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THE IMPACT OF BANKS' CREDIT POLICY CHANGES ON BUSINESS INVESTMENTS

Abstract: *The business investments play one of the most important roles in the country's economic growth, so the analysis of the investments statistics and the understanding of factors influencing the investments allow to forecast the country's economic development. Large part of business investments consist of borrowed capital, which is often not easy to obtain during the economic downturn and recovery periods. In recent years, significant business cycle fluctuations were observed in many countries; likewise, the banks' loan portfolio quality and amount indicators were affected. This research reveals the interrelations between banks' loan portfolio and business investments in Lithuania and other EU countries. The quantitative statistical analysis helps to understand the changes in trends in current business investments.*

Keywords: *bank, investments, loan portfolio, macroeconomics, statistical analysis*

JEL: C 38, E 32, G 21

Introduction

The owners of capital can invest their money by making a bank deposit, purchasing the enterprises' and government's securities, or directly investing the capital into business and beginning the own production process. Investing thus implies any action which has an acquisitive purpose – to offer an extra return to the owner. The business investments are considered as buying or creating the assets with the expectation of capital appreciation and other returns after the particular period. In the market economy, the capital is an incentive in any kind of economic activity, irrespective of its size. Aiming to perform a profitable activity the enterprises carry out investment projects that at the same time have engaging effects on the national economy, materialized in the increase of the products and services demand, the job creation and the progress of the entire society. Definitely, the business enterprises are not always able to make all the investments that create value. In these situations the companies may encounter problems of optimal investment decisions due to the existence of business environment and capital markets imperfections. The firms always face the risk of possible non-profitable projects and especially in the unstable business environment they must implement excessively risky projects. In such

situations the optimism or overconfidence of managers play a central role in the investment and financing decisions making process.

The business investments are very sensitive to the internal and external cash flows availability. Access to finance plays a significant role in the development of the company, while the company's development level is dependent on the availability of financial resources. At the same time, the access to finance is dependent on the financial market development, economic environment and banks' credit policy. The credit policy of banks is closely related to the risk management, which is an extremely complex and important for the stability of the banking sector. The bank risk management involves prevention, measurement, risk management decisions, and control. An efficient risk bank management is achieved through the commensurate efforts, quantifying and calculating the risk indicators that enable the static and dynamic assessment of the risks, with reference to the central bank's regulations and the banks' experience. In response to the changes in country's economy, banks' financial condition and loan portfolio quality, the banks form the expansive or conservative credit policy. In economic downturn, banks are forced to contract loan supply due to the reduced ability of debtors to repay credits when the higher capital buffers for banks are necessary. As a consequence, the access for business enterprises to financing of especially bank-dependent borrowers is curtailed and the business activities are contracted. The macroeconomic uncertainty prompts banks to re-allocate their assets away from risky loans toward safer capital investments.

The aim of this research is to estimate the impact of tightened commercial banks' credit policy on business investments. The main statistics of Lithuania and overall European Union is presented and analysed which is related to the banks' loan portfolio, business investments and other macroeconomic variables.

1 The Main Factors of Business Investments

The capital markets offer the different possibilities for companies to attract the capital necessary for the business activity [21]. Business enterprises have two capital forms to finance their assets: equity and debt. More frequently a combination of both in the company's balance-sheet is used. Equity states to the money invested by the shareholders and presents the long term enterprise's financing source [22]. When a company issues shares during the initial public offering it attracts owners' capital flows. Most efficiently, it can be used for stimulating new investments in developing industries, where the value of mortgaged assets is insufficient and the investment return is vague [21]. These investments are associated with the return expected by the shareholders for the sustained risk, which is dependent on the firm's profitability [22]. The other source of capital are debts that refer to the money invested in the companies by the creditors. These obligations require the trouble-free repayment and generally are associated to the interest rate and maturity date [22]. In the balance-sheets the liabilities are subdivided into the short-term and long-term debts according to the maturity. The short-term debt instruments are used when the enterprises lack

the working capital, while the long-term credits are used when making fixed assets investments and purchasing new equipment. The way a company finances its assets through the combination of equity and debt states to its capital structure [22]. The access to financing and its cost represent important dimensions of the competition between firms and the decisions regarding the optimum capital structure choice are essential in maximizing the enterprise value and hence, in stimulating the growth of the existing shareholders' benefits [24]. One of the most important spheres of finance management of a company is the selection of the structure of financing sources. The growth of a company is influenced by its capital expenses which occur due to the efficiency with which the debt capital is being used [21].

