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THE ROLE OF FISCAL POLICY IN ENSURING FINANCIAL STABILITY IN LITHUANIA

Egidijus Bikas[1], Sandra Žaltauskaitė[2]
[1,2]*Vilnius University, Faculty of Economics, Finance Department, Saulėtekio al. 9, Vilnius, Lithuania*
Email: egidijusvln@gmail.com; sandra.zaltauskaite@gmail.com

Abstract. Paper describes the role of fiscal policy ensuring financial stability. The main purpose of the paper is to calculate the aggregate financial stability index, which can be used to measure the systematic financial stability. Literature reviews the main concepts of financial stability, such as combination of fiscal and monetary policy. It presupposes the importance of adapting the fiscal policy. The paper reveals the substantial effects that fiscal policy instruments do to financial stability of the country, moreover it shows that well considered public finance decisions helps to implement the stabilization targets of the financial system. There is calculated aggregate general financial stability index and performed its dependence correlation – regression analysis on the indicators of fiscal policy of Lithuania.

Keywords: fiscal policy, finacial stability, financial stability index.

JEL classification: H6, H610, E62.

1. Introduction

Throughout the last decade due to the fact that ongoing perturbations and disruptions were spreading very fast and involved not only national or domestic economies but the world economy as well, financial system stability received a lot of attention from financial institutions, politicians and public in general. When central banks reduced the base interest rate, traditional monetary policy instruments became not effective any more.

The studies of management of finance stability, highlights the combination of monetary and fiscal policy instruments use, however the priority is always given for monetary policy. Money policy was valued as a sufficient tool for short-term macroeconomics stabilization. Nevertheless in the face of 2007 crisis all economies of developed countries adapted fiscal policy tools. Developed countries used fiscal policy over monetary due to the zero interest rate in their economies and the continue extinction of credit channels. At this time there are ongoing discussions about the effectiveness of precedent and gradual (stable) fiscal adjustments and the role of institutions who implement them. However it is highlighted that, the more transparence and effectiveness the public finance has, the more resistance economy has for the shocks. (IMF Policy Paper 2013).

The currency board model became valid, after the law of the credibility of Litas *de jure* and *de facto* in the Republic of Lithuania took effect on April 1st, 1994. Lithuania was no more able to use discrete monetary policy. The main tool for the finance management of the country became fiscal policy. The assurance of financial stability purpose is consolidated in operational priorities of 2014 of the government of Republic of Lithuania. The financial stability of the country depends on the fiscal policy direction chosen by the government.

The purpose of the paper – to form the financial stability evaluation index and to investigate the efficiency of fiscal policy instruments on financial stability in Lithuania.

Until now, in the scientific literature, financial stability theme by systematic view has been analyzed very little, fragmentary; there was a lack of systematic conclusion. There is no official financial stability evaluation methodology developed or presented in Lithuania. Moreover there are not many discussions going on about fiscal policy role in the stabilization of the financial system and the importance of institutions who adjust fiscal policy.

Completed analysis broadens the already implemented economic researches and combines theory aspects with practice implementation. In this paper formed aggregated general financial stability index indicates the correct values of the financial system condition of Lithuania. Index could beforehand alert about the possible problems of finance system and be an influential instrument for the nation's financial stability valuation. Econometrics modeling methods reveals that the biggest impacts on the financial system of Lithuania have: tax tariffs, minimal monthly wage and government debt.

The paper includes scientific literature systemic analysis and synthesis, indexes, descriptive statistics and econometrics modeling methods. MS Excel program is used for graphic visualization and mathematical calculations. The analysis consists of 2001-2013 statistics quarterly data.

2. Theory aspects of financial stability and fiscal policy

Financial stability in scientific economics literature is described in a great variety of terms. There is no united or international, common accepted term, nor there is one financial stability valuation and measurement model. F. Mishkin (1999) financial stability describes as a financial system which is able to maintain an effective asset distribution between asset savers and investors while avoiding substantial losses for a long period of time. E. Novotny states that financial stability is a vital condition for economic growth and prosperity. (Novotny 2012). A.Crockett (1997) refers a financial stability as a stability of main institutions and markets which form a financial system, and sustain a stable borrowing price and financial institutions are able to meet their contract commitments. H. Hannoun (2010) noted that financial stability requires risk restrictive monetary and fiscal policy, accompanied with market discipline. According to him only the combination of fiscal and monetary policy instruments allows to reach prices and financial stability (Hannoun 2010).

