

# Credit Union's Theoretical Aspects and Performance Analysis

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**Abstract** In recent years, the role of credit unions (credit cooperatives) has gradually become more and more significant in financial sector of Lithuania. The number of credit unions grew as well as their assets, number of members and deposits. The beginning of rapid process of credit unions establishment and development caused unmeasured risks, which led to suspended activity of several credit unions in 2013. In order to assess factors that affect stability of credit unions, the study using the economical – statistical methods was performed.

*Index Terms:* Credit unions, performance analysis, loans, financial ratios.

*JEL:* G21, G00

## I. INTRODUCTION

Despite the fact that credit unions do not have a significant share in financial markets, their rapid development, connecting more than 145 thousands members, certainly has significant importance in servicing small customers and solving certain social issues. Credit unions play an important role in country's regions by providing financial services to residents in the most remote areas of Lithuania, thus contributing to the development of agriculture, small and medium business, developing rural communities, attracting even the lowest savings of residents. In our country, credit unions for their members are able to offer not only traditional saving and crediting services, but also electronic banking products: internet banking, payment cards.

Considering the short history of credit unions in Lithuania, there was no significant demand for scientific studies. Activity of credit unions, business development and perspectives of the business are little analyzed. Considering the increasing perspectives of credit unions, it is important to analyze and evaluate their activities.

Due to the fact that it is not always possible to identify negative changes in economy, it is very important to know factors which have significant impact on loan portfolio of credit unions as one of the most largest and important part of assets and which needs to take a closer look at to identify further perspectives in development of these credit institutions.

The evaluation of these macroeconomic and microeconomic indicators is very important as these indicators affect growth of loans portfolio and thus increase the possibility for development-related risks to emerge.

The purpose of this article is to study and evaluate certain theoretical aspects and also to analyse the macroeconomic and microeconomic factors affecting the performance and growth of credit unions by applying multivariate linear regression model.

## II. THEORETICAL APPROACHES OF CREDIT UNION PERFORMANCE

The main purpose of credit union is to bring two groups of people together: ones who have free funds and wants to use it effectively and ones who wants to borrow money and thus fulfill their aspirations. The business of credit union should be devoted to increase the benefit of their members, i.e. depositors should get the higher rates for deposits and borrowers should pay the lower rates for loans (Kėdaitis, Žilinskas 2013; Jasevičienė et al 2014).

Each credit union is autonomous, i.e. individual subject which is managed and controlled by its members which mainly consist of local residents. By purchasing the shares of credit union customers become members of credit union. Each member has one equal part, i.e. one voting right. This democratic control helps to ensure that the needs of members would be fulfilled properly. Members vote in making key decisions, for instance, electing the board members, approving financial reports, etc. (Freshwater 2007; Levišauskaitė, Kaupelytė 2005).

Commercial banks mainly had serviced trade sector, unwillingly provided financial services to other sectors, especially ignored indigent individuals. Latter wanted to borrow in small amounts what was of no benefit to commercial banks, because the granting of each loan required additional expenses. This extraordinary situation urged community members to unite and establish credit cooperatives (later named credit unions). These cooperatives provided services to community members, worked in various sectors, especially in agricultural, had solved certain social issues (Okurut et al 2004).

In Lithuania, it is common acceptable to name credit cooperatives as credit unions, but while analyzing foreign scientific studies, there are common concepts of naming as cooperative banks, cooperative financial institutions, mutual aid organizations, etc. (Dubauskas 2012, Jasevičienė, Valiulienė 2013). Although in different

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countries different concepts of credit unions are used, principles of their activities are similar.

The importance of membership principles in credit unions is revealed by the same author, i.e. Dubauskas (2012). He claims that credit union is credit cooperative which provides financial services to people group which are united on common membership principles. So the credit union is an organization which is united on cooperative basis to common savings fund, using which people grant loans to each other for acceptable interest rates.