The main financial indicators related to capital structure are the equity ratio, debt ratio and solvability. These ratios determine the level of equity and debt while companies finance their assets, as well as the ability to repay their debt [22]. Also according to Serghiescu & Vaidean [24], being strongly connected with the long-term financing methods used by a company, the capital structure of a company is reflected by the debt to equity ratio, which is very important in the financing choice [24]. Proenca, Laureano & Laureano [22] assumed that there is no universal theory of the debt and equity proportion choice. Serghiescu & Vaidean [24] classify the factors that affect the capital structure of a firm into two categories:

- The external factors reflecting country-specific macroeconomic conditions (for instance, the inflation rate, the average interest rate, etc.).
- The internal factors specific to the business, such as the profitability, the company's size, the tangibility of its assets, the liquidity, the asset turnover, etc.

According to Mokhova & Zinecker [18], one of the most important external determinants of capital structure is Gross Domestic Product (GDP). The boost in economy and consequently growth in GDP lead to the increase in companies profits. In these periods companies prefer internal sources as retained earnings then debt. In addition, during the period of economic expansion, when interest rates are rising, the profit-motivated banks have tendency to increase loans to private sector, thus, corporate financial leverage should rise. The expansion of credit and the quantity of money supplied increases aggregate demand improving the enterprises' financial results and the abilities to repay credits. Inversely, during economic downturns and fall of interest rate, the bank loans also start to decrease and consequently change the corporate capital structure [18]. In general Proenca, Laureano & Laureano [22] maintain that capital structure choice varies according to several factors, such as industry, tax policies, type of asset, costs of financial distress, uncertainty about the future, company's life cycle and borrowing decisions. The next widely investigating external factor is inflation rate. Inflation is negatively related to total leverage and the short-term debt ratio, but positively influences on the long-term debt ratio. Furthermore, there are other external determinants of corporate capital structure, for example developing of banking sector, public debt, bank credit, unemployment rate, etc. [18].

The capital availability stimulates the business investments. Various theories explain the factors influencing investments into business activities. Mendes, Serrasqueiro & Nunes [16] classify these theories into two groups:

- Theories considering that investment depends more on conditions outside of the firm, such as sales, demand, growth opportunities and macroeconomic conditions.
- Theories considering that investment depends more on firms' internal conditions, namely internal finance and liquidity.

In addition, Korutaro & Biekpe [13] assert that a good investment climate, which addresses the local institutional, regulatory and policy environment in which firms operate, stimulate economic growth by providing firms with the incentive to invest and improve productivity. Enterprises take advantage of favourable business conditions allowed by the economic expansion phase, increasing their investments to maximize company's value. In periods of economic recession, when it is less likely that profits can grow, firms reduce the investments adjusting them to the worsened business opportunities. The investments in fixed assets depend on firms' capacity to obtain both internal and external finance. If firms do not have the capacity to generate internal finance, and verify restricted access to external finance, then they decrease the level of investment. The investments also depend on enterprise's liquidity. If firms have the capacity to generate liquidity, they will be able to increase investment [16]. The generation of higher cash flows may show the good management in the past and these companies are more likely to remain well managed in future. In this case the companies have more liquidity and have the greater investment opportunities that lead to a higher level of investment. The financial condition of companies that are in financial distress unfavourably influences their investment behavior. One of the defining characteristics of firms in distress is the existence of financial constraints and strained access to credit, stemming from their situation [15].

The human optimism and the attitude towards business prospects also is the important factor stimulating the investments. Mohamed, Fairchild & Bouri [17] characterized the new approach as the behavioural corporate finance which proposes managerial optimism as a factor that can cause corporate investment cash flows. The managerial overconfidence can significantly affect the corporate decisions. With optimistic managers, corporate investment should be interacted with firms' internal financing sources. Optimistic managers are assumed to be less rational from their portrait in traditional behavioural finance models. They believe that firm's projects under their control are better than they actually are. In such case, managers will attribute a higher expected return to these projects than their true value [17].

The higher business investments are one of the main factors of a country's economic growth. Explaining the determinants of economic growth Patruti [20] stated that the classical economists have recognized three basic growth mechanisms:

- The accumulation of capital, resulting from invested savings.
- The division of labour.
- The technological progress.

According to Albu [2], the investments into the fixed capital formation and new technologies are main factors of GDP growth. The macroeconomic indicators usually regarded as being significant to describe the economy growth mechanism are: GDP per capita, GDP growth rate, the investment share in GDP, gross fixed capital formation and efficiency of investments. Gabriela [9] also maintains that investments are the driving force of economic growth. All patterns of macroeconomic balance include investments, along with consumption as part of the aggregate demand of an economy. The concept of investment multiplier highlights the role of investments in capital acquisitions as a component of the aggregate demand through their accelerator effect. In case of a balanced economy, investments and savings are even, the latter having the role of increasing the demand for investment goods. The status of investments as the driving force behind economic growth is not merely a postulate used by macroeconomists but also one which is supported by several empirical studies conducted to that effect. Gabriela [9] observed the empirical studies where an additional investment of one percent of the GDP in capital assets leads to an annual increase in the GDP by a third of one percent, this being the mechanism of economic growth.