Considering the theoretic provisions it is possible to say that finance stability even when encountering economic shocks and disbalances – the possibility: to create conditions for effective recourse distribution either geographically or in time, to evaluate and control financial risk, also to carry out the basic functions of financial system, which includes: savings and investments, lending and borrowing, creating liquidity, property pricing, production encouraging. Until now there are no official guidelines, which policy should be implemented in order to ensure financial stability. However we can unambiguously state that activity of private operators and the implementation of monetary and fiscal policy, followed by market discipline, ensures financial stability.

Fiscal policy includes governments tools closely related with government budget collection and distribution of expenses. Active government participation in goods and services, labor, real estate, capital and exchange markets balances certain economics areas, and accelerates recovery. At the time, when market is no more capable of ensuring sufficient distribution of resources, the government intervention is needed in order to remove coordination errors (Tomann 1997).

In the developed economics by using fiscal policy governments seek to achieve medium and long term goals, for instance: increase national savings, to maintain long term fiscal and debt sustainability, given the expenses demand growth. By using fiscal policy governments seeks to ensure efficient functioning of market economy as well as the stability of macroeconomics. According to H. Hannoun (2010), fiscal policy plays a vital role in absorbing shocks, seeking to ensure financial stability. It is important to use such a fiscal policy, which immediately responds to economic changes. H. Hannoun (2010), highlights that monetary policy, ought to be responsible for the control of inflationary processes, whereas fiscal policy should control not cyclical demand and to maintain fiscal buffers, withstanding the tension in finance system (Table 1).

Table 1. Fiscal policy objectives and tools in their implementation (Source: formed by authors according to Hannoun, H., 2010)

Regulation of public demand	Taxes
	Automatic stabilizers
	Not cyclical regulation ones
Creation of fiscal buffers in good times	Indebtedness reduction
Help for financial sector in economic downturn	Capital injection
	Deposit and loan guarantees
	Banks lifesaving packages
	Discrete fiscal inducements

In order to reach financial stability and economic growth, nation‘s government should coordinate fiscal policy and structural reforms. As L.Vogel (2007), argues structural reforms are more supplements than substitutes. Reforms increase capabilities of production, nevertheless former ones not always ensure fast economic growth and required utilization rate of recourses. Financial stability depends on the effectiveness of each discrete policy tool separately. The reduction of tax tariffs or the boost in expenditures is less time consuming than public projects execution.

At current conditions, after 2008 financial crisis, both in the world and in Lithuania the biggest macroeconomic problem is low public demand for goods and services. Government decisions related with budget revenue and expenses have the biggest impact to public demand. One of the ways to in-

crease public demand is – temporary budget deficit increase by increasing public expenditures. Previous fiscal consolidation experience shows, that high debt to GDP ratio suggests that there is a possibility to change economic responses to fiscal shocks. It means that after a long term fiscal deficit increase the increase in public consumption has been noticed. Based on the quarterly report data analysis of 19 OECD countries, Perotti R. (1998) discovered that shock of expenses effect can be positive, if the country has not significant need for funding. He argues that changes in government expenses are highly related to tax policy. If county expects higher tax rate in future, it experiences higher welfare loss and lower consumption at presence. Constant decrease in government expenditures allows for consumers to expect a reduction in tax tariffs and input increase in the future, which leads to a private sector growth (Kirchner, Cimadomo, Hauptmeier 2010). Despite that, in the long run, the living standards of consumers would increase just in case of increase in level of production and higher gross revenue inflow from foreign. That is why it is very important to evaluate the effect that different fiscal policy tools have in the short and long term, before adapting them.

Note, that in the short run decrease in budget deficit would decrease production and can reduce investments, whereas in the long run it would increase investments. Notwithstanding the importance of investments, European Council urges structural deficit to consider as one of the most important long term public indicator of finance sustainability. (European Parliament resolution, 2010).

