

ESTIMATION of the OPTIMAL SIZE of FINANCIAL DEPTH in TERMS of MACRO-STABILITY

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Received 18 January 2019; accepted 14 June 2019; published online 05 July 2019

ABSTRACT

In this paper, we have tried to quantify development aspects of the financial sector that ensures price as well as financial stability. Economic development, its volatility as well as non-linear relation between price and financial stability were investigated. Standard panel regression methods were conducted using data obtained from 64 developed and developing countries for the sample period of 2000-2017. Considering the importance of the banking sector in developing countries, we have also tried to quantify the optimal size of the banking sector in the context of Azerbaijan.

Results show that, in countries where financial intermediation was weak rising financial depth is positively correlated with economic growth. Up to optimal point, loan-to-GDP ratio positively impacts economic growth and afterwards negatively. Currently financial sector is bank-based and accordingly banks play important role in the financial markets.

Keywords: financial depth, macroeconomic stability, financial stability, economic growth volatility, panel modelling.

JEL classification: C32; E44; F31; G18

I. INTRODUCTION

There is a large existing literature that aims at identifying the impact of financial market development on macroeconomic stability and economic growth (for instance, Aghion, P., Howitt, P., Mayer-Foulkes, D., 2005; Hasanli 2013; Sahay R., et al., 2015). Developed financial markets ensure an effective transformation of savings into investments, redistribute risk between economic agents, and help to disseminate economic information and thus stimulates economic growth.

On the other hand, Global Financial Crisis of 2008-2009 proved that extreme financial deepness could potentially create bubbles, prevent proper identification of risks and financial sector sustainability and increase its sensitivity to shocks. This, in turn, may negatively affect economic activity.

A lot of existing studies was devoted to non-linear relationship between financial deepness and economic growth (see for instance, Arcand et al., 2015; Law and Singh, 2014; Cecchetti and Kharroubi, 2012; Sahay et al., 2015; Imanov 2017). The majority of these papers have shown that the optimal level of domestic credit to the private sector in percentage of GDP varies between 80-100% and anything beyond this level has negative macroeconomic impact.

Financial deepness can be bank-oriented and market-oriented. In the early stage of economic development, the main driver of the economic growth is banking sector (bank-oriented financing). Banks finance low risk investments through standard financial products. Whereas in the transition from developing stage to developed stage, investors require a broader range of financial instruments to manage risks and attract capital. In this stage, securities markets play key role to finance complex investment projects through their non-standard financial mechanism (market based financial sector).

The rest of the paper will be structured as follows. Section 2 provides a literature review related to my study. Section 3 is devoted to data and methodological issues. The fourth section summarizes results of analysis followed by conclusion in section five.

II. LITERATURE REVIEW

There is a broad range of research in economic literature that investigated the market versus bank-finance: for research in the field of currency crisis see Kaminsky and Reinhart (1999) and Domac and Martinez-Peria (2003); for research in the field of deposit insurance see Demirgüç-Kunt and Detragiache (2002); and for research on development level and dynamic of credit market see Schularick and Taylor (2012).

However, the impact of the development of financial markets, especially that of loan and stock markets on price stability, is not widely examined. Lee et al. (2011) used VAR model and found that yields of securities had negligible impact on inflation.

Investigating 15 OECD countries, De Schryder (2017) reviewed the impact of inflation on crisis and its reaction on decreasing level of leverage in economies. The author used a hybrid Keynesian Phillips curve and identified that there is an asymmetric reaction of inflation on output gap (strong when there is overheating of

economy and vice versa) and there is no correlation between bank loans and inflation and the output gap. Theoretically, the impact of the loan market deepness on inflation might be positive as well as negative. The first case happens via credit channel: A high level of loans speeds up economic growth level, which in turn raises inflation. The second case arise through alternative financial resources prices. In the context of decreasing number of banks, lending firms search for alternative sources to finance their projects. This, in turn, affects cost as well as inflation.

Some researches on the other hand focused on the impact of oil revenues on macroeconomic and financial stability. For instance, Imanov et al. (2017) used fuzzy modelling to evaluate