Szkorupova [25] assumed that foreign direct investment (FDI) and exports are considered to be the main determinants of the economic growth. Omri & Kahouli [19] have identified the two-way linkage between FDI and economic growth in which FDI promotes economic growth and, in turn, economic growth is viewed as a tool to attract FDI. The higher economic growth requires more domestic capital. It has been also found that domestic capital plays a determinant role in the increase of FDI inflows. The researchers investigated the nexus among FDI, domestic capital and economic growth by considering them simultaneously in a modelling framework. The impact was proven of the foreign and domestic capital on economic growth, the economic growth and domestic capital on FDI inflows, and the economic growth and foreign investment on domestic capital. According to Abdioglu, Khurshed & Stathopoulos [1] the domestic investors prefer to invest more in their local market than abroad. This is mainly attributed to the higher information asymmetry costs associated with investing abroad. Given that domestic investors have more information about the domestic economy, foreign investors suffer from adverse selection problems and require a premium in order to compete with domestic investors. The lack of knowledge about business environment and market structure can reduce the foreign investors motivation to invest abroad.

2 Bank Credit Supply in Different Stages of Business Cycles

Analysing the business cycles, researchers usually refer to the sequences of economic booms and recessions that are specific to the market economies. The business cycles are type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises. These cycles have the significant impact on credit policies of commercial banks. Investigating the

financial frictions, Apostoaie & Percic [3] found that these market imperfections arise from several sources: the informational asymmetry between creditors and borrowers, the lending collateral constraints faced by borrowers and the changes of loanable funds of the banks. The recent turmoil in financial markets has had deep consequences for the allocation of credit within the economy. Access to credit is particularly important for nascent and growing firms, for which it is much more difficult to rely only on retained earnings as a source of financing [5]. The credit crunch makes it almost impossible for companies or individuals to borrow from banks because lenders are scared of bankruptcies or irregularities, leading to higher rates and involve a prolonged recession and slow recovery, which occurs due to supply low credit. Banks have less capital because they have been eroded by losses, thus increasing concerns about the credit quality of borrowers [7].

The pro-cyclical nature of bank loans is normally depicted in the following way. The observed increase in bank loans during economic expansions is likely to be characterized by the deterioration of bank loan quality due to over-optimism, risk exposure underestimation and reduction of lending standards. Then, following a shock that sends asset prices to nosedive and leads to recession, banks experience losses in their balance sheets. In reaction, banks curtail credit supply and, in the process, amplify cyclical fluctuations [12]. The credit restraint is related to the complex risk management in banks. The term banking risk defines those risks faced by credit institutions in their current operations. The bank risks management is part of banking activity which is the specific business requiring the understanding of risk sources and their management principles. Moreover, these risks are taken into account when talking about risk prevention and monitoring set by supervisors to ensure that they will not have a significant negative impact on bank's stability and the country's financial system [8].

The relationship between bank capital and risk-taking is one of the key issues in the banking literature. The minimum capital standards advocated by the Basel Committee which are sought to be implemented are premised on the rationale that increased capital enhances bank safety. The risk-averse banks need low levels of capital [10]. Credit risk is the most critical and the biggest challenge facing banks' management. In fact, risk estimate is a major factor contributing to any credit decision, and the inability to precisely determine risk adversely affects credit management. In addition, risk affects both approved and unapproved financing decisions. When a credit manager approves a loan, the risk is the possibility that the customer may be unable to repay the obligation. Conversely, when loan is rejected, there is a risk of losing a potentially profitable customer to competitors and the risk of opportunity cost. Hence, credit risk evaluation is essential before making any lending decision [6]. Credit risk can have a significant impact on credit institutions. It can be direct, when not managed properly and becomes loss, or may be indirect, with negative results on customers, employees, business partners, or even on the banking supervisory authority. Credit risk may arise from within the institution, driven by exposure to customers, or beyond, coming from the external environment.

Credit institutions are also subjects of all the risks the customers are facing, risks that can be extremely diverse [8].

Credit constraints arise naturally due to the fact that lenders cannot force borrowers to repay their debts unless the debts are secured. In such an economy, durable assets (land, buildings and machinery) play a dual role: they are not only factors of production, but they also serve as collateral for loans. Borrowers' credit limits are affected by the prices of the collateralised assets. And at the same time, these prices are affected by the size of the credit limits. Firm investment behavior is influenced by variables that increase its ability to contract external finance when investment demand is constrained by credit imperfections [11]. Small private firms find it difficult to obtain commercial bank financing, especially long-term loans, for a number of reasons, including lack of collateral, difficulties in proving creditworthiness, small cash flows, inadequate credit history, high risk premiums, underdeveloped bank-borrower relationships and high transaction costs [23]. Conversely, the performance and production of public firms, which are considered less financially constrained than private firms, are less affected by credit crunch due to the subsidized loans, while the production and performance of private firms are greatly adversely affected. This is because public firms are able to substitute subsidized loans with bank credit, while private firms are not [14].