Certain foreign authors (Chambers, Ryder 2009) claim that credit unions are financial cooperatives which fulfill the needs of their members and Ferguson and McKillop (1997) define that credit unions are mutual aid, saving and lending organizations serving to the needs of their members. According to Mazure (2011) the credit union is cooperative financial institution, governed on the basis of democratic principles, seeking to urge the saving and use accumulated financial resources for granting loans to its' members, and also provide other necessary services to its' members. This author also emphasizes that credit unions help to develop the business, especially small business (granting micro loans), support local communities. The author especially emphasizes micro loans benefit to economic development.

McKillop *et al* (2006) distinguish the main factors which determine successful development of credit unions systems and transition to higher development level:

- leadership;
- professionalization;
- regulation of credit unions' activity;
- legal environment and technologies.

Credit unions have to become the place of providing society with services which meet the needs of society the best (Bartlett 2011).

Kaupelytė and McCarthy (2005) noted that the role of credit unions as financial institutions often constitute an opposition to cooperative nature of unions: as cooperatives they are not profit seeking organizations, but while operating in competitive financial intermediary system environment, the seek for profit is a guarantee of survival and operational stability for financial institution.

Lucas (2007) claims, that credit unions have gradually increasing perspectives to grow and develop and become more competitive in the sector of financial services. There is a difference in culture and services in credit union. Chilingerian (2012) claims that members of credit unions have more confidence in its' financial situation and manage their personal finance better than people who are not members of credit unions. Račkauskas, Liesionis (2013) in their study revealed main aspects why people choose credit unions. Also they evaluated the people's satisfaction with credit unions in case when the customer can compare and already has experience as a customer. They also identified that financial behaviour of members of credit union can positively affect the performance of whole credit union.

By analyzing tendencies of credit unions' development in different foreign countries, researchers usually distinguish three developmental stages of credit unions and other cooperative financial institution systems (Igarytė, Ramanauskas 2011). To mention, these are initial development stage, transition stage and developed stage of credit unions' system. Some other authors reveal the differences between banks and credit unions (Bikas 2013). Klinedinst (2010) also claims, that credit unions have more competitive advantages than banks, although the products offered by credit unions are very similar compared to banks. Credit unions operate in niche market – they are servicing only certain group of people – their members, what makes them feel exceptional.

### III. PERFORMANCE ANALYSIS AND FACTORS OF LOANS IDENTIFICATION OF CREDIT UNIONS

As of 1<sup>st</sup> January, 2014 76 credit unions operated in Lithuania, connecting more than 151 thousands members. 63 credit unions belonged to Central Credit Union of Lithuania (LCKU), 13 – operated independently. Credit unions started their business in 1996. The figures of credit unions growth was not even each year as the most credit unions were established only in 2000-2002. In this period even 20 credit unions were established. After wards establishment process substantially slowed down. In 2008-2010 none of credit unions were granted with a license. Assets of credit unions increased substantially. Total increase in the period of 2008-2013 was even 2.7 times. But market share of such institutions remained relatively small and at the end of 2013 took 2.7 percent of total assets of all operating banks. The establishment of credit unions are stimulated by relatively low capital requirements and relatively liberal membership criteria. During the analysed period, assets growth of credit unions was strongly affected by significantly increased volumes of loans granted to their members. Total increase in the period of 2008-2013 amounts to 3 times. Rapid increase in volumes of taken deposits undoubtedly was affected by deposit interest rates, which were a few times higher than in other credit institutions. The growth of loans, as opposite to deposits, was influenced not by interest rates, which in most credit unions were higher than in commercial banks, but by application of more liberal crediting policy, i.e. credit unions applied lower requirements for their members, also decisions were approved faster than in other credit institutions. But due to increase of requirements by Bank of Lithuania and revoked licences for previously mentioned credit unions, loan portfolio decreased significantly in 2013.

For several years credit unions suffer losses. Although, at the end of 2013, yearly losses decreased but still remained large and amounted to 38,3 mln. Litas (~11,1 mln. EU).

Due to unprofitable performance, during whole analysed period (except year 2008) profit margins, return of assets and return on equity ratios were negative (see

Table 1). This shows, that assets and equity of credit unions were used ineffectively. Meanwhile, the decrease of income ratio and increase of equity coefficient was influenced by significantly increased assets of these credit institutions. The increase of equity coefficient shows, that

the risk of these credit institutions increased. Therefore, we could claim that the performance of credit unions was unprofitable and ineffective.

