemployment affects production volume. The direct costs of unemployment can be determined but it is rather hard to measure the social, psychological or moral consequences of unemployment.”

Unemployment is not just the economical and social state of a certain individual. It is a country level problem that affects processes not only for an individual but also for the national economy as a whole. When unemployment increases as some individual loses his/her job the demand is affected in the industries in which the particular individual consumed goods and services and also in the whole national economy, considering the fact that economic development acts as one entity and changes in one industry can influence other industries. The real estate market is not an exception here as unemployment affects it much more heavily than most other industries. Increase in the employment rate will have a positive effect on demand for dwelling space, while it is the other way round when employment rate decreases.

During the economic crisis unemployment problems affected Latvia severely. On average unemployment rate in the country increased from 4.8% in April 2008 to 17.3% in May 2010.

In the beginning of 2011 the unemployment rate was around 14%. Unemployment is not only a problem by itself; it is strongly connected with a decrease in the welfare of the society, high emigration and emotional state of inhabitants. State economics do not operate effectively when there is unemployment because human resource capital is not being used to the full extent, hence the gross domestic product is not being produced in its maximal possible amount which damages the national economy. Unemployment and employment are two of the most important factors in macroeconomics that have the biggest influence on the demand for real estate objects. In Latvia’s dwelling space market lowest prices have been recorded when unemployment rates were high.

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3.3. Demographic situation

Real estate is used, sold and bought by inhabitants. They affect the demand for objects in the real estate market and also the supply of objects in the real estate market. Demand for habitable and uninhabitable premises, which are needed for ensuring various processes, is dependent on the inhabitant situation in a particular area which is characterized by the region’s demographic situation. The demographic situation is one of the most influential factors that affect the real estate market, processes and forecasts in the real estate market. Also it has to be analysed as one of the influential factors when making a forecast for the possible development scenarios of some real estate sector.

To determine the effect of demographic situation on the real estate market one has to study the specifications of the particular region: the decrease or increase in urbanisation level, population’s age structure because people from different age groups may have different dominant actions towards the real estate market. The demographic situation is also connected with migration, which is a strong factor that in a relatively short period can considerably influence demand in the region. Emigration is one of the problems in Latvia. In 2009 more than 4700 people officially emigrated from Latvia, while the real number of emigrated people is much higher.

Latvia’s case is specific because the number of inhabitants is decreasing which is not typical for EU countries. As a result, the real estate market has to adjust to this situation. In 2009 the natural growth of population was -8220 people. In the last two hundred years the number of inhabitants in Latvia has decreased by more than 420 thousand. It has continuously decreased every year since 1990. The decrease in population could be explained by lower birth-rates, which were very common in the nineties, as well as negative migration balance.

Without inhabitants and a certain density of population the real estate market will not be able to develop in the long run, thus the development of the real estate market has to be adjusted to match the demographic processes in the region. If the real estate market will not be commensurable with the demographic situation in the country, real estate owners who will want to sell their properties can bear loses as the demand will be rather low. The positive aspect of this is that compared to other factors that influence demand in the real estate market demographic situation is the easiest to forecast. That should be put to use when creating real estate market forecasts. In the previous years there was not a significant correlation between changes in the

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number of inhabitants and real estate prices. However, such relation will exist in the future and will more and more affect operations in all industries because economy cannot function without people.

3.4. Crediting

A significant part of deals happen with the help of mortgage loans, thus there is a reason to believe that a mortgage loan with its expenses, terms, and proposals can influence deals of purchasing and selling real estate. During a time when there is a sufficient supply of mortgage loans and also an adequate demand for them, the real estate market is being positively stimulated. In a normal situation without rapid price increase or decrease the existence of mortgage loans is a factor that ensures price stability. At any given moment prices in the market already include the fact that money from crediting is flowing in the market. The real estate cycle fluctuations can be affected by actions that increase or decrease crediting. The real estate purchase and sale market is being stimulated when a loan is given to a person who previously could not acquire a loan or did not want to have it, while the same signals are negative signs for the real estate lease market. Negative signals for the real estate market can also arise if credit institutions for some reason limit or completely stop issuing loans. In such circumstances there is a money outflow from the real estate market that can result in a decrease in the real estate prices. Credit institutions can decrease the amount of issued mortgage loans based on many factors, for example, when the economic situation in country rapidly worsens or in a situation when the real estate prices in the market are considerably exceeding their fundamental price. Correlation between block house prices and increase in the amount of issued mortgage loans can be seen in figure 1.

3.5. Government decisions

When evaluating inhabitant demand for dwelling space in a country one has to take into account all the factors mentioned above that influence the demand. Another factor that has not been previously mentioned and can significantly affect the real estate market is government decisions and regulations directly relating to the real estate market. The evasion from them at least on an individual level is near to impossible. It is a positive sign if these decisions have economic grounds and they are really necessary, however, when looking at the speed and specifics of decision making, one can see that the bureaucracy can do more harm than good with unreasonable interference in the real estate market. An example is the government’s decision in 2007 as part of the plan to decrease inflation to introduce a mandatory first payment of 10% if one takes a loan in a commercial bank to acquire real estate. It is not a bad decisions but it was made when the real estate prices had already started declining. In Latvia real estate owners have faced also significant changes in the real estate taxation policy. In 2010 government introduced a dwelling tax to supplement government’s budget not to fulfil some regulatory role. That definitely resulted in a negative pressure on the overall demand. Moreover, in 2011 this newly introduced tax rate was doubled. We have to add that it all happens at a time when the average dwelling space per inhabitant is relatively low compared to other EU countries and also the quality of these dwellings is quite low.

Taxes and various regulations are very cumbersome factors in the development of the real estate market. However, an even more cumbersome fact is that these decisions in Latvia are completely unpredictable. Exploitation expenses as well as the quality of these properties for real estate developers, for potential buyers, and also for current owners can significantly change when affected by various regulations and taxes. As a result, the total demand and total supply can change their equilibrium and with that influence the average market price of real estate objects as well as change the direction in which the industry is developing.

Conclusions

The economic situation and the real estate market in the last years have developed very dynamically. There have been rapid price increases and decreases. The swift changes in the real estate market have largely come from the changing external economic environment because such factors as unemployment, gross domestic product, inflation, and commercial bank crediting activity during the past three years have been exposed to changes. These and other factors affect the real estate market resulting in further changes in both the number of transactions and the amount of money that circulates in these real estate market transactions. However, the real estate market can be affected also by political and social factors not only economic ones. The real estate market is subject to various government regulations and laws.

Understanding these factors that affect the real estate market and their effect can significantly improve forecasts about the direction in which this industry is developing and also the direction in which it should
develop. This understanding would also give an opportunity to ensure a sustainable real estate market development that would be compatible, for example, with the current demographic situation.

If the cyclical development of the real estate market is too severe, it can negatively affect the development perspectives of the industry and also the overall economic situation in the country as this industry is very significant in the national economy. The recent events with threefold price drop in some real estate market sectors act as a proof about what can happen if the real estate market development is not compatible with the macro environment and other important factors.

The main conclusion in this paper is that prices in the real estate market are affected by the existence of various economical, social and political factors and changes in them. The understanding of these factors and further usage of this knowledge in setting and forecasting the preferable direction of development can significantly improve the profitability of this industry and can facilitate a reasonable and sustainable development.

References

INVESTMENT PORTFOLIO OPTIMIZATION BASED ON GENETIC ALGORITHM

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Abstract. The paper describes creation and application of an investment portfolio. For the creating an investment portfolio is used technical approach supported by statistical analysis. Main aim of the paper is to perform statistical analysis of selected financial instruments and to find connections between the input data using application Adaptrade from Adaptrade Software Company. This application is based on genetic algorithms basis and is able to process this difficult task in real time. Application of genetic algorithms in developing a model of investment portfolio allows sophisticated analysis and searching of relevant information in the input data than standard algorithmic methods. Genetic algorithms find a more sensitive set of rules for entry, exit and management of speculative positions. The added value of the application of genetic algorithms is sensible setting of the investment portfolio parameters. The case analysis is performed for three world currencies (U.S. dollar, Euro and British pound). The connections between the input data found by sophisticated statistical analysis are suitable for decision making in the financial markets for investment and speculations.

Keywords: optimization, artificial intelligence, genetic algorithms, evolution, foreign exchange, datamining

Introduction

The paper describes one of the ways of investment portfolio creation, concretely the application of active access to investments with the features of technical view for speculation.

The contribution aim fills the statistical analysis of chosen financial instruments with the aim to find the connection in input data. The analysis is fulfilled by the use of software (Adaptrade), which works on the basis of genetic algorithm. The application of genetic algorithms in financial decisions strats to interest nowadays a significant role.

The aim is to full the fastest and the most effectively generate the outgoings promoting the determination of financial experts on a field of worldmarket. Present ‘digital’ period offers a notation of a great deal of data and search of commentions of algorithmic methods starts to be a very difficult as long as unsolvable task. Here starts to play a significant game the genetic algorithms, which accelerate the period of finding the optimal solution of engaged tasks.

Efficiency and speed of finding the optimal parameters of the investment portfolio allow sophisticated analysis of input data and find relevant connections in input data. The inefficiency of standard algorithmic methods don’t allow a thorough analysis of input data and the application of genetic algorithms seems to be a suitable solution. Genetic algorithms find a more sensitive set of rules for entry, exit and management of speculative positions of investment portfolio.

1. Investment portfolio

Investment portfolio is maybe to define generally as a set strategy of capital connected to one unit. The partial strategy of this set in ideal case diversificate the risk of different access of a separate investment realization. Acceses, how to form an investment portfolio, there are many. Generally it is possible to quantify it in to two basic groups – passive and active access.
Passive access is the situation, when the investor makes his portfolio from the products offered on the market of banks and funds. Nowadays exits many products offering an annual value reaching about 2-10%. Specify of this type the investment is that the investor insert the capital on a bank account of given financial authority and of the separate investment realization it does not already care.

Active access is the situation when the investor individually on the basis of his experience gains the information (diversified business strategy) to investment decision. This access is very difficult, but on the other hand offers relatively high rate of annual investment evaluation. Investors working with an active form of their capital can also use the two main access to investment strategy formation.

The first access, so-called fundamental access, puts together strategies on the basis of issued fundamental reports. As an example of this access it is possible to show the reactions of worldmarkets on proclamation of fundamental state of the employment of the United States of America the first Friday in a new month. There are issued tens of fundamental reports daily and it is up to the investor to which reports assigns his relevancy.

The second access, so-called technical access, basically differ from the above mentioned, because the investor does not follow any fundamental reports, but he follows only the price, its moves and the mathematical transformation in the form technical indicators.

There are generally two possibilities, when the investor at the investment decision prefers gained feeling for price moving and of technical indicators. The second possibility is to take an advantage of the statistical analysis supported by sophisticated calculations for example by a type of correlation or cointegration by using the programming applications.

The intermediate stage between an active and a passive report is in the conditions of the Czech republic not really known service business signals shopping. The investor subscribes at a company so-called ‘news letter’, when he gets by an e-mail commands for shopping or selling of financial decisions from the specialist (expert). By this specialist we can mean a physical (legal) entity or a computer programme. If the appropriate investment step will be realized or not, it depends only on the investor.

The specificity for this type of access to investments is, that the investor actively manage his capital on the basis of input signals of specialist for investment decision. The above mentioned theoretical way out, related to the production of investment portfolio, presents the following picture 1.

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**Picture 1.** The basic principle at formation of investment portfolio.¹

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¹ Personal processing, 2011.
2. Genetic algorithms

The main algorithm of genetic algorithms is built according to the theory of Charles Darwin so, that in population live only stronger individuals – better solution of the problem. Each individual has its own genetic information, which is interpreted as its fitness. The individuals can crossover or mutate. The selection pressure ensures that in the population will increase stronger and stronger individuals from the time, when the population comes across an acceptable solution (intended in finishing condition – target functions), optimum (ideal solution) or local maximum (population unimproves in the long term), which will not be able to leave a general algorithm. The process of reproduction simply describes the following picture 2.

![Diagram of genetic algorithm process](image)

**Picture 2. Process of reproduction**

The most implementations of genetic algorithms work with the conceptions used in genetics, for example the conception chromosome. In human genetics is the chromosome defined as a functional complex of heritable record of genetic information in a cell, able of independent function at information transfer. At genetic algorithm the chromosome is represented by zeros and ones, i.e. binary representation. In this case are chromosomes represented by binary chain, for example 01100110. For the manipulation with chromosomes were designed some genetic operators, which are mainly selections, crossover and mutation.

At the selection goes about the chromosome choice, which became the parents. The important standpoint, which directly or indirectly asserts at the choice at least one parent, is its fitness. This so-called selection (table 1) describes the example, when the number 122 (binary 01111010) is bigger than 34 (binary 00100010), therefore the chromosome 01111010 goes in another generation.

<table>
<thead>
<tr>
<th>Selection</th>
<th>01110101 &gt; 00100010</th>
</tr>
</thead>
<tbody>
<tr>
<td>End?</td>
<td>Yes</td>
</tr>
<tr>
<td>Finishing</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1. Selection**


3 DOSTÁL, P., s. 87.
Crossover shows the parts exchange of two or more parents’ chromosomes, which causes modification of chromosomes, at which originate one or more descendants. This is so-called single point crossbreeding in table 2.

### Table 2. Crossover

<table>
<thead>
<tr>
<th>Parents</th>
<th>Descendants</th>
</tr>
</thead>
<tbody>
<tr>
<td>011001</td>
<td>0111001</td>
</tr>
<tr>
<td>011101</td>
<td>0110010</td>
</tr>
</tbody>
</table>

The mutation shows the chromosome modification, at which comes to random change. This activity occurs rarely in the nature. The mutattion is shown in table 3.

### Table 3. Mutation

<table>
<thead>
<tr>
<th>before</th>
<th>after</th>
</tr>
</thead>
<tbody>
<tr>
<td>011010</td>
<td>001011</td>
</tr>
</tbody>
</table>

Genetic algorithms are used there, where the exact task solutions from practise would take endlessly long time by systematic searching. They enables to solve difficult problems very elegantly.

The considerable advantage of genetic algorithms is the ability to solve the tasks abstractedly on the charakter of data (linear, nonlinear, leap), cohesion of individual parts of system or existence of feedback. On the contrary of clasical mathematical methods, does not come to conditions adding and the limitation to incresing of description complication of the problem and thus it is possible to solve even very difficult tasks, indescriable by classical mathematics.

Genetic algorithms are generally used at optimalizations. For economical tasks its typical using for example for the solution of decision problems to minimize the costs or maximization of turnovers (profit). Practical using is possible to see at the solving at the task problems like cluster analysis, approximation of economic curve, prediction etc.

### 3. Aplication

Aplication description

The contribution describes an active access formation of portfolio by using the technical access supported by statistic analysis, there is no consideration on fundamental reports.

For statistic analysis is used the application Adaptrade from the company Adaptrade Software, its computation core works on the basis of genetic algorithms and proves to work up even so difficult task in a real time.

The input in this concrete case is made by 23 technical indicators with some tens of periods.

At some various possibilities of inputs and outputs from investment position the number of combinations grows on the value which is not possible to solve by standard algorithmical methods. For example the applications of genetic algorithm can solve this difficult task.

The basis of computation system made by applications based on gentic algorithms, when we are able to reach relevant solutions in a real short time.

The imput data show the indicators of technical analysis, which directly come from the price. It is a price transformation by the help of defined patterns. As an example we can show sliding averages, oscillators represent the price moments and many others. Each of these indicators, we can further quantify according to the period of calculation from historical price. Thanks to this fact it is very easy to get to the number of operations overlapping billions of combinations.

On the picture 3 is graphically shown the input of the programme Adaptrade represented the technical indicators, which are calculated from the price.

The input in this concrete case is made by 23 technical indicators with some tens of period. At some various possibilities of inputs and outputs from the investment position, the number of combinations

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4 DOSTÁL, P., s. 88.
5 DOSTÁL, P., s. 89.
increases on the value which is not solved by standard algorithmical methods. For example the application of genetic algorithms can solve this difficult task.

![Diagram showing the inputs of the program Adaptrade.](image)

**Picture 3.** Inputs of the program Adaptrade

**Case study**
The statistical analysis by the help of the programme Adaptrade was performed concretly on currency couple EUR.USD and GBP.USD, which is traded on monetary market FöEx.

The input data are made by time series recording the price running watched financial instruments with the period 15 minutes constantly from Monday 00:00 to Friday 23:00 for a period 2.1.2009 – 14.3.2011. The time serie was divided into two periods. In the first period, learning period (2.1.2009 – 5.1.2010), were generated the rules for investment and in the second period, validation period (6.1.2010 – 14.3.2010), were happening application of found rules.

The programme Adaptrade after fulfilment of statistic analysis generates the text file containing the list of relevant information, which are implemented into the application TradeStation. This application generates commands for buying or for selling of chosen financial investment.

**Statistics of currency couple EUR.USD**
In the table 4 are stated the basic statistical results from the analysis for the currency couple EUR.USD and on the picture 4 it is shown the accumulation of profit and loss distribution of particular speculative positions for currency couple EUR.USD.

<table>
<thead>
<tr>
<th>Number of businesses [-]</th>
<th>441</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of profitable businesses [-]</td>
<td>326</td>
</tr>
<tr>
<td>Number of loss businesses [-]</td>
<td>115</td>
</tr>
<tr>
<td>Number of profitable businesses [%]</td>
<td>73,9229</td>
</tr>
<tr>
<td>Number of loss businesses [%]</td>
<td>26,0771</td>
</tr>
<tr>
<td>Clear profit ($)</td>
<td>53464</td>
</tr>
<tr>
<td>Clear loss ($)</td>
<td>-21673</td>
</tr>
<tr>
<td>Total profit ($)</td>
<td>31791</td>
</tr>
</tbody>
</table>

*Source: Personal processing*  

7 Personal processing, 2011.  
8 Personal processing, 2011.
2. ECONOMICS AND FINANCIAL MARKETS

Learning Application

Number of Transactions [-]

Value of Capital [$/lot]

Curve of currency couple EUR.USD

Picture 4: Accumulation of profit and loss distribution of particular speculative positions for currency couple EUR.USD

Statistics of currency couple GBP.USD

In the table 5 are shown the basic statistic analysis results for the currency couple GBP.USD.

Table 5 Statistic of investment strategy for the currency couple GBP.USD

<table>
<thead>
<tr>
<th>Number of businesses [-]</th>
<th>295</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of profitable businesses [-]</td>
<td>225</td>
</tr>
<tr>
<td>Number of loss businesses [-]</td>
<td>70</td>
</tr>
<tr>
<td>Number of profitable businesses [%]</td>
<td>76.2719</td>
</tr>
<tr>
<td>Number of loss business [%]</td>
<td>23.7281</td>
</tr>
<tr>
<td>Clear profit ($)</td>
<td>134667</td>
</tr>
<tr>
<td>Clear loss ($)</td>
<td>-74826</td>
</tr>
<tr>
<td>Total profit ($)</td>
<td>59841</td>
</tr>
</tbody>
</table>

On the picture 5 is shown the accumulation of profit and loss distribution of particular speculative positions for the currency couple GBP.USD.

Picture 5: Accumulation of profit and loss distribution of particular speculative positions for the currency couple GBP.USD

9 Personal processing, 2011.
10 Personal processing, 2011.
4. Discussions

The statistic analysis specialized on a technical access to the solitary speculation were by the support of the programme Adaptrade found some conjuctions in the input data. At suitable application of found conjuctions is possible to generate the profit of financial market.

The statistic analysis was made for the three significant currencies and they are dollar, euro and the british pound. Concretely for two financial instruments working with the currency couple crossing euro and the American dollar (EUR.USD) and the British pound and the American dollar (GBP.USD).

For the currency couple EUR.USD is designed the strategy, which entered into 441 speculative positions last time by the advantageous prediction 73,9%, generated a total profit 53464$/lot, clear loss 21673$/lot and a total accumulated profit 31791$/lot.

For the currency couple GBP.USD is designed the strategy, which entered into 295 speculative positions last time by the advantageousness prediction 76,3%, generated a total profit 134667$/lot, clear loss 74826$/lot and a total accumulated profit 59841$/lot.

By the reason of the risk diversification are designed two investment strategies (for the currency couple EUR.USD and GBP.USD) generating an investment portfolio.

These strategies generated a total profit 91632$/lot. The profit distribution of these strategy profits and loss did not embody the colored dependence, that it is possible to apply together by the diversification aim of investment portfolio.

Conclusions

By the help of the programme Adaptrade, which works on the base of genetic algorithms, was made the statistic analysis based on the principle of technical access to speculations.

By the above mentioned algorithmic principle are found some connections in input data, which at the suitable application on financial markets, concretely monetary market, can generate profit.

The application of genetic algorithms presents one of the possible solutions of difficult optimization tasks elaborating a huge amount of inputs. The principle founded on the base of evolution ensures the found optimal solution by the help of crossovering of two ‘weaker’ solutions or mutations of partial solution.

The analysis is made for the three world currencies (American dollar, Euro and the British pound). The sample of data is represented by the record during the price of above mentioned currency couples in the time interval 15 minutes always from Monday 00:00 to Friday 23:00 from 4.1.2009 to 14.3.2011.

The time interval from 4.1.2009 to 5.1.2010 shows the ‘designating’ area of data, in which are searched the rules for outputs and inputs at speculative positions. The time interval from 6.1.2010 to 14.3.2010 shows the area of validation and application of found rules.

The statistic analysis were detected by the connection between input and output data, which for the currency couple EUR.USD generated a total profit 31791$/lot and for the currency couple GBP.USD 59841$/lot. Investment portfolio is built-up for the work with the financial lever 1:40.

Better solutions, so the high level of profits is possible to reach by the application of mathematical formulas for reinvestments.

References


11 Personal processing, 2011.
INVESTICIŲ RŪŠYS IR JŲ VALDYMO YPATUMAI

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Raktiniai žodžiai: pinigų srauto investicijos, kapitalo investicijos, mišrios investicijos, investicijų valdymas.

Įvadas

Pastaruojų metų egzistuojanti investicinių priemonių gausa ir termino „investavimas“ vartojimas skirtinguose kontekstuose sukėlė nemažai painiavos tiek moksle, tiek praktinėje veikloje. Investavimui vadinama spekuliacija finansinėmis priemonėmis, įmonių vykdomi projektai plečiant savo veiklą, kaupiamasis gyvybės draudimas arba tiesiog pinigų taupymas. Toks išplėstas investavimo sampratos traktavimas trukdo deramai suvokti šio proceso esmę, todėl prasminga tiksliau apibūdinti, ką laikyti investavimui ir kokios investicijų rūšys egzistuoja praktikoje.

Daugelis autorių, Rutkauskas A. V., Martinkutė R., Cariov V.², savo darbuose apie investicijas skyrę deramą dėmesį rizikos ir neapibrėžtuino vertinimui investavimo sprendimų ir investicijų valdymo procese. Tačiau praktiškai šios idėjos iš esmės nebuvo naudojamos, ką liudija dėl finansų krizės patirti investitorų nuostoliai. Tikėtina, kad nepakankamai efektyvus investicijų valdymas yra susijęs ne tiek su mokslininkų tyrimų trūkumu šioje srityje, kiek su investavimo sampratos ir investavimo priemonių klasifikavimo neišbaigtumu. Todėl kyla poreikis suvokti investavimo esmę dabartiniai kontekste, aiškiai apibrėžti investavimo tikslus bei priemones, kuriomis galima pasiekti investavimo tikslą.

Viena didžiausių šiuolaikinių problemų šioje srityje – finansinių instrumentų gausa ir tai, kad nemaža šių įrankių dalis yra spekuliacinės, bet ne investicinių priemonės. Tokių įrankių kaip išvestinės finansinės priemonės įsigijimas ne apsidraudimo nuo rizikos, bet prekybos tikslais neturi būti laikomas investavimu. Kai kurių investitorių nuomone, išvestinės finansinės priemonės gali būti prilygintos mastinio naikinimo ginklams ir turėtų būti laikomos potencialiai pavojingomis³. Prekybą akcijomis ir kitais vertinbiniais popieriais taip pat kažin ar teisinga laikyti investavimui, nes šiuo atveju vertinbiniai popieriai tėra tik prekė, bet ne investavimo objektas. Investavimo sampratos išgryninimas įgalintų išskirti konkrečius investavimo tikslus ir sugrupuoti investavimo priemones į tam tikras grupes, kurioms būtų atvejų pritaikyti bendros valdymo principus.

Šio straipsnio tikslas – išskirti investicijų rūšis atsižvelgiant į investavimo tikslus, apibūdinti pagrindinius skirtingų investicijų rūšių valdymo principus.

Tyrimum atlikti šie metodai: sisteminė mokslinė literatūros šaltinių analizė, palyginamoji analizė, modeliavimas, aprašomas ir apibendrinamas metodai, sisteminė ir loginė analizė.

1. Investavimo esmė ir investicijų rūšys

Egzistuoja daugybė investavimo apibrėžimų. Dalis jų akcentuoja pelno (pajamų), socialinio rezultato ar valstybės funkcijų įgyvendinimo užtikrinimo siekį. Kiti nurodo, kad investuojant „kapitalo prieaugis turi būti pakankamai, kad kompensuotų investitoriuį jo atsisakymą einamuoju momentu panaudoti lėšas vartojimui...“

Kaip matyti, viena esminių investavimo funkcijų – dabartinio vartojimo atsisakymas dėl gausesnio vartojimo atitekyje. Mūsų nuomone, kai kurių autorų teiginys, kad vertinant investicijų sprendimus reikia išsiaiškinti, ar investuotos lėšos griežtai, neatskleidžia investavimo esmės. Kitaip tariant, investuotojas smanomai atsisako darb suvartoti tam tikrus resursus (dažniausiai pinigus) tik tuo atveju, jei jų pagalba sukuria ar įsigyta finansines priemones ir tikisi gauti daugiau resursų, palyginti su tais, kurius jis investavo pradiniame etape. Jei subjektas tiesiog atideda resursus ateitai, tačiau jų pagrindu nėra kuriamos finansinės priemonės, šis procesas vadintinas ne vartojimu, o taupymu. Jei subjektas prekiauja finansiniais produktais, šis procesas vadintinas ne investavimu, o taupymu...
Kur:
K_{10} – investicijos vertė laikotarpio pradžioje;
K_{11} – investicijos vertė laikotarpio pabaigoje.

Pagrindinis kapitalo ir pinigų srauto investicijos skirtumas yra tas, kad pinigų srauto investicija realią ekonominę naudą duoda nedelsiant ir šią naudą galima patikimai įsmatuoti. Tuo tarpu kapitalo investicijos nauda yra potenciali iki to momento, kai ši investicija yra likviduojama, t. y. vėl paverčiama pinigais. Todėl vertinant kapitalo investicijų naudą reikia tureti galvoje, kad pastaroji galūn būtų ne įsmatuota, o tik su tam tikra tikimybe įvertina.

**Mišrių investicijų** – tokios investicijos, kurios generuoja pinigų plaukus ir tuo pat metu jų vertę auga. Šios investicijos yra pačios geriausios naudingumo prasmė, tačiau naudos vertinimas yra komplikuotnis. Tokios investicijos pavyzdžiu yra nekilnojamasis tertas, kuris yra nuomojamas (pinigų plaukus) ir ekonomini pakilimo laikotarpiu auga jo vertė.

**Mišrių investicijų** tikslas – siekti, kad investicija generuotų teigiamą suminį pinigų srautą ir jos vertė nuolat augtų. Tokį tikslo galima užrašyti bendra formulė:

\[
(Q^1 - Q^2) + (K_{11} - K_{10}) > 0; 
\]

\[
(3) \]


Atkreiptinas dėmesys, kad konkrečios investicinės priemonės klasifikavimas priklauso nuo tikro ir netiek nuos jų kilmės, kiek jie investuotojo pasirinkimo. Investicija į nekilnojamąją turtą gali būti pinigų sraudo (nuomojant įsigytą turtą), kapitalo (laikant turtą ir laukiant jo vertęs padidėjimo) arba mišri investicija (nuomojant turtą ir laukiant jo vertęs padidėjimo). Įsigytose įmones akcijos – pinigų srauto (kiekiant gauti dividendus), kapitalo (laikant ilgainiokio vertės padidėjimo) ir mišri investicija (kiekiant gaunti dividendus ir tikintis vertės padidėjimo).

Toliau detaliai išnagrinėsime skirtingų investicijų rūšių valdymo specifiką.