During the crisis period, in 2008, fiscal condition of euro zone got worse, because vast majority of euro zone members did not take advantageous of reducing government deficit and debt and did not create opportunities for automatic stabilizers to freely operate. Note that government is the biggest lender in the domestic economy and financial system issuing bonds in domestic currency with safe interest rate. Government has to have a clear future oriented program including budget plans for few years in the future. The decisions should be clear as well as fiscal policy expansion and contraction should be strictly monitored. In order to ensure fiscal sustainability budget plans and programs ought to be based on realistic forecasts and countries capabilities. It is important to evaluate the outcome of long term decisions because the fiscal policy decision made today will have an influence for the future generations.

According to J. Minkevičius (1999), big government debt along with big budget deficit causes permanent economic difficulties for the country and limits its chances to use fiscal policy as a stabilizing instrument. As Praet P. said in the tenth Bank of International Settlements conference in June 2011, debt of the country usually is a small risk asset and is used to refinance its previous indebtedness (Praet 2011). When finance markets doubt the sustainability of government debt, the liquidity and solvency of finance intermediaries could deteriorate and lead to destabilization of finance sector.

3. Methodology of evaluation of finance stability in Lithuania

Albulescu C.T. (2008), in his work tries to evaluate the condition of financial system of Lithuania and to estimate the benefit that fiscal policy instruments has in ensuring the financial stability, based on methodology of calculations of aggregate general finance stability index. On the basis of chosen index method, connected autonomous indicators get a statistical rate, which characterizes new generalized complex variable. After calculating and evaluating financial stability of Lithuania, the commercial – regression analysis of dependence of financial stability of Lithuania and fiscal policy tools has been executed (Fig. 1).

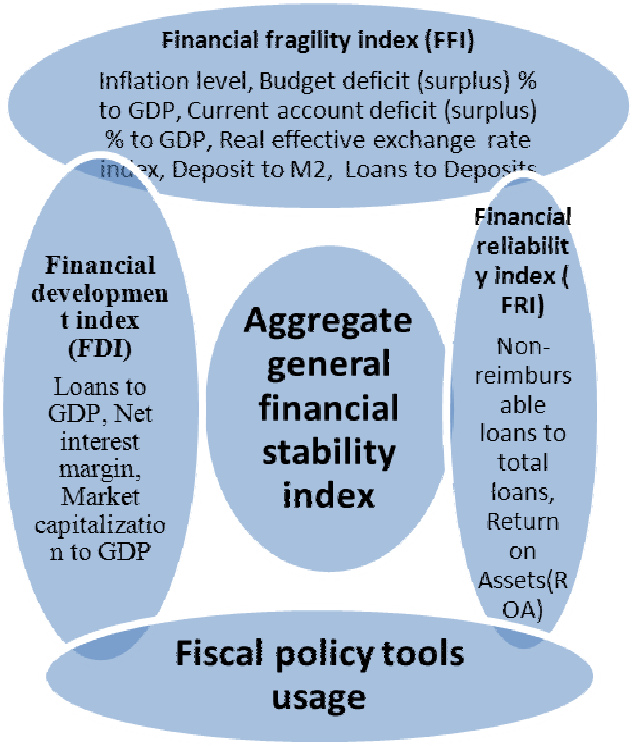

Fig.1. Fiscal policy effect on maintaining financial stability, analysis method (Source: formed by authors).

To calculate compound financial stability index of Lithuania was chosen due to its usage ad-

vantages. First of all, it evaluates financial challenges, which emerges due to different influence factors. Moreover it does not concentrate to one particular instability source and allows evaluate the effectiveness and implementation of decisions accepted by government and central bank in response to system defects.

Aggregate finance stability index (AFSI) is calculated in four steps:

1. Investigated indicator ratio normalization;
2. Partial indexes: financial development, financial fragility, financial reliability calculation;
3. Aggregate general financial instability index (AGFII) calculation, using partial indexes;
4. Aggregate general finance stability index (AGFSI) calculation.