TABLE 1.  
PROFITABILITY RATIOS OF CREDIT UNIONS

Ratios	2008	2009	2010	2011	2012*	2013
Profit margin (%)	1,06	-6,46	-5,86	-12,52	-43,84 (1,01)	-29,24
Return on assets (%)	0,08	-0,57	-0,42	-0,86	-2,92 (0,07)	-1,79
Equity coefficient (times)	7,93	8,44	9,59	10,08	12,57 (9,95)	13,12
<b>Return on equity (%)</b>	<b>0,66</b>	<b>-4,80</b>	<b>-4,06</b>	<b>-8,68</b>	<b>-36,76 (0,65)</b>	<b>-23,46</b>

\* In parenthesis there is represented the data of credit unions without ratios of National Credit Union, credit union "Švyturys savings c.u." and credit union "Credit of temporary capital city". Operating licences were revoked for these credit unions.

Source: Authors' compilation, according to data of Statistics of Lithuania and Bank of Lithuania

On the other hand, although profitability ratios got worse annually during the analysed period, i.e. operating loss increased annually, but amount of unprofitable credit unions annually decreased. This shows that worsening performance results and financial condition were mostly affected by losses of individual credit institutions. For some more than one year unprofitably operating credit unions, not covered losses reached significant volumes for these credit unions, causing capital base reduction and difficulties to secure fulfilment of capital-related activities risk requirements. In addition, it was noticed that share capital of credit unions is unstable, because it's size fluctuates in accordance to granted loans and repayment of them.

There are different ways to strengthen capital base and reduce risk. In order to ensure stability and opportunity to amortize possible losses of credit unions, there is a proposal to set that equity of credit union should not be lower than 0,5 mln. litas instead of current 15 thousands litas, to set that the lowest membership amounts to 150 members instead of 50 and that retained earnings above half of share capital of credit union would be covered.

As aforementioned, the largest part of assets of credit unions is comprised of loans. Loans of credit unions closely relates to the country and other countries economic situation.

From 2008 till 2010 unemployed figures increased (see Fig. 1), if in 2008 there were 73 thousands unemployed, then in 2010 this rate reached 312,2 thousands. Although, in recent years, decrease tendencies of unemployed is observed, but this level remains high enough. While analyzing why this happened, several factors are to be mentioned: while economy is slowing down, the enterprise investments decreased, bankruptcy cases increased, what led to massive redundancies, reduced opportunities for employment, therefore the duration of unemployment extended. Due to growing unemployment, disposable income of households and, due to falling stock prices, the value of investment units or financial assets decreased. Unemployment growth tendencies changed the behavior of households borrowing and also made a negative impact on volumes of loans.

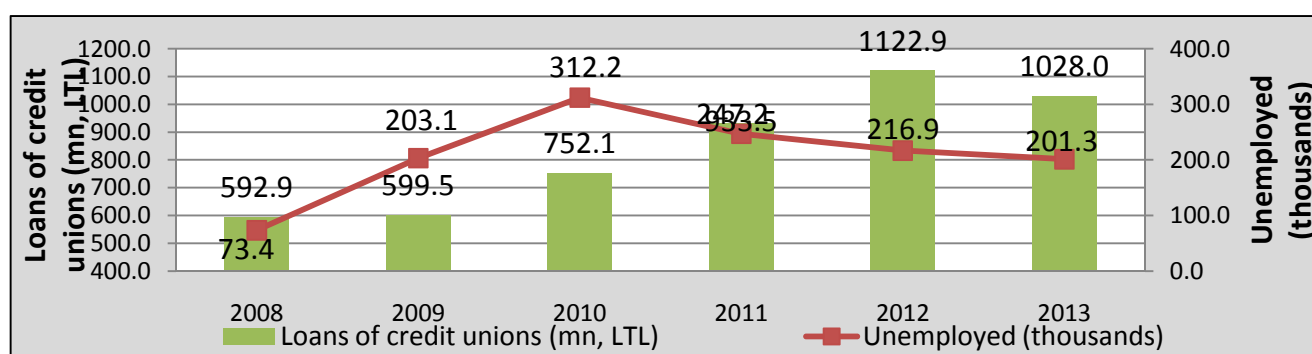


Fig. 1. Dynamic of loans of credit unions and unemployed figures in 2008-2013

Source: Authors' compilation, according to data of Statistics of Lithuania and Bank of Lithuania