2. Pinigų srauto investicijų valdymas

Pinigų srauto investicijomis laikomi instrumentai, kurių generuoja įplaukų srautas yra didesnis negu išlaidų srautas (žr. 1 formulę). Tam, kad turitos uždirbtų pinigų, reikalingos papildomos jo išlaikymo išlaidos. Be to, dažniausiai turito uždirbamos įplaukos yra apmokestinamos. Todėl 1 formulė prasminga transformuoti taip:

\[
\Delta Q = Q^1 - (Q^2 išlaikymas + Q^2 mokesčiai); \]

\[
(4) \]

Šiuo atveju aiškiai matoma siekiamybė, kad investicijos suminės pinigų srautų (\(\Delta Q\)) būtų teigiamas. Taip pat aiškiai matyti, kokie veiksmai veikia konkrečios investicijos pinigų srautą. Pärmus kiekvieną veiksnią atskirai galima kvalifikuoti spręsti tai, kaip, pavyzdžiui, padidinti įplaukas, sumažinti išlaidas ir optimizuoti mokesčius.

Labai svarbu, kad tokie skaičiavimai būtų atliekami ir sprendimai priimami kiekvienai pinigų srauto investicijai atskirai. Taip yra todėl, kad skirtingam turtui, naudojamam pinigų srauto investicijoms, reikalingos skirtingos išlaikymo išlaidos. Skirtingi mokesčiai takomi ir skirtingoms pinigų įplaukoms.

Pinigų srauto, kaip ir bet kuriuos investicijos, gali būti kuriomis naudojantis savo arba skolintais pinigais. Jei pinigų srauto investicijai naudojami skolinti pinigai, tai taip pat būtina atsižvelgti įskaičiuojant investicijos naudingumą. Tai atliekama prie pinigų išlaidų, susijusių su investicijos priežiūra ir mokesčiais, papildomai pridedant skolos grąžinimo ir palūkanų išlaidas. Tada investicijų suminio pinigų srauto formulė atrodytai taip:

\[
\Delta Q = Q^1 - (Q^2 išlaikymas + Q^2 mokesčiai + Q^2 skolos grąžinimas + Q^2 palūkanos); \]

\[
(5) \]

3. Kapitalo investicijų valdymas


Formulės šie dydžiai yra valdomi skirtingai ir priklauso nuo skirtingų veiksnų. Šoklą galima grąžinti greičiau ar kiek lėčiau. Tai lemia skolos sutarties terminas. Jei veikla sėkminga, šoklą galima grąžinti ir greičiau taip padidinant vėlesnį sumų pinigų srautą. Palukanų sumos tiesiogiai nėra valdomos, nes jos priklauso nuo sutarties sąlygų ir, jei skola paimta su kintamomis palūkanomis, nuo ekonominės situacijos.


Formulės šie dydžiai yra valdomi skirtingai ir priklauso nuo skirtingų veiksnų. Šoklą galima grąžinti greičiau ar kiek lėčiau. Tai lemia skolos sutarties terminas. Jei veikla sėkminga, šoklą galima grąžinti ir greičiau taip padidinant vėlesnį sumų pinigų srautą. Palukanų sumos tiesiogiai nėra valdomos, nes jos priklauso nuo sutarties sąlygų ir, jei skola paimta su kintamomis palūkanomis, nuo ekonominės situacijos.

K pradinė < K rinkos;
K pradinė – investuota pinigų suma;
K rinkos – investicijos rinkos vertė vertinimo momentu.

Kalbant apie kapitalo investicijas, ypač svarbu suvokti, kad investicijos rinkos vertė toli gražu nėra ta pinigų suma, kurią investitorius realiai turi rankose. Tai yra pinigų suma, kurią jis galėtų gauti, jei investiciją parduotų. Tai pirmasis komplikuotas momentas.

Antras dalykas, į kurį būtina atsižvelgti, yra tai, kad dažniausiai kapitalo investicijoms palaikyti reikalingos išlaidos. Tokių išlaidų pavyzdžiui galėtų būti turto eksploatavimo išlaidos, įvairūs komisiniai, aptarnavimo, operacijų, turto mokesčiai ir kitos išlaidos. Šios išlaidos taip pat reikia atsižvelgti vertinant, ar investicija atitinka keliamus tikslus. Kapitalo investicijoms, kurių palaikymui reikalingos išlaidos, atėciančius pateiktai formulė turėtų būti patikslinta ir atrodyti taip:

K pradinė < K rinkos - Q² palaikymo;

kur
Q² palaikymo – išlaidos investicijai palaikyti.

Praktikoje šis komponentas (Q² palaikymo) dažnai ignoruojamas, todėl kapitalo investicijų naudingumo vertinimas būna pernelyg optimistinis.

Kalbatojo, kaip ir pinigų srauto investicijos, galėtų kuriamos naudojant savus arba skolintus pinigus. Tais atvejais, kai investicijai panaudojami skolinti pinigai, vertinant kapitalo investicijos vertės kitimą būtina atsižvelgti į į išlaidas, susijusias su paskola, t. y. į sumokėtas palūkanas. Tuomet ankstesnė formulė atrodytų taip:

K pradinė < K rinkos - Q² palaikymo - Q² palaikymo;

Palyginti su pinigų srauto investicija, kuriai kurti paimta paskola, kapitalo investicijos atveju skolos grąžinimo išlaidos neturėtų būti traukiamos į formulę todėl, kad papildomos išlaidos, susijusios su investicijos vertės koreguvimo, yra tik mokomai palūkanos.

Nors kapitalo investicijos vertės augimas yra svarbus dalykas, išaugusi vertė nėra galutinis investavimo tikslas. Tai, kad kapitalo investicijos vertė didėja, yra gerai, tačiau pagrindinis klausimas, kurią reikia spręsti taikant šią investavimo strategiją – kada ir kaip pradėti naudotis investicijos nauda. Tam, kad investicijos vertės augimas būtų taikomas ją atsipalaiduoti dar ir jį mokesčius, kuriuos privalo sumokėti. Po to gautų pinigų sumą galima panaudoti taip, kaip numatyta. Labai svarbu atkreipti dėmesį į tai, kad skaičiuojant gaunamą iš investicijų sumą būtina atsižvelgti dar ir į mokesčius, kuriuos privalo sumokėti. Tik tuo atveju, kai gauta pinigų suma atėmus mokesčius yra didesnė negu pradinė investuota suma, galima teigti, kad investicija buvo pelninga. Todėl papildant jau aptartas formules, galutini kapitalo investicijų tikslų būtų galima išreikšti taip:

\[
K \text{ pradinė} < K \text{ rinkos - } Q^2 \text{ palaikymo - } Q^2 \text{ mokesčiai}; \tag{9}
\]

kur
\[
Q^2 \text{ palaikymo – išlaidos investicijoms palaikyti per visą investavimo laikotarpį;}
\]
\[
Q^2 \text{ mokesčiai – mokesčių suma likvidavus investiciją.}
\]

Tik tuo atveju, kai kuriando kapitalo investiciją atvejį nustatyti yra skirta daugybė mokslinių darbų\(^{10}\), todėl šiame straipsnyje paprastumo dėlei ignoruojame pinigų laiko vertę. Teisingai nustačius investicijos dabartinę vertę galima apskaičiuoti potencialią naudą, kuri būtų gaunama, jei kapitalo investicija būtų parduota:

\[
\Delta K = K \text{ pradinė} - (K \text{ rinkos - } Q^2 \text{ palaikymo - } Q^2 \text{ mokesčiai}) \tag{10}
\]

kur
\[
\Delta K – \text{ potenciali kapitalo investicijos nauda, kuri būtų gauta parduavus investiciją.}
\]

Tuo atveju, jei potenciali kapitalo investicijos nauda yra teigiamas dydis, tai reiškia, kad, padavus investiciją po to, kai bus sumokėti visi priklausantys mokesčiai, būtų gauta didesnė pinigų suma negu buvo investuota. Jei gaunama neigiamą \(\Delta K\) reikšmę, tai reiškia, kad investicija jau pasidarė nuostolinta, todėl reikia spręsti, ar tokią investiciją vertę laikyti toliau, ar ją geriau parduoti taip apsidraudžiant nuo didesnių galimų nuostolių. Kai kurie autoriai\(^{12}\) formuluoja ne tik vadinamą „išėjimo“ į investavimo taisyklę.

Aukščiau pateiktai skaičiavimai yra santykiniai sudetingi ir jiems reikia laiko bei pastangų. Todėl rekomenduotina atlikti kas pusesči ar metus. Nuolatiniam kapitalo investicijų vertės kitimui būtų galima rekomenduoti stebėti *kiekvienos atskirai kapitalo investicijos* vertės kitimą. Toks požiūris kiek skiriasi nuo bendrai priimto investicinio portfelo formavimo ir valdymo principų\(^{13}\), tačiau, mūsų nuomone, pakankamai dažnai galėtų būti naudingas. Laikotarpis, per kurį turėtų būti atliekamas minėtas stebėjimas, turėtų būti santykiniai trumpas (mėnau, ketvirtis, pusmetis) tam, kad geriau būtų įvertinti visi neapibrėžtumai\(^{14}\). Vertinimo parametrai gali būti užrašyti formulė

\[
K \text{ rinkos } t_0 < K \text{ rinkos } t_1; \tag{11}
\]

kur
\[
K \text{ rinkos } t_0 – \text{ investicijos rinkos vertė laikotarpiu pradžioje;}
\]
\[
K \text{ rinkos } t_1 – \text{ investicijos rinkos vertė laikotarpiu pabaigoje.}
\]

---


\(^{11}\) Jei kapitalo investicijai buvo panaudota skola, dar būtina atitikti \(Q^3\) palūkanas (žr. 8 formulę).


2. ECONOMICS AND FINANCIAL MARKETS

Pastebėjus, kad per laikotarpį investicijos rinkos vertė nukrito, reikėtų atlikti papildomus detalinesius skaičiavimus. Jei papildomi skaičiavimai rodo, kad kapitalo investicija, nepaisant jos vertės kritimo, yra vis dar potencialiai naudinga, tuomet pakanka tik atidžiai stebėti, kaip keičiasi situacija. Tačiau jei kapitalo investicijos rinkos vertė vertė krinta keletą laikotarpių iš eilės, tai gali būti signalas, kad pasikeitė ekonomikos tendencijos ir šias investicijas reikia pardiavinti. Labai geras pavydzys yra nesenas nekilnojamojo turto kainų burbuluo sprogimas. Lietuvoje, palyginti su Estija ir Latvija, nekilnojamojo turto kainos pradėjo kriti pirmą kartą 2009 m. Laikotarpiu turėjo įvairią pinigų formą, kurios, kaip rodo (10) formulė, gali būti įvairiai naudingos įvairiose situacijose. 

Labai svarbus momentas, į kurį būtina atsižvelgti validant kapitalo investicijas, yra tas, kad visi aukščiau nurodyti skaičiai ir naudos turi būti atliekami viešame kontekste, o kartais net ir kiekvienai investicijai atskirai. Tik tokio atveju galima pastebėti vienokias ar kitokias tendencijas ir sugebėti naudingai investuoti bei gauti siekiama pelno.

4. Mišrių investicijų valdymas

Mišrių investicijų valdymas, palyginti su jau aptartosiomis, yra komplikuotės todėl, kad šiuo atveju reikia atsižvelgti į du aspektus, lemiančius investicijos naudingumą. Tai pinigų srautas ir investicijos vertės kitimas. Performulavę 3 formulę ir atsižvelgę į aukščiau išnagrinėtus klausimus, turime tokį mišrių investicijos naudingumo išraišką:

\[ N = \sum \Delta Q + \Delta K; \]  

kur \( N \) – mišrių investicijos teikiami naudos.


Antrasis 12 formulės dėmuo, išreiškiantis mišrių investicijų naudos vertės augimo dalyje, tiksliai apskaičiuotas negali būti, todėl yra tik įvertinamas, taip, kaip buvo aprašyta (10) formulėje. Tiksliai šį dydį apskaičiuoti galima tik likvidavus pačią investiciją. Todėl antrasis dėmuo yra tik potenciali, nerealizuota ekonominė investicijos nauda. 

Pakitus ekonominei situacijai, investicijos vertė gali pradėti kriti ir antrasis 12 formulės dėmuo, išreiškiantis potencialią investicijos naudą, susijusią su vertės kitimu, gali tapti neigiamas. Šiuo atveju sprendimas, susijęs su investicijos likvidavimu, gali būti siejamas su pirmuoju dėmeniu, išreiškiančiu realią investicijos naudą, pasireiškiančią sumini pinigų srautų per investavimo laikotarpį. Jei investicijos generuojamas pinigų srautas yra padengęs pradines investicijos vertę ir išlieka teigiamas, ekonomikos nuosmukio laikotarpiu tokų investicijų likviduoti neverta. 

Pasikeitus pasiūlos ir paklausos santykii15, gali atsitikti taip, kad investicijos generuojamas laikotarpio pinigų srautas tampa neigiamas ir anksčesnė sukaupta sumini investicijos naudingumo dalis pradeda mažėti. 

Kylant investicijos vertei jį gali potencialiai kompensuoti realų pinigų praradimą. Tai gali būti padaryta likvidavus investiciją. Šiuo atveju primantas sprendimus dėl investicijų likvidavimo ar jos pratesimo turėtų būti atsižvelgiant į numatomus ateities įvairius, lemiančius investicijos vertės kitimą. Gali susiformuoti tokia ekonominė situacija, kai pinigų srauto požiūriu naudinga investicija, labai išaugus jos vertei, pelningiau parduoti todėl, kad pinigų srautos, kurį gali sugeneruoti investicija per savo gyvavimą laikotarpį, bus mažesnis negu kainų skirtumas, kurį galima gauti nedelsiant pardavus šią investiciją. 

Taigi mišrios investicijos atveju vienas iš „avarinių signalų“, liudijančių, kad investicijos naudingumas kinta, gali būti konkretaus laikotarpio pinigų įplaukų mažėjimas. Todėl mišrios investicijos turi tarytum papildomą „saugiklį“, palyginti su kitomis investicijų rūšimis.

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Sėkmingas mišrių investicijų valdymo pavyzdys buvo turinio nuomojamo nekilnojamojo turto pardavimas per patį jo kainos pakilimo piką ir pakartotinis tokio pobūdžio turto įsigijimas, kai kainos rinkoje yra nakrusiosios.

**Išvados**


2. Pagal tai, kaip pasireiškia investavimo ekonominė nauda (investicijos generuojamų pinigų srautų, jos vertės didėjimu ar abiem iš karto), atlikto tyrimo pasėkoje siūloma kiek kitaip nei įprasta klasiifikuoti investicijas. Siūloma skirti pinigų srauto, kapitalo ir mišrių investicijų grupes. Konkrečios investicinės priemonės klasiifikavimas priklauso ne tik ir ne tiek nuo jos kilmės, kiek nuo investuotojo pasirinkimo.

3. Atsižvelgiant į tyrimo rezultatus daroma išvada, kad pinigų srauto investicija turėtų būti valdoma siekiant gauti teigiamą naudą, kuria kuria tokia investicija, bet ir ją visas su investicija susijusias išlaidas.

4. Darbo rezultatai atskleidė, kad kapitalo investicija valdoma stebint jos vertės kitimą. Toks stebėjimas atliekamas tik tam, kad investicija būtų parduota, kai jos vertė pasiekia maksimalų dydį. Tyrimas parodydavo, kad valdant kapitalo investicijas potencialią vertės padidėjimo naudą reikia lyginti ne tik su pradinė investuota vertė, bet ir su šios investicijos išlaikymo susijusiomis išlaidomis, į ją paprastai mokslinėje literatūroje nėra kreipiamas daromos dėmesys.

Tyrimas parodydavo, kad mišrios investicijos turėtų būti valdomos derinant pinigų srauto ir investicijos vertės teikiamą naudą. Naujas požiūris į šių investicijų valdymą yra tai, kad darbe atskleidė, jog reikia nuolat stebėti ir lyginti realią naudą, kuri pasireiškia kaip pinigų srautas, ir potencialią naudą, kuri pasireiškia kaip vertės augimas.

**Literatūra**


TYPES OF INVESTMENT AND THEIR MANAGEMENT PECULIARITIES

Gintaras Černius

Summary

The article presents a discussion on the fundamental nature of investing by focusing on the goal of the investment process, i.e. an increase of future application possibilities by employing current investing efforts. This creates an opportunity to clearly discern investment from other fields of possible activities such as saving money and speculation. The purified concept of investment enabled distinguishing particular investment goals and distributing investment tools into certain groups to which general principles of management could be applied. Investment tools can also be classified into the following groups based on the prevailing economic benefits: cash flow investments, capital investments and mixed investments. The classification of a particular investment tool depends not only on its origin and not as much on its origin but rather on the choice made by the investor.

The function of cash flow investments is to generate a flow of income right from the start of the investment creation. Capital investment is the kind of investment the value of which keeps growing for a certain period of time. Later this investment is turned into cash and the investor is able to use the earned money for his or her own purposes. Mixed investments are the ones that generate cash flow and increase their own value at the same time.

Each of the investment types coincide with a different investment strategy. One of the strategies involves creating tools to constantly generate income. Another strategy suggests designing tools the value of which increases over time. The tools that do both, i.e. generate income and increase their own value within a particular period of time, can be designed as well.

The purpose of the cash flow investment is to aim for the income received from the investment to be larger than expenditure related to the sustainment of such investment. In this case any changes in the value of the investment are disregarded. The aim of the capital investment is to reach a constant increase in the investment value. The mixed investment aims to generate positive cumulative cash flow all the while retaining a constantly increasing value. The main peculiarity of the cash flow investment is that it brings real economic benefit immediately and this benefit can be measured rather credibly. Meanwhile, the benefits of the capital and mixed investments hold potential only until the moment such an investment is liquidated, i.e. turned into cash. Therefore, when evaluating the benefits of the capital and mixed investments it is important to keep in mind that the latter one can only be estimated with a certain level of probability rather than assessed precisely.

Each kind of investments is managed based on the goal of its creation and the peculiarities of its type. The aim of the cash flow investment management is receiving positive cash flow. The capital investment is managed by observing the changes in its worth and selling the investment the moment its value reaches the peak. The management of mixed investments includes the coordination of the benefit provided by the changes in cash flow and investment value. The peculiarity of such investment management is the constant observation and comparison of the real benefit, which is seen as cash flow, and the potential benefit, which manifests as an increase in value.

It is recommended to use the Return on Investment ratio to evaluate the investment benefit. This indicator is calculated as a ratio between the real (for cash flow investments) or the potential (for capital investments) or both the real and the potential benefits and the initial investment value. A ratio calculated in such a way enables the comparison of the benefits of different types of investments. When performing an evaluation of the benefits of capital and mixed investments one must pay additional attention to the potential risk of such types of investments. The aforementioned risk involves the possibility of the future real economic benefit (the difference between the invested and the received amount) being smaller than the potential economic benefit (increase in the investment value) calculated during the assessment due to the fact that the investment value will be significantly lower at the time of the investment sale.

Key words: cash flow investments, capital investments, mixed investments, investment management.
THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON EMERGING ECONOMIES: A COMPARATIVE ANALYSIS

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Abstract. The global financial crisis emerging in USA has left entire world economies under its influence. This article analyzes the extent of this influence on emerging economies by using several variables. By following the evolutions in growth, employment and inflation rates, the depth of the crisis has been propounded for each country. Also, whether the country has come to the end of the crisis has been expressed according to the data. It is concluded that although strength of the crisis on the economies differed across the countries, all the economies has experienced a deep recession due to the crisis.

Keywords: GDP, Consumer Expenditure, Production Index, Employment, Unemployment, Inflation.

Introduction

The global financial crisis which broke out in the US subprime mortgage market in August 2007 and deepened following the bankruptcy of several large US financial institutions in September 2008 had significant adverse effects on the real economy in mid-2008. The main reasons behind the crisis were an excessive rise in asset prices, easily available credit, inadequate regulation and oversight and increasing inequality. Related with the recessionary times for developed economies and reduction in international capital flows in the last quarter of 2008, the crisis started to take hold in developing countries as well [1]. In addition, the crisis, emerging in the financial sector, passed through to other segments of economy. As of the third quarter of 2008, growth rates have fallen sharply all around the world, particularly in advanced economies. Moreover, economic slowdown accelerated in the fourth quarter of 2008. As a result, the severest financial crisis in recent history had a deep impact on the development of the global economy that experienced collapse [2].

The effect of the crisis at first stage has been the contraction in liquidity and credit channels and spoiling effects of the crisis has spreaded to the other economic fields in a short time. As a result, the economic situations all over the world depressed owing to worsened growth performance, increasing unemployment rates, retrogressive expectations during the crisis period. In addition, after soared in the summer of 2008, commodity and oil prices plunged starting from the third quarter of the year due to reduced demand from industrialized countries. The sharp contraction in economic activity and the strong decline in commodity prices caused inflation to fall across the globe [3].

The first aim of this paper is to examine severity of the global crisis on the emerging economies. In order to access how deep the impact of the crisis on the emerging countries, recession is explained with developments of growth, employment and inflation for the sample countries; Estonia, Latvia, Lithuania, Poland, and Turkey in section 2. Section 3 concludes the paper with remarks on the deep recession in the sample countries.

RECENT DEVELOPMENTS: GROWTH, EMPLOYMENT AND INFLATION

1. Growth

The global financial crisis has led the difficulties in the whole world. Estonian economy, one of the emerging economies in Baltic region, entered into the recession in 2008 and the volume of its economy contracted about nearly by 20% compared to its peak [2]. The Estonia’s recession was deep and acute. As can be seen in the graph 1, starting from at the end of 2007, and growth rate of GDP continued to decline throughout 2008 and 2009. GDP growth rate decreased by 5.2% in the last quarter of 2007 to its lowest rate of -16.6% in the second quarter of 2009. By the third quarter of 2009, a recovery in GDP growth rate started to appear, and growth rate of GDP reached -8.8% by the last quarter of 2009.
Still, in 2009, Estonia was one of the five worst performing economies in the world in terms of annual GDP growth rate. GDP dropped nearly 15% in 2009, among the world's highest rates of contraction [4]. The downturn was primarily caused by a decline in external demand arising from the global crisis, and by domestic imbalances that emerged in the previous rapid growth years.

All the demand components of Estonia notably deteriorated due to the crisis. One of the most important demand component, Estonian household final expenditure exhibited a sharp decline amounted to -16.7% in the last quarter of 2009 relating to the same period of previous year (see graph 2). The main reason behind this result was deterioration of consumer confidence. Consumer confidence considerably decreased by the fear of rising unemployment. Due to uncertainty led by the crisis, households was compelled to be very cautious in their consumption expenditure.

In the same way, the fact that Estonia hit by the crisis can be observed on industrial production index. The deepest contraction emerged at the end of 2008 and at the beginning of 2009. As seen in the graph 3, the contraction was -13.46% by the last quarter of 2008 and -14.13% by the first quarter of 2009 compared with previous period. The index recorded an accrual in the second half of 2009 and this upgrowth continued in 2010.

GDP growth rates reflecting economic activity in Estonia have already bottomed out. The economy started to stabilize, but it is obvious that the Estonian economy is still under the effects of the crisis. Growth rate is far away from pre-crisis levels. Therefore, sustained recovery is going to take time. Despite the near-
term outlook being optimistic, there is the threat that the initial speedy recovery will be followed by a period of relatively slow growth and the volume of the economy will remain below pre-crisis levels for several years. 2009 was a year of sharp income declines and growth will resume not earlier than 2011 [2].

Graph 3. Quarterly Industrial Production Index¹ (2005=100), Percentage Change On Previous Period
(Seasonally adjusted data)
Data Source: Eurostat

1. Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply.

Latvia, the other emerging Baltic economy, also experienced one of the world’s worst economic crises. The Latvia’s economy entered in a phase of economic contraction during the second half of 2008 after a period of expansion. GDP growth rate constriction started in the last quarter of 2007 and GDP index reached its record level of 19.1% in the third quarter of 2009, compared to the corresponding period of previous year, (graph 1). After reaching this record rate, GDP growth rate has started to improve in the line of world [5]. Although the recovery in GDP was remarkable in the first two quarter of 2010, it is not possible to talk about a full recovery.

On the other hand, the demand components remarkably contracted during the last crisis in Latvia. Parallel to decline in GDP, household final consumption expenditures had continued to shrink considerably, and the contribution of consumption to growth had decreased. While it was 24.9% as of the first quarter of 2007, consumption expenditures indicator have started to fall down regularly and reached its dramatic level of -27.3% in the third quarter of 2009 with respect to the same period of previous year (graph 2). In the fourth quarter of 2009, the rate of decrease in household consumption displayed a slowdown and amounted -19.6% in the last quarter of 2009 compared to the same period of 2008. The weak and constantly shrinking domestic demand was the main contributor to the GDP decrease in the fourth quarter of 2009. After a period of a long-term depression, 2010 is the year of economic recovery for most countries. As can be seen in the graph 2, there is a serious increase in household final consumption during the first two quarters of 2010. While it had reached approximately -30% during 2009, consumption expenditures was -5.9% by the first quarter of 2010 and 1.4% by the second quarter of 2010. It is obvious that harmful effects of the crisis on the economy began to disappear. Unfortunately, Latvia’s economy still needs time to overcome the crisis.

Also, effects of crisis can be seen in the monthly industrial production index in Latvia. Considerable decline was observed in industrial production during the crisis period. As can be seen in the graph 3, index displayed marginal contractions and expansions between the first quarter of 2007 and second quarter of 2008. After this period, with the impact of the crisis, industrial production index continued to diminish until the first quarter of 2009, and reached its lowest level of -10.25% compared to the previous period. According to the industrial production data, industrial production has started to recovery as of the second quarter of 2009. This indicates the ongoing moderate growth rate in economic activity.

After experiencing rapid growth rate, Lithuania also went into under the influence of the global financial crisis in terms of growth in the second half of 2008. For the first three quarters of 2008 Lithuanian economy successfully resisted strong economic slowdown observed in the other Baltic states. However, in the last quarter of 2008 first signs of unavoidable crisis appeared. In addition, falling external demand as of mid-2008 led to a further slowdown in Lithuanian economy. Finally, in the first half of 2009, the Lithuanian economy collapsed sharing the fate of Estonia and Latvia. Gross domestic product decreased to -13.3% in
the first quarter of 2009 and to -19.5% in the second quarter of 2009 compared to the same period of 2008, which was a highest decrease since gaining the independence. A higher decline in GDP growth in Lithuania, in comparison with other Baltic states, resulted from a high base at the beginning of 2008, when Lithuania still recorded a relatively high economic growth, Latvia and Estonia already experienced a slowdown in the economic activity. Graph 1 also indicates this profound decadence. While maintaining relatively high growth rate, GDP declined throughout 2008, and reached the lowest point in the second quarter of 2009 as stated above. In the third quarter of 2009, GDP showed an weak recovery and amounted -14.2% compared to the same quarter of 2008 [6]. The improvement in the economy in third quarter of 2009 is mainly a result of reconstruction of inventories and further improvement of the trade balance.

Similar to the other Baltic states, GDP decline in the first half of 2009 was mainly a result of a decrease in domestic demand in Lithuania. Household final consumption fell dramatically therabouts minus 20% during 2009 (see graph 2). Household has had to cut down their spendings for reasons such as 30% reduction in public spending and cuts in wages and increasing tax rates. Lithuania’s government took tight fiscal policy measurements unlike most of countries that expanding expenditures in the crisis. However, such a internal devaluation had been necessary to improve competitiveness and regain confidence of bond markets.

On the other hand, industrial production also reflected a collapse in the domestic demand in the first half of 2009. The effect of crisis on industrial production was felt seriously in the last quarter of 2007, led to a decline in index by -5.38% compared to previous quarter (graph 3). However, in the subsequent quarters, industrial production displayed an increase by 8.7% in the first quarter of 2008, and by 4.31% in the second quarter of 2008 compared to previous period. Unfortunately, second part of 2008 and the first half of 2009 were the periods of the global financial crisis hit industrial production strongly. In these periods, index declined by -7.9% in the last quarter of 2008, and by -7.5% in the first quarter of 2009. In the following quarters, the extent of declines slowly decreased. By last quarter of 2009 the decline amounted by -0.03%. While the index was -2.37% in the first quarter of 2010, the second quarter saw a considerable improvement amounting 5.9%. Since data are seasonally adjusted, there is no effect of seasonality in this movements.