While calculating financial stability index of Lithuania, chosen a standard procedure, for all compound indexes assigned equal weights.

Different rates are expressed in different units. That complicates calculations and that is why chosen rates have to be normalized. Each indicator's normalized value is calculated, using empirical normalization method (Interval – 0 to 1):

$$I_{it}^{n} = \frac{I_{it} - Min(I_i)}{Max(I_i) - Min(I_i)} \quad (1)$$

I_{it} – ratio i value during t period;
Min (Ii), Max (Ii) – Minimal and maximal ratio i value during n period;
I_{it}^{n} – Ratio i normalized value.

0 normalized values reflects the lowest value, (the most unfavorable financial stability situation), 1 reflects the most favorable financial stability situation (the greatest value).

To calculate partial indexes arithmetic averages of analyzed ratios were used. Four different indexes are formed. They are calculated using formulas 2 – 5.

$$FRI_{iz} = \frac{\sum_i X_{1i} + \sum_i X_{2i} + \sum_i X_{3i}}{52 + 35 + 52} \quad (2)$$

$$FPI_{iz} = \frac{\sum_i X_{4i} + \sum_i X_{5i} + \sum_i X_{6i} + \sum_i X_{7i} + \sum_i X_{8i} + \sum_i X_{9i} + \sum_i X_{10i}}{52 + 52 + 52 + 51 + 52 + 51 + 52} \quad (3)$$

$$FPTI_{iz} = \frac{\sum_i X_{11i} + \sum_i X_{12i} + \sum_i X_{13i} + \sum_i X_{14i}}{31 + 28 + 28 + 36} \quad (4)$$

z – denotes standardized ratio values, i – periods.

Based on partial indexes values we calculate aggregate general finance instability index according to:

$$AGFII_{iz} = \frac{3 \cdot FRI_{iz} + 7 \cdot FPI_{iz} + 4 \cdot FPTI_{iz}}{14} \quad (5)$$

Due to the fact that index can be either negative or positive, it is necessary to recalculate values in certain chosen interval (formula 6). The interval chosen in the analysis: [1; 100].

$$AGFII_{iz} = \frac{AGFII_{iz} + |\min(x_{in1,\ldots,} x_{in13})|}{\max(AGFII_{tz}) + |\min(x_{in1,\ldots,} x_{in13})|} \times 100 \quad (6)$$

$AGFII_{iz}$ – Aggregate general financial instability index, which fluctuates from 1 to 100;
$AGFII_{iz}$ – Aggregate general finance instability index;

In the end we calculate aggregate general finance stability index AGFSI i= (100 - $AGFII_i$). Higher index values denote higher financial country stability. Index values fluctuate from 0 to 1. After calculating aggregate general finance stability index (AGFSI), the correlation – regression analysis of the AGFSI dependence on the variables that reflect fiscal policy of Lithuania will be executed.

Formed multiple linear regression models is expressed by the equation:

Aggregate general financial stability index of Lithuania (Y)= f (government sector debt in billion Lt. (X_1);total government sector expenses in billion Lt. (X_2); VAT tariff (X_3); income tax tariff (X_4); revenue tax tariff (X_5);minimal monthly wage (X_6)).

Final derived regression equation expressed as:

$$Y_i = 0,20096 - 0,00011 X_{1i} - 0,00047 X_{2i} - 0,00776 X_{3i} - 0,00776 X_{3i} + 0,000326 X_{4i} - 0,00021 X_{5i} - 0,000037 X_{6i} + \varepsilon_i \quad (7)$$

The effectiveness of the model reflects the coefficient of determination, which is equal to 0.75.

4. Ensuring the fiscal policy impact to financial stability of Lithuania

In order to find out whether fiscal policy decisions, accepted by the government of Lithuania, had any influence and if so, what kind of influence to financial stability of Lithuania, there has been done correlation – regression analysis of the AGFSI dependence on the variables that reflect fiscal policy of Lithuania. The analysis shows very strong linear relationship between AGFSI and value-added tax tariff, minimal monthly wage, also a strong linear relationship between government sector debt and total government expenditures, whereas with value-added tax tariff has been found a moderate relationship (Table 2).