While comparing years 2008 and 2009, the average monthly wage in Lithuania decreased by 4 percent, and in

2010 – by 3,3 percent. This possibly made negative impact on loans of credit unions (see Fig. 2). From 2010 the

average monthly wage started to increase. Such an increase was affected by recovering economy of Lithuania.

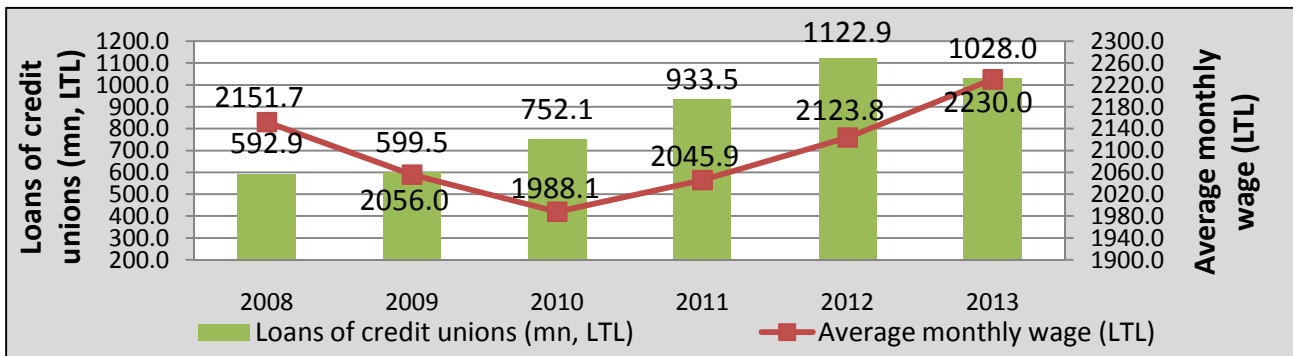


Fig. 2. Dynamics of loans of credit unions and average monthly wage (gross) in 2008-2013  
 Source: Authors' compilation, according to data of Statistics of Lithuania and Bank of Lithuania

In 2009 average annual inflation rate decreased (Fig. 3) in comparison with 2008, the decrease of prices amounted to 62 percent. The main reason was increased VAT rate, canceled or decreased VAT exemptions for individual goods and services (e.g. pharmaceutical products, cultural and accommodation services). In 2011 annual inflation was

greater in comparison with 2010 and this was mainly affected by increased prices of food and energy what was related to external factors. Meanwhile, while Lithuania was seeking to join the Eurozone and adopt the Euro, in 2013 inflation considerably decreased.