Poland is the only EU economy to have escaped from the recession. Like its regional peers, it experienced spill-overs from the crisis through both real and financial channels, in particular the latter, as an abrupt slowdown in capital inflows caused a credit crunch and sharp decline in investment [7]. One of the reason of Polish economy remained strong relative to other developing economies is that Polish banks had not been directly involved in complex instruments, including structured financial instruments secured by subprime mortgage loans, until the disruptions in the global financial markets soared in the Polish banking system. Due to that reasons, Poland's economy was one of the few countries to have maintained a positive economic growth rate during the crisis, though declining rate of change in consumption demand contributing to this growth. In the first half of 2008, Polish economy was in a phase of intensive growth encompassing all its major sectors. However, due to the recession in the economies of Poland’s main trading partners and the uncertain outlook for global and domestic economic growth, country’s economic activity went into a slowdown. The deteriorating indicators of economic conditions coupled with steady decline of some measures of activity in the Polish economy pointed to a gradual deceleration of GDP growth rate. In terms of growth rates, the effects of the crisis was most felt in 2009. While it was by 7.3% by the last quarter of 2007, it dropped to 0.8% by the first quarter of 2009, to 1.2% by the second quarter of 2009, and 1.2% by the third quarter of 2009, compared to the same period of 2008. GDP growth rate slightly increased in the last quarter of 2009. This trend continued in 2010 and the index reached 4% in the second quarter of 2010 related to corresponding period of previous year. This was due to a strong increase in net exports at the end of 2009 and an increase in domestic demand at the beginning of 2010 [8].

As 2008, the dominant contribution to GDP growth was made by dynamic increase in consumption and investment. However household consumption expenditure displayed an contraction in 2009 A limited increase in consumption in 2009 and in the first half of 2010 was caused, among others, by a further rise in unemployment and a slow real wage growth. The low consumption growth rate was also related to the decline in the growth of lending to households.

The impact of the crisis is more visible in Poland’s industrial production that contracted during the crisis period. The graph 3 illustrates that industrial production index followed an systematic attenuation throughout 2008, and after dropping to -4.52% by the last quarter of 2008, an healing was appeared in the indicator and industrial production index was 2.48% by the last quarter of 2009 related to previous period, which is very close to the rate of 2.66% of the first quarter of 2007. This favorable headway continued in 2010 and by the second quarter of 2010 index amounted as 2.56%.

Data presented here shows that although the Polish economy recorded a strong decline in growth rate, this was within the scale of cyclical changes in the last 10 years. Moreover, some of the macroeconomic
variables remain at levels that are more favourable from the point of view of financial stability than in the previous periods of economic slowdown. In particular, the situation in the labour market has remained relatively good. In the coming quarters, Poland's positive GDP growth rate is expected to increase gradually. The risk of a lower than expected economic growth is mainly connected with the developments in the macroeconomic situation abroad and the potential consequences of a further rise in Poland's public debt [9]. As confirmed by strengthening domestic demand at the turn of the year, Poland outpaced other countries in the region in terms of economic growth [5].

After the turbulences and volatility in the 1990s and early 2000s, the Turkish economy recorded a relatively high and stable growth between 2002 and mid-2007. However after the last turbulence the economy went into the recession [10]. This headway can be observed in growth rates of quarterly GDP shown in graph 1. Despite the slowdown in consumption and investment expenditures of the private sector, gross domestic product (GDP) grew by 5.3% in the first half of 2007 compared to the same period of 2006 mainly owing to strong foreign demand. While the contribution of consumption and investment expenditures to growth diminished in the first half of 2007, that of net exports increased [11]. However, due to the impact of the global financial crisis on Turkey, Gross Domestic Product (GDP) growth displayed an considerable contraction during 2008 and 2009. Despite of positive effects of taken fiscal and monetary measures, GDP growth rate decreased to -6.5% in the last quarter of 2008, to -14.7% in the first quarter of 2009 as the sharpest decline in the last tree decades, to -7.9% in the second quarter of 2009, and to -3.3% in third quarter of 2009. After third quarter of 2009, an expansion was observed in GDP growt rate, and it was 6% by the last quarter of 2009 and 11.7% by the first quarter of 2010. The quarterly figure suggests that Turkey is enjoying one of the region’s strongest recoveries from the global crisis, after suffering one of its sharpest recessions.

On the other hand, deceleration in growth of the Turkish economy started in mid-2007, before it was hit by the recent crisis, basically due to falling growth in private investment and consumption. When we look at the graph 2, we see that household final consumption expenditures item remained strong until middle of 2008, following a stable trend. However, after the first quarter of 2008, household final consumption expenditures showed a sharp decrease declining by -10.1% compared with the same period of previous year in the first quarter of 2009, which emerged as a factor retarding the growth. However, this trend of decline slowed down owing to tax incentives in the second quarter of the year. Consequently, at the beginning of 2010 index showed a significant recovery and final consumption expenditures rose to 9.9% compared to corresponding period of the previous year by the first quarter of 2010 [9]. The main reason for the fall in private domestic demand was the volatility in capital flows first in mid-2006, when there was a global volatility, and second in mid-2007, when there were political uncertainties [10]. Also, the increased rate of unemployment caused to collapse of demand driven by households that defer their demand as they suffer a decline in income and wealth linked to decreasing asset prices, further deteriorates the financial position of firms.

The sharp decline in growth is even more strikingly visible in monthly industrial production. Due to the contraction in both internal and external demand, industrial production index started to decline in the second quarter of 2008, and went down by -3.67% compared to the previous period and fell to its lowest level in the last quarter of 2008, by a decrease of -8.05% compared previous period and started to recover after this period in Turkey (graph 3). This deterioration originates mainly from the manufacturing industry [1].

2. Employment and Unemployment Rates

The global crisis has adversely affected labor markets throughout the world. Economic contraction caused by the global financial crisis led to a decrease in employment, and an increase in unemployment. The Estonian labour market started to experience a upset at the end of 2008. This was a signal of larger declines in employment rates and increases in unemployment rates. In the line with downturn in output, labour force demand has been reduced during the crisis period. Also, decreasing demand in the world economies along with financing difficulties hit external trade and caused a very sharp contraction in production and a decline in employment. In this context, the employment rate of Estonia displayed an considerable decline between the third quarter of 2008 and the end of 2009. After reaching 70.4% in the third quarter of 2008, employment rates started to decline and reached to the rate of 61.7% in the last quarter of 2009. The contraction in the employment rate between third quarter of 2008 and the end of 2009 is around 9%. While decreases in employment rates continued during 2009, it slowed in the second half of 2009 and fetched up to the rate of 58.9% as of the first quarter of 2010.
Table 1: Employment and unemployment Rates, Quarterly Data

Data Source: Eurostat

On the other hand, unemployment rates were subjected to a sharp increase due to the crisis in Estonia. Unemployment rates hiked notably as a result of diminishing labour demand and the number of new jobs has also sharply decreased. The number of vacancies intermediated by the Labour Market Board is several times lower compared to the years of rapid growth. It is seen in the table 1 that the rate of unemployment ascended from 4.1% in the last quarter of 2007 to its record rate of 19.8% by first quarter of 2010.

In order to curb costs, many companies have implemented more flexible forms of work, such as layoffs and part-time employment, as an extraordinary measure. Compared to the peak recorded in the second half of 2008, the number of jobs has dropped by nearly 80 thousand, i.e., by 12%. The most extensive changes have taken place in construction, which has suffered a major setback, and manufacturing, where in second-quarter of 2009 employment was down by 35.3% and 21.3%, respectively, year-on-year. In addition, working hours per employee in these sectors over the same period decreased by 5.2% and 6.5%, respectively, whereas the number of working hours in the economy as a whole was 4% lower [2].

The same effect on labor market also was observed in Latvia. The Latvian labour market situation had been stable before the last economic crisis. The economic activity of the population had grown; the number of employed persons and the employment rate rose up. However, after the last turbulence, the employment rates has displayed an considerable decline starting from the first quarter of 2008 until now. Especially, after the third quarter of 2008, the tumble accelerated and the Latvian labour market situation deteriorated rapidly in parallel to uncertainties and contractions in economic activity led by the global financial crisis. Employment rate went down more than 10 percent in this period. Moreover, this trend has continued at the beginning of 2010. Eventually, employment rate diminished from 70.3% at the last quarter of 2007 to 57.7% at the first quarter of 2010 [12].

In the same period of time, unemployment rates continued to grow up incessantly and went up sharply by 20.4% in the first quarter of 2010. This unemployment rate is three times higher than the rate of 6.9% of the first quarter of 2007 and has reflected the dramatic effect of crisis on labor market in Latvia. A gradual easing in unemployment is likely to start only after notable strengthening of the economic growth, i.e. in the second half of 2010 at the earliest. Employment can be expected to resume growth first in the export sectors. Unemployment growth already decelerated significantly in the first half of 2010 in comparison with the end of 2009 [5].

The situation in the Lithuanian labour market was similar to Estonia and Latvia. Lithuania’s labour market starting to deteriorate from middle of 2008 continued to be worse off throughout 2009. The employment rate has been falling since the last quarter of 2008. While it was 65% in the third quarter of 2008, it declined to 58.7 % in the last quarter of 2009. 2010 also saw this downward trend
and the employment rate decreased to 56.8% as of the first quarter of 2010. The data in the table 1 highlights that the number of employees was falling since the middle of 2008. In a such environment of shrinking economy, possibilities of getting employed decreased. Therefore, the duration of unemployment increased. In 2009, unemployment rose further, while the employment and job vacancies were shrinking. The most significant changes were registered in the first quarter of the 2009, when the unemployment rate jumped by 4 percentage points. As can be observed in the table 1, unemployment rate increased from the rate of 7.9% as of the last quarter of 2008 to 11.9% as of the first quarter of 2009 in Lithuania. In the subsequent quarters, the growth of unemployment rate slackened. In the first quarter of 2010, it gradually reached the rate of 18.1%. The average level of unemployment in 2009 made up 13.7% ( in 2008–5.8%). This percentage is approximately equal to the level reached in 2002 [13].

Poland’s overall registered unemployment rate was 18-20 percent range until 2004. This is roughly twice the EU average. Poland’s employment rate is not surprisingly quite low: at only 51.5% in 2003, it was well below the EU15’s average employment rate of 64%. By 2004, Poland acquired an fast economic growth and redounded its labour demand leading an upswing in employment rate and downfall in unemployment rate to the lowest level since 1992. Before the effect of the economic crisis appeared on the country’s economy, employment rate in Poland was increasing and unemployment rates was decreasing continuously until the end of November 2008. As can be seen from the table 1 above, after reaching 60% in the last quarter of 2008, employment rates started to decrease due to the deterioration in the country’s financial situation and the employment rate gradually reached 58.2% as of the first quarter of 2010.

Also, effects of this deterioration in the global scale can be observed in the rates of unemployment, which started to increase after the third quarter of 2008. The unemployment rate in Poland jumped from 6.7% as of the last quarter of 2008 to 8.3% as of the first quarter of 2009, and reached to the rate of 10.6% by the first quarter of 2010. The rate has risen by 4% since the third quarter of 2008. Still, some part of this increase in unemployment rate was seasonal. Despite everything, unemployment rate was not away to its lowest level recorded in 2008.

During the crisis period, employment rate of Turkey started to decline after the third quarter of 2008 like other countries and reached the rate of 41.4% at first quarter of 2009. Some part of this decline can be explained by seasonality but only seasonality can not explain this drastic fall. Official unemployment rate in the period of 2004-2007 remained annually average about 10% in Turkey. However, because of the adverse effects of the crisis on labor market in Turkey, unemployment rates displayed a sharp increase after the year of 2008, and reached quite high rate of 14% in the first quarter of 2009, as seen in table 1. There is also, to some degree, a seasonal factor in this sharp upturn, but the previous peak unemployment rate was only 11.2% in the last quarter of 2008, so this increase can not be explain with seasonality. In spite of all the drawbacks, there exist an improvement to some extent in the second half of 2009 and beginning of 2010. On the other hand, firm-level deals such as nominal pay cuts, shortening of working hours and sabbatical schemes, which reflect flexibility in the labour market, prevented unemployment from rising further. In addition, several monetary and fiscal measures have been introduced to lessen the impact of the global crisis on the economy as late as end of 2008 [10].

3. Inflation

In the first half of 2008, most of countries was exposed to a significant rise in inflation, mainly resulting from a price surge in the global agricultural and energy commodity markets observed in 2007 and the first half of 2008. However, in the last quarter of 2008 slowness in economic activity driven by the contractions in credit channels and battered confidence contributed to the continuing decline in prices of many commodities and food in international markets. As a consequence, the inflationary pressure was undermined all over the world, and as of early 2009, inflation risk was overtaken by fear of deflation [5].

Changes in inflation levels in Estonia has been parallel with the global economy. The Estonia’s price level is for the most part affected by foreign prices, but also, domestic factors play a considerable role. Estonia’s harmonized indices of consumer prices (HICP) exceeded 11% in 2008. Although demand-driven price pressures moderated owing to the crisis, the inflation peaked in 2008 due to rises
ECONOMICS AND FINANCIAL MARKETS

In food prices and tax changes scheduled for 2008. Along with a slowdown in the economic activity led by the crisis, the rise came to a halt in the first half of this year and prices have been falling year-on-year since the end of 2008. The main driver behind the recent price decline has been cheaper food and energy in the global market. In parallel with the downward trend in global scale, HICP started to decline after the tenth month of 2008 and continued on its downward trend by the end of 2009. Since inflation have been faster in reacting to the economic downturn, the price level in Estonia decreased to -2.1% by the end of November in 2009 and after reached this bottom level of -2.1%, HICP started to increase as seen in the graph 4. Compared to the EU average, the relative price level in Estonia will decline less in the period of economic contraction than the relative income level [2].

Graph 4. HICP Monthly Data (annual rate of change).
Data Source: Eurostat

Latvia also experienced a decline in inflation rates during the crisis. As a result of persistently weak demand and production costs, harmonized indices of consumer prices (HICP) started to decline continuously in the line of slowdown in economic activities. In February of 2010, HICP reached -4.3% as annual rate of change. After this point, a slight recovery actualized in the index and it was -0.4% as of the August of 2010. The biggest contributors to the falling prices was the rising unemployment as well as the shrinking overall household income and lower propensity to consume. Nevertheless, as the global oil prices resumed growth at the beginning of 2009, the fall of energy tariffs is likely to reverse into a steady price rise quite soon. Prices on administered services (in particular those related to social care) continued to climb in the fourth quarter and are also expected to soften the overall consumer price drop in the nearest future[5].

The fall was contained from being even steeper by supply factors, effects from the global oil prices on fuel prices in Latvia, and miscellaneous administrative decisions, including tax rate changes. On the supply side, a downward pressure on prices is persisting. These trends stemmed from the dropping unit labour costs on a large scale for the third consecutive quarter, gradually renewing competitiveness of the Latvian economy. In recent months, inflation expectations remained in the positive territory and suggested that people did not anticipate any long-lived deflation [5].

In Lithuanian economy, annual change rate of HICP showed an two fold increase from the first to the last month of 2007 and the rise continued in the subsequent months until October 2008. Like other Baltic countries, this increase in the annual change of monthly HICP was driven by the rise in commodity and energy prices all over the world. Annual rate of change in monthly harmonised index of consumer prices was about 11% throughout the first ten months of 2008. With the downfall in prices of commodity and energy, the growth rate in the index slowed and declined gradually from 9.5% by the first month of 2009 to 1.8% as of August of 2010. In the first three month of 2009, inflation rate was relatively high than subsequent months due to the rise in value added tax, excise duties and administered prices. Also, strong consumption compared with other baltic countries played a rol in the rise of inflation in this period. Approximately, half of this shrinkage in the last nine months of 2009 was driven by lower prices of food, beverages and tobacco, another one third of the reduction
was caused by core inflation changes. With some exceptions, prices were decreasing from April 2009, falling most in July and October when some administered prices were reduced. In September prices stepped up due to the rise of VAT rate and excise duty on cigarettes.

The inflationary processes in Poland in 2008 were to a large extent determined by food price movements and also by the shifts in energy prices and other administered prices, in particular prices of services related to maintenance of dwelling, i.e. by factors remaining largely beyond direct impact of the domestic monetary policy. As a result of strong price shocks in the agricultural commodity markets in the second half of 2007 and the first half of 2008, the annual growth rate of the prices of consumer goods and service remained high in the first months of 2008. At the same time, the up trend in oil prices in the world markets enduring until July 2008 led to increase in fuel price in the domestic market. Nevertheless, the impact was slightly abated by the swift appreciation of the zloty exchange rate that was observed in the same period [14]. With the slowdown of prices in the agricultural commodity market that appeared in August 2008, the annual growth rate of food prices began to slide. In addition, in the same period, the decline of oil prices in the global markets transpired and fuel prices declined in Poland. However, this favourable impact of the decline in oil prices was curtailed by depreciation of zloty against the Euro and USA Dollar. Also, throughout 2008, the HICP inflation was pushed up significantly by remarkable increases in administered prices dependent on decisions of governmental agencies and local government authorities. The decisions were taken in different months of the year and primarily concerned with the prices of energy carriers that is subject to the regulatory policy of the Energy Regulatory Office. The graph also reflects this points. HICP inflation was just 1.6% at the first month of 2007. With the upward trend in prices of agricultural commodities and energy, towards 2008, it started to increase and peaked with 4.6% by February of 2008. By August of 2008, a downward trend in commodity and energy prices induced an decelerating in HICP inflation and the index was 1.9% by the March of 2010.

As last, Turkey has been a chronic high inflation country since mid-1970s. Inflation was dropped significantly from over 60% in 1999 and 2000 to single digit numbers by 2004, when relatively high growth rates were being recorded [10]. Recently, developments in the global economy became the main determinant of the course of domestic inflation throughout 2008. Similar to the other countries, monthly harmonized indices of consumer prices (HICP) inflation which was about 8% throughout the second half of 2007 also rose to 12.1% at in july 2008 due to the hikes in food and energy prices in the first three quarters of 2008. In the first quarter of 2009, owing to the positive developments in cost-based effects and further slowdown in economic activities, commodity prices has decreased, and annual rate of increase in HICP fell to around 5% in the second half of 2009 (graph 4). Although food, energy and other commodity prices have started to ease in September 2008 due to deepening problems in global financial markets, their past increases have continued to keep annual headline inflation at relatively high levels [15]. On the other hand, despite considerable increases in exchange rates in the last quarter of 2008, the effect of exchange rate movements on prices remained below levels of the previous years due to the marked slowdown both in economic activities and import prices. For this reason, in the first quarter of 2009, it is observed that the effect of exchange rate movements on inflation remained limited [1].

Conclusions

The global financial crisis emerged in US has effected the emerging countries’ both real and financial sectors in different scales. This study discusses recent growth, employment and inflation performance in developing countries. While the impact of the crisis on developing countries varied from country to country, it can be concluded that the countries has experienced deep decline in growth, employment, and inflation rates.

Depending on this developments, it could be concluded that the crisis influenced the social life in the emerging countries. Since lower growth rate turned into higher poverty, malnutrition, weaker health care, more stress and anxiety, more crime can be expected to occur.

Data indicate that the crisis has already bottomed out, and a recovery has started in economic activities. Despite signs of gradual recovery of emerging economies, there stil exist considerable risks.

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1 CPI inflation rate averaged just over 77% during 1990-1999.
Accordingly, this recovery may not be strong enough. Therefore, the economies should continue to reforms in order to stimulate economic activities.

References

USE OF DYNAMICAL STATISTICAL MODELLING FOR INVESTIGATION OF EFFECTIVENESS OF ACTIVITY OF PRODUCTION SYSTEMS IN ECONOMICS

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Abstract. Information technologies provide an opportunity to create, collect, save, process and efficiently use information in the processes under investigation. In contemporary world information technologies are most frequently linked with modelling making use of computer technology and information networks. Modelling is considered to be an indirect investigation method for originals of objects used while researching the substitutes of the objects. The information image of the object (information model) may be used as the object substitute. In economic studies it is important to create a business model.

Keywords: Stability of Production systems, statistical modelling, optimization

Introduction

One of the constituent parts for successful application of production systems in economics (PSE) is optimization of functioning of all production and economic parameters of the given system. The aim of this research work is modelling the behaviour of the criterion of stability of PSE.

When speaking about stability of PSE many authors consider the organisational and economic stability of PSE under changing parameters of external environment. Stable position (functioning) of PSE in the market is understood as the capacity of PSE to maintain or increase the tendency of positive growth, i.e., to maintain (increase) the sales volume of goods or services and the profit margin gained by sales of goods and services rendered under different changes of external and internal environment of PSE functioning.

1. Modelling the behaviour of criterion of stability

Modelling the behaviour of criterion of stability of PSE is based on building a set of alternative strategies, the introduction of which at certain periods of time allow maintaining of PSE functioning in a stable position, i.e., the concept of „criterion of stability“ is introduced. Thereby, the main objective of managing stability of PSE is provision of criterion of stability to the given interval of permissible values of the chosen criterion of stability. Taking into account the

2. ECONOMICS AND FINANCIAL MARKETS

infrastructure of PSE as well as the character of relationship of internal and external factors of the functioning environment of PSE the criterion of integral profit is considered to be the generalized (integral) criterion for stability which may be presented as:

\[
P(T_0, T, w) = \int_{T_0}^{T} R(t, w) dt - \int_{T_0}^{T} C(t, w) dt \geq K,
\]

where:
- \([T_0, T]\) – the period of modelling time of PSE functioning;
- \(w\) – the random parameter having a given distribution and affecting the PSE to be investigated;
- \(P(T_0, T, w)\) – the criterion of integral profit of PSE functioning in the period of modelling time of PSE functioning;
- \(\int_{T_0}^{T} R(t, w) dt\) - the integral criterion of profit gained from PSE functioning in the period of modelling time of PSE functioning;
- \(\int_{T_0}^{T} C(t, w) dt\) - the integral criterion of losses linked with the functioning of PSE in the period of modelling time of PSE functioning;
- \(K\) – the given minimal value of integral criterion of profit due to PSE functioning in the period of modelling time of PSE functioning.

The research work presents the following task of dynamic programming (modelling) for assessing the stability of PSE, that may be shown as:

\[
P(T_0, T) = \int_{T_0}^{T} R(t) dt - \int_{T_0}^{T} C(t) dt \geq K;
\]

\[
\sum_{i=1}^{n} \sum_{t=T_0}^{T} Q_{i,t} c_{i,j,t} \leq s_j; \quad j = 1, 2, \ldots, n;
\]

\[
p_{\min_{i,t}} \leq p_{i,t} \leq p_{\max_{i,t}};
\]

\[
Q_{\min_{i,t}} \leq Q_{i,t} \leq Q_{\max_{i,t}};
\]

\[
C_{i,j,t} \leq c_{i,j,t};
\]

\[
i = 1, 2, \ldots, n; \quad t = T_0, \ldots, T,
\]

where
- \(p_{i,t}\) – value of the criterion of integral profit of PSE at the moment of modelling time \(t\);
- \(p_{\min_{i,t}}\) – minimal value of the criterion of integral profit of PSE at the moment of modelling time \(t\) (determined by conditions of modelling);
- \(p_{\max_{i,t}}\) – maximum value of the criterion of integral profit of PSE at the moment of modelling time \(t\);
- \(Q_{i,t}\) – volume of sales (services of functioning) of PSE functioning realized at the moment of modelling time \(t\);
- \(Q_{\min_{i,t}}\) – minimal volume of sales (services) of PSE functioning realized at the moment of modelling time \(t\) (determined by conditions of modelling);
- \(Q_{\max_{i,t}}\) – maximum volume of sales (services) of PSE functioning realized at the moment of modelling time \(t\) (determined by conditions of modelling on the basis of information characterizing real capacity of the market segment);
Ci,j,t – production (services of functioning) price per unit of PSE realized at the moment of modelling time t;
C_{i,j,t} – maximum production (services of functioning) price per unit of PSE realized at the moment of modelling time t (determined by conditions of modelling on the basis of information about the prices of similar production in the market);
n – amount of resources of PSE considered in the process of modeling;
t – modelling time;
T_0 – time for positiveness of the period of stability;
T – time for completing the process of modelling.

2. Modelling process of stability of production system in economics

Fulfillment of the conditions (2) provide appertainment of values of integral profit P (criteria of stability of PSE) to the given boundaries during the period of modelling time t of PES functioning at given constraints (condition 2). The dynamics of the process under investigation takes place during the period of modelling time [T_0,T], see Figure 1.

In Figure 1 trajectory 5 shows violation of the condition of stability (condition 1). As the process of modelling of the stability of PSE is investigated dynamically, the necessity arises to use the methods of dynamic programming. The value of integral profit P (criterion of stability of PSE) is accepted as the target function. During the investigation the dynamic state of PSE is modelled with variable values of parameters of PSE satisfying conditions in system (2).

In Figure 1:
B_n – variety of permissible values of the criterion P after n periods of modelling time of PSE;
A – the interval (set) of values of parameters of PSE (Q, p, c,...) when criterion of stability of PSE falls into interval (set) B_n by optimal trajectories;
B_1, B_2, ..., B_n – the interval (set) through which the trajectory of values of criterion P must pass at the moments of time (control points) T_0+t_1, T_0+t_1+t_2, ..., T. The task of managing the stability of PSE in the process shown in Figure 1 turns into a task of control of trajectory of the values of the criterion P and (if possible) introduction of constructive effects into the process of PSE development at the moments T_0+t_1, T_0+t_1+t_2, ...,T using the information about the possible optimal trajectories of the values of criterion P.
Taking into account the nature of interaction of internal and external factors of environment of PSE functioning, the necessity arises to include the incidental parameter \( w \) with a given distribution into the model. The condition (1) now looks like as follows:

\[
P(T_0, T, w) = \int_{T_0}^{T} R(t, w) dt - \int_{T_0}^{T} C(t, w) dt \geq K,
\]

where:

\( w \) – the incidental parameter (vector of incidental parameters) with the given distribution affecting the behaviour of PSE to be investigated;

\( P(T_0, T, w) \) – the criterion of integral profit of PSE functioning during the period of modelling time \( T \);

\( \int_{T_0}^{T} R(t, w) dt \) – the integral criterion of profit due to PSE functioning in the period of modelling time \( T \);

\( \int_{T_0}^{T} C(t, w) dt \) – the integral criterion of losses linked with PSE functioning in the period of modelling time \( T \). In this case we consider the stochastic modelling of stability of PSE during the modelling time \( T \) of PSE functioning. The task for stochastic modelling of PSE functioning is presented as follows:

\[
P(T_0, T, w) = \int_{T_0}^{T} R(t, w) dt - \int_{T_0}^{T} C(t, w) dt \geq K;
\]

\[
\sum_{t=T_0}^{T} \sum_{i=1}^{n} Q_{i,t} c_{i,j,t} \leq s_j; \quad j = 1, 2, ..., n;
\]

\[
p_{i,t}^{\text{min}} \leq p_{i,t} \leq p_{i,t}^{\text{max}}; \quad i = 1, 2, ..., n;
\]

\[
Q_{i,t}^{\text{min}} \leq Q_{i,t} \leq Q_{i,t}^{\text{max}}; \quad i = 1, 2, ..., n;
\]

\[
c_{i,j,t} \leq c_{i,j,t}; \quad i = 1, 2, ..., n; \quad t = T_0, ..., T.
\]
Figure 2. Graphical representation of changing parameters to be modelled of PSE stability by using the Monte Carlo methods

Using the results of statistical modelling of the PSE state makes it possible to determine the probability characteristics of its stability at the given moments of time, including the identification of risks linked with PSE functioning in the given periods of time. Figure 1 shows the results of statistical modelling of PSE transfer to a stable state.

Table 1. First time positiveness depending on $w_1$ and $w_2$

<table>
<thead>
<tr>
<th>$w$</th>
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<td>1</td>
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<td>67</td>
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<td>4</td>
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<td>4</td>
<td>85</td>
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<td>5</td>
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<td>100</td>
<td>85</td>
<td>100</td>
<td>3</td>
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</tbody>
</table>

Graphical illustration of the results of statistical modelling of PSE stability by using Monte Carlo methods and changing parameters $w_1$ and $w_2$, is presented in Figures 3 and 4.
Figure 3. Graphical representation of the results of statistical modelling of PSE stability by using Monte Carlo methods (Distribution of first time of positiveness)

Figure 4. Graphical representation of the results of statistical modelling of PSE stability by using Monte Carlo methods (polynomial approximation of PSE stability)

Figure 4 shows that cubic polynomial describes the changes in PSE stability well enough when changing the basic parameters of the system to be modelled. In the case of the well-known distribution of incidental parameter \( w \) it may be possible to use the parametric methods of modelling of incidental values. In real life only rarely it is possible to gain a sufficiently good description of behaviour of incidental parameters. In this case nonparametric methods of modelling may be used by applying histograms, methods of local non-parametric regression etc. The authors have described in detail the non-parametric methods of modelling in other research papers (see references).