Table 2. Paired correlation coefficient matrix (Source: formed by authors).

ABSI	General government gross debt (billion Litas)	VAT (%)	Corporate tax (%)	Personal income tax (%)	Minimal wage (Litas)	Government expenditure (billion Litas)
1						
-0.6745	1					
-0.7194	0.4302	1				
-0.3906	0.0789	0.2416	1			
0.7086	-0.681	-0.6924	-0.3967	1		
-0.7181	0.7804	0.7445	0.3203	-0.7320	1	
-0.6674	0.6973	0.6472	0.2951	-0.8368	0.8245	1

The analysis shows very strong inverse relationship between AGFSI and income tax. Due to the fact that pair correlation coefficient module between independent variables should not be bigger than 0.8, because in that case regression model is characterized by autocorrelation between two variables, the ratio of government expenditures has been eliminated from calculations of regression analysis according to *t* (Stjudent) criteria.

The results shows that for each 1 billion Litas increase in government debt, AGFSI decreases approximately by 0.00218 points, all else being equal. Along with the debt increases debt service expenses, that is to say interest rate, increased share of current expenses of the Government budget, which in turn, increases budget deficit revenues keeping constant.

Increased interest rate payments can cause rise in taxation of households and corporate personhood. Nevertheless most of the time higher interest rate increases the need for borrowing in government sector, what in turn causes national debt to increase. The growing government debt burden usually leads to increase in taxes and higher inflation, then policy uncertainty arises and in the extreme cases – debt crisis which is followed by bank runs and (or) with currency crisis, which in turn is accompanied with financial instability.

Studies showed inverse government debt and AGFSI relationship (Fig. 2).

In late 2008 government debt started to increase rapidly and financial stability started to deteriorate. Furthermore since 2008 the ratio of interest rate for government sector debt to government sector revenue rose sharply. The latter ratio during the 2009 advanced by 1.74 % and at the end of 2009 reached 3.69%, 2010 due to unfavorable crisis consequences the ratio rose to 5.41% and in 2011 reached a peak at 5.61%. Such increasing trend can be explained by the consumption and production decrease after the financial crisis took effect. In line with that the government sector revenues shrunk and for the government borrowing became more expensive. These tendencies prove that government debt has a big negative impact on financial stability of Lithuania.

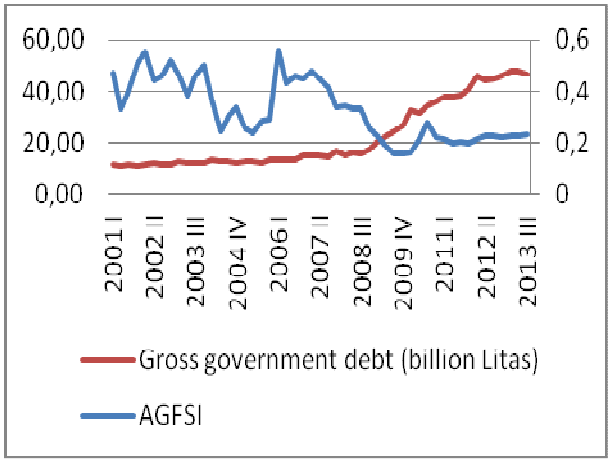

Fig. 2. Relationship between government sector debt and AGFSI (Source: analysis data and the data of Department of Statistics department of Lithuania).

Research results reveals that 1 Litas increase in minimal wage would decrease AGFSI by approximately 0.00106 points (Fig. 3).