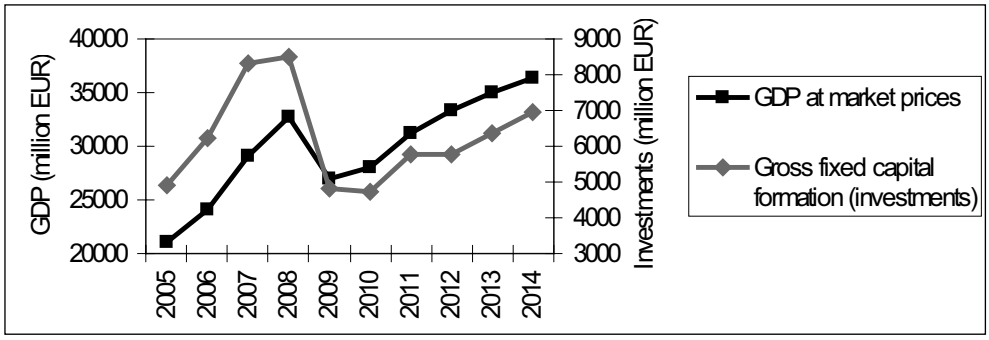
The restricted credit policy towards private enterprises is particularly unfavourable, because when the internal finance is insufficient, the restrictions imposed by creditors may contribute to firms diminishing the investment [16]. According to Banu [4] it is not difficult to explain the concrete way in which the growth of credit influences economic growth. When credit grows, consumers can borrow and spend more, and companies can borrow and invest more. A rise of consumption and investments in a country creates jobs and leads to a growth of both income and profit. Furthermore, the expansion of credit influences also the price of assets, thereby increasing their value. The rise of asset prices offers the owner the chance to borrow more, due to the increase of wealth. This cycle of credit expansion leads to increased costs, investments, to the creation of new jobs, to prosperity, followed by a new loan, which produces the sensation of increased wealth, and which makes people feel happier as long as they are moving within the realms of this circle. Finally, all economic expansion induced by credit comes to an end when one or more important economic sectors become incapable of paying off their debts [4].

3 Changes of Business Investments and Banks' Loan Portfolio in Lithuania

The further empirical research aims to analyse the business investments, banking and macroeconomic indicators in Lithuania and the EU. The business cycle of Lithuanian economy is visible in Figure 1.

Figure 1

GDP and gross fixed capital formation (investments) in Lithuania

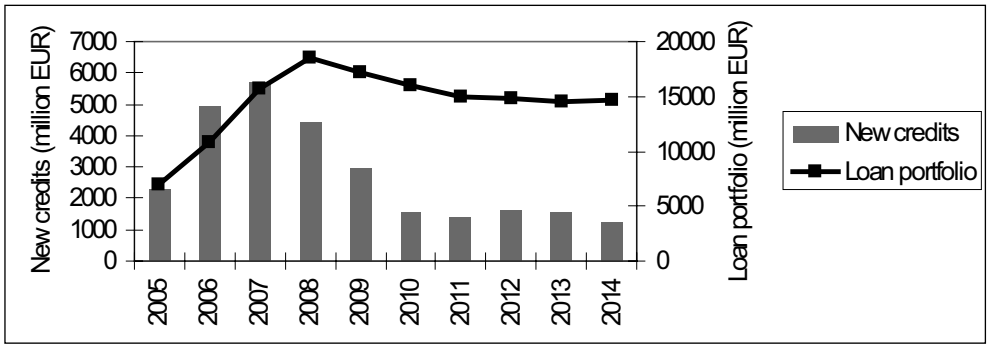


Source: EUROSTAT (2015).

The GDP of this country grew until 2008 when it reached 32,7 billion EUR, while in 2009 this indicator decreased by 17.7% to 26,9 billion EUR. Since 2010 the GDP constantly grew with the average annual increase rate of 6.2% and in 2014 it reached 36,3 billion EUR. Compared to the year 2008 in 2014 the GDP was higher by 11%.

Figure 2

The loan portfolio and new credits in Lithuanian commercial banks



Source: Bank of Lithuania (2015).