Conclusions

The application of modelling is connected with the fact that frequently it is not possible to provide a definite description of the behaviour of the economic system being investigated. When investigating the dynamic behaviour of the economic system, i.e. by making definite changes of
parameters of the system under investigation, we frequently observe the existence of incidental factors affecting the character of the behaviour of the system. In addition, it should not be forgotten that the very character of the research also brings its incidental elements into the research process. By using statistical dynamic programming as well as the Monte Carlo method for modelling it has become possible:

1) to set alternative strategies of PSE performance;
2) to model PSE stability using nonparametric techniques;
3) to model the “risk zones” in which the stability of PSE has been distorted;
4) to identify the amount of the financial reserves required for PSE stability in the “risk zones”;
5) to manage functioning of PSE using the integrated criterion of PSE stability.

References

FINANCIAL PLANNING AND SAVING CAPABILITIES OF INDIVIDUALS

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Abstract. The article discusses principles of personal finance management. After examination of theoretical aspects of main features of individuals’ financial behavior and changes during life cycle, financial behavior in recent years of Lithuanian individuals is analyzed. The authors continue to investigate and verify householder’s financial behavior with assumptions made summarizing sentiments of researchers and financial intermediaries'. The goal of this investigation is to ascertain financial saving possibilities of residents and determine the factors of making financial decisions in the economic downturn. The presented survey conclude that Lithuanian citizens are not active in using financial instruments for long term goals (retirement), but save money for unforeseen situations while their income are sufficient.

Keywords: economic downturn, financial behavior, householders’ financial behavior, personal financial management, saving motives.

Introduction

Globalization and boost of financial markets, permanent changes in the economy that is difficult to predict, highlight the need for precise personal financial management. These movements and technological innovations determine increase of personal wealth and changes in property structure, create new personal financial management opportunities, provide new saving and investment products. This modifies individuals’ financial behavior, their attitude to personal financial management, which is defined as an effective motive for deliberately handling in the financial markets and assuring revenues for the future.

Personal finance can be traced back about 200 years to efforts by economists to better understand the daily management of the home1. Personal finances – a cash flow held by a person2. The goal of personal financial management – always have enough money: at present, in the near and distant future3. For years, scientists have been interested in the family’s financial management procedures and processes. The family’s cash management practices have been of particular interest4,5. In 1912, Mitchell noted that it is developed less skill in spending practice than in the practice of making money. To spend money is easy; to spend it well is hard6.

So it is very important to understand personal financial management process and to apply its principles. Some authors have even suggested that learning about money matters starts before language is developed when children accompany their parents into the market and observe the exchange of money for goods at check-out counters.

The paper proposes a hypothesis that despite of created favorable conditions for long-term investment in Lithuania, residents tend to seek short-term goals and mind additional financial resources for the retirement insufficiently.

The goal of the paper is to ascertain factors that stimulate individuals in making financial decisions after assessment of financial status and financial behavior.

The methods used in the article are: systematic literature analysis, comparative analysis, logical analysis, questionnaire, statistical processing of data, logical abstraction, induction, clustering and graphical data visualization methods.

1. Personal financial management principles

Personal financial management provides the opportunity to accumulate funds and lay aside them to the specific goals. Personal financial management process (Fig. 1) is divided differently by various experts, but it can be illustrated as follows:

![Financial management process](image)

**Fig. 1. Financial management process**

It is important to notice that individuals investing in financial instruments pay attention not only to financial motives, but also to:

- possibility to use instrument for simplifying financial operations such as credit cards;
- risk management motives related to insurance products;
- demand for borrowing related to such financial products as consumer and mortgage loans.

The essence of personal financial management is to achieve the planned financial goals. This requires a targeted plan and management of own finances in accordance with mentioned principles. As Phineas Taylor Barnum wrote (1880), those who really desire to attain financial independence, have only to set their minds upon it, and adopt the proper means. This is not surprising – it is always easier to accomplish any object just behaving in a systematic and concentrated way.

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Thus, financial literacy and personal financial management allow preparing for the unforeseen situations, wisely saving and investing, preparing for retirement, avoiding scams, choosing services that better correspond to the needs, avoid buying unnecessary (or unintelligible) products, not overtake risk, which subsequently would result difficulties.

The first step of personal financial management is planning. Its goal is to create a financial strategy according to the individual’s needs and financial possibilities in every life stage. The financial planning process can be divided into the following steps\textsuperscript{15,16}:

- setting financial goals and objectives;
- analysis initial financial status;
- creation of financial plan that corresponds to set goals;
- implementation, review and correction of financial plan due to changes in financial status.

More and more consumers have far better diversified asset portfolios that include a variety of financial assets. Consumers are told to set financial goals and then choose appropriate financial instruments to achieve these goals\textsuperscript{17}. So, when identifying financial goals, individual should first define them: when he expects to achieve the goal, how much money will be needed to achieve it, how much money individual has already accumulated and how the missing funds will be accumulated.

In order to manage effectively personal finances it is necessary to know current financial situation. This requires a consideration of the existing structure of assets and tracking the movements of funds. Arranging a personal balance sheet is a mean for fixing financial situation. A balance sheet is a financial picture of an individual or family at a point in time\textsuperscript{18}. After making the balance sheet it is recommended to compute net personal wealth, by subscribing liabilities from the assets. The bigger this figure, the better and more stable is personal financial situation.

The obtained information helps to make decisions, useful for the implementation of the financial goals. Thus, keeping the budget – is the possibility to allocate earned money more rational.

The life cycle hypothesis is the dominant saving theory in economic literature\textsuperscript{19}. According to the original life cycle model\textsuperscript{20}, people save mainly for retirement purposes since they attempt to maintain the same consumption levels before and after retirement\textsuperscript{21}.

People maximize utility of their future consumption, postulating that the main motivation for saving is to accumulate resources for later expenditure and in particular to support consumption at the habitual standard during retirement\textsuperscript{22}.

DeVaney, Chiremba and Vincent (2004) point out that there are four stage model of family life cycle: single persons, single parent families, couples without children, and couples with children\textsuperscript{23}. These four stages can be readily applied to changes in needs over life cycle\textsuperscript{24}.

Bodie, Merton, and Samuelson (1992) show that human capital significantly influences an individual’s saving, consumption, and investment portfolio decisions over his life cycle\textsuperscript{25}.


DeVaney (1997) indicate that financial decisions of families at mid-life are likely to be influenced by the cost of children's college education and the need to save for retirement\textsuperscript{26}.

The last period of life cycle is retirement, when there is no direct labor income, so there are no funds to save and individuals have to use previously accumulated financial and other property. Importance of retirement planning and accumulating for it highlights constantly increasing life expectancy.

The earlier individual begins retirement program, the greater amount of money he needs at his retirement. It is important to note that pension schemes should include contributions to social insurance, voluntary pension funds and long-term savings without tax incentives.

Summarizing, personal financial management is important throughout all individual’s life cycle, as just properly managing the assets, financial resources and expenditure of sufficient income at any time can be secured. It is important to consider how to allocate the available income – how much to use for consumption and how much for the savings.

2. Analysis of Lithuanians’ financial behaviour

In order to clarify the potential for savings of Lithuanian population the survey has been carried out. Questionnaire is the only way to learn out individuals’ money management habits and underlying motives. A survey was carried out anonymously; paper questionnaires, online questionnaire file, as well as the questionnaire posted on the Internet were used. Data were collected in September–October 2010. The questionnaire consists of 17 questions, along with its answers. Respondents could select more than one option or add their own. More than 400 respondents had to be interviewed\textsuperscript{*}; 412 responses received. Reliability of survey is not less than 95%.

2.1. Analysis of respondents’ social data

The composition of respondents was: 230 women (55.83\%) and 182 men (44.17\%); 184 (44.66\%) unmarried, 228 (55.34\%) – married; 348 (84.47\%) indicated city as their residence place, 34 – town (8.25\%), 30 – village (7.28\%). Respondents under 30 years old comprise 63.35\% of all. Majority of respondents – even 66.02\% – have higher (college or university) education. Even 238 respondents (57.77\%) indicated that they don’t have children under 18 years, 105 respondents (25.49\%) have one child, 60 (14.56\%) have two children of this age; three or more small children have only 9 (2.18\%) respondents.

2.2. Analysis of Lithuanians’ financial situation

The survey revealed that 52.67\% of all respondents put aside their income for saving (Fig. 2), 75.12\% from them save a little bit and 24.88\% – accumulate a lot of savings. 29.13\% of all respondents indicated they earn enough money, and 18.20\% don’t save – they have to use their savings (57.33\%) or to borrow (42.67\%).


\textsuperscript{*} A simple probability sampling for this survey was used. General set – all adults of Lithuania (from 18 years old). In the beginning of 2010 there were nearly 2.7 million of them\textsuperscript{27}. The sample size was determined by the formula of Paniotto\textsuperscript{28}:

\[
n = \frac{1}{\Delta^2 + \frac{1}{N}} = \frac{1}{0.05^2 + \frac{1}{2692968}} \approx 400, \quad (1)
\]

where: \( n \) – the required number of respondents; \( \Delta \) – error; \( N \) – a whole number of members.


\textsuperscript{28} В. И. Паниотто [V. I. Paniotto], Качество социологической информации. Методы оценки и процедуры обеспечения [The Quality of Sociological Information. Evaluation Methods and Procedures of Assurance]. Киев: Наукова думка [Kiev: Naukova Dumka], 1986, p. 207.
Fig. 2. Respondents’ ability to put aside money for saving and investing in September–October 2010

The level of income is important assessing objectivity of financial situation of respondents. Even 44.17% of respondents’ have income per person up to 1000 litas per month. The vast majority (61.54%) has income per person 500–999 litas per month, while 38.46% of them get 499 litas and less per month per person.

Department of Statistics of Lithuania reports that in 2008 average disposable income per person was 987LTL per month\textsuperscript{29}. It could be concluded that more than half of respondents have monthly disposable income higher than the average.

Fig. 3. Monthly income of savers (in percent of respondents-savers)

It should be noted that the number of respondents who have savings is growing in interval of 1000–1499LTL monthly income per person; in other intervals this number gradually decreases (Fig. 3).

Such data can be explained in two ways:

1. Nearly half of respondents have up to 1000 litas monthly income per person, 20.87% receives 1000–1499LTL per month.

2. According to Franco Modigliani and Richard Blumberg life cycle hypothesis, Milton Friedman permanent income hypothesis, and financial motives, it can be argued that the individual saving is determined not only by the amount of monthly income, but also by social factors: age, education, occupation, marital status, future expectations and so on\textsuperscript{30}.


Analyzing liabilities of Lithuanian households it could be stated that 42.96% of respondents have no debts.

Most popular sources of borrowed funds are (Fig. 4):
1. Mortgage loans (39.87%);
2. Credit card debts or consumer loans (25.95%);
3. Financial leases and debts to relatives, friends or other persons (each 12.97%).

It could be concluded that Lithuanians still borrow for short term needs as the popularity of loans on credit cards accounts together with consumer loans was still high enough (these debts amounted more than a quarter – 25.95% between respondents having credits, Fig. 4).

Regardless of debts nearly half of respondents (44.66%) answered that they don’t supervise their expenses. The most difficult for this they indicated discipline (37.55%), nearly one third (33.09%) – time expenditures and more than one quarter of respondents (26.02%) specified unwillingness to collect receipts.

Those who monitor their expenses prefer not to use any software (just to put down in some copybook) or to use the simplest “Microsoft Excel” software.

Summarizing mentioned above factors it could be concluded, that more than half of all adults have money to save and invest. So, we can state that Lithuanians have financial potential for savings and investments and can meet their objectives. But it is important to pay attention that majority of respondents (57.04 %) have more or less debts and don’t supervise their expenses.

2.3. Analysis of saving and investment behaviour of Lithuanian residents

Saving motives differ in accordance with income and social factors (the age of individual, education, occupation, family status, suspense about future, etc.). A comprehensive investigation about influence of education for financial behavior was presented by one of the authors 31. An individual can save at once for some objectives: to buy long-term consumer goods, for retirement, unforeseen events, devise, vacation, etc.

In 2010 there were 18.20% respondents who had no savings; only 30.34% of respondents had 5000 litas savings and more, but even 81.80% of respondents have accumulated more or less savings.

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Table 1. Lithuanians’ saving goals (in percent of respondents-savers) in September–October 2010

<table>
<thead>
<tr>
<th>Saving Objectives</th>
<th>31.45%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unforeseen situations (illness, unemployment, etc.)</td>
<td></td>
</tr>
<tr>
<td>Vacation, travel</td>
<td>16.51%</td>
</tr>
<tr>
<td>Retirement</td>
<td>13.76%</td>
</tr>
<tr>
<td>Home purchase and rehabilitation</td>
<td>12.19%</td>
</tr>
<tr>
<td>Purchase of a car or long-term consumer goods</td>
<td>8.65%</td>
</tr>
<tr>
<td>Education</td>
<td>7.08%</td>
</tr>
<tr>
<td>Repaying debts</td>
<td>6.55%</td>
</tr>
<tr>
<td>Other objectives</td>
<td>3.80%</td>
</tr>
</tbody>
</table>

It is worth to analyze the objectives and forms of savings. The first objective indicated in the respondents’ answers was accumulation for unforeseen situations: 31.45%; it may be related to instability in the markets yet, the high unemployment level and fear to loose permanent source of income (Table 1).

Saving for vacation and travels (16.51%) shows that Lithuanian residents try to spend purposeful leisure even in instable economic situation and treat saving important enough. The objective for home purchase and rehabilitation is on the fourth place (12.19%) though is defined in scientific literature as one the most important saving motives for individuals during life cycle. However it is worth to fix that in these survey even 13.76% respondents-savers indicate that they save for retirement.

Table 2. Saving for retirement of different age individuals in September–October 2010

<table>
<thead>
<tr>
<th>Individuals under 30 years</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>72.41%</td>
<td>27.59%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>30 years and elder</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>93.38%</td>
<td>6.62%</td>
</tr>
</tbody>
</table>

Analyzing savers for retirement (Table 2) it merged that inhabitants above 30 years tend to save for this purpose more than younger. The amount of savers for retirement in the age group under 30 years is up to 11.11% and above 30 years – up to 50.33%. So, despite recommendation to start saving for retirement earlier in Lithuania majority start above 30 years.

In general the saving motive for retirement was indicated only by 13.76% of respondents and is not popular enough in Lithuania though accumulation of funds for this purpose is pointed out as one of the main goals in personal financial management scientific literature. This could be determined due to liabilities (57.04% of respondents indicated financial commitments) or still vital trust in social insurance.

Thus as Lithuanians still tend to save for short terms goals and consumption needs, we may conclude that Lithuanians prefer short term financial goals, but start to ensure accumulation of funds for retirement.

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The survey ascertains (Fig. 5) that even 49.03% of savers use to accumulate their income in bank accounts or in cash; in bank deposit held 25.04% savers and 13.93% of them tend to invest in financial instruments (securities, various funds, investment insurance, etc.). Such forms of savings reflect that Lithuanians do not tend to make long term financial plans.

Even saving for retirement Lithuanian residents are very conservative; more than half respondents indicated that they either pay premiums to Social security fund (47.93%), or to private pension funds (18.13%) and 12.60% of them do not accumulate any funds for retirement. Moreover it is notable that accumulative life insurance is very popular – this is used by 7.36% of all respondents. The rest of them invest in financial instruments, real estate for rent or speculation and bank deposit.

So, however accumulation for retirement indicate only 25.49% of respondents, even 87.26% of them save money for this period of life in one or another manner.

Lithuanian residents do not use long term saving instruments proposed by financial markets. It could be caused either due to low knowledge of investments possibilities, or unwillingness to overtake risk, weak investment skills likewise suspect of financial markets. It again shows that against existence of favorable long term financial conditions, Lithuanians intent to seek short term goals managing their finances and not feel concern about old age.

3. Analysis of correlation between savings and various factors

The goal of analysis – to determine interrelationship between analyzed quantitative factors, i.e. weather individuals try to accumulate finances during “good times” for unforeseen situations and what factors mostly influence saving level.

Table 3. Pair correlation coefficients ($r$)*

<table>
<thead>
<tr>
<th>Pair correlation ($r$)</th>
<th>$Y$ and $X_1$</th>
<th>$Y$ and $X_2$</th>
<th>$Y$ and $X_3$</th>
<th>$Y$ and $X_4$</th>
<th>$Y$ and $X_5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Y$ and $X_6$</td>
<td>0.121002478</td>
<td>0.011646896</td>
<td>0.119133182</td>
<td>0.007357616</td>
<td>0.055702084</td>
</tr>
<tr>
<td>$Y$ and $X_7$</td>
<td>0.314042138</td>
<td>0.509556052</td>
<td>0.210599541</td>
<td>0.550625534</td>
<td>0.019646597</td>
</tr>
</tbody>
</table>

* Here: $Y$ – savings (LTL); $X_1$ – gender; $X_2$ – age; $X_3$ – family status; $X_4$ – children under 18 years; $X_5$ – residence; $X_6$ – education; $X_7$ – monthly income per person (LTL); $X_8$ – payment via credit cards; $X_9$ – self estimation of financial status; $X_{10}$ – expenses follow-up (“yes” or “no”).
Absolutely insignificant interdependence is:
- between amount of savings and age (0.011646896) – respondents in various age groups tend to save similarly;
- between amount of savings and householders with children under 18 years (0.007357616) – existence of under-age children has no impact on level of savings;
- between amount of savings and place of residence (0.055702084) – people living in cities, towns and villages have accumulated the same amount of savings. This indicate positive trend of all respondents independently of living place to care personal finances responsibly;
- between amount of savings and habits to follow up expenses (0.019646597) – both kinds – monitoring their spending or not – tend to save evenly.

Notably small interdependence is:
- between amount of savings and gender (0.121002478) – men tend to save more (their level of savings is a bit higher);
- between amount of savings and family status (0.119133182) – married tend to save more (their level of savings is a bit higher than single).

Interdependence between amount of savings and usage of credit cards is weak and equal 0.210599541 – persons using credit cards for payments have accumulated more savings and tend to save more than those who use them occasionally or never. It could be concluded that using credit cards is an impact for saving.

Interdependence between amount of savings and education is equal 0.314042138, i.e. lower than average – more educated people (with higher education) hold more savings and tend to save more than less educated.

Average interdependence is:
- interdependence between amount of savings and monthly income amount per person (0.509565052) – those who earn more are inclinable to save more. It could be summarized that people tend to save more when they earn more and accumulate savings for the periods when income will be insufficient;
- interdependence between amount of savings and self financial status assessment (0.550625534) – the better people qualify their financial status, the more they tend to put aside a part of income. This confirms proposition that people tend to save more when they earn more and accumulate savings for the periods when income will be insufficient.

Summarizing it is notable, that mostly motivated savers are those who better qualify their financial status and whose monthly income is higher. Respondents aim for non basic goal of personal financial management goal – to accumulate enough money for retirement period, but short term goal – to save more when they earn more and accumulate savings for the periods when income will be insufficient. This indicates that trend in personal financial management in Lithuania is positive and individuals overtake personal responsibility for their financial situation. The level of savings is also a bit influenced by education, i.e. more educated people (with higher education) hold more savings and tend to save more than less educated.

Conclusions

Though personal finance can be traced back about 200 years the efforts of economists to better understanding the daily management of the home finance is still of high interest. Summarizing mentioned above factors it could be concluded, that more than half of all adults in Lithuania have money to save and invest. While Lithuanians have financial potential for savings and investments and can meet their objectives, majority of respondents (57.04%) have more or less debts and don’t supervise their expenses.

In general the saving motive for retirement was indicated only by 13.76% of respondents and is not popular enough in Lithuania though accumulation of funds for this purpose is pointed out as one of the main goals in personal financial management scientific literature. This could be determined due to liabilities (57.04% of respondents indicated financial commitments) or still vital trust in social insurance.
Concluding it is important to emphasize that Lithuanian residents understand the necessity of savings, but unfortunately do not give preferences for retirement period. It means that they still believe in governmental social pensions and do not figure out possible decrease of social security income.

References


WEEKEND EFFECT AT CZECH CAPITAL MARKET

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Abstract. In the course of the investment process it is necessary to examine a large number of
stocks (stock groups) within wide categories of financial assets. The main objective is to find stocks
that are not rated correctly at the given moment, appearing thus from the buyer’s point of view as
interesting to buy. To make such an analysis there is a wide scope of approaches. One of them is the
efficient market theory. In this article the authors aim at verifying the existence of the „weekend
effect“ at the Czech capital market, particularly in the conditions of the Prague Stock Exchange.
The primary data used herein were obtained from official lists of prices of the Prague Stock Exchange.

Keywords: capital market, stock exchange, prediction, weekend effect, verification

Efficient Market Theory

The first references about the efficient market hypothesis can be found in articles by Bachlier
from 1900. His work also explained the theory of random processes of commodity prices, being en-
tirely original but in its time it was not given too much attention. Furthermore, it appeared in an em-
piric survey carried out by Cowles in 1937. However, it was Samuelson to outline the concept of the
modern hypothesis of efficient market as the first one. 1

A comprehensive theory of efficient markets was formulated for the first time by Eugene Fama in
the 60ies and 70ies of the previous century, summarising the theory known until then and above all,
the empiric results available. He then implanted the definition of efficient capital markets in the sim-
plest form into the general framework of efficient market in economic terms, i.e. a market where
prices „fully“ reflect all the information available.2

1. Fama´s concept was followed by many renowned financial economists such as R. A. Brealey,
S. C. Myers, J. C. Francis or R. A. Haugen, who defines the efficient market as a place where stock
prices reflect all the information that is possible to know and that is significant.3 Fama himself later
used a definition more general and deeper set into economic terms where prices reflect the information
available to the extent that the limit benefit produced by usage of the information is equal to the cost
of acquisition thereof.4 Malkiel defines capital markets as efficient if buyers are not able to achieve
excessive returns without accepting excessive risk.5

1 SAMUELSON, P. A. Proof That Properly Discounted Present Values of Assets Vibrate Randomly. The Bell Journal
4 FAMA, E., p. 1575-1617.
   1, pp. 59-82.
Basic Assumptions

The efficient market theory is currently the most significant stream in economics. The theory says that the stock market is efficient and price-creating information is contained therein nearly immediately (relevant information spreads in 30 seconds as maximum). This is the reason why business strategies fail because the price is always objective and adjusts to its internal value, and price movements are affected only by unexpected information, and hence the price changes unexpectedly, too.

Efficient market assumptions are:

- There is a huge number of rational buyers at the stock market continuously analysing and trading.
- Buyers have got sufficient information that is true, cheap and current.
- Buyers respond to new information accurately and quickly.
- Transaction costs are low.
- The market is near-money.
- None of the participants is in any monopolistic or exclusive position.
- Quality infrastructure and legal market regulation.

According to the efficiency power we distinguish three basic forms:

1) Weak efficiency form – the price contains historical information and therefore price predicting based on the previous price curve is not possible, which casts doubts on the technical analysis.
2) Semi-strong form – the price contains historical and current public information, which casts doubts on the fundamental analysis, too.
3) Strong efficiency form – the price contains any and all information including non-public one.

Many researches dealing with the efficient market theory have been carried out but confirmed were just the weak and semi-strong efficiency forms. It has been confirmed that there is non-public information accessible to elect professionals only who thus achieve above-average revenues. This fact is also confirmed by Liu Yongxin in his study of 2009.6

Efficiency tests are divided in the same groups as the forms thereof. Therefore, Fama in his later work introduced three groups again but with modified names giving a better description of the testing procedure.7 The new test groups are revenue prediction tests (for the weak form), case studies (for the semi-strong form) and private information tests (for the strong form). If we want to examine the semi-strong form of efficient capital markets we must first of all check the basic assumption whether the markets are at least weakly efficient.

Revenue Prediction Tests

This group of tests includes a large number of testing procedures. They may be divided into two main groups, which, it needs to be noted are very closely linked one with the other. The first group contains tests of fair game and random walk, including randomness tests, run test, variance ratio test and examination of series correlations. The other one contains anomalies, i.e. regularities in the development of stock returns difficult to be explained in economic terms. One of the anomalies is the January Effect when the returns of the first days of January and the whole month of January in total tend to be significantly higher compared to the other months. Another of the anomalies is the Weekend Effect when Monday revenues tend to be significantly different compared to the other days. Parallel to the Weekend Effect is the National Holiday Effect when the returns of the day following the day off (non trading) tend to be different.

Market Anomalies

Market anomalies are specific features in the stock behaviour that cannot be simply explained on the statistical basis, and sometimes they are difficult to explain on the economic basis, as well. A frequent solution of such problems is an approach explaining anomalies on the basis of specific features

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7 FAMA, E., p. 1575-1617.
in the behaviour of economic players. It is really hard to explain in economic terms why the stock
should trade more on Wednesday than on any other day.

Most of the studies accomplished so far document the situation on the American market primarily. Papers examining the efficiency level in other countries appear only sporadically and if they do they usually refer to highly developed countries, such as Great Britain, Germany or Japan. Notwithstanding that, there is a study dedicated to the Czech capital market testing the efficiency thereof, namely the one by J. Filáček, M. Kapička and M. Vošvrda of 1998. The authors came to the conclusion that the Czech capital market does not even reach the weak form of efficiency based on their testing of 1995 - 1997.

In our article we will draw up an analysis of one of the effects mentioned above – the „Weekend Effect“.

The Weekend Effect

The Day-of-the-Week Effect, also referred to as the Weekend Effect, is one of the most frequently observed anomalies. The theory suggests that on Monday the stock returns are negative. The reason may be seen in the fact that negative news are announced on Fridays after closing, in the total nervousness after the weekend and the review of the buyer’s position during the weekend.

The fundamental objective of our research is to find out whether any day of the week exhibits significantly higher returns than in the other days.

The anomaly most frequently found is that of the significantly lower returns on Monday (Gibbons & Hess, 1981). The same deviation from the standard was found by Harris (1986), who also identified the reasons to negative Monday returns. For big companies the largest part of the loss accumulates over the weekend, from the closing price on Friday until the opening price on Monday. Contrary to this, for small companies negative returns accumulate during Monday. However, these results are not the same for all markets, as shown by Chang, Pinegar & Ravichandran (1993), who did not ascertain this anomaly in the US market but in seven European markets included in their research plus Canada and Japan the anomaly was there. Moreover, they showed that the anomaly was significant for two weeks of each month as maximum.

Methodology and data

The Day-of-the-Week Effect will be examined in the years 2007 – 2010 using official lists of prices. For our research we have chosen a package of stocks traded on the main Prague Stock Exchange market including stock of the following companies in the period 2007 -2010:

1. AAA Auto Group N.V. (AAA)
2. CENTRAL EUROPEAN MEDIA ENTERPRISES LTD. (CETV)
3. Česká zbrojovka, a.s. (ČESKÁ ZBROJOVKA)
4. ČEZ, a.s. (ČEZ)
5. ECM REAL ESTATE INVESTMENTS A.G. (ECM)
6. Erste Group Bank AG (ERSTE GROUP BANK)
7. Jihomoravská plynárenská, a.s. (JM PLYNÁRENSKÁ)
8. Komerční banka, a.s. (KOMERČNÍ BANKA)
9. New World Resources N.V. (NWR)
10. Orco Property Group S.A. (ORCO)
11. PEGAS NONWOVENS SA (PEGAS NONWOVENS)
12. Pražská plynárenská, a.s. (PRAŽSKÁ PLYNÁRENSKÁ)
13. SETUZA, a.s. (SETUZA)

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Returns achieved on a given day are examined on the basis of average returns and only in the main Prague Stock Exchange market, which will make it possible for us to avoid any inconsistency with insufficient liquidity as its influence particularly on small and less traded stock may be essential.

For each stock we have identified the average, standard deviation, number of observations, plus t-statistics testing the hypothesis that the average return of the day is the same as the one of the other days.

Returns were monitored both separately for each year of the survey and in aggregate for the entire period of four years. An overview of the results is summarised in the tables below.