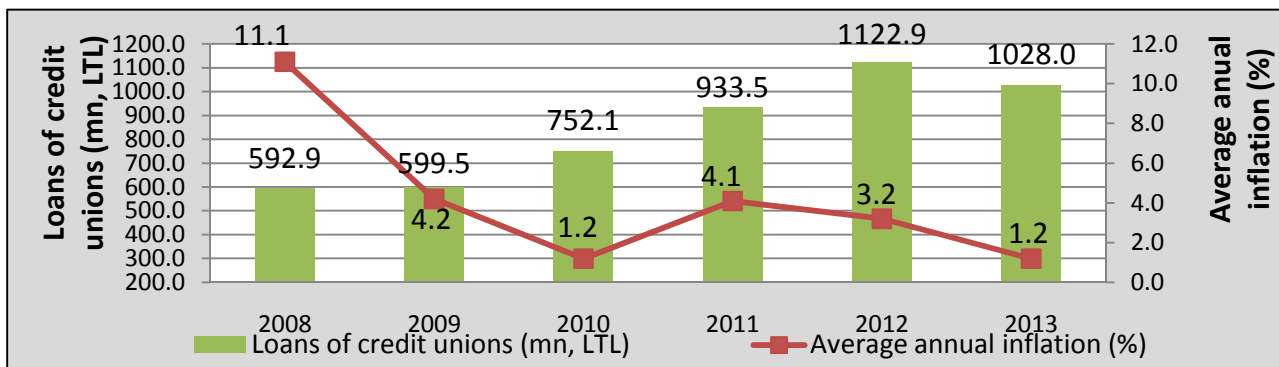


Fig. 3. Dynamics of loans of credit unions and average annual inflation in 2008-2013  
 Source: Authors' compilation, according to data of Statistics of Lithuania and Bank of Lithuania

As it is not always possible to identify negative trends in economy, it is very important to know the factors, which can more or less influence the dynamic of loans of credit unions and which should be considered in order to identify further developmental perspectives of these credit institutions. Due to this reason, in this study there is a goal to identify loans and deposits of credit unions, inflation, wage, unemployment level and also loans granted to legal entities relationships. Identifying of relationships is made using pair and multivariate correlation and regression analysis, which provides us with opportunity to identify the strength and nature of relationship between two or more variables. Correlation and regression analysis is made considering 11 years old historical data of analyzed factors.

Correlation and regression analysis – quantitative analysis method, which allows to identify if there is a relationship between variables – stochastic relationship. Stochastic relationship is dependence when changing independent variable there is a change in dependent

variable. In order to get results, first of all, the correlation coefficients are calculated for chosen factors by applying the following formula:

$$r = \frac{\overline{yx} - \overline{y} * \overline{x}}{\delta_y * \delta_x} \tag{1}$$

where r – correlation coefficient;  $\overline{y}, \overline{x}$  - averages of analyzed factors;  $\delta_y, \delta_x$  – standard deviations of analyzed factors (Kancerevičius 2009).

Analysis of all chosen factors revealed that strongest direct relationship exists between loans of credit unions and deposits of these credit institutions (see Table 2). This relationship is self-evident, because deposits of credit unions are the only funding source for these credit institutions. In 2012 deposits comprised 96,3 percent of total liabilities. Strong relationship represents that growth pace of deposits of credit unions completely corresponds to growth pace of assets of credit unions. Also strong direct relationship was identified between loan portfolio of

credit unions and for legal entities granted loans of these credit institutions. This represents that for legal entities granted loans significantly affect the volume of loans of these credit institutions.

Slightly lower but still strong direct relationship between loans of credit unions and annual wage fund was

identified. Identified relationship shows that in case of increasing annual wage fund, or salaries in other words, members of credit unions more and more are tend to fulfill their expectations and take new loans.

TABLE 2.  
IDENTIFICATION OF FACTORS' RELATION WITH LOANS OF CREDIT UNIONS

	CU loans and CU deposits (y; x <sub>1</sub> )	CU loans and inflation (y; x <sub>2</sub> )	CU loans and annual wage fund (y; x <sub>3</sub> )	CU loans and unemployment (y; x <sub>4</sub> )	CU loans and CU loans granted for legal entities (y; x <sub>5</sub> )
<b>Correlation coefficient (r)</b>	0,932	0,376	0,768	0,498	0,905
<b>Strength of relationship</b>	Very strong	Weak	Strong	Medium	Very strong
<b>Student coefficient (t)</b>	7,696	1,217	3,598	1,723	6,399
<b>t<sub>tabled</sub></b>	1,833	1,833	1,833	1,833	1,833

Source: created by authors

Also inflation and unemployment influence on changes of loans of credit unions was analyzed. Usually, increasing unemployment level, crediting should decrease (inverse direct relationship exists), meanwhile increasing inflation, volumes of loans and also assets should increase (direct relationship exists).

But analyzed loans of credit unions and inflation and also loans of credit unions and unemployment level relationship, there was identified that very weak relationship exists between these factors. This represents that changes of unemployment level and inflation only slightly affect volumes of loans of these credit institutions.