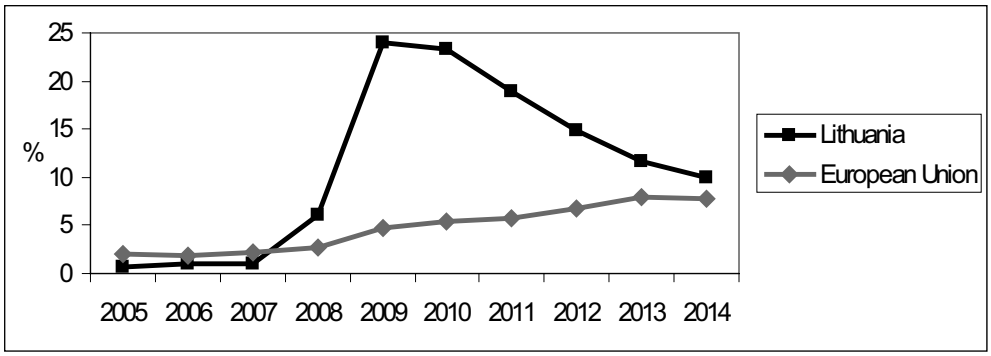
The gross fixed capital formation (investments) in 2014 reached only 81.9% of the year's 2008 level. This research aims to reveal the interrelation between the restrained growth of investments and restricted credit policy of commercial banks.

The growth of loan portfolio in Lithuanian banks was observed until 2008 when it was 18,5 billion EUR (total credits for non-financial corporations and households). The economic downturn of 2009 caused the decrease of loan portfolio to 14,6 billion EUR in 2014. The restricted credit policy of banks reduced the amount of new credits for non-financial corporations and households from 5,7 billion EUR in

2007 to 1,3 billion EUR in 2014 (Figure 2). The possibilities to lend of Lithuanian banks were reduced by the economic downturn in 2009, which caused the highest non-performing loans (24%) in overall EU. Until 2014 this rate decreased to 9.9% (Figure 3).

Figure 3

Non-performing loans in Lithuania and the European Union

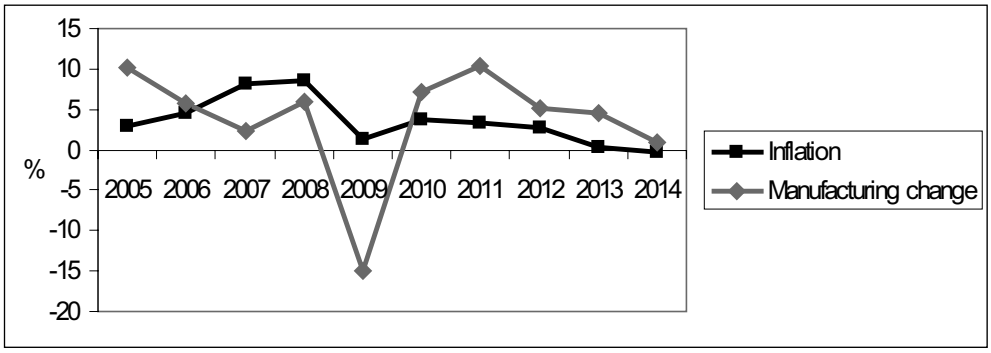


Source: World Bank (2015).

The multiple regression model was developed to predict the business investments. The set of independent variables of GDP, new credits (NCR) and loan portfolio (LPF) was supplemented with two additional variables – the inflation rate (INF) and volume index of production (percentage change compared to same period in previous year) – MCH. In the peak point of Lithuanian economy (year 2008) the inflation rate was 8.5%, while in 2009 year's downturn it decreased to 1.3%. Since 2010 the inflation constantly decreased to the deflation of 0.3% in 2014. The manufacturing volume only in 2009 decreased by 15%, while since 2011 the manufacturing growth rate slowed to 1% in 2014 (Figure 4).

Figure 4

Volume index of production (percentage change) and inflation rate in Lithuania



Sources: Statistics Lithuania and EUROSTAT (2015).

The multiple regression analysis results are given in Table 1. The regression coefficients and intercept value are calculated in column B.

Table 1

The multiple regression results

Regression Summary for Dependent Variable: INV (investments) R = 0,97463484; R² = 0,94991307; Adjusted R² = 0,88730441; F(5,4) = 15,172 p < 0,01043; Std. Error of estimate: 454,21						
	Beta	**Std. Err.**	**B**	**Std. Err.**	**t(4)**	**p-level**
Intercept	-	-	-1 675,1	1 292,49	-1,296	0,2646
NCR	0,5175	0,3316	0,42	0,27	1,560	0,1936
LPF	-0,5998	0,3603	-0,25	0,14	-1,664	0,1713
GDP	1,1396	0,2463	0,32	0,06	4,626	0,0098
INF	0,6420	0,4501	297,24	208,41	1,426	0,2269
MCH	-0,2124	0,3186	-39,81	59,70	-0,666	0,5413

Source: Own processing based on data of EUROSTAT and Bank of Lithuania (2015).