### 2007 - 2010

<table>
<thead>
<tr>
<th>Day</th>
<th>Average return</th>
<th>SD</th>
<th>N</th>
<th>t-statistics</th>
<th>hypothesis $H_0 (\alpha = 0.05)$</th>
<th>hypothesis $H_0 (\alpha = 0.01)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.2127</td>
<td>1.9286</td>
<td>2772</td>
<td>-43.0102</td>
<td>rejected</td>
<td>rejected</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-0.0945</td>
<td>1.7824</td>
<td>2814</td>
<td>-1.8240</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Wednes.</td>
<td>-0.0482</td>
<td>1.7272</td>
<td>2856</td>
<td>-1.5415</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Thursday</td>
<td>-0.0381</td>
<td>1.6984</td>
<td>2814</td>
<td>-0.8026</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Friday</td>
<td>-0.1198</td>
<td>1.9449</td>
<td>2814</td>
<td>-3.4851</td>
<td>rejected</td>
<td>rejected</td>
</tr>
</tbody>
</table>

### 2007

<table>
<thead>
<tr>
<th>Day</th>
<th>Average return</th>
<th>SD</th>
<th>N</th>
<th>t-statistics</th>
<th>hypothesis $H_0 (\alpha = 0.05)$</th>
<th>hypothesis $H_0 (\alpha = 0.01)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.0173</td>
<td>0.5235</td>
<td>686</td>
<td>-0.4304</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Tuesday</td>
<td>0.0100</td>
<td>0.7743</td>
<td>686</td>
<td>-0.5971</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Wednes.</td>
<td>-0.0157</td>
<td>0.7562</td>
<td>714</td>
<td>-1.7607</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Thursday</td>
<td>-0.0128</td>
<td>0.9256</td>
<td>714</td>
<td>-1.3314</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Friday</td>
<td>0.1219</td>
<td>0.6949</td>
<td>714</td>
<td>4.6992</td>
<td>rejected</td>
<td>rejected</td>
</tr>
</tbody>
</table>

### 2008

<table>
<thead>
<tr>
<th>Day</th>
<th>Average return</th>
<th>SD</th>
<th>N</th>
<th>t-statistics</th>
<th>hypothesis $H_0 (\alpha = 0.05)$</th>
<th>hypothesis $H_0 (\alpha = 0.01)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.1527</td>
<td>2.8682</td>
<td>700</td>
<td>5.2623</td>
<td>rejected</td>
<td>rejected</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-0.2488</td>
<td>2.6874</td>
<td>714</td>
<td>0.6829</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Wednes.</td>
<td>-0.3656</td>
<td>2.2928</td>
<td>714</td>
<td>-0.9019</td>
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<td>accepted</td>
</tr>
<tr>
<td>Thursday</td>
<td>-0.5306</td>
<td>2.2939</td>
<td>686</td>
<td>-3.2378</td>
<td>rejected</td>
<td>rejected</td>
</tr>
<tr>
<td>Friday</td>
<td>-0.5263</td>
<td>3.2856</td>
<td>714</td>
<td>-2.2625</td>
<td>rejected</td>
<td>accepted</td>
</tr>
</tbody>
</table>

### 2009

<table>
<thead>
<tr>
<th>Day</th>
<th>Average return</th>
<th>SD</th>
<th>N</th>
<th>t-statistics</th>
<th>hypothesis $H_0 (\alpha = 0.05)$</th>
<th>hypothesis $H_0 (\alpha = 0.01)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.1373</td>
<td>2.2630</td>
<td>686</td>
<td>-0.4140</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Tuesday</td>
<td>0.1175</td>
<td>1.7584</td>
<td>714</td>
<td>-0.9191</td>
<td>accepted</td>
<td>accepted</td>
</tr>
<tr>
<td>Wednes.</td>
<td>-0.0005</td>
<td>2.0638</td>
<td>714</td>
<td>-2.6941</td>
<td>rejected</td>
<td>rejected</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.3929</td>
<td>1.9823</td>
<td>700</td>
<td>3.7866</td>
<td>rejected</td>
<td>rejected</td>
</tr>
<tr>
<td>Friday</td>
<td>0.1824</td>
<td>1.4691</td>
<td>686</td>
<td>0.3678</td>
<td>accepted</td>
<td>accepted</td>
</tr>
</tbody>
</table>

### 2010

<table>
<thead>
<tr>
<th>Day</th>
<th>Average return</th>
<th>SD</th>
<th>N</th>
<th>t-statistics</th>
<th>hypothesis $H_0 (\alpha = 0.05)$</th>
<th>hypothesis $H_0 (\alpha = 0.01)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.5436</td>
<td>1.0296</td>
<td>700</td>
<td>16.0719</td>
<td>rejected</td>
<td>rejected</td>
</tr>
</tbody>
</table>
In the table “Summary of the entire period“ we can see returns significantly lower on Friday and significantly higher on Monday, which is not consistent with the observation of world markets.

In world markets we witness a significantly different return on Monday, which can be explained by the fact that Monday follows the weekend during which decisions about investment pile up and hence, returns are considerably different from the other days of the week.
In this case, however, we get a completely different result. The return is significantly lower on Friday. If we are to explain this anomaly on the similar basis as Monday on world markets we would need to discover what differs Friday from the other days. This difference would also need to be very specific for the Czech Republic. A fundamental psychological effect surviving the times of the previous regime is the phrase „Friday is a small Saturday“. Friday could thus become a sort of a Czech Monday in terms of trading or labour in general.

Taking into consideration that the statement indicated above is valid and the psychological effect of a „small Saturday on Friday“ is real it should be the same for every single year. Should the outlined psychological phenomenon persist and be really strong it would be possible to see it in each year. For example, if it really were a kind of a hold-over of the past we could expect a gradually decreasing t-statistics in the absolute value. This would happen provided that the Czech Republic moves towards a freer and more efficient market.

Having studied the years 2007-2010 one by one, we may say that the t-statistics in its absolute value actually goes down with the exception of 2010 when the world crisis hit the Prague Stock Exchange.

Conclusions

The Day-of-the-Week Effect was confirmed in the analysed stock although not in a clear way. Unlike the world markets where in most cases there was a significant negative return on Monday, on the Czech stock market we observed a significantly higher return on Monday and significantly lower return on Friday if we examine only average returns per day.

However, if we study the anomaly in more detail and try to find the reason to it we will at first come to the conclusion that lower Friday returns can be caused by a psychological effect. This effect indicates that in the Czech Republic the buyer’s working activity on the last days of the week is not as high as on the other days.

The Day-of-the-Week Effect shows itself on different days in each of the years studied, in some cases it is not present at all. Using an investment strategy based on the observed anomalies the buyer would not reach any excessive return in the next year.

References

3. FILÁČEK, J.; KAPÍČKA, M.; VOŠVRDA, M. Testování hypotézy efektivního trhu na BCPP. Finance a ūvěr, 1998, roč. 48, č. 9, s. 555-566. ISSN 0015-1920
PERSPECTIVES OF THE EVOLUTION OF THE ECONOMY OF INDIA

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Abstract. India is one of the most up-graded countries of the world and it has the qualitative conditions to become an economic superpower. The young population of India has a strong potential not only to create a huge labour force, but also to provide significant economic benefits to the economy with a substantial increase in total consumption and spending. In addition improving legal regulations will lead to a liberalism which will improve business effectiveness. Alongside foreign investments there is a crescendo in the buying power of the population which affects the economics. Also an increased number of academic and professional people (more than a million per year) adds to this effect. These people positively stimulate domestic demand. So the economics of India is not wholly dependent on foreign investments but it is supported by a growth of the domestic demand of the large middle class. European investors have many possibilities to invest in the economics of India, more and more in sectors with a big added value (computers, pharmacy). The profit-cost ratio of funds based on shares listed on the Stock Market is amongst the best.

The goal of the article is to show perspectives of the evolution of India which together with China and some other developing countries has determined the direction of the global economy during the last ten years. Objects of the article are main macroeconomic indices of India, possibilities of investment in India through funds and tourism as the most important part of services as well.

Keywords: GNP of India, balance of trade, foreign national debt, India Equity Fund, tourism in India, tourism

Introduction

India appertains to the quartet of countries of the future known as BRIC (Brazil, Russia, India and China). The country has 1.2 billion in population and this number should exceed to 1.5 billion by 2030 and exceed China’s population. Services produce for more than half of GDP. These are often services outsourced by multinational corporations, whether they are customer service or business process outsourcing.

India's economic boom started in the early 90’s of the 20th century when transformation of the economy began by liberalization and privatization. Despite of the undeveloped nature of India’s economy, a service share is comparable with some advanced countries (OECD). Services account for over half of value-added sectors of Indian economy, while industry accounts for only a third and agriculture a fifth. Consumption is at a very high level. India is the second most populous country which means a large market with constantly increasing purchasing power of the population. Growing middle class drives domestic demand, competitiveness and productivity, and influences the changes in basic needs. Investments into the economy represent approximately one third of India's gross domestic product and are largely of domestic origin and therefore the impact of the current financial crisis is only slight, compared with other Asian economies. Also due to the fact that export accounts for only 15% of GDP.
Table 1. Planned evolution of the World’s GDP (in %)

<table>
<thead>
<tr>
<th>Country</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>-2.5</td>
<td>2.7</td>
</tr>
<tr>
<td>UK</td>
<td>-4.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Euro area</td>
<td>-3.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Japan</td>
<td>-5.3</td>
<td>1.7</td>
</tr>
<tr>
<td>China</td>
<td>8.7</td>
<td>10.0</td>
</tr>
<tr>
<td>India</td>
<td>5.6</td>
<td>7.7</td>
</tr>
<tr>
<td>Developing countries</td>
<td>2.1</td>
<td>6.0</td>
</tr>
<tr>
<td>World</td>
<td>-0.8</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: World Economic Outlook Update, IMF, January 26, 2010

The current global crisis has affected all economies in the world and has caused a decline in their performances. The Indian economy stands out among all the countries hit by the crisis. Important factors for that are healthy economic conditions such as strong domestic demand which to some extent isolates country from external negative economic impacts, large domestic savings most of which had been converted into domestic investments, low dependence on external demand and effective monetary measures of the government. Economic growth is supported also by a huge population. Growth is not reliant only on exports. Very important is significant middle class (about 400 million) who allows huge economic activity and also protectionist policy of Indian government that protects domestic firms against foreign competitors.

1. The impact of global crisis to the Indian economy

The impact of the global crisis to the Indian economy reflected in 2008 and led to a decline of GDP growth. But crisis did not affect the economy as much as expected, mainly due to the large domestic market. The Indian economy, like other global economies has recorded decline of GDP, export, import, stock market collapse, a lack of liquidity in the financial sector and the consequent managed decline of basic rates, the weakening currency, a reduction of commodity prices.

Despite of that India’s economy remains the second fastest growing economy in the world (after China). In the fiscal year 2008/2009 projected economic growth was 7.1%, but actual was at 6.7%. Projected GDP growth of India for 2010 (chart 1) is estimated at 7.7%, according to the International Monetary Fund - IMF (China at 10.0%). Important is the change of the GDP structure. The share of agriculture has been declining; the share of industry remains at the same level and the share of services have been increasing. India is the real driving force in global information technology field and services related to them. Although IT sectors contributed to only 4% of GDP last year, engineering and services has been primarily the engine of economy.

In 2008, India's GDP was 3-times lower than the Chinese GDP, but analysts from Goldman Sachs have projected that India's GDP will grow at an average rate of 8-9% annually and reach China’s current situation in 2020.

India experienced a high inflation in 2008, the highest in the last 13 years. In 2009, the inflation in wholesale prices (WPI) progressed more positively than expected by Reserve Bank of India (RBI) and reached 7.3% at the end of the year. The biggest problem of the Indian economy is continuing sharp rise of the retail price inflation (CPI). In the first half of 2009 it was below 10%, but significantly it increased to13.9% in the second half of the year, mainly due to increases in food prices due to crop failure and a supply deficit.

Export began to decline in late 2008 and the next year the situation had worsened. The government sought to promote exports, despite its effort, a massive outflow of orders occurred mainly from Europe and USA due to the global crisis. The automobile industry received the hardest hit. Import decline was recorded only at the beginning of 2009, though equally energetic as export decline (May 2009 decline of 39.2%). India’s trade balance is a long-term negative and reached 119 billion USD in 2008/2009. Despite of the decline of Indian export growth, it has been growing relatively rapidly, but lags behind the high rate of import growth. While intangible export has increased, it is insufficient to cover for the growing trade deficit, and force increasing demands to import. In the year 2009/2010 there is a further slowdown in foreign trade and the widening trade deficit. Improvement occurred in May 2010, when exports recorded the year-on-year increase of 35.1% and import increased by 38.5%.
Foreign trade is the primary channel of transmission of financial crisis, but its share of the overall economy of India is not too significant. An efflux of foreign institutional investors from the Indian market, due to their effort to ensure the liquidity of parent companies overseas, caused a massive decline in foreign currency reserves (about 50 billion USD). A lack of liquidity also affected the Indian financial sector, which had to ensure its financial institutions would not bankrupt after loss of short term mortgages from western interbank market needed to ensure long term financing. Surprisingly high is trust of Indians living and working abroad who have increased transfers of their funds to Indian banks.

Table 2. Main macroeconomic indicators of India

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP in bill. USD (in real prices)</td>
<td>465</td>
<td>548</td>
<td>628</td>
<td>718</td>
<td>812</td>
<td>887</td>
<td>928</td>
</tr>
<tr>
<td>Year-on-year growth of GDP (in prices of 1999/2000)</td>
<td>3.9</td>
<td>8.6</td>
<td>7.6</td>
<td>9.0</td>
<td>9.2</td>
<td>9.3</td>
<td>6.7</td>
</tr>
<tr>
<td>GDP per habitant (in USD)</td>
<td>357</td>
<td>403</td>
<td>437</td>
<td>655</td>
<td>741</td>
<td>780</td>
<td>830</td>
</tr>
<tr>
<td>Inflation rate in % measured by consumer price index</td>
<td>4.1</td>
<td>3.5</td>
<td>4.2</td>
<td>5.0</td>
<td>6.9</td>
<td>6.4</td>
<td>9.3</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>8.9</td>
<td>7.0</td>
<td>8.1</td>
<td>7.5</td>
<td>7.6</td>
<td>7.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Rate of interest</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>7.50</td>
<td>7.75</td>
<td>6.0</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Source: Reserve Bank of India

After several years of growth, the Indian economy has slowed down as a result of the global crisis. The growth of industry fell deeply in 2008, although only modest impact was expected given the size of the internal market. Poor infrastructure and a lack of electricity is the biggest obstacle of country and they both limit rapid economic growth. India invested only 4.2% of GDP into infrastructure construction in years 1995-2007 (China approximately 8.5%), but quickly realized its importance and the situation has radically changed by investing 8-9% of GDP at the present time. Essential to sustain economic growth is the increase of competitiveness and productivity of domestic producers in order to advance trade liberalization. Necessary for future development is the elimination of unhealthy labor laws, and large bureaucracy resulting in improvement of cooperation central government and the employer unions. The Indian economy has been in a budgetary deficit for many years. Fiscal policy and its consolidation has been one of the main pillars of economic reform. In the early 90’s, the fiscal deficit reached 6.1%, then declined in the years 1996/1997 to 4.1%, but has began to rise again from 2000. It was at the highest level of 6.2% in 2001/2002. In recent years, the deficit was maintained at the 4% level, but has increased again to 6.0% in 2007/2008, to 6.7% in 2009/2010 and is expected to be at 5.5% of GDP in 2010/2011.¹

Table 3. Fiscal deficit of India

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal deficit</td>
<td>1 232</td>
<td>1 252</td>
<td>1 463</td>
<td>1 486</td>
<td>1 509</td>
<td>2 412</td>
<td>3 369</td>
<td>3 814</td>
</tr>
<tr>
<td>Ratio to GDP in %</td>
<td>4.5</td>
<td>4.0</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
<td>6.0</td>
<td>6.7</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Source: Reserve Bank of India

External debt of India increased to 22% of GDP in the year 2008/2009. It means big improvement of the situation to comparison with 1991 when the country was the third most indebted economy in the world. Although external debt rose by 3% again after the country was hit by the current financial crisis. There has been a change in the composition of external debt in the past decade. Government debt to non-government debt ratio was 60:40 in the 90’s but now has changed to the opposite ratio of 40:60.

Table 4. Foreign debt of India

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign debt in % of GDP</td>
<td>17.8</td>
<td>18.5</td>
<td>17.2</td>
<td>18.1</td>
<td>19.0</td>
<td>22.0</td>
</tr>
</tbody>
</table>

Source: Reserve Bank of India

¹ Fiscal year ends to 31.03.
* budget planned for 2010/11
2. ECONOMICS AND FINANCIAL MARKETS

Fiscal measures are very limited due to the high government debt, therefore the emphasis is on a monetary policy. The Indian government has adopted incentives to boost the economy. The government focused on metallurgy, automobile and textile industries by adopting the first stimulus package in December 2008. The purpose of this package was to support India's total domestic demand and export. This meant reduction of consumption tax by 4% by the end of March 2009, an increase in government spending by 200 billion rupees, reduction of interest rates and issuing 3 billion rupees into circulation. The purpose of second stimulus package in January 2009 was to stop the slowing of economic growth, increase liquidity, boost of export and the housing sector, which reduces the consumption tax from 10% to 8% and tax on services from 12% to 10%. By these adopted measurements the government sought to strengthen anti-dumping regulations to protect domestic industry from cheap imports. Interest rates were reduced, new policy called cheap money policy was introduced, volume of obligatory minimum reserves was reduced from 9% to 5%, basic short-term repo rate was reduced from 9% to 5.5%, reverse repo rate fell to 4% and duties on many goods were reduced as well. These incentive measurements have proved to be a success, as there has been a growth in industrial production and consumer goods and preconditions for raising interest rates that have been created strengthening national currency by 3%.

2. Tourism

Tourism is the widest sector of service industries. Its share of GDP is 6.23 % which is 8.78 % of all employees in the country. India is home to many ancient civilizations and a centre of important historical business routes. There are over 5 million foreign tourists and 562 million domestic tourists. The tourism earned in 2008 around 100 billion USD and it is expected to grow to around 275.5 billion USD in 2018 at a 9.4 % annual growth rate. According to “Hospitality 2015”, the paper of Deloitte about the global evolution of tourism, in next years there are several factors influencing the growth of tourism. One of them is the growth of the middle class in India and China. According to their prognoses there will be 50 million tourists in India in 2020 wanting to travel abroad. Tourism in India and China will outrank UK, France and Japan.

The evolution of economics and tourism is connected with the evolution of transport. Air transport currently caters for around 100 million passengers per year. In the next 6 years this number will double by reason of the huge investments of the Indian government in the reconstruction and construction of airport infrastructure.

Medical tourism in India is an evaluating philosophy. Indian corporate hospitals excel in cardiology and cardiothoracic surgery, joint replacement, orthopedic surgery, ophthalmology and urology to name a few of most common treatments. The reason India is a popular destination is because of its infrastructure and technology in which is on par with those in USA, UK and Europe. All medical investigations are conducted using the latest, technologically advanced diagnostic equipment. Stringent quality assurance exercises ensure reliable and high quality test results.

3. Investing in the Indian Stock Market

Market capitalization of the BRIC countries has increased by 400% as far as to 16% of world capitalization from 2003 to 2008. The US share declined from 45 to 24% simultaneously. As we can see from trend over the past decade, only stock markets of young essence of market economies such as Russia, China, India or Brazil were making money. Russian stock index has profited more than 720%, Brazilian stock index has earned 300%, Indian stock market around 250% and Chinese stock market around more than 130%.

There are many possibilities of integration for emerging Asia into investment portfolio’s, with the most world known agent’s offering mutual funds to this region. The best companies have their agents directly in the country, managing their funds locally.

There are over 5000 companies that can be traded on the Indian stock market. Market capitalization of over 129 of them has exceeded more than 1 billion USD. It is appropriate to invest through the Fund with local administrators in the country.

Another way to get into the regional portfolio’s, are index funds, but to find a fund involving the entire region is problematic. The largest agent of index funds in the world, Barclay's Capital, does not even offer index funds for the Asian markets.
The Indian stock market has been growing strongly and it is certain that India will continue to progress in economic growth. Indian stock market has been hit by the crisis as well as other markets, but has never even come close to its several year minimum.

Indian companies have plenty of cash and they invest not only into "half-hearted" Indian export, but mainly several billions of dollars of business is associated with building infrastructure.

For investors who want to participate in the anticipated growth of the Indian market, there is an interesting option, and that is through equity funds focusing right on India, through the following ETFs:
- iShares S & P India Nifty 50 Index Fund (in USD)
- PowerShares India Portfolio (USD)
- WisdomTree India Earning Trend (USD)

Indexes have been developing by the same pace, except for the collapse that occurred in October 2008 - March 2009, when impact of the current crisis in India appeared. Index has begun to increase with slight variations since April 2009.

Bombay Stock Exchange is not available to ordinary investors, but several shares can be purchased through the secondary listing on foreign stock exchanges in New York, London or Frankfurt. As already mentioned, the easiest way for small investors is to invest through mutual funds. In general, mutual funds have a portfolio of 50-60 shares and the top 10 positions represent about half of the portfolio. Only HSBC fund has 97 titles in its portfolio, but also in this fund, the top 10 shares together represents half of the assets. Broad diversification is then meaningless, as the remaining 87 shares will not significantly affect the performance of the portfolio, due to the fact, that they represent less than one percentage of fund assets.

Historically, the Fund Franklin Templeton accounts for highest performance, which from its establishment has surpassed the established benchmark - the MSCI India index. The results are monitored on the semi-annual, annual, and three-year basis. Funds Fortis and HSBC have also solid performances. HSBC has the longest history and has surpassed the benchmark by 103 percentage points in 10 years.

The difference 15.23% per annum HSBC Fund to 11.98% per annum MSCI seems to be small (chart 5). In annualized terms, the power of compound interest on losing. If the investor has invested 10 years ago, 100 units, the value of shares of the Fund HSBC would be about 413 units at present the index value of zero investment cost would be 310 units.3

Performance of funds in individual years (chart 5) points to a higher volatility of HSBC fund and lower volatility of Franklin Templeton fund (50 shares). Better historical performance of the Fund, Franklin Templeton is not due to a higher appreciation, but mostly due to the fact, that fund recorded a lower loss in 2008.

### Table 5. Historical performance (EUR) and costs (TER) of funds of Indian shares

<table>
<thead>
<tr>
<th>Fund</th>
<th>6 months</th>
<th>12 months</th>
<th>3 years p.a.</th>
<th>5 years p.a.</th>
<th>10 years p.a.</th>
<th>TER 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fortis India</td>
<td>21.10 %</td>
<td>36.43 %</td>
<td>7.04 %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Franklin India</td>
<td>25.46 %</td>
<td>42.84 %</td>
<td>9.05 %</td>
<td></td>
<td></td>
<td>2.00 %</td>
</tr>
<tr>
<td>Horizon Access India</td>
<td>18.74 %</td>
<td>36.23 %</td>
<td>5.31 %</td>
<td>17.15 %</td>
<td></td>
<td>1.82 %</td>
</tr>
<tr>
<td>HSBC Indian Equity</td>
<td>19.22 %</td>
<td>46.75 %</td>
<td>5.81 %</td>
<td>18.61 %</td>
<td>15.23 %</td>
<td>1.87 %</td>
</tr>
<tr>
<td>ING India Focus</td>
<td>20.21 %</td>
<td>38.91 %</td>
<td></td>
<td></td>
<td></td>
<td>1.84 %</td>
</tr>
<tr>
<td>Parvest India</td>
<td>19.96 %</td>
<td>34.21 %</td>
<td>4.27 %</td>
<td></td>
<td></td>
<td>2.12 %</td>
</tr>
<tr>
<td>Pioneer Indian Equity</td>
<td>20.82 %</td>
<td>31.20 %</td>
<td>5.02 %</td>
<td></td>
<td></td>
<td>1.95 %</td>
</tr>
<tr>
<td>SGAM India</td>
<td>21.34 %</td>
<td>31.83 %</td>
<td>2.84 %</td>
<td></td>
<td></td>
<td>2.43 %</td>
</tr>
<tr>
<td>MSCI India (Net)</td>
<td>22.26 %</td>
<td>38.48 %</td>
<td>6.13 %</td>
<td>19.61 %</td>
<td>11.98 %</td>
<td></td>
</tr>
</tbody>
</table>


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2 ETF (Exchanged-Traded Funds) are built like shares funds but traded like shares.
3 For a comparison are index’s net results with dividends. In fact, every index investment has some costs, for example year’s and manager’s fees.
ABN AMRO Asset Management is an independent investment division of Dutch bank ABN AMRO (13th largest bank in the world), which plays an important role in the Euro zone due to financial strength and stability in particular.

One of the funds of this group is a fund focused on India. ABN AMRO Bank is one of the fastest growing foreign banks in India. In order to improve the performance of the funds, ABN AMRO Asset Management set up directly in India a team of agents who have years of experience in investing into Indian companies named Global Emerging Equity Fund. Managers analyze the current situation in the region and directly use the information from the region on the most appropriate investments. Companies with best growth qualifications are being selected, so called “top-down approach”. They use so called “bottom-up approach” with selecting smaller companies to the portfolio, analyzing their profitability, price/earnings per share ratio etc. There are 35-45 most promising companies included in the portfolio. The objective of India Equity Fund is to maximize the profit (in USD). The fund invests at least 2/3 of net assets into securities of companies located in India or companies that make most of their revenues and profits in India.

India Equity Fund is suitable for investors who want to invest long term and are willing to accept the risk coming from each evolving market, as large volatility, unstable legal system, and regulatory environment etc. The fund is suitable for portfolio diversification, since it is not directly affected by fluctuations in mature capital markets.

As you can see from charts Nr. 6 and 7, development of the India Equity Fund and the benchmark of the Indian market are about the same. It declined in fiscal years 2007-2009, but showed a significant increase (34.96%) in the next year.

<table>
<thead>
<tr>
<th>Table 6. Evolution of India Equity Fund and benchmark in USD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>India Equity Fund</td>
</tr>
<tr>
<td>MSCI India Index</td>
</tr>
</tbody>
</table>

Source: Nomura Asset Management UK. Ltd

<table>
<thead>
<tr>
<th>Table 7. Annual comparison of evolution of funds to 30.06.2010 in USD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010/09</td>
</tr>
<tr>
<td>India Equity Fund</td>
</tr>
<tr>
<td>MSCI India Index</td>
</tr>
</tbody>
</table>

Source: Nomura Asset Management UK. Ltd

Most major stock markets in the world showed large profits the last year. The highest appreciation came from investments in the BRIC countries (chart Nr. 8). Shares of developed countries showed gains as well, but they mostly made up for high losses from 2008. Investors have focused mainly on Asian markets, where shares have risen on average by 68%. Shares in Western European markets have gained about 25% and have recorded the highest growth over the past ten years.

<table>
<thead>
<tr>
<th>Table 8. Evolution of share indexes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
</tr>
<tr>
<td>MSCI  All country world</td>
</tr>
<tr>
<td>BSE Sensex</td>
</tr>
<tr>
<td>Shanghai composite</td>
</tr>
<tr>
<td>Bovespa</td>
</tr>
<tr>
<td>RTS</td>
</tr>
</tbody>
</table>

Source: www.yahoo.finance.com
Bombay Stock Exchange (BSE) is the oldest stock market in Asia (1875). It is the first exchange in the country, who has received recognition from the Government of India (1956), the largest exchange in the number of listed companies in the world (4700) and the fifth largest in number of processed transactions. The best known and most widely used BSE Sensex index is a value-weighted index, calculated with free-float capitalization methods. It consists of 30 shares from 12 major sectors.

Development of BSE Sensex index has evolved similarly to GDP from about 2003 and has an upward trend until 2008, when it slowed down, similar as GDP. Interest rates were falling steadily until 2003 and their value were rising slightly by 2008/2009 and since then have decreased due to stimulus incentives (graph 1).

Graph 1. Evolution of GDP, interest rates and index BSE Sensex

Source: according www.rbi.org

Conclusions

India like some other developing countries is managing the current economic crisis relatively well. Before the crisis the country had a positive balance of payments and so it has given itself sufficient space to affect required fiscal measures. They have been able to use anti cyclical policies to protect the country against external shocks. India has strengthened its industry which has given it comparative advantages, for example an abundance of workforce, natural resources and capital grants. These advantages have been a foundation of its competitive ability, dynamic growth and great fiscal and international position. If countries want to spread their comparative advantages and profit in the global world, they need a system of pricing reflecting a relative abundance of their production factors. Firms need to be stimulated to enter industries where they can use any superfluous workforce and so replace a relative shortage of capital or alternatively to bring down their costs and increase their competitiveness. Software companies in India are a positive example of this. A transplantation of comparative advantages has strengthened the country to enable it to be secure against the crisis and given it the possibility to swiftly create both physical and work capital. The help of the government of India is an important part of this process.