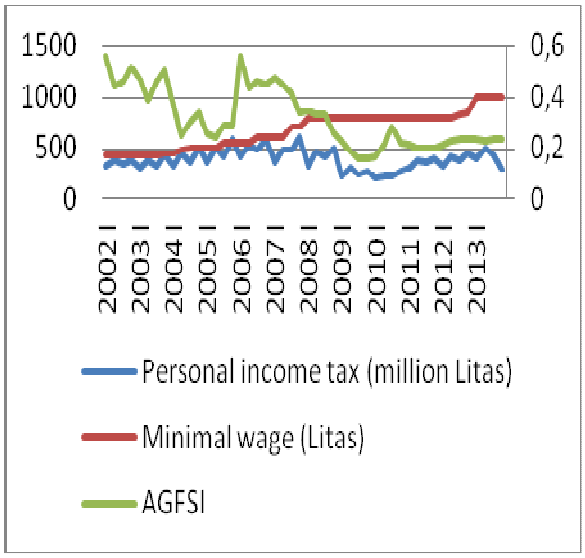

Fig. 3. AGFSI, minimal monthly wage and personal income budget revenue relationship. Source: analysis data and the data of Republic of Lithuania Ministry of Finance and Department of Statistics department of Lithuania.

These results may be explained by the fact that, it is expected to collect more taxable revenue by increasing MMW, however the increase in unemployment, the black economy, the number of bankruptcies, potential economy imbalance, the decrease in competition rate either in domestic and in international level are not taken into account.

Throughout the II quarter of 2007 - II quarter of 2010, the unemployment rate increased sharply, note that MMW was increasing gradually. In the same period the government revenue from ITI was gradually decreasing. By increasing MMW, the expenses of entities increases, which leads to a higher production cost and in turn higher prices, which leads to a higher inflation rate and an imbalance of the economy. The increase in MMW also influences a public sector, due to the additional need for funds in the government budget, for instance, social security expenses.

With the regression analysis, we found that AGFSI has an inverse relationship with the corporate tax tariff. The increase in the latter by 1% leads to a 0.03569 points decrease in AGFSI. This tendency can be seen throughout I quarter of 2009 - I quarter of 2010. In the beginning of 2009 the increase in the corporate tax tariff from 15% to 20%, had a strong influence to AGFSI, which decreased drastically. Furthermore it recovered in the I quarter of 2010, when the corporate tax tariff was reduced back to 15% (Fig. 4).

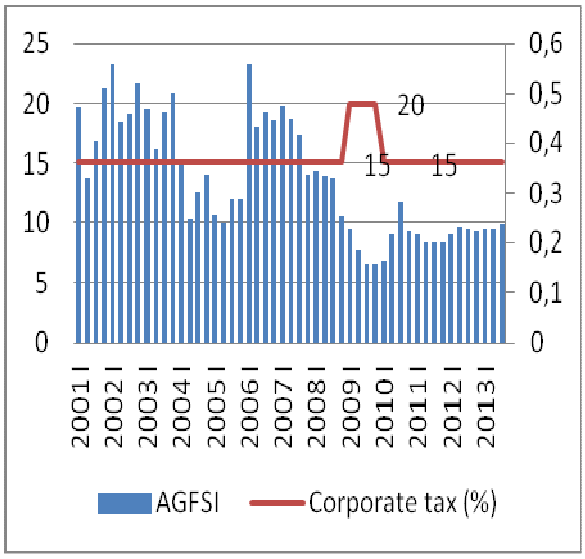

Fig. 4. AGFSI and corporate tax relationship. Source: done by the authors according to research data and the data of Republic of Lithuania income tax law.

The experience showed that reckless handling of tax rate in order to get more funds in the government budget is ineffective, and sometime has a negative impact to the economy.

Regression analysis showed an inverse relationship between AGFSI and personal income tax tariff. The 1% in increase in the latter leads to a 0.03018 points decrease in AGFSI (Fig. 5).

In Lithuania income tax tariff of the households was reduced 3 times and in all cases collected budget revenue from this tax was greater before the reduction. Lower taxes speed up economic growth by increasing willingness to work, invest and produce by private and public sector. During the time when the economy grows the income of the householders and profits of entities also increases, due to a lower tax burden and the black economy also shrinks. Foreign investments create new workplaces which lead to higher amount of collected person income taxes, income taxes and higher social security contributions.