The gross fixed capital formation (investments) in Lithuania prediction multiple regression model is:

$$INV = 0{,}42 \cdot NCR - 0{,}25 \cdot LPF + 0{,}32 \cdot GDP + 297{,}24 \cdot INF - 39{,}81 \cdot MCH - 1\,675{,}1$$

The validity of model was estimated by the mean absolute percent error (MAPE), which is the most common measure of forecast errors. The real investments and predicted values (Table 2) were used for the calculation of MAPE:

$$MAPE = \frac{\sum_{k=1}^{N} \frac{\left|F_k - A_k\right|}{A_k}}{N} = \frac{0{,}464316}{10} = 0{,}0464316 = 4{,}64\ \%$$

Table 2

The absolute errors of investments predictions and data for MAPE calculation

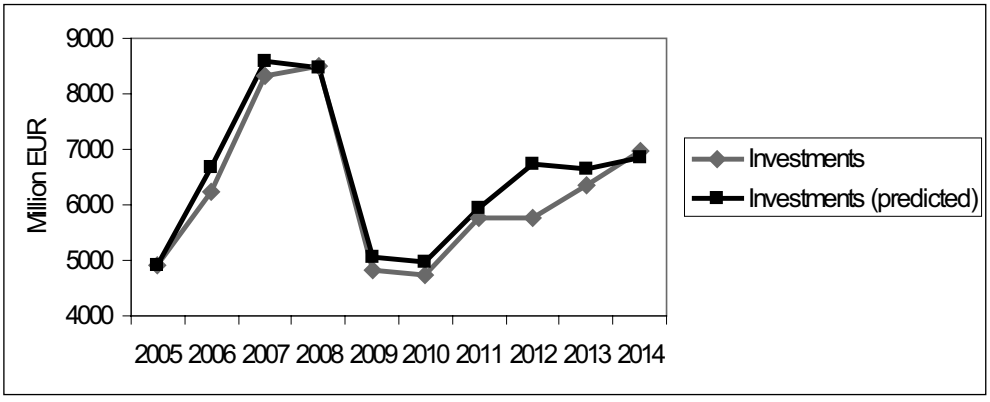
Year	Investments, million EUR (A_k)	Investments (predicted), million EUR (F_k)	$\lvert F_k - A_k \rvert$	$\frac{\lvert F_k - A_k \rvert}{A_k}$
2005	4 912	4 919,42	7,42	0,001511
2006	6 249	6 675,375	426,375	0,068231
2007	8 312	8 584,123	272,123	0,032739
2008	8 512	8 473,163	38,837	0,004563
2009	4 826	5 050,739	224,739	0,046568
2010	4 736	4 967,086	231,086	0,048793
2011	5 761	5 955,196	194,196	0,033709
2012	5 777	6 746,868	969,868	0,167884
2013	6 360	6 642,017	282,017	0,044342
2014	6 973	6 861,6	111,4	0,015976
Σ	-	-	-	0,464316

Source: Own processing based on data of EUROSTAT (2015).

The MAPE value of 4.64% indicates the high ability of developed statistical model to predict the investments in Lithuania according to the selected five banking and macroeconomic indicators. The visualisation of these predictions is given in Figure 5.

Figure 5

The correspondence between actual and predicted values of investments



Source: Own processing based on data of EUROSTAT (2015) and regression model.

The analysis results corroborate the dependency between restrained growth of gross fixed capital formation (investments) in Lithuania and restricted credit policies

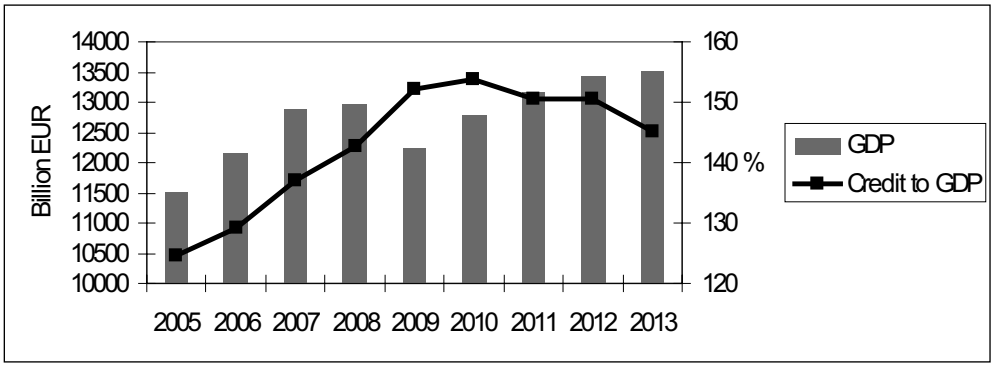
of banks that are related to the significant decrease in the amount of new credits by 77.9% in period of 2007 – 2014. The restricted credit policy of banks is related to the highest proportion of non-performing loans (24%) that were influenced by the economic downturn in Lithuania in 2009. Despite the growing GDP and other macroeconomic indicators of Lithuania, the growth of business investments is quite slow because in 2014 this indicator still failed to reach the pre-crisis value, while many other macroeconomic rates are higher. Regarding the insufficient investments currently the growth of manufacturing volume is slowing to 1% in 2014 and the deflation in the Lithuanian economy at the first time in the last ten years was experienced. That confirms the problems of credit risk management in Lithuanian banks and irresponsible borrowing until 2008 because the higher credit amount in 2010 – 2014 could stimulate the Lithuanian economy and the more intensive economic growth could be expected.