Because correlation coefficients are calculated using only data from specific period, inevitably certain errors appear. Due to this reason it is necessary to evaluate the reliability of correlation coefficients. In order to do this, it is necessary to identify student's t-distribution and critical values of student's t-distribution (t<sub>tabled</sub>). Values of student's t-distribution are calculated by applying the following formula:

$$t = r \sqrt{\frac{n - 2}{1 - r^2}}, \quad (2)$$

where t – coefficient of student's t-distribution, n – years of analyzed factor, r – correlation coefficient. Meanwhile critical values of student's t-distribution are calculated using MS Excel and applying the following formula: t<sub>tabled</sub> = TINV (0,1; n-2) (assumption is made that distribution with (n-2) degrees of freedom level is 0,1). If we get that t ≥ t<sub>tabled</sub>, then relationship between factors is probabilistic and indeed strong.

From Tables 2 and 3 data, it is clear that for values of x<sub>1</sub>, x<sub>3</sub> and x<sub>5</sub> factors student coefficients are larger than critical

values of student's t-distribution, therefore obtained correlation coefficients can be treated as reliable. Meanwhile, calculated student's coefficients of x<sub>2</sub> and x<sub>4</sub> factors revealed that its' values are smaller than critical values of student's t-distribution. This represents that obtained correlation coefficients are not significant, therefore they are eliminated from further analysis.

Therefore, in further part of study only x<sub>1</sub>, x<sub>3</sub> and x<sub>5</sub> factors are analyzed. In further analysis, in order to identify if between dependent variable (y) and all factors are relationship, linear multivariate regression and correlation analysis is applied. Multivariate correlation and regression analysis, as opposite to pair correlation and regression analysis, gives a chance to evaluate dependent variable (y) and independent variables (x) relationships as a whole. But in case of multivariate correlation, relationship of two variables can be affected not only by their interaction but also relationships of independent variables (multicollinearity). Due to this reason, the correlation coefficients matrix of dependent variable and independent variables was compiled and, due to multicollinearity, factors, which prevent to properly evaluate and calculate coefficients of linear multivariate regression equation, were eliminated (see Table 3).

TABLE 3.  
MATRIX OF CORRELATION COEFFICIENTS

	y	x <sub>1</sub>	x <sub>3</sub>	x <sub>5</sub>
y	1			
x <sub>1</sub>	0,932	1		
x <sub>3</sub>	0,768	0,689	1	
x <sub>5</sub>	0,905	0,925	0,530	1

Source: created by authors

y – dependent variable; x<sub>1</sub>, x<sub>3</sub>, x<sub>5</sub> – independent variables.

From Table 3 data it is obvious that between  $x_1$  and  $x_3$  factors there is strong direct relationship ( $r = 0,689$ ), and between  $x_1$  and  $x_5$  factors there is very strong direct relationship ( $r = 0,925$ ), therefore  $x_1$  factor due to multicollinearity is eliminated. Therefore only  $x_3$  and  $x_5$  factors are included in the equation. After calculation, there was equation obtained which represents relationship between loans of credit unions ( $y$ ), annual wage fund ( $x_3$ ) and for legal entities granted loans ( $x_5$ ):  $y_x = -1,273 + 0,068x_3 + 1,700x_5 + \square$ . After the calculated elasticity of multivariate regression equation, there was identified that in case of increase by 1 percent in for legal entities granted loans, loans of credit unions would increase by average 0,31 percent. Meanwhile, in case of increase by 1 percent in annual wage fund, loans of these credit institutions would increase by average 2,95 percent.

Performed calculations represents that regression equation is adequate to real situation, because Fisher coefficient  $F > F_{\text{tabled}}$ , student's coefficient  $t > t_{\text{tabled}}$  (see Table 4). Moreover, the eligibility of composed equation is also confirmed by small differences between actual  $y$  and calculated values according to equation  $y_x$  and high correlation and determination coefficients. This means that dynamic of  $y$  is accurately described by  $x_3$  and  $x_5$  factors by applying equation of multivariate regression.