India is a country with huge possibilities for tourism. There are still very poor provincial states in India where the evolution of tourism is the only chance for them to reflect the success of the remainder of the country. Their culture is unique and a way to reach this intent of economic prosperity is the evolution of massive tourism which will have only a minimal impact on the culture and the environment.

As Indian corporate hospitals are on par with, if not better than the best hospitals in Thailand, Singapore etc. there is scope for improvement and the country may become a preferred medical destination. In addition to the increasingly top class medical care, a big draw for foreign patients is also the very short and, in some cases no, waiting list as is common in European or American hospitals.

Despite India's economic growth in the current global crisis, rising inflation is dangerous for the further growth of Indian economy and stock market. In March 2010, the Indian consumer prices rose by 14.9%, the highest inflation of the G-20 countries. Food prices increased drastically and their production
level fell to 1950 level. On the other hand, demand has been growing, thanks to higher income per capita in the last 15 years (56%) and an expanding middle class. As we can see from history, inflation has also resulted in political instability in the country. Indian government has raised interest rates to try to curb inflation. Despite current problems of the Indian economy, it is very promising to invest in this economy due to enormous potential this country has.

Summarizing we can state the current global crisis have not effected the Indian economy as badly as USA and countries of Europe, some of them have had huge debt problems. The countries of G 7 contributed before the beginning of global crisis GDP around 60 per cent higher than seven largest developing countries. Last year the difference brought down on around 32 per cent. Positions changed during the current global crisis, the countries of BRIC including India achieved positive GDP growths (graph 2). India has a large potential of the evolution of the economy, tourism, medical tourism as its very important part. The investment in India through funds seems very advantage mainly at the time of enhanced risk on global financial markets.

Graph 2. Real contribution to World GDP growth

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GLOBAL FINANCIAL CRISIS 2007-2009 IN REGIONAL EMERGING MARKETS

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Abstract. The global financial and economic crisis changed the main focus on exports to developed markets towards a more balanced economic structure supported by domestic and regional financial development. The crisis provides an opportunity for strengthening the international financial architecture through regional financial system reform, regional consensus and integrated decisions. There are different approaches to financial liberalization, prudential regulation, and financial innovation, and emerging markets have the range of weaknesses in the international financial system. The Baltic States faced the global financial crisis show the exceptional case in compare with other emerging economies.

Keywords: Global financial crisis, Group of 20, systemic risk, financial sector development.

Introduction

The global financial crisis 2007-2009 shows an essential degree of global financial integration and its impact on emerging financial markets. The resistant by regional economic and financial system has been different according to the number of external/internal driven factors. There are number of studies how United States (US) sub prime mortgage (2007) market crash effected developed industrialized countries and emerging economies. The common recognition that regionally integrated financial markets became vulnerable to direct and indirect shocks in emerging Europe, Latin America and East Asia’s and the future of financial integration on regional and global level depend on new financial architectural issues and policy consolidations.

The Financial crisis arise the discussion about the limits and benefits of financial integration, as theory support the ideas of benefits of risk sharing and fostering economic development and growth. On the other hand, the cost of regional financial integration should be comparable with intensified financial links and increased risk of cross-border financial vulnerable. Finally, what lessons can the region's policy makers use from the post-crisis experience of financial deregulation and liberalization in order to perform their economies. Therefore, an in-depth analysis of the process of financial integration, at both the regional and global levels, will increase understanding of impact on emerging economies and support strategies for financial market development. Due to the field of the research about the financial crisis aftermath shifting in the economy growth the article describes fundamental aspects of financial stability in regional emerging financial markets. Unequal post-crisis economy recovery in the emerging financial markets create necessity analyze financial instability prevention.

1. Emerging Financial Markets (EMS) In The Globalization Context

There are several classification of the category Emerging market (EM) assets have historically been regarded as inherently risky and particularly vulnerable to international shocks that result in a general increase in investor risk perceptions. IMF/OECD assigned developing countries to Emerging economies depending by range of factors as CPT, Fiscal Balance, Current Account, Official reserves and External Debt/Domestic Credit. In the table 1 the proposed EM markets are grouped according to main macro indicators which are compared in 2006 against 1996.
Table 1. Main macro indicators of assignment to the Regional Emerging Markets (EM)

<table>
<thead>
<tr>
<th></th>
<th>All EMs</th>
<th>EM Asia</th>
<th>EM Europe, Mid-East, and Africa</th>
<th>EM Latin America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Price Inflation (%)</td>
<td>18.7</td>
<td>5.2</td>
<td>6.7  4.0</td>
<td>23.9  5.9</td>
</tr>
<tr>
<td>Fiscal Balance / GDP (%)</td>
<td>-2.5</td>
<td>-1.2</td>
<td>-1.5 -1.6</td>
<td>-4.5 -2.3</td>
</tr>
<tr>
<td>Current Account / GDP (%)</td>
<td>-2.4</td>
<td>1.8</td>
<td>-3.8 4.1</td>
<td>-2.3 -1.4</td>
</tr>
<tr>
<td>Official Reserves / GDP (%)</td>
<td>12.2</td>
<td>21.1</td>
<td>13.9 32.3</td>
<td>11.9 18.8</td>
</tr>
<tr>
<td>External Debt / GDP (%)</td>
<td>40.2</td>
<td>36.7</td>
<td>37.2 29.0</td>
<td>38.6 47.7</td>
</tr>
<tr>
<td>Domestic Credit /GDP (%)</td>
<td>54.4</td>
<td>63.1</td>
<td>83.0 92.2</td>
<td>52.7 59.6</td>
</tr>
</tbody>
</table>

Even CPI changes in one decade show the impact of integration on EM stability and effectiveness. All main indicators has positive trend, and as figures in the Table 1 connected to the crisis impact on world economy with EM economies groups. In very short time one-two years the recovering process started in the most world economies. In-depth analysis shows the scope of factors influencing the speed and the cost of recovery. There are several classifications of the category Emerging market (EM) with connection to their initially inherent risks and vulnerable to international shocks. In the examining the linkages between EM and non-EM main macro indicators and changes in stock and bond markets in the past two decades, with a focus on how these relationships played out during the global financial crisis of 2007-2009 was find that over the longer period EM recovery changes have on average moved in the same direction as of non-EM (GDP growth trends in Tab.2, as sample). EM sensitivity to international shocks and EM sovereign specific factors of internal financial system stability pushed investors to sell of EM assets in response to increase in risk.

Integration with Western Europe was beneficial for Central and Easter Europe (CEE), as Emerging Europe group. There are number of studies to support the concept of integration and positive impact on real economy and economy wealth. Here we can see illustration of argue about quick reaction of CEE economies on integration with EU-15, and main macro indicators reflected the positive changes in the regional integration. The changes of Income per capita in, attractiveness as FDI location (figure 1).

Table 2. GDP Growth, %

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011*</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>3.2</td>
<td>-1.3</td>
<td>1.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Adv. Economies</td>
<td>0.8</td>
<td>-3.8</td>
<td>0.01</td>
<td>2.6</td>
</tr>
<tr>
<td>US</td>
<td>1.1</td>
<td>-2.8</td>
<td>-0.05</td>
<td>3.5</td>
</tr>
<tr>
<td>EU</td>
<td>1.1</td>
<td>-4.0</td>
<td>-0.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Japan</td>
<td>-0.6</td>
<td>-6.2</td>
<td>0.5</td>
<td>2.2</td>
</tr>
<tr>
<td>EM Economies</td>
<td>5.2</td>
<td>0.01</td>
<td>3.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Emerging Asia</td>
<td>6.3</td>
<td>2.5</td>
<td>5.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Emerging South Asia</td>
<td>7.0</td>
<td>4.3</td>
<td>5.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Emerging Europe</td>
<td>4.0</td>
<td>-4.8</td>
<td>0.7</td>
<td>3.6</td>
</tr>
<tr>
<td>Emerging Americas</td>
<td>4.0</td>
<td>-1.7</td>
<td>1.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Emerging Middle East</td>
<td>5.3</td>
<td>0.5</td>
<td>2.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Emerging Africa</td>
<td>4.8</td>
<td>1.5</td>
<td>3.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Newly Industrialized Asia</td>
<td>1.6</td>
<td>-5.6</td>
<td>0.8</td>
<td>4.4</td>
</tr>
<tr>
<td>Developing Asia</td>
<td>7.7</td>
<td>4.8</td>
<td>6.1</td>
<td>8.3</td>
</tr>
<tr>
<td>China</td>
<td>9.0</td>
<td>6.5</td>
<td>7.5</td>
<td>10.2</td>
</tr>
<tr>
<td>India</td>
<td>7.3</td>
<td>4.5</td>
<td>5.6</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Source: IMF Outlook, 2009, * - projection
The needs for regional financial stability based on the simple triangle of financial stability goals are achievement: monetary independence, exchange rate stability, and financial integration seem rather complicate for implementation. The studies of trilemma configuration (Aizenman, Chinn and Ito, 2008, 2009) illustrate that developing countries, and particularly emerging markets (EM), have moved towards greater exchange rate flexibility and deeper financial integration. Variety of monetary policy models provides emerging countries with adjustment instruments to soften landing by the high liquidity risk. So far, the adjustment of emerging economies to the liquidity crisis has proceeded in line with this new trend –the real exchange rate and monetary policy have taken the first brunt of the adjustment. Given the magnitude of the disruption, the absence of deeper adjustment so far is a testament that the observation that the intermediate ground in the trilemma, combined with proper governance and management, allows for a softer landing. In the Tab. 4 the selected data illustrated global crisis impact on CEE economies in 2008-2009.

### Table 4. Central and Eastern Europe (CEE)

<table>
<thead>
<tr>
<th>Country</th>
<th>Sales of goods domestically demanded, % change</th>
<th>Sales of exportables and construction, % change</th>
<th>Overseas on obligations, % of firms*</th>
<th>Non-bank financing, % of firms**</th>
<th>Corporate sector debt, % of total debt</th>
<th>Employment, % change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>July 2009</td>
<td>Short-term debt***</td>
<td>Foreign currency debt</td>
<td>Permanent employment</td>
<td>Temporary employment</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>21</td>
<td>35</td>
<td>23</td>
<td>52</td>
<td>84</td>
<td>49</td>
</tr>
<tr>
<td>Hungary</td>
<td>11</td>
<td>25</td>
<td>66</td>
<td>26</td>
<td>51</td>
<td>69</td>
</tr>
<tr>
<td>Latvia</td>
<td>33</td>
<td>48</td>
<td>63</td>
<td>50</td>
<td>73</td>
<td>49</td>
</tr>
<tr>
<td>Lithuania</td>
<td>18</td>
<td>47</td>
<td>48</td>
<td>40</td>
<td>51</td>
<td>80</td>
</tr>
<tr>
<td>Romania</td>
<td>14</td>
<td>56</td>
<td>9</td>
<td>38</td>
<td>65</td>
<td>57</td>
</tr>
</tbody>
</table>

On the other hand, the lending boom was impressive in CEE countries (Fig.2)

The spectrum of main reasons driving the crisis remains the same through any research, they are: financial sector liberalization and capital flows; expansion economic policy; financial institution regulation and banking governance; growing housing, equity and consumer goods prices; and specific reasons typical for separate country.
2. ECONOMICS AND FINANCIAL MARKETS

Fig. 2. Credit to the private sector in CEE, %

Fig. 3. CEE economies fell into recession -with the exception of Poland, Real GDP, %

Source: DB research

Each reason affected the real economy in different way and created risks correlated to internal/external factors. The risks arisen through liberalization affected conversely the balance of payment (BOP) increasing CAD, and the process of easier borrowing on international markets could create macroeconomic imbalance and risks for financial stability. According different studies financial liberalization became useful for developing countries if the financial institutions are strong and regulation in relevant to prevent critical situations. The cases of Island and Baltics illustrate statements mentioned above. The financial liberalization process is ongoing, and the imbalances could accrue during 5-10 years, even longer time, and the impacts on economy could be hardly negative.

2. Regional Lessons of the Crisis

Different regions have different approach about prevention a global systemic financial crisis or dealing with such a global systemic crisis when it actually occurred. The regional financial crisis occurred approximately each 2-5 years in North America, the number of dramatic financial system destruction in Latin America, then 1997/98 Asian financial crisis, Russian crisis 1998, Scandinavian crisis 1972, Baltics 1995/1996, etc.

The fundamental aspect of financial stability is the adequate regulatory system design and its active role in the international context. Then the systemic risk and expanding to the global financial markets prevention measures will be more reasonable. Systemic risk according to common understanding is an event turn to a loss of economic value or confidence in, and attendant increases in uncertainty about the financial system ability to stand adverse effects on the economy. Then the systemic risk events can be sudden and unexpected, or can build up through time in the absence of appropriate policy responses. The adverse real economic effects from systemic problems are generally seen as arising from disruptions to the payment system, to credit flows, and from the destruction of asset values.

The international banking crisis which started in 2007 in the US subprime mortgage market shows weaknesses of the institutional framework. The number of critical events overlapped in time created challenge for the EU countries and other OECD countries as well as China, India and other NICs in implementing a new global financial architecture. The US, the euro zone and other EU countries will have to adopt reforms on domestic level. Today there are consolidated decisions regarding institutional and regulatory changes in respond to the transatlantic banking crisis. The role of banking institutions in globalization depends on activities of banks in real economy, creating economy development conditions and accumulating and providing information sources. Following crucial place of the banking in financial system stability, the banks became for crisis responsible institutions as regards the level of risk, lending and refinancing complication. There are several directions of conceptual points on future developments of the global finance splitting European case, Brazil and Latin America, and Japan and East Asia.

The current global financial crisis has significant regional impact on economy tends. The Asia’s financial system have been less affected than the EU and the US, the other emerging financial markets Latin America and South Africa was systemically affected. Indeed many Asian banks and other intermediaries have suffered losses in capitalization and confidence.
In this paper, proposed simplified financial sector gradation associated with financial crises, and the real economy sectors also associated with economic crises. In such way the data collection became clear, as the IMF use standardized set of economic indicators - Special Data Dissemination Standards (called the Special Data Dissemination Standard), and Central banks provide data in the standards of those sectors of the economy and identifies indicators of them. In the Tab. 5 composed sectors with relevant main indicators.

Table 5. The sectors in the economy

<table>
<thead>
<tr>
<th>Sector</th>
<th>Main Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Sector</td>
<td>Money P1, P2 and P3, domestic credit, deposit and loan interest rates, government securities yield, equity indices;</td>
</tr>
<tr>
<td>The economic sector indices</td>
<td>The fiscal sector revenue, expenditure, debt and guarantees;</td>
</tr>
<tr>
<td>Real economy sector</td>
<td>GDP, income and expenditure, the economic sentiment indicator, manufacturing, construction, consumer confidence, unemployment, average wage, the producer and consumer price indices;</td>
</tr>
<tr>
<td>External sector</td>
<td>goods and services exports and imports, foreign investment in/from country, irretrievably various transfers between domestic and foreign, total external debt, the country's currency exchange rates;</td>
</tr>
</tbody>
</table>

The lesson related to European region is that EU is still evolving, growing, continuing on its path of integration. The crisis created additional risks and difficulties on a way forward with all 27 members accepted the costs of losing which often are higher than benefits of maintaining their national prerogatives, often more symbolic. In the first half of 2010, there was a clear risk of another major financial crisis created from the euro area of the EU (e.g. Portugal/Ireland/ Greeks). The joint efforts and new international arrangements directed to stabilize regional financial system.

Baltic countries in the period of global financial crisis 2007-2009 had some significant differences in the macroeconomic conditions. Latvia had worse starting positions, then Lithuania, and Estonia’s indicators were also bad with some exceptions as Poland stands all the time of the crisis in the better position even in the whole Europe. All Baltic countries experienced a banking crisis with a large share of non-performing loans in the second half of the 1990’s. The subsequent economic growth period further decreased inequality. All these countries were involved in the European enlargement process, trade and foreign exchange liberalization contributed to lower inequality.

Completely different situation arises when the country does not have adequate financial resources for effective measures to prevent had crisis impact on real economy as it was in Lithuania or Latvia. Typically, such a situation occurs in developing countries, and then the country accumulates foreign debt, and inefficient activities of financial institutions. Such a crisis usually ends when a new phase in the economy starts to the domestic currency devaluation. It should be pointed, that according to scientific analysis of the financial crisis and its impact on the economy, it was found that the financial crisis decrease growth GDP per capita by 5 percentage points in three years.

The growth in advanced economies, even at the highest point of the cycle is not always equal to 5 percent, and in developing economies contraction rates in a critical period often exceeds the average. It means that impact of the financial crisis on the real sectors of the country is very serious and damaging.

The recent economic and financial crisis already started in all Baltic countries with delay in one year, and it faced the financial and economic crisis in the second half of 2008, when fall in economy became dramatic. The difficulties in the management of countries’ public finance created significant budget problems during the crisis were determined by several reasons in some aspects common for all countries, in some fully specific. In Latvia as specific was problems of systemic Parex bank, it was nationalized. The negative impact on economy by expansionary fiscal policy expanded the government sector; the economy was above its potential level. Finally, the country requests the assistance from the IMF.

In Latvia and Lithuania the historical budget consolidation was a challenge to stimulate the recovery of the economy. Actually there still no one economic recovery plan was started to really work. All efforts first of all were put on consolidation of public finances. The Interest rate changes in 2005-2009 (Fig. 4) illustrate banking sector reaction to interest rate decrease promoted by Fed and ECB.
The global financial crisis became first event then the global economy is a largely open trading system, generally floating exchange rates, globalized finance, and decentralized support for development. In such conditions the global financial system will be periodically instable. It has raised the question about reform or redesigns the international financial architecture. Meanwhile, the European Union has set up three new supervisory authorities: for securities and markets, for banking, and for insurance, as well as a European Systemic Risk Board. Euro area countries have approved the €110 billion rescue package for Greece, Portugal obtained assistance from IMF, the creation of a European Financial Stability Facility with €440 billion; then exceptional US government intervention with the $700 billion package for economy stimulus. The impact of economy stimulus implemented in selected countries illustrated in the Tab. 6. G-20 consolidated decision was essential to motivate each country to find measurements relevant to separate economy in the line of common tend.

Summarizing all responds to the crisis in ES and in EU it should be stressed the time factor of the decision-taking. The ECB and several sovereign central banks deserve credit for flexible and rather consistent crisis management in 2008, although the crisis has not yet been fully resolved. Beyond questions of financial regulation and financial development, the global financial crisis has raised the question of whether there is a need to reform or redesign the international financial architecture and rethinking about theory shifting.

**Table 6. Growth impact of the current crisis**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>1.3</td>
<td>-1.4</td>
<td>-2.1</td>
<td>205.1</td>
</tr>
<tr>
<td>Japan</td>
<td>2.1</td>
<td>-1.5</td>
<td>-2.6</td>
<td>167.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.6</td>
<td>-1.1</td>
<td>-2.8</td>
<td>139.8</td>
</tr>
<tr>
<td>Germany</td>
<td>2.1</td>
<td>-0.6</td>
<td>-2.5</td>
<td>128.8</td>
</tr>
<tr>
<td>France</td>
<td>2.1</td>
<td>-0.3</td>
<td>-1.9</td>
<td>114.4</td>
</tr>
<tr>
<td>United States</td>
<td>2.6</td>
<td>-0.4</td>
<td>-1.6</td>
<td>113.6</td>
</tr>
<tr>
<td>South Korea</td>
<td>4.8</td>
<td>-0.6</td>
<td>-4.0</td>
<td>111.5</td>
</tr>
<tr>
<td>Canada</td>
<td>2.9</td>
<td>-0.3</td>
<td>-1.2</td>
<td>108.6</td>
</tr>
<tr>
<td>Spain</td>
<td>3.7</td>
<td>-0.3</td>
<td>-1.7</td>
<td>106.7</td>
</tr>
<tr>
<td>Mexico</td>
<td>3.7</td>
<td>0.8</td>
<td>-0.3</td>
<td>80.0</td>
</tr>
<tr>
<td>Russia</td>
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<td>2.8</td>
<td>-0.7</td>
<td>62.3</td>
</tr>
<tr>
<td>India</td>
<td>9.4</td>
<td>6.2</td>
<td>5.1</td>
<td>34.2</td>
</tr>
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<td>11.3</td>
<td>7.9</td>
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<td>30.5</td>
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<td>Brazil</td>
<td>4.1</td>
<td>3.8</td>
<td>1.8</td>
<td>7.5</td>
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Sources: BOL
Conclusions

The causes of the financial crises include the failure to correct the global imbalances that ballooned in the years leading up to the crisis; the absence of the needed degree of transparency in financial markets; the failures of national regulatory and supervisory systems and the absence of sufficient mechanisms for international regulatory coordination; the failures to prevent the emergence of perverse incentives in the financial system, especially in US. In general terms, emerging financial markets reacted to the global financial crisis in different way and the lessons to be learned are implicit in the causes. It is different experience and power abilities to react and implement specific decision to prevent the negative financial impact on economy.

The lessons should be translated into specific measures that will have the power to correct the practices that used by regional and national economies, it is both costly to societies and individuals. Related to this, the emerging market countries (Latin America, China, etc.) have greater potential in stimulating their domestic economies, if growth in the industrial/advanced countries remains as weaker. The unexpected growth of Asian region provides the new financial governance model with more influencing government participation in compare with US or advanced EU countries.

The activity of Baltic finance reflected on real economy growth mainly depended of external policies. Each country should find appropriate fiscal/monetary package, as it the United States launched $787 billion in response to the crisis, and the $586 billion effort in China. The key conceptual issue is to view monitor the national stimulus programs as part of a comprehensive global strategy. In light of the intimate trade and financial linkages among virtually all countries that have now been so clearly revealed, including all the G-20 countries, it is essential to spur global demand if any individual nation is to experience an early turn-around.

The global economic and financial crisis requires a global policy response. The efforts of the G-20 are a unique opportunity to mobilize the needed cooperation among countries that make up the bulk of the world economy. One of the key lessons from the current crisis is that worldwide consolidation provides policies to generate recovery and growth across a wide range of countries in a very short period.

For resent changes in monetary decision of ECB to increase interest rate will create reaction of separate Central Banks (as Poland) to use its measures, then the situation in the regional financial map will create new disposition to a comprehensive strategy to preserve to the euro-area crisis and reinforce financial stability.

References

VARTOROJŲ LŪKESČIŲ POVEIKIS NEKILNOJAMOJO TURTO RINKAI LIETUVOJE

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Anotacija. Nekilnojamojo turto (NT) rinkos svyravimai yra įprastas reiškinys, tačiau 2008 m. pasaulinė finansų krizė labai stiprėjo šalies sektorių. Tokie reiškiniai rinkose reikalauja išsamesnių mokslinių tyrimų siekti Europos centrinėje institucijoje, kad įvertintų naujų jėgų augimą ir kritimas susijęs su vartotojų lūkesčiais, kai vartotojai, subjektyviai vertindami informaciją, gali nepasityti rinkos fundamentalių veiksnių ir priimti neracionalius sprendimus. Šio straipsnio tikslas yra šį įtaką būtų kainų ir vartotojų pasitikėjimo rodiklio ryšį siekti įvertinti šių veiksnių ryšį įvairių kultūrų ir ekonomikų. Tyrimo metu nustatyta, kad vartotojų pasitikėjimo rodiklis turi poveikį NT kainoms, tačiau patikimo statistinio ryšio tarp skirtinų vartotojų grupių pasitikėjimo rodiklio ir būsto kainos pokyčių nustatyti nepavyko.

Raktiniai žodžiai: nekilnojamo turto rinka, vartotojų lūkesčiai, būsto kaina, perceiamento ekonomika, vartotojų pasitikėjimo rodiklis, vartotojų nuomonė.

Ivadas

Stebint nekilnojamojo turto (NT) rinkas pasaulėje, galime pastebėti, kad jas vis dažniau sukrečia įvairūs šokai, kurios sunku pagrįsti fundamentaliais veiksniais. Šios rinkos tampa priklausomos ne tik nuo tiesioginių veiksnių, tokių kaip bankų palūkanų normos, atlyginimų dydis, ekonominis augimas ir kt., bet ir nuo netiesioginių veiksnių, tokių informacinės technologijų plėtra, investicinių fondų augimas, akcijų rinkų išvystymas ir kt. Tai reiškia, kad vartotojų lūkesčiai yra labai heterogeniški, tai siekiant nustatyti šių veiksnių ryši. Nekilnojamojo turto (NT) rinkos veiksnių susiję su naujų įmonių sukūrimu, kurių tikslas bus įvertinti šių veiksnių ryšį. Prieš perėinant prie empirinio tyrimo dalies, kurio tikslas bus įvertinti vartotojų nuomonės bei būstų kainų ryšį, reikėtų išanalizuoti vartotojų nuomonės tyrimų teorinius aspektus. Sekančiame skyriuje bus aptarti mokslininkų tyrimai įtempia apie tai, kaip susiformuoja vartotojų nuomonė, kokia jos sasaža su NT rinka ir kodėl jią įvertinti. Tai reiškia, kad vartotojų nuomonės susiję su naujų įmonių sukūrimu, kurių tikslas bus įvertinti šių veiksnių ryšį. NT rinkos nuomonė yra labai heterogeniški, kodėl siekiant patikimų duomenų šiame tyrome bus naudojami būsto rinkos duomenys Lietuvoje, neliečiant žemės ir komercinių objektų NT rinkos.

1. Vartotojų lūkesčiai ir NT rinka

Vartotojų nuomonė (pasitikėjimas) – tai labai sąlyginus publikos subjektyvių vertinimų susijusius su šalies ekonomine būsenu. Ekonominės būsenos vertinimas susijęs su auklės lūkesčiais, nes vartotojai, vertindami ekonomiką numato jos ateities kryptį. Tai tapo labai svarbus rodiklis padedantis prognozuoti ekonomikos ateitį, tačiau, žengiant toliau, svarbu prognozuoti ir pačią vartotojų nuomonę ar lūkesčius. Šioje teorinėje analizėje mes neskirsime dėmesio sąvokų „lūkesčiai“ ir „vartotojų nuomonė (pasitikėjimas)“ skirtumams, kadangi abu rodikliai tarpusavieje labai susiję ir vartotojų nuomonės tyrimo dažnai būna klausimų susijusių su lūkesčiais.

M. Friedman iškėlė hipotezę, kad vartotojų lūkesčiai dėl pajamų veikia namų ūkių išlaidas. Šį fenomeną tyrinėję mokslininkai nustatė, kad yra ryšys tarp vartotojų nuomonės ir jų išlaidų. Tačiau svarbu ne tik tai ar veikia nuomonę ir lūkesčiai vartojimą, tačiau svarbu kaip jie susiformuoja ir kaip tai veikia atskiras rinkas. Šiame tyrome mes analizuosime NT rinką, todėl ir teorinė analizė bus labiau sietina su NT rinka.

Kartais lūkesčiai gali tapti kaip pranašystė, tai atsitinka kai nėra jokio stipraus fundamentalaus pagrindo rinkos pokyčiams įvykti, tačiau jie vis tiek įvyksta. Tada jau pastebimas fundamentalūs veiksniai neveikimas ir tampa aktualu suprasti lūkesčių priežastis ir būsimą vartotojų elgesį.

Taigi, lūkesčiai turi didelę įtaką NT kainoms ir čia buvo atlikta nemažai tyrimų, kurie atskleidė, kad nuomonė turi svarbų vaidmenį priimant sprendimą dėl investicijų į turtą. Tairiant Taiwano NT statybos kompanijų akcijas, autorius nustatė, kad NT statybos kompanijų akcijų burbula labiausiai koreliuoja su užsienio investuotojų lūkesčiais. Šių kompanijų akcijas pradeda kelti instituciniais investuotojais, o tada, vyrant bandos jausmai, prada investuoti mažieji ir užsienio investuotojai. Pagal tyrimo išvadas, norint išvengti nepagrįstų lūkesčių sukeltų burbulų, reikia investuoti kai yra mažai mažųjų ir užsienio investuotojų. Tačiau reikia atkreipti dėmesį į tai, kad investavimas į statybų bendrovių akcijas ir investavimas į NT nėra tas pats. Nepaisant akivaizdžių skirtumų tarp šių investicijų, pats investuotojų „rizikos apetitas“ yra skirtingas. Nustatyta, kad akcininkų rinkoje investuotojai labiau linkė rizikuoti nei NT rinkoje.