4 Similarities and Differences in the European Union

The aggregated GDP statistics of 28 EU countries shows the business cycle fluctuations in overall EU like in Lithuania (Figure 6). In 2008, the GDP of these countries was 12,986 billion EUR while in 2009 this indicator decreased by 5.7% to 12,246 billion EUR. Until 2013 GDP increased to 13,520 billion EUR. The highest average domestic credit provided by the financial sector to GDP was in 2010 (154%) which includes all credits to various sectors and households with the exception of credit to the central government. Until 2013, this rate decreased to 145%, which indicates the decreasing loan portfolios of the EU banks and the tightening of their credit policies.

Figure 6

The GDP and banks' credit to GDP rates in the European Union (28)

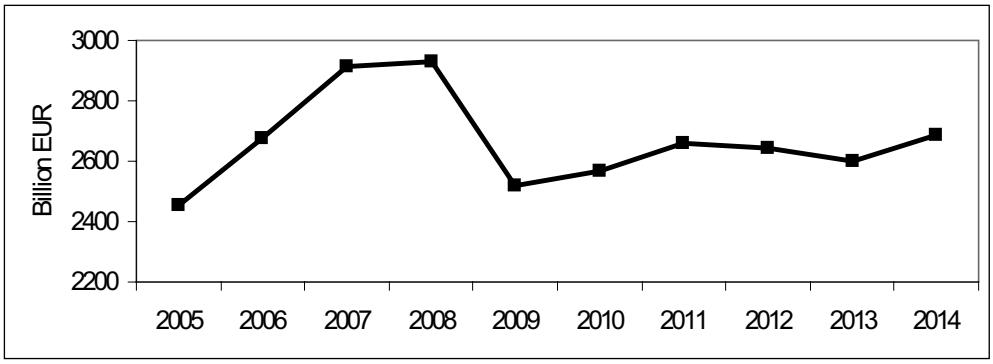


Sources: EUROSTAT and World Bank (2015).

The changes of aggregated gross fixed capital formation (investments) in the European Union is also similar to the situation in Lithuania. The highest value was in 2008 (2 927 billion EUR), while after the sudden downfall in 2009 its recovery is quite restrained. In 2014 the investments in the EU were 2 685 billion EUR or 91.7% of year's 2008 level (Figure 7).

Figure 7

The gross fixed capital formation (investments) in the European Union (28)



Source: EUROSTAT (2015).

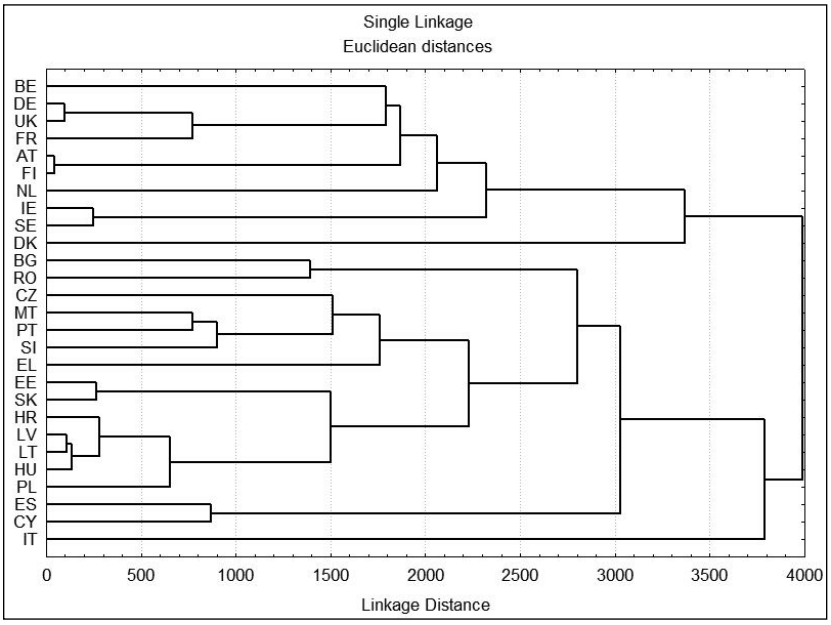
The cluster analysis was implemented to classify the EU countries and estimate the interrelations between the investments and banks' loan portfolio changes (Figure 8). The EU countries were classified into two clusters analyzing 6 variables: change of investments in 2008 – 2009; non-performing loans (NPLs) in 2009; change of banks' loan portfolio in 2010 – 2013; change of manufacturing volume in 2009; country's average GDP per capita in 2005 – 2014 and average proportion of high technology products exports in 2007 – 2013. Analyzing the statistical data, Luxembourg was excluded from cluster analysis as the outlier because its average GDP per capita is very high (75 889 EUR) and due to the outstanding indicators this country can be considered as a separate cluster.