TABLE 4.  
INDICATORS CONFIRMING THE RELIABILITY OF MULTIVARIATE  
REGRESSION EQUATION

Year	y	$y_x$	$y - y_x$	Other indicators
2003	0,152	0,164	-0,012	$r = 0,912$
2004	0,209	0,267	-0,058	
2005	0,280	0,264	0,016	$F = 21,865$
2006	0,367	0,374	-0,007	
2007	0,459	0,409	0,050	$F_{\text{tabled}} = 4,459$
2008	0,529	0,495	0,034	
2009	0,651	0,665	-0,014	$t = 8,517$
2010	0,786	0,735	0,051	
2011	0,873	0,723	0,150	$t_{\text{tabled}} = 2,365$
2012	0,987	1,037	-0,050	
2013	0,862	0,909	-0,047	

Source: created by authors

$y$  – values of actual dependent variable;  $y_x$  – values of actual dependent variable calculated using the result of multivariate regression equation.

Therefore, the analysis of loans of credit unions and chosen factors relationships revealed that the strongest direct relationship exists between loans of credit unions and deposits of these credit institutions, loans of credit unions and for legal entities granted of credit unions and also loans of credit unions and annual wage fund. Meanwhile, unemployment level and inflation changes have slight impact on changes of loans of these credit institutions. Correlation and regression analysis

identified macroeconomic and microeconomic factors which affect loan portfolio of credit unions. But how loans of credit unions will change depends on changes in the legal basis (due to stricter prudential requirements, deposits and crediting of legal entities they can decrease considerably as well as loans of these credit institutions), chosen future business strategy, policy conducted by commercial banks, changes in society's attitude to these credit institutions and others.

#### IV. CONCLUSIONS

Despite the fact that credit unions do not have a significant share in financial markets, their rapid development (especially after bankruptcy was declared for two banks) has significant importance in servicing small customers, farmers, citizens and solving certain social issues. Credit unions play an important role in country regions by providing financial services to residents in the most remote country areas, aiding to develop agriculture, small and medium business, developing rural communities, attracting even lowest savings of residents.

Analysis of tendencies of credit unions disclosed that during analyzed period credit unions were characterized by rapid business development, which allowed to make its situation stronger in credit market of Lithuania. On the other hand, such a fast business change also had negative consequences: business results and financial condition deteriorated, credit unions moved away from classic principles of cooperative business, business risk increased, financial stability, business efficiency decreased, therefore it is likely that deposits decreased slightly. Because not always one succeeds to identify negative changes in economy, it is very important to know the factors which are able to affect changes in loan portfolio of credit unions and which should be considered in order to identify further developmental perspectives of such credit institutions. Correlation and regression analysis identified macroeconomic and microeconomic factors which affect loan portfolio of credit union. After the analysis of loans of credit unions and relationship of chosen factors, there was identified, that the strongest direct relationship exists between loans of credit unions and deposits of these institutions. Strong relationship represents that growth pace of deposits of credit unions completely corresponds to growth pace of assets of credit unions. Also strong direct relationship was identified between loan portfolio of credit unions and for legal entities granted loans of these credit institutions. This represents that for legal entities granted loans are significant and affect common growth of loan portfolio. Meanwhile, unemployment level and inflation changes have slight impact on changes of loans of these credit institutions. This represents that unemployment level and inflation changes have only slight impact on volumes of loans of these credit institutions. Usually, increasing unemployment level, crediting, loans of credit unions, and also assets, where loans comprise the largest part of assets, should decrease (inverse direct

relationship exists), meanwhile increasing inflation, volumes of loans and also assets should increase (direct relationship exists).

Also, the relation exists between loans and loans to legal entities and between loans and annual wage fund. Meanwhile, unemployment level and inflation changes have slight impact on changes of loans of these credit institutions. In addition, slightly lower but still strong direct relationship between loans of credit unions and annual wage fund was identified. Identified relationship shows that in case of increasing annual wage fund, members of credit unions more and more are tend to fulfill their expectations and take new loans, which represent the largest part of assets of credit unions.

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