Kaip gi formuojasi žmonių nuomonė arba lūkesčiai? Mokslininkai plėtodami lūkesčių formavimo modelį, priėjo įvados, kad individai gauna informaciją kaip šaltinių ekonominės veiklos produktą ir gali optimaliai nuspręsti, kada ši informacija leidžia jiems formuoti lūkesčius, kurie yra „papankamai tikslūs“ ir įtampa nebėra paskatinojo išskoti jokios papildomos tikslines informacijos, kurios dalis gali būti randama oficialiuose statistiniuose leidiniuose. Taigi, tyrimais prognozuoti vartotojų lūkesčius apsunkina subjektyvus kiekvieno vartotojo informacijos vertinimas ir ketinimą ją pasitikrinti. Taip pat lūkesčiai priklauso nuo to, kokią informaciją vartotojai naudojosi ir kaip jų lūkesčiai kinta panaudojus šią


**9** Gritten, A. New insights into consumer confidence in financial services, p. 90-106.

informaciją. Yra įrodymų, kad socialiniai tinklai ir kaimynai turi įtakos pateikiant informaciją individui. Taip pat yra žinoma, kad individams turi didelį poveikį pažįstamos mažos žmonių grupelės neįgima patirtis. Tai paaškina gandų perteklimą tarp žmonių, kai žmonės patiki kelių žmonių pateikiamą nuomone ir priima tai kaip faktą. Vėliau šių žmonių ratas pradeda didėti ir tai gali paversti veiksmų, kuris veikia rinką. Panašus pavyzdys buvo Lietuvoje po įstojojimo į Europos sąjungą, kai nuomonė, kad euro įvedimas pakels NT kainas pradėjo sklosti tarp žmonių, tai galiausiai tapo vienu iš veiksnių, kėlusiu NT kainas.


Taip pat yra žinoma, kad individams turi didelį poveikį kuo naujesnius vartotojų nuomones. Panašus pavyzdys buvo Lietuvoje po įstojojimo į Europos sąjungą, kai nuomonė, kad euro įvedimas pakels NT kainas, tai matavimas jodumo tuo, kad jis ne tik atskleidžia vartotojų lūkesčių dydį, bet gali ir dalinai paaškinti jų ekonominio lygi. Lūkesčių nuomones reikalauja atskiro dėmesio nagrinėdami pereinamų šalių ekonomikas, karp kurių yra ir Lietuvoje. Šių šalų gyventojai žinojo kaip žmonės gyvena vakarų Europoje ir įstojojimas į Europos sąjungą jiems asocijuotis su praturtumo procesu. Dar prie šių veiksmų pritaisydė perėmė lūkesčiai dėl euro įvedimo ir kaių įpratėjimo prie kintų Europos sąjungos narių kainų vidutinio lygio. Nors euro įvedimas nesukėlė didelio inflaciøjusio šuo 12 euro zonos šalių, tai, tačiau manoma, kad lūkesčiai dėl euro įvedimo galėjo turėti lemiamos įtakos kainų šuoliui. Tokie neracionalūs lūkesčiai į rinką pritraukia naujus pirkėjus – manoma, kad daugiausiai spekuliantus. Atliekti tyrimai ir studijos rodo, kad spekulatūrinių nekilnojamojo turto pirkėjai visose šalyse ar kultūrose visada néra nustatyti. Taip pat buvo nustatyta, kad lūkesčiai nesuvalgomi ir skatina būti NT kainų didėjimui pakels NT kainų. Tai paaiškina gandų perteklimą tarp žmonių, kai nuomonė, kad euro įvedimas pakels NT kainas, tai galiausiai tapo vienu iš veiksnių, kėlusiu NT kainas.


16 Belinskaja, L.; Rutkauskas, V. op. cit., p. 7–27.
mažiau efektyvios reguliavimo institucijos ar mažesnis rinkos integralumas. Ir nors institucijas galima sukurti ir pasiekti didesnio rinkos integralumo, šalies kultūrinius pakyčius pakeisti nelengva. Todėl šalyse, kurios turės „bandos“ investavimui požymius, lūkesčiai turės didesnį poveikį rinkoms. Panašus principus turėti ir NT rinkose.


Dar vienas svarbus klausimas tariant vartotojų nuomonė, tai ar ši nuomonė skatina vartotojus keisti įprastą elgesį, ar tai tik išlieka žmogaus nuomonė be jokių vartotojų veiksmų pokyčio. Nes jei nuomonė nesukelė didelių elgesio pokyčių, tai jų tyrimas nepatiria pasmingų prognozuojant ekonominius procesus. Mokslinginkai tyrinėdami lūkesčius besisutavėčioje šalyje nustatė, kad subjektyvus lūkesčių gali pagrįstoti mokslininkai apibrėžti kiekvieną lūkesčių elgesį. Tačiau nėra atskleista koks tikslus lūkesčių mažinimo būdas padeda geriau susipūti vartotojų elgesį. Taip pat tyrimų reikia nustatyti kiekvieną lūkesčių elgesį. P.vz.: ar šeimos galvos lūkesčiai dėl didėjančių kainų atitinka likusių šeimos narių lūkesčių ir kieno lūkesčiai yra arčiau tikroveš? Po to, kai tampa išskė, kad vartotojas vis dėl to keičia savo elgesį po tam tikros nuomonės susidarymo, tyrimams yra svarbu per koki laikotarpį reikėtų tikėtis šių elgesio pokyčių. Tariant vartotojų lūkesčius ir jų veikėjų kreditinių kortelių paskolų dydžiui, nustatyti tam tikri laiko intervalai, per kuriuos vartotojai pakeitė elgesį. Šiame tyrome seriją požiūriu į tyrimą, kad subjektyvūs lūkesčiai gali pagrįsti mokslininkai, kad subjektyvus lūkesčių elgesį susitvarė į mokslininkų požiūrį. Tačiau nėra atskleista koks tikslus lūkesčių mažinimo būdas padeda geriau susipūti vartotojų elgesį. Taip pat tyrimų reikia nustatyti kiekvieną lūkesčių elgesį. P.vz.: ar šeimos galvos lūkesčiai dėl didėjančių kainų atitinka likusių šeimos narių lūkesčių ir kieno lūkesčiai yra arčiau tikroveš?

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2. Vartotojų lūkesčių poveikio NT kainoms empirinis tyrimas

Tyrimo tikslas – įvertinti kaip (ar) vartotojų nuomonė įvairių įtaką būsto kainų pokyčiams Lietuvoje.

Atliekant tyrimą buvo įvertinta tai, kad vartotojų nuomonės tyrimai nukreipti į ateitį, t.y. vartotojai prognozuojant ir vertina pokyčius, kurie įvyksta po artimiausius 12 mėn. Tuo tarpu būsto kainų pokyčiai skaičiuojami esamų laiko momentu ir lyginami su ankstesnėmis būsto kainomis. Kap sukurtų prognozes su kainų pokyčiais, rešio tarp būsto kainų pokyčių ir vartotojų pasitikėjimo rodiklio reikėtų išskoti ne tiriama laiko momentu, o kai kurių ateityje, t.y. išskoti laiko momentu, kada vartotojai priima sprendimus įsigyti būstą ar prisideda formuojant vieną ir aplinkinių žmonių nuomonė.

Numatomą nagrinėjamų rodiklių nesutapimą laikė ir vartotojų grupių nuomonės skirtumus galima išreikšti suformuluojant padines hipotezes:


H1: Vartotojų nuomonės apie ekonominės tendencijas ir būsimus pokyčius, išreikštos vartotojų pasitikėjimo rodikliais, ryškiausiai pasireiškia būsto kainų pokyčiose praėjus kažkuriam laikotarpui.

H2: Vienų vartotojų grupių nuomonė apie ekonominės tendencijas ir būsimus pokyčius, išreikšta vartotojų pasitikėjimo rodiklį, yra tikslsne nei kitų.

Atlikdami tyrimą mes naudojome vartotojų pasitikėjimo rodiklio indeksą bei būsto kainų indeksą.

Vartotojų pasitikėjimo rodiklį (indeksą) sudaro atsakymai į klausimus apie numatomus pokyčius per artimiausius 12 mėn. aritmetinis vidurkis. Vartotojų klausia: kaip pasikeis namų ūkio finansinė padetis, šalies ekonominė padėtis, kaip keisias bedarbių skaičius, kokios galimybės sutaupyti?


Apskaiciuotos mėnesinės vartotojų pasitikėjimo rodiklio reikšmės pateikiamos Lietuvos statistikos departamento tinklapioje http://www.stat.gov.lt/lt/pages/view/?id=1334. Šiame tinklapioje vartotojų pasitikėjimo rodiklis pateikiamas įvairiais pjuviais: bendras, pagal respondentų gyvenamąją vietą (miestas, kaimas), pagal pajamų kvartilius, pagal išsilavinimą (trys grupes: pradinis, pagrindinis; vidurinis; aukštisnysis, aukštasis), pagal amžių (16-26 m., 30-49 m., 50-64 m., 65 metų ir aušine).


Kadangi būstų kainų pokyčiai išmatuoti ketvirčiais, o vartotojų pasitikėjimo rodiklis – mėnesiais, priderinant prie būsto kainų pokyčių buvo apskaičiuotos vidutinės ketvirčinės vartotojų pasitikėjimo rodiklių reikšmės kaip trijų mėnesių rodiklių aritmetinis vidurkis (1 pav.). Tegul $Y = (y_1, \ldots, y_n)$ – stebimas bendras vidutinis vartotojų pasitikėjimo rodiklis (1 pav., VPr, bendras), o $Z = (z_1, \ldots, z_n)$ – būsto kainų pokyčiai, $n=38$.

Parduotų gyvenamųjų būstų vidutinės 1m² kainos pokyčiai $Z$ apskaičiuoti dviem būdais: $Z_n$ – palyginant kainas su 1998 m. IV ketvirčiu ir $Z_n$ – su palyginta su ankstesniu ketvirčiu:

$$z_{a,i} = \frac{g_{i}}{g_{1998}} \cdot 100, \quad i = 1,2,\ldots, n. \quad (I)$$

1 pav. Bendro vartotojų pasitikėjimo rodiklio $Y$ (VPr) ir atskirų jo grupių kitimas nuo 2001 m. antro ketvirčio iki 2010 m. ketvirto ketvirčio.
Čia $g_{1998} - 1998$ metų paties ketvirčio vidutinė būsto kaina. Toliau tyrimu buvus naudojamos būsto kainos, apskaičiuotos pagal formulę (1).

Antruoju būdu vartotojų pasitikėjimo rodiklis apskaičiuojamas nagrinėjamo ketvirčio vidutinę kainą palyginant su prieš tai buvusio ketvirčio vidutinė kaina.

$$z_{k,j} = \frac{g_j}{g_{i-1}} \cdot 100, \quad i = 1,2,\ldots,n.$$  

(2)

Kainų pokyčiai, apskaičiuoti pagal formulę (1), pateikti 2 paveikslėlyje.

2 pav. Būsto kainų pokyčiai pagal būstų grupes palyginant jų kainas su 1998 m. IV ketvirčiu.

Panagrinėjus abi diagramas (1 ir 2 pav.) matyti, kad kainų pokyčių maksimalios reikšmės yra vėlesnės nei vartotojų pasitikėjimo rodiklių maksimalios reikšmės. Šis poslinkis tampa akivaizdesnis kai rodikliai standartizuojami, t.y. transformuojami į intervalą $[0;1]$ pagal formulę:

$$k_p = \frac{p_{fakt} - p_{\text{min}}}{p_{\text{max}} - p_{\text{min}}}$$  

(3)

Čia: $p_{fakt}$ - faktinė rodiklio reikšmė; $p_{\text{min}}$ ir $p_{\text{max}}$ - atitinkamai, minimali ir maksimali kiekvieno rodiklio reikšmė.

Bendro poslinkio nustatymui buvo apskaičiuotas vidutinis vartotojų pasitikėjimo rodiklis ir vidutiniai būsto kainų pokyčių rodiklis. Abu šie rodikliai buvo transformuoti į intervalą $[0;1]$. Bendras vaizdas pateiktas 3 pav.

3 pav. Vidutinis vartotojų pasitikėjimo rodiklių reikšmės ir vidutinis būsto kainų pokyčių (palyginant jų kainas su 1998 m. IV ketvirčiu) reikšmės interвалą $[0;1]$. 204
2. ECONOMICS AND FINANCIAL MARKETS


4 pav. Vidutinių, butų kainų pokyčių palyginimas su vidutinių vartotojų pasitikėjimo rodikliu: kairėje –senų ir naujų butų kartu, dešinėje – atskirai senų ir naujų butų


Kaip buvo minėta, Statistikos departamentas vartotojų pasitikėjimo rodiklį matuoja įvairiais pjuviais: bendras, pagal respondentų gyvenamąją vietą (miestas, kaimas), pagal pajamų kvartilius, pagal išsilavinimą (trys grupės: pradinis, pagrindinis; vidurinis; aukštės nes, aukštasis), pagal amžių (16-28 m., 30-49 m., 50-64 m., 65 metai ir daugiau). Tikrinant antrą tyrimo hipotezę - ar šios vartotojų grupių nuomonės sutampa, ar vienos vartotojų grupių nuomonė yra tikslesnė ar pagrįstesnė nei kitų grupių – buvo apskaičiuotos atskirų vartotojų grupių nuomoninių ir būsto kainų pokyčių skirtumų vidurkiai $E_l$ ir standartiniai nuokrypiai $S_l$:

$$E_l = \frac{\sum_{i=1}^{38} (y_{1l} - z_l)}{n}, \quad S_l^2 = \frac{\sum_{i=1}^{38} ((y_{1l} - z_l) - E_l)^2}{n-1}, \quad l = 1, 2, ..., m$$

čia: $y_{1l}$ - l-tosios vartotojų grupės pasitikėjimo rodikliai ($m=16$); $z_l$ - būsto kainų pokyčiai.

Apskaičiuotos reikšmės atveju kai $z$ - vidutinių butų kainų pokyčiai pateiktos 5 pav.

Tiksliau ar šie skirtumai reikšmingi galima atsakyti pritaikius vienfaktoriines dispersinės analizės metodą ANOVA. ANOVA nulinei hipotezai kad visų populiacijų vidurkiai lygūs ($H_0: \mu_1=\mu_2=...=\mu_k$) tikrini Naudojamas F kriterijus.

Dispersinės analizės procedūra reikalinga, kad būtų patenkintos šios prieilaidos:
- kiekviena tiriama grupė būtų nepriklausoma atsitiktinė imtis, atrinkta iš populiacijos, pasiskirstusi sus pagal normalūjį dėsnį;
- grupių dispersijos būtų lygios;
Bendra dispersinės analizės modelio lygčių turi formą (5):

$$X_{ij} = \mu + \tau_i + \epsilon_{ij};$$

(1)
čia $\mu$- bendras visų populiacijų vidurkis; $\tau_i = \mu_i - \mu$ yra $i$-osios populiacijos vidurkio ir bendrojo vidurkio skirtumas ($\tau_i$ dar vadinamas $i$-osios populiacijos efektu); $\epsilon_i^j$ yra atsitiktinė paklaida.

Apskaičiuota F kriterijaus reikšmė lygi 0,043, o stebimasis patikimumo lygmuo artimas vienetui. Taigi, skiriamai tarp grupių vidurkių yra visiškai nežmūs.

**Išvados**

Vartotojų lūkesčiai, nuomonė ar pasitikėjimo rodikliai parodo subjektyvius vartotojų vertinimus jiems pateikiamais klausimais. Nustatyta, kad nuomonė turi įtakos priimant sprendimus dėl investicijų į NT ir tas ryšys yra abipusis, t.y. pradžioje nuomonė gali kelti kainas, vėliau kainų pokyčiai turi įtakos nuomonės formavimui. Ypatingai įdomūs tyrimai atliekami ekonominių permainų metu, tada vartotojų nuomonės būna stipriai veikiamos ekonominės naujienų ir taip atsiranda perdirbti optimistiniai arba pesimistiniai lūkesčiai. Įdomus tas faktas, kad po ekonominio nuosmukio, vartotojų nuomonė dėl nuosavo turto greitai tampa pozityvi ir jie linkę į geriau vertinti, nepaisant prastų ekonominiių rodiklių.

Tiriant NT rinkos ciklus, svarbiausia prognozuoti jų pasikeitimo momentus. Tai apsunkina Pigmaliono efektas, kuris veikia ir NT, nes, nepaisant blogų fundamentalių rodiklių, kol vartotojai manys, kad kainos turi kilti, jos greičiausiai ir kils. Nors analizuojant mokslininkų darbus ir rinkos duomenis pastebima, kad vartotojų lūkesčiai turi poveikį NT rinkai, tačiau trūksta išsamų mokslinių darbų, analizuojančių kaip tiksliau matuoti tuos lūkesčius ir nustatančių kieno lūkesčiai turi didžiausią įtaką. Toliau pateikiami svarbiausias šio straipsnio išvadas:


5. Įvertinus laiko poslinkį tarp būsto kainų pokyčių ir vartotojų pasitikėjimo rodiklio, tikslesnė kainų prognozė gaunama kai būstų kainų pokyčiai lyginami su 1998 m. būstų kainomis, o ne su prieš tai einančio ketvirčio duomenimis.

Taip pat šiame tyrimė galime pastebėti kaip po vartotojų pasitikėjimo rodiklio pasikeitimo, pasiekus didžiausią reikšmę, kinta naujos statybos butų, senos statybos butų kainų. Greičiausiai pradeda kristi senos statybos butų kainos, vėliausiai – naujų namų kainos. Tai susiję su tuo, kad senos statybos butai yra pigesni ir jie sudaro didžiausią į kvartalų kainų pokyčių kapitalo įtvirtinimą. Pagal šio tyrimo išvadas galėtume prognozuoti, kad po vartotojų nuomonės pokyčio NT rinkos kilimas turėtų maždaug po dviejų metų ir greičiausiai atsigavimo požymius turėtų parodyti senos statybos butų kainos.

Iš pateiktų tyrimo išvadų galima susidaryti tikslesnį vartotojų nuomonės ir būsto rinkos ryšį, tačiau šiuos duomenis reikia vertinti atsargiai ir atsižvelgti į senus tyrimus ir naujus duomenis. Beje, šiame tyrime galime pastebėti, kad vartotojų nuomonės pokyčiai NT rinkos kilimas turėtų maždaug po dviejų metų ir greičiausiai atsigavimo požymius turėtų parodyti senos statybos butų kainos. Tai susiję su tuo, kad senos statybos butai yra pigesni ir jie sudaro didžiausią rinkos dalį. Todėl šių pokyčių pradėti kurti senos statybos butų kainomis, o ne su prieš tai einančio ketvirčio duomenimis.

**Literatūra**

THE IMPACT OF CONSUMER CONFIDENCE ON REAL ESTATE MARKET IN LITHUANIA

Vitalija Rudzkienė, Vytautas Ažbainis

Summary

Looking at real estate markets in the world, we can see that they are often affected by the various shocks which are difficult to justify just based on fundamental factors. These markets depend not only on the direct factors, such as bank interest rates, wage rates, economic growth and etc., but also from indirect factors such as information technology development, growth of mutual funds, development of stock markets and others. There are many indirect factors, but they are all connected by one feature – consumer’s expectations. Consumer’s expectations may be influenced by fundamental or direct factors, but indirect factors are less analyzed and require greater scientific attention. Aim of this research is to reveal relationship between consumer’s confidence and housing price in Lithuania. Before turning to the empirical part of research, this paper examines the theoretical aspects of expectations. Literature review section is focused on consumer’s opinion formation and how they interface with the real estate market and why it is important to investigate. Real estate market consist of very heterogeneous objects and for more reliable data in this study we will use just housing market data in Lithuania, without touching land and commercial real estate markets. In this research we come to these conclusions:

1. Consumer’s expectations are important trying to predict economic growth. But now is more important to predict consumer’s expectations and identify factors which influence them. Consumer’s expectations may influence the market without any rational factors, but eventually market comes back to fundamental factors. Expectations various between different country’s and depend on the culture of the country, i.e. where the country is dominated by “herd” feeling, expectations have more possibility to come true.

2. The first hypothesis of our research stated that consumer opinion on economic trends and future changes evaluated by consumer confidence indicator indicates housing price changes in the future. This hypothesis is proven when we compare housing price changes with the 1998 housing price.

3. Second hypothesis stated that a confidence of different user group on economic trends and future changes is more accurate than the other. This hypothesis is not proven. The sum of correlation coefficient squares differ slightly, overall difference between the maximum and minimum values are less than 10 percent of maximum value.

4. Comparing housing prices with 1998 price give us more accurate prediction of the time lag between housing prices and consumer confidence indicator changes.

5. When the housing price changes are calculated in comparison with 1998 prices, the highest correlation coefficient obtained when house prices are measured two years after the consumer’s confidence survey.

Findings of the research can provide a more accurate relation between consumer confidence and housing market, but these results should be interpreted with caution, taking into account the fact that consumer surveys started in Lithuania only in 2001 and the housing prices are from 1998. Real estate market cycles are longer term usually. Therefore, to improve results, this research should be repeated by taking a longer time interval.

Keywords: Real Estate market, consumer confidence, sentiment, expectations, housing prices, transition economy.
IMPACTS OF CURRENT GLOBAL FINANCIAL CRISIS ON TURKISH ECONOMY: SOME POLICY SUGGESTIONS FOR SOLUTION

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Abstract. With indications of economic trouble brewing in the first months of 2008, the last months of 2008 finally saw the beginning of what is being called the worst financial crisis since the Great Depression of 1929. The current crisis is causing profound financial change around the world. In fact, the economic power of the world is likely to shift from the advanced Western countries to the emerging economies. Thus, in this paper, we investigate the impacts of the latest global financial crisis on Turkey. Firstly we will compare the position of the Turkish economy between the February 2001 and October 2008 crises. Secondly we will focus on Turkey’s successful crisis management and the robustness of the fiscal balances of both the private as well as the public sector. Finally we will discuss the major lessons from these two crises. These results provide benefits to develop policy recommendations related to crisis management for other emerging countries.

Keywords: Financial crisis, Turkish economy, emerging economies, crisis management.
DEBT CRISIS IN THE EUROPEAN UNION

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**Abstract.** From the American market in Europe they transformed the financial crisis which began oneself into the crisis of the debt. The crisis of the debt which originally caught Greece, then forced Ireland for breaking the principle telling that every country must to advise oneself remaining countries of bond alone with own financial problems. The crisis of the debt made citizens aware of the EU, that the European Union differed from the United States and other states in it isn’t a single state and in fact is affiliating sovereign states which in the completely voluntary way are striking to behave joint politics. The pursuit of such economic policies dozens of countries that are at different stages of development makes this task becomes quite difficult for the Community countries of modern Europe.

**Keywords:** crisis, debt, European Semester, Strategy 2020

1. Main causes of the financial crisis

One should search distant history for main causes of the financial crisis through which entire World spread, for the American financial system.

The American system of financing the market of the real estate arose after the Great Crisis in 30-tych years of the 20th century. From the initiative of president Franklin D. Roosevelt a created agency stayed Fannie Mae, which supporting Americans dreaming of having their own home was a task for. Fannie Mae bought mortgage credits in from banks and using government warranties created bonds from them (MBS) which next sold to investors. Thanks to the credibility of the government of the United States these papers provided the cheap refunding for the credit share what next the interest lowered and increased the availability of home loans.\(^1\)

The system applied without charges for over 70 years, until persons used it about the good credit credibility, and banks scrupulously judged the risk. The situation changed at the end of the last century. In 1999 under the stress of administration of the president of Bill Clinton Fannie Mae loosened criteria, according to which she assessed bought credit. Banks officially were encouraged lending persons money about the weak financial condition. Nobody concealed that it had been about it, in order to representatives of an ethnic minorities, traditionally voting for Democrats, could more easily and more cheaply get a home loan. The contemporary boss Fannie Mae called the new market the modest “name sub prime”. It is astounding, that everyone turned over to themselves then from the risk of this decision.\(^2\)

In quest new ways of investing, at first hedging funds, and next banks started investing financial resources in loan funds. In the process wallets of banks swelled and a part of assets needed to find a remedy for getting rid in order can elaborate the credit share farther. So taking over smaller funds and linking assets into groups, on the base started of which securitized is eating, transmitting Collateralized Debt Obligations (CDO) whether Mortgage Backed Securities (MBS). Additionally dynamically a market of derivative credit instruments, amongst which they enjoyed the greatest popularity, started developing Credit Default Swaps (CDS) allowing for covering for each other before the credit risk.

From 1997 house prices in the USA rose continually. Ignoring credit institutions entirely elements of financing, granted persons not having a permanent source of the income credit what had to sooner or later lead to the crisis.\(^3\) In the end house prices started the increased demand to grow still more quickly. On account of growing FED borrowing costs from the half the yr raised 2003 to June 2006 for 4.25 percentage

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\(^3\) Nawrot W., Globalny Kryzys Finansowy XXI Wieku, Wydawnictwo Fachowe CeDeWu, Warszawa 2009, ss. 25.
pt and the unjustified rise in house prices, artificially the American can blown up started bases to crack. Clearly both a demand, and house prices dropped.

Unfortunately credit institutions didn’t cease further developing its credit activity. More and more persons started having trouble with a repayment of the debt. Banks started seizing the real estate and putting them up for sale what on account of the increased supply, still more lowered prices. In the period from the beginning of a year 2006 up to the half of 2007 yr house prices dropped this way much the American bubble after all cracked, and effects started diffusing itself to entire world. Revealing losses started.

Happening from June 2007, when the first funds hedging owe them started contending with financial problems until to August 2008 it seemed that they should overcome this dangerous impasse and slowly regain what earlier they lost. However these events turned out to be only an announcement of what was already inevitable in September 2008. Exactly already from this moment, nobody had doubts, that most serious” would catch the USA, Europe and the rest of „World in history crisis.

A globalization was another factor which eternal trouble of the influence of the fast height on a rise in inflation was supposed to break. Managed to move the production of cars, TV sets, toys and clothes from developed countries to poor, what costs of the production dropped thanks to. With word, they could it seem that a miracle happened: prolonged growth without the escalating imbalance.

The financial crisis which started in the United States, took a heavy toll in Europe. Many states had to entertain the EU acting in order to help banks with the difficult situation. The European central bank allocated billions for saving of the system which lost the financial liquidity, but governments of individual states the EU guarantees of deposits increased the euro in order to calm citizens. In spite of these all efforts in the last time they survived European markets worst in one’s history moments.

2. „European” Semester

The European Commission in 2010 created the mechanism of the fight against the crisis named „European ” Semester, of which a supervision of structural action is a purpose in member states. To enable this mechanism profiting from the evaluation conducted on the EU rung among others in the course of preparing domestic plans of budget and domestic reform programmes by membership states has.

The so-called „introduction of the European” Semester requires establishing new (earlier) of dates of submitting programs of the stability and the convergence to the update (PSK) and of domestic reform programmes of the country in order to enable to make the comprehensive economic evaluation of a situation given and better of for her synchronizing budget with domestic procedures concerning the preparation.

In taking the euro zone back to states after conducting the horizontal fiscal evaluation of a situation on the basis of programs of the stability and KE forecasts.

In practice the European Council would conduct the horizontal review at the beginning of the year, pointing at main economic challenges of the EU and euro zones and appointing strategic directions of economic policies. Of you membership they would take results of this inspection into account, preparing PSK programs as well as in the first half of the year, in addition these programs would be handed over to KPR - and then judged by KE - simultaneously in order to include the influence of planned reforms on the strategy and budget cells of the given country. The early evaluation of these programs by KE and the EU Council would allow for taking into consideration taking significant budget decisions for her at the stage by member states.

On on 18 January it initiated the first European semester i.e. the six-month-old cycle of the coordination of budget and economic policies in harmony with shared principles.

A presentation of the annual vision of the growth in the economy carried out by the Commission opened the European semester. This document contains the evaluation of a situation of the economic EU and appoints priority action which membership states should entertain in order to ensure the permanent height of the management of the EU.