The other 27 EU countries were classified into two clusters:

- Cluster 1: Belgium, Germany, United Kingdom, France, Austria, Finland, Netherlands, Ireland, Sweden, and Denmark.
- Cluster 2: Bulgaria, Czech Republic, Estonia, Greece, Spain, Croatia, Italy, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia and Slovakia.

Figure 8

Cluster analysis results



Source: Own processing based on data of EUROSTAT and World Bank (2015).

The calculated average indicators highlight the differences between the EU countries of Cluster 1 and Cluster 2 (Table 3). In Cluster 1 the average change of banks' loan portfolio is -6,4% and the change of investments is -13,7%. In Cluster 2 the decrease of banks' loan portfolio is higher by 5.2%; accordingly, the decrease of investments in these countries is higher by 7.5%. That affirms the interrelation between credit supply and business investments in the EU countries. For the countries of Cluster 2 the high proportion of non-performing loans, the low GDP per capita and low proportion of high-tech exports are typical. The decrease of manufacturing volume changes is also higher in Cluster 2 countries by 1.4%.

Table 3

The average indicators in clusters of EU countries

Cluster	Change of investments (%)	NPLs (%)	Change of loan portfolio (%)	Change of manufacturing volume (%)	GDP per capita (thousands EUR)	High- tech exports (%)
1	-13.7	3.4	-6.4	-13.7	35.8	14.4
2	-21.2	7.5	-11.6	-15.1	13.9	9.6

Source: Own processing based on data of EUROSTAT and World Bank (2015).

So, this empirical research affirmed the interrelations between banks' credit policy and investments considering the problem of non-performing loans in banks and macroeconomic indicators. Banks performing in the EU countries with lower macroeconomic rates face higher risk of non-performing loans growth in the economic downturn and have less possibilities to finance the new business investments in the stage of economic recovery.

Conclusions

The analysis of scientific literature affirmed the interrelations between macroeconomic indicators, banks' lending and business investments. The capital structure of enterprises and the fixed capital formation depend on the internal and external factors that are influenced by business cycle fluctuations. The investment climate of a country, the human disposition to accept business risk and the attitude towards business prospects also are the important factors stimulating the investments. The banks' credit policy is related to the complex risk management that includes the assessment of loan applicant's specific and macroeconomic indicators. As the rule, the country's economic downturn causes the deterioration of debtors' financial condition, the abilities to repay their credits and the banks' loan portfolio quality. Reacting to these imperfections banks tighten their credit policies reducing the credit supply and slowing the economic recovery.

The empirical research substantially has affirmed the theoretical propositions analyzing the data of Lithuania and other EU countries. The downfall of business cycle in Lithuania highly affected the commercial banks' loan portfolio quality when in 2009 Lithuania had the highest problem of non-performing loans in overall EU. During the crisis the loan portfolio started to decrease also the gross capital formation of Lithuanian enterprises decreased considerably. Until the end of 2014 the growing macroeconomic indicators did not increase the amount of business investments to the pre-crisis level. Quantitatively describing the dependence of business investments on the set of macroeconomic and banking variables the multiple regression model was developed that predicts the investments with the average error of 4.64%.

The expansion of the research to the other EU countries allowed to ascertain the common patterns of the dependence between banks' loan portfolio and business investments. The aggregated GDP, loan portfolio and business investments indicators of the EU had the analogous change directions compared to the Lithuanian rates. The decreasing loan portfolio and restrained recovery of investments are typical for most EU countries. Considering the economic differences of EU countries the cluster analysis allowed to classify them into two groups and implement a more detailed analysis. The countries that suffered the high decrease of investments can be characterized as having the problem of high non-performing loans in banks and decreasing loan portfolio, the lower GDP per capita and high-tech industry indicators, the more decrease in manufacturing volume when the economic downturn period starts. These results highlight the importance of proper credit risk management in

commercial banks and recommend to apply more restricted credit policy in economic growth periods for banks performing in EU countries of Cluster 2. Having the less but higher quality loan portfolio the banks could finance more investment projects in economic recession and promote the economic recovery.

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