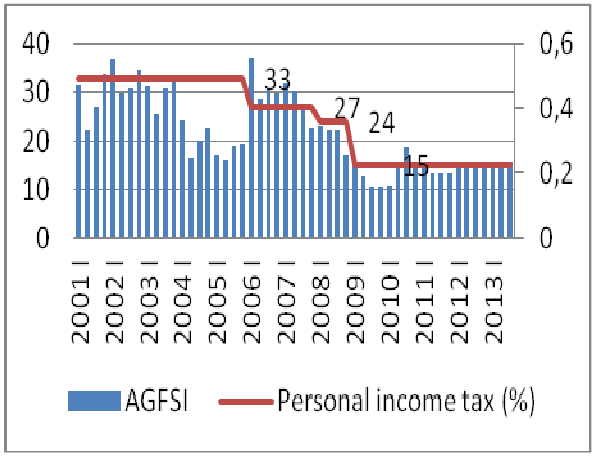

Fig. 5. The relationship between AGFSI and personal income tax. Source: done by authors, according to the research data and the data of Republic of Lithuania income tax of individuals' law.

Research revealed that the biggest impact to AGFSI has value-added tax tariff. The 1% increase in VAT leads to a 0.09996 points decrease in AGFSI (Fig. 6). VAT is the most important budget input, because it has the biggest value.

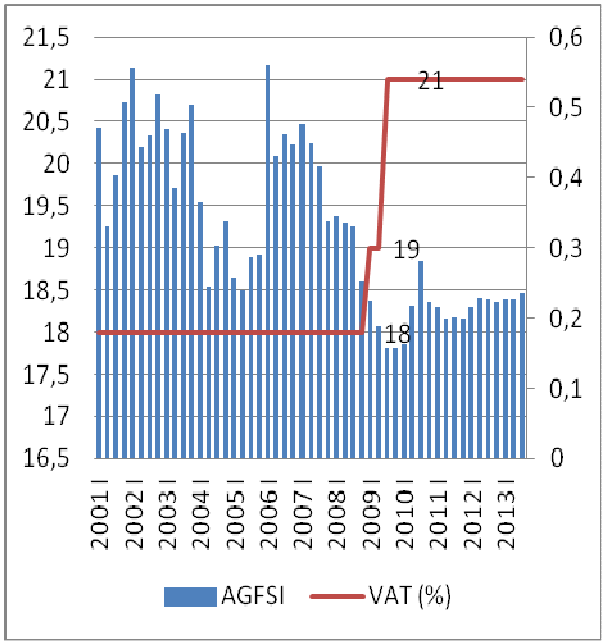

Fig. 6. AGFSI and VAT relationship. (Source: done by authors according to research data and Republic of Lithuania value-added tax law).

In 2009 I quarter, 1% increase in VAT, led to a 24.06% decrease in 2009 in VAT revenue to the budget. By comparing the same tendency, the AGFSI also declined. On the one hand the big influence for this decline had an economic downturn in 2008, however on the other hand we can argue that tax reform was not properly thought out. Also the lower collection of VAT was determined by the decline of people expenditures.

Overall fiscal policy tools for financial stability of Lithuania should be directed to the reduction of expenses and the coordination of fiscal policy tools to structural reforms while paying big attention to public sector reorganization.

5. Conclusions

After computing the aggregate general financial stability index dynamics analysis was found out that index values reflects the condition of finance system of Lithuania correctly and could be a significant tool in evaluating financial stability of the country.

Growing government debt burden leads to a tax increase, which in turn triggers a higher inflation and uncertainty of the policy. In order to stabilize the growth of government debt and to improve debt management the longer duration of debt instruments and better liquidity of government securities in secondary markets is necessary

Unfavorable tax environment for business leads to: corporate bankruptcies, decline in efficiency, lower corporate income and competition, decline in investments in private and public capital, slower economy growth and GDP decrease. Lower taxes causes the willingness to work, invest and produce more, that triggers higher economic growth, reduction in black economy and better assurance of financial stability.

Performed analysis revealed that the biggest impact to AGFSI has a value-added tax tariff. The 1% increase in VAT tariff, leads to a decrease of 0.09996 points in AGFSI. The rise in VAT causes inflation, which in turn lowers consumption that is to say the base of this tax. The more effective way to stabilize financial stability of Lithuania is to reduce budget expenses.

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