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4 Gazeta Wyborcza, wydanie z dnia 09.10.2008.
5 Nawrot W., Globalny Kryzys..., ss. 35.
7 Włodzimierz S., Dominika W., Globalny kryzys a jednoczącą się Europa, Wydawnictwo Poltext, Warszawa 2010, ss. 46.
8 Bednarczyk J., Bukowski S., Misala J., Globalne rynki finansowe w dobie kryzysu, Wydawnictwo Fachowe CeDeWu, Warszawa 2009, ss. 67.
10 Nawrot W., Globalny Kryzys Finansowy XXI Wieku, Wydawnictwo Fachowe CeDeWu, Warszawa 2009, ss. 35.
With the urge test task it saying in front of the EU in years 2011 – 2012 preventing falling into the vicious circle of the underpaid debt is, of disruptions of financial markets and the low growth in the economy. In the current annual evocation of the growth in the economy they suggested therefore that first they caused the rigorous fiscal consolidation, corrections of the macroeconomic imbalance and a stability of the financial sector was ensured\(^\text{11}\).

It is also important in order to prevent the risk consisting in the not-supported resurgence dynamic enough with building places of employment. From here the other priority is fast limiting the unemployment through reforms of the labour market. They would be connected with making the work more appealing, with reform of pension systems, for which making them would be a purpose more stable, and with encouraging unemployed persons for the return to the work.

Effective introduction into force of these two priorities depends than third, unusually important, of purpose of the increased growth in the economy. In the vision also using the single market full of the potential was suggested, attracting private capital in order to finance the growth in the economy, and enabling the profitable access to the energy from it\(^\text{12}\).

In the March the European Council should accept the report which a general description of the situation is supposed to contain in this field and summing caused progress up based on the annual vision of the height economic\(^\text{13}\).

### 3. Strategy Europe 2020

Strategy Europe 2020 for ten nearest years, which the vision of the European social market economy was presented, in is based in three priority areas interdependent and mutually complementing each other: intelligent – height indicating the development of the economy based on the knowledge and innovations; the permanent – height i.e. supporting the economy low-emission, more effectively using resources and competitive; and favourable height for public including, spelling supporting the economy being characterized by the high staffing level and ensuring the economic, social cohesion and territorial.

Progress in the realization of these three priorities will be measured with reference to five superior purposes with the EU, which membership states will transfer into domestic purposes, taking one's starting positions into account\(^\text{14}\):

- the indicator of employing persons at the age of 20-64 should amount to the 75%;
- for investments in examinations and the development one should allocate the 3% GDP of the Union;
- one should achieve „20 purposes /20 /20 ” within the scope of the climate and the energy;
- prematurely finishing the number of people one should limit the school learning to the 10%, and at least from the young generation a higher education should get the 40% of persons;
- the number of people threatened with the poverty one should reduce by 20 m.

In order to accomplish above purposes the Committee proposes the program Europe 2020 which a few central initiatives make up. Implementing these initiatives is a shared priority and action will be necessary on all rungs: of organizations operating on the level of the EU, membership states, the local authority and regional.

The European Commission determined 7 central projects which will contribute to progress in frames of each of priorities\(^\text{15}\):

- Union of the – innovation exploiting research-developmental activity and the innovation for solving our most considerable problems and the liquidation of the gap between the world of science and the market so that inventions become products. With example of it a Community patent, thanks to which enterprises could save the 289 m euro up every year can be;
- Young people in the route – the improvement in the quality and attraction of the European higher education on the international arena by supporting the mobility of students and young specialists. Specific

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\(^{11}\) Komunikat Komisji Europejskiej „Reinforcing economic policy coordination”, Bruksela, 12 maja 2010 r., COM(210)250 final.


\(^{14}\) http://ec.europa.eu/eu2020/pdf/1_PL_ACT_part1_v1.pdf

of it a greater availability of positions in membership states should be a sign for candidates from entire Europe and due recognizing the classification and professional experience;

- European digital – department achieving long-lasting economic and social benefits from the digital single market based on the very fast Internet. To 2013 all residents of Europe should have an access to the fast Internet connection;

- Europe effectively using – resources supporting the change towards the economy low-emission and more effectively using resources. Europe should hold on to purposes fixed in strategy 2020 with reference to the production of the energy, the effectiveness and the consumption. It would lower it to 2020 value of the import of petroleum and gas for the 60 bn euro;

- Industrial politics for the ecological – development increasing the competitiveness of the EU manufacturing sector in conditions after the crisis, supporting the entrepreneurship and the development of new abilities. She will contribute to create million of new places of employment;

- Program for new abilities and the – employment creating conditions to modernize the labour markets in order to increase the staffing level and ensuring our permanencies of social models in the face of diverging for the retirement of the generation of the baby boom;

- European schedule of the fight against the – poverty providing for the economic, social and territorial cohesion by the help to persons poor and ruled out socially and enabling active participating in the social life for them.

As part of the supervision of macroeconomic imbalances the European Commission proposes the mechanism making up from\(^{16}\):

a) of preventive part:

- assessment of structural weaknesses, competitive position and appearing of macroeconomic imbalances in every member state, with the special attention devoted to connections in frames of the euro zone, with the help of the table of – indicators for individual indicators defined warning levels would stay, in addition they would be different for countries from and from outside the euro zone;

- comprehensive quality analysis of countries, in which risks will be identified. In case of confirming appearing of these risks, KE would present to the EU Council proposal to recommend for the given country, and alone could submit the early warning directly to this state;

- starting the so-called procedure of the exaggerated imbalance (in particularly serious situations);

b) of correcting part:

- surrendering the country to the deepened supervisory body: the EU Council could issue recommendations concerning the economic policy, and the country would be obliged for regular of submitting to the ECOFIN council and Euro group reports of progress in implementing reforms;

- towards countries of the euro zone repeatedly not-abiding by recommendations of the EU Council, KE proposes considering special rules of implementing the mechanism.

Summary

Article mentioned issues were associated with the crisis which turned into the crisis of the debt in a very short time as well as spread through almost entire Europe.

References


\(^{16}\) Komunikat Komisji Europejskiej „Reinforcing economic policy coordination”, Bruksela, 12 maja 2010 r., COM(210)250 final
NAMŲ ŪKIJŲ FINANSINĖS ELGSENOS POKYČIAI EKONOMINĖS KRIŽĖS LAIKOTARPIU LIETUVOJE

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Raktiniai žodžiai: asmeniniai finansai, asmeninių finansų valdymas, pajamos, išlaidos, taupymo ypatumai

Įvadas

Namų ūkių finansai, mokslo požiūriu, yra nemažaiši įdomūs už įmonės finansus, todėl sulaukia itin daug mokslininkų dėmesio. Išanalizavus įvairius mokslinius tyrimus, pastebėta, kad dauguma autorių asmeninių finansų ypatumų nagrinėja fragmentiškai:


Išanalizavus tiek lietuvių, tiek ir užsienio autorių mokslinius šaltinius, buvo pastebėtas sisteminio požiūrio į asmeninius finansus poreikis. Todėl 2010 m. vasario mėn. buvo pristatytas pranešimas 13-oje Lietuvos jaunų mokslingųjų mokslininkų konferencijoje ir publikuotas straipsnis VGTU moksliamiame žurnale „Verslas XXI“, 2010/2(2), kuriamo buvo pasiūlyta asmeninius finansus analizuoti kaip všĮ sistemą remiantis fundamentalia lygimi, sudaryta iš trių kintamųjų: pajamų, išlaidų ir laisvų lėšų.

Be mokslingųjų, asmeniniais finansais domisi ir įvairios institucijos, atliekancioms statistinius tyrimus, susijusius su gyventojų namų 2004 – 2010 m. atlikdavo ankstesnių statistinių metodai, grafinis duomenų vaizdavimas kompiuteriniu įrankiu ir atliekant mokslinius šaltinius, buvo pastebėtas neanalizuojami namų 2004 – 2010 m. metų finansų rodikliai ir jų situacijos tyrimus.

Išvardintuose tyrimuose daugiausiai konstatuojama esama padėtis, tačiau neanalizuojami namų 2004 – 2010 m. mokesčių elgės pokyčius asmeninių finansų esmėje, taip pat atlieka panašius tyrimus, tačiau jais nėra teigianti asmeninių finansų sistemos esmėje viešųjų institucijų, atliekančių simptomus, atliekančių mokesčių elgės pokyčius, bet siekia išsiaiškinti asmeninių finansų sistemos pokyčius ir jų priežastis, o nuo 2010 m. periodiškai ir sistemiškai namų 2004 – 2010 m. asmeninius 2010 m. finansinius situacijos tiekimą atlieka AB „Swedbank“ Asmeninių finansų institutas.


1. Namų 2004 – 2010 m. 2004 – 2010 m. finansinių rodiklių ir jų analizė

Straipsnyje vartojama namų 2004 – 2010 m. finansų analizė, Žemėlapiuose pateikti asmeninių finansų analizės, teorinės medžiagos apibrėžimai ir sisteminis metodas, grafinis duomenų vaizdavimas kompiuterinių programų pagalba, lyginamoji analizė, anketinė aplinkosa, aprašomos statistika.

1 pav. Namų 2004 – 2010 m. 2004 – 2010 m. finansinių rodiklių ir jų analizė

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Nurodytame paveiksle vaizduojamos 3 kreivės, išstatojanimos bendrą situaciją Lietuvos namų įkių sektoriaus pastaraisiais metais. Matome, jog po 2008 m. namų įkių vartojimo išlaidos mažėja kur kas labiau nei pajamos, o laisvųjų, laikomų indėlių pavidalu komerciniuose bankuose, didėja.

Šalyje vyraujant ekonominiam pakilimui, darbo užmokestis didėjo, tačiau situacija pasikeitė po 2008 m. Neigiamai pokyčiai tarptautinėje ekonomikoje neįsgavėjami paveikė ir Lietuvą, tad darbo užmokestis šalyje ėmė mažėti. Remiantis LR Statistikos departamento31 ir LR Finansų ministerijos32 duomenimis, 2009 m. bruto darbo užmokestį lygintant su 2008 m., jis sumėžejo 95,3 Lt (nuo 2151,7 Lt iki 2056,4 Lt) arba 4,43 %, o 2010 m. lygintant su 2009 m. dar 25,2 Lt (nuo 2056,4 Lt iki 2031,2 Lt) arba 1,23 %. Taigi šiame laikotarpiu vidutinis bruto darbo užmokestis buvo 5,6 % mažesnis nei 2008 m. pabaigoje.

Namų įkių vartojimo išlaidos iki 2008 m. augo itin sparčiai. Jei lygintume 2004 m. su 2009 m. pašažėjimą siektų net 35,47 % (1 namų įkiio nario vartojimo išlaidos per mėnesį 2004 m. siekė 512,3 Lt, o 2008 m. išaugo iki 793,9 LT). Tuomet šalis ekonomika augo ir žmonės, jaukdamiesi saugūs dėl savo ateities, didelė dažių pinigų leido vartojimui. Prasidėjus ekonominiam nestabilumui, situacija pasikeitė. Lygintant 2009 m. su 2008 m. vartojimo išlaidos sumėžejo 21,01 % (iki 627,07 Lt), o 2010 m. su 2009 m. − dar 5,6 % (iki 591,86 Lt). Taigi Lietuvos gyventojų reakcija į mažėjančias pajamas, visų pirma, pasireiškė per vartojimo mažinimą.

Mažėjant darbo užmokesčiui, natūralu būtų tikėtis ir namų įkių sukaupiamų laisvųjų lėšų sumažėjimo. Tačiau iš 1. pav. pastebime, kad reali situacija yra priešinga − indėlių apimtys pastaraujo metu Lietuvos komerciniuose bankuose išauga. Nuo 2004 m. indėlių suma augo nuolat, išskyrus tam tikrus nedidelius svyravimus po 2000 m. sausio 1 d. Tolesniu laikotarpiu, 2009 m. II ketvirčio 2008 m. išaugo iki 793,9 LT). Nuotraukos projektavimo auga ir žmonės, jaukdamiesi saugūs dėl savo ateities, darbo užmokestį, o tolesniais metais, pakeisdami, jie susiduria su jauna išlaidų padidėjimu. Lygintant 2010 m. gyventojų pajamos su 2009 m., jis sumažėjo 1,23 % (iki 25,342 mln. Lt), o 2010 m. liepos 1d. (22,678 mln. L), 2010 m. liepos 1d. (25,342 mln. L), pastebėtume, kad namų įkių laisvųjų lėšų kiekis komerciniuose bankuose padidėjo net 11,75 %.

Nors 2009 m. namų įkių pajamos lyginant su 2008 m. sumažėjo 4,43 %, vartojimo išlaidų „susitraukimas“ buvo gerokai didesnis ir siekė 21,01 % lyginant su tuo pačiu laikotarpiu 2008 m., tuo tarpu laisvosios lėšos indėlių pavidalo bankuose padidėjo 5,83 % (2008 m. − 22,678 mln., o 2009 m. išaugo iki 24,0 mln. L). 2010 m. gyventojų pajamos dar sumažėjo į 1,23 %, vartojimo išlaidos − 5,94 %, o laisvosios lėšos šalies komerciniuose bankuose padidėjo 4,75 % (iki 25,342 mln. L).

Šie duomenys rodo, jog pastaruoju metu, baimindamiesi dėl nestabilios ekonomikos, žmonės ėmė grižtai taupyti (lygintant su anksčesniais metais) ir tai daro vartojimo išlaidų šakaita. Itin stiprus ir neproporcingas pajamoms vartojimo išlaidų sumažėjimas (2008 m. − 21,01 %, 2009 m. dar − 5,94 %) neigiamai atsitiepia valstybės ekonomikai ir ypač viešojo sektoriaus finansams. Tai lemia mažėjančią gamybą, darbo užmokestį ir didėjančią nedarbą. Žmonės, negalėdamos realizuoti savo produkcijos dėl sumažėjusios paklauso, susidiria su jūraisa pobūdžio finansiniais sunkumais, be to, surenkama mažiau mokesčių į valstybės biudžetą. Taigi namų įkių vartojimo mažinimas – iš vienos pusės, turi teigiamos įtakos atskirų namų įkių biudžetui, iš kitos pusės, – sukélė rimtų problemų visos valstybės ekonomikai. Susidaro „užburtas ratas“, dėl kurio pasiekimų kėnčia visa visuomenė visi mažiau lėšų į valstybės biudžetą, mažinamas įvairios socialinės išmokos, pensijos ir t.t.

2. Lietuvos namų įkių biudžetų valdymo tendencijos ekonominis krizės sąlygomis

Siekiant nustatyti namų įkių įpročius tarkvark asmenininius finansus ir pagrindinius veiksnius, lemiančius finansinius sprendimus, bei pašyti, kaip šie įpročiai kito finansinės krizės laikotarpiu akivaizdoje, pakartotiniai 2 kartus buvo atlikta specialus sociologinis tyrimas ir apdorojo jo rezultatai. Pirminis tyrimas atlikta 2008 m. gegužės mėn., kuris atskleidė:


217
• Individų padrinko ir nematyvuo to finansinių išteklių valdymo ypatumus, dėl kurių daliai respondentų sunkiai sekasi subalansuoti pajamas ir išlaidas;
• Polinkį laisvas lėšas laikyti bankuose indėlių pavidalu arba investuoti į vertybinius popierius;
• Menką asmeninių finansų pagrindų žinojimą.

Analogiškas pakartotinis tyrimas atliekas 2010 m. gruodžio mėn ir šių dviejų apklausų rezultatai lyginami tarpusavyje.


Siekiant gauti kuo patikimesni rezultatus, iš 3,32 mln. LR gyventojų, su 95 % pasiklyviojo lygmeniui, naudojotis specialia programa, buvo apskaičiuota, kad reikėtų apklausti 200 respondentų. Tokiu atveju, rezultatų galima pakeista yra 6,9 %.

2.1. Bendroji informacija apie respondentus


Bendrieji duomenys apie respondentus:
1. respondentų santykis pagal lytį: 48,25 % - vyrai, 51,75 % - moterys (2009 m. atliktaime tyrime: 55,28 % - vyrai, 44,72 % moterys);
2. respondentų santykis pagal išsilavinimą: 81% - aukštasis; 9,5 % - nebaigtas aukštasis; 5,5 % - aukštėsnysis, 3,5 % - vidurinis (2009 m.: 79 % - aukštasis; 11 % - nebaigtas aukštasis, 6,5 % - aukštėsnysnis; 3,5 % - vidurinis);

2.2. Namų ūkių biudžetų valdymo ypatumai ir pastarųjų metų tendencijos

Apžvelgus bendrąją informaciją apie respondentus, toliau pereinama prie pagrindinės dalies, kuriose analizuojami individų asmeninių ir valdymo ypatumai. Respondentų gaunamių pajamų daipazonas (2 pav.) yra labai plačios – nuo 500 Lt iki daugiau nei 5000 Lt per mėnesį „i rankas”. Didžioji dalis (22 %) apklausytųja gauna 1000 - 1500 Lt per mėnesį. 18% apklausytųja gauna nuo 1500 iki 2000 Lt, o 17% respondentų pajamos yra 2000 - 2500 Lt. Po 3 % apklausytųja gauna atitinkamai nuo 4000 iki 5000 Lt ir 5000 Lt ir daugiau. Tačiau net 10 % respondentų pajamos yra iki 500 Lt, 14 % - nuo 500 iki 1000 Lt. Pagal turimus duomenis apskaičiuovus vidutines respondentų pajamas, jos yra lygios 1737,46 Lt. Šio tyrimo atskymus lyginant su ankstesnių metų atlikto tyrimo rezulta- tais, galima pasakyti, kad nuotrašdino respondentų pajamų grupę buvo 500 – 1000 Lt. Be to, darbie skiek tiek sumažėjo asmenų, kurių pajamos yra iki 500 Lt (2009 m. tokių buvo 11%). Asmenų, gau- nančių nuo 3000 iki 4000 Lt skaičius trumpko (ir tuomet buvo 5 %), tačiau gerokai sumažėjo naugančių auksčtas pajamas: 2009 m. 4000 – 5000 Lt gaudavo 5 % respondentų, o darbie juo tik 3 %, 5000 Lt ir daugiau anksčiau gaudavo 6%, o darbie tokių asmenų sumažėjo dvigubai iki 3 %. Tuomet vidutinis respondentų pajamos buvo aukštesnė nei dabartinio tyrimo metu ir siekė 1860,88 Lt.
2. pav. Respondentų mėnesinės pajamos

Matome, kad krizės laikotarpio sumažėjo ne tik labai mažas, bet ir santykinai didėjas pajamas gautiųjų, o vidutinės pajamas gautiųjų asmenų skaičius nepakito.

Tolesniu anketos klausimu norėtų išsiaiškinti, kaip respondentai panaudojo savo pajamas, ir kaip nuo gautų pajamų dydžio priklauso išlaidos.

3 pav. Respondentų atsakymai į klausimą, kaip pastaruojų metu naudojo savo pajamas

Iš 3 paveikslės matome, kad 40 % respondentų išlaidos neviršija pajamų, tačiau didžioji dalis atsakusiųjų susiduria su rimtomis finansinėmis problemomis, kai nepriklausomai nuo gautų pajamų dydžio, išlaidos yra arba joms lygios arba netgi jas viršija.

Pagal anketos duomenis apskaičiuotos vidutinės apklaustų pajamos 2010 m. yra lygios 1737.46 Lt, o tai reiškia, kad respondentų finansiniai ištekliai viršija vidutinį šalies darbo užmokeštį, atskaičius mokesčius (1583.9 Lt). Tačiau, nepaisant to, respondentams finansinių sunkumų vis tiek yra.

2009 m. apklaustoje maždaug pusė respondentų (49 %) išlaidos neviršijo pajamų, tačiau net 31 % respondentų nepavykdavo suvaldyti savo išlaidų ir jos buvo didesnės už pajamas.

Paaiškėjus, kad net 60 % respondentų susiduria su pajamų trūkumu, kitu klausimu norėtų išsiaiškinti, kam daugiausiai išleidžiama pinigų (4 pav.):

4 pav. Respondentų atsakymai į klausimą, kam daugiausiai tenka išleisti pinigų
Didžiausia išlaidų dalis tenka maistui, antroji – išlaidos komunalinėms paslaugoms, trečioji – transporto išlaidos ir t.t. 2009 m. apklausos duomenys buvo labai panašūs – tuomet 29 % visų išlaidų sudarė maistas, 17 % komunalinės paslaugos, 15 % transportas ir tokią pat dalį sudarydavo išlaidos drabužiams ir avalynei. Šiuo metu šis išlaidų segmentas 14,29 % sumažėjo, tačiau 11,76 % išaugo išlaidos komunalinėms paslaugoms ir 6,67 % - transportui.

Kita klausimų grupė susijusi su taupymu. Klausiama, ar respondentai taupo pinigus:

Iš 5 paveikslo matome, kad dabartiniu momento, taupymui skiriamos didesnis dėmesys nei krizės pradžioje. Atsakymus lyginant su 2009 m. pavasarį atlikto tyrimo duomenimis matome, kad taupantys jų padaugėjo net 17,65 % ir tai yra gan didelis pokytis, atsižvelgiant į tai, kad respondentų vidutinės pajamos sumažėjo 6,63 %.

Į klausimus apie taupymo priemones respondentai atsakė taip (6 pav.):

Iš 7 paveikslo matoma, kad taupymo srityje situacija pastaruoju metu šiek tiek paskatinta. Lyginant 2009 m. apklausų rezultatus su 2010 m. tyrimu, pastebimas didesnis procentas tų, kurie šiuo metu taupymui renkasi bankų indelį – jų skaičius per 1,5 metų padaugėjo 15,38 %. Jei lygintume, kaip pasikeitė respondentų skaičius, kurie taupydami savo pinigines lęšas jas perveda tiesiog į paprastą sąskaitą banke, parašyti, kad ankščiau tokį individų buvo net 30,3 % daugiau. Be to, 2009 m. buvo didesnis procentas žmonių, kurie taupymo tikslams rinkosi investicinį gyvybės draudimą ir kitas taupymo alternatyvas. Tačiau šiuo metu, net 47,06 % padaugėjo tokų, kurie savo sukauptų laisvų lėšų išvis nenori niekur panaudoti, o tiesiog jas laiko „kojinėje“.
Išsiaiškinus apie taupymo priemones, tolesnis klausimas buvo adresuotas netaupantiems, siekiant iššyti jų nuomonę, kodėl jie to nedaro.

7 pav. Klausimo, adresuoto netaupantiems respondentams, atsakymai

Paaiškėjo (7 pav.), kad net 53 % netapančių to nedaro todėl, kad visas savo pajamas išleidžia vartojimui. Vis dėlto, jeigu palygintume naujusius rezultatus su ankstesnių metų apklaukos duomenimis, patyrymes, kodėl toks respondentų skaičius sumažėjo 13,11 % sumažėjo. Tačiau itin žinomai, net 166,67 %, padaugėjo tokų, kurie bijodami visiško arba dalinio sukauptų lėšų praradimo nusprendžia išvis net nebandyti taupyti, ir 25 % daugiau tokų, kurie dėl finansinių žinių trūkumo netaupo, nes laisvas lėšas išleidžia kažkur kitur.

Paskutiniu klausimu bandyta suzinoti, kaip patys respondentai vertina savo žinias apie asmeninius finansų valdymą (8 pav.):

8 pav. Respondentų atsakymai į klausimą, kaip jie vertina savo žinias apie asmeninius finansus

Atsakymai rodo, kad 6,45 % padaugėjo žmonių, manančių, jog apie asmeninius finansų valdymą žino pakankamai ir net 85,71 % sumažėjo išvis nieko apie tai nežinantiųjų. Tačiau, 18,18 % padaugėjo žmonių, kurie bijodami visiško arba dalinio sukaupimo bendro vartojimo daro ir neigiamąją naudą savo finansams, nes laisvas lėšas išleidžia kažkur kitur. Akivaizdu, kad poreikis tobulinti ir švietti visuomenę šioje srityje vis dar lieka aktualus.

Išvados

Atliktas finansinis elgsenos pokyčių krizės laikotarpio tyrimas parodė:

1. Recesija paskatino namų ūkius atsakingiai valdyti išlaidas ir tuo pačiu atsleidė nemažus taupymo rezervus. Vis dėlto, griežtas vartojimo valdymas šala pozityvius poveikį namų ūkio finansams, tuo pat metu dėl mažėjančio bendro vartojimo daro ir neigiamąją įtaką šalies ekonomikai ir ypač viešojo sektoriaus finansams.

2. Aktualios išlieka tos pačios problemas: biudžeto subalansavimo nepaisyti gautų pajamų dydžio; neracionalus elgesys su laisvoms piniginėmis lėšomis; nepakankamas Žinii apie asmeninius finansų valdymą lygis;
3. Ekonominės recesijos laikotarpiai sumažėjus respondentų pajamoms, dominuojanti iššūkių grupė ir toliau iššieka maistas. Pasteibima, kad 11,76 % išaugo išlaidos komunalinėms paslaugoms ir 6,67 % transportui, tačiau 14,29 % sumažėjo išlaidos drabužiams ir avalynei. Vadinas, sumažėjus pajamoms, križės laikotarpiu žmonėms pinigų pakanka būtinausiuosiomis poreikiais, o kitų dalykų pirkimas atidėdamas geresniems laikoms.

4. Nors 60 % respondentų susiduria su pajamų trūkumu, analizuojamu 1,5 metų periodu maždaug penktadaliu padėgaujo taupančiųjų respondentų. Tačiau nepaisant to, kad 15,38 % padėgaujo besireikščių į laisvą laiką indėlius, net 47.06 % panaikino norinčiųjų savo santapas laikyti tiesiog „kojineje“.

5. Netaupančių respondentų sumažėjo 37,5 %, tačiau iš šių, kurie ir toliau taupymui nesikiria visiškai jokie dėmesio, net 166,67 % padėgaujo respondentų, kurie bijo visiškai arba daliniu sukauptų lėšų pradėjo ir 25 % daugiau tokių, kurie dėl finansinių žinių trūkumo neteisėtai ir laisvais lažės išleidzia kitur. Galima teigti, kad križės laikotarpiu nors ir suaktyvėjo taupumas, tačiau padidejo žmonių nepasipiktėjimas finansinėm institucijom, tokiom kaip komerciniais bankais.


7. Taigi išanalizuvas įvairius respondentų atsakymus, vis dar jaučiamas elementarų asmeninių finansų valdymo žinių trūkumas. Daugelis žmonių neracionaliai valdyma savo finansinius išteklius ne tik, kad nėra saugūs ir užtikrinti dėl finansinių stabiliaus rytojaus, tačiau ir esamu momento susiduria su rimtomis finansinėmis problemomis. Gebėjimų valdyti savo išteklius tobulinaus švietimo priemonėmis bei pasiūlant praktiniams namų ūkių biudžetų valdymui skirtas praeigos, neabejotinių prasidėtų prie esamos padėtės gerinimo.

**Literatūra**

THE CHANGES OF HOUSEHOLD FINANCIAL BEHAVIOUR DURING ECONOMIC CRISIS IN LITHUANIA

Kamilė Taujanskaitė

Summary

Households finance, scientific point of view, is no less interesting for the company's finances, and attract very much attention of scientists. In addition to academics, personal finance and various institutions interested in carrying out surveys in relation to households. However, studies conducted mainly states the current situation, but the plot of household financial behavior features of recent financial crisis. Therefore, this article aims - to investigate Lithuanian household financial behavior changes in the economic recession.

The object of research - personal finances in the context of the household.

Research methods: primary and secondary data analysis, theoretical materials and summary of the systematic methods of graphic representation of data in computer programs, aid comparative analysis of the questionnaire, descriptive statistics.

The first paragraph summarizes the analysis of household statistics. Examine how changes in a time of crisis household income, as this affect the use of cost-saving and what are the characteristics of recent times. Decrease in revenue during a recession, households began to responsibly manage the costs and at the same time revealed significant savings reserves. However, severe restriction of the use of positive close on household finances, while decreasing the overall use and have a negative impact on the economy and especially the public sector finances.

The second part investigated Lithuanian household budget management trends in the economic crisis. In order to identify patterns of households in managing personal finances and the main factors in financial decisions, and compare how the habits of another financial crisis, repeated two times was performed sociological research and process the results. It is noted that the relevance of the problem remains the same: balancing the budget in spite of the revenue size of the irrational behavior of free-cash expense, lack of knowledge about personal finance management level. However, noticeable and positive change - the study of self-reported views about their personal financial management skills, offering greater self-confidence. Thus, the analysis of the various responses of the respondents still felt in the basic personal financial management, lack of knowledge, it is therefore proposed to draw attention to the financial systems market segment, and a variety of educational means to improve financial literacy.

Keywords: personal finance, personal finance management, income, spending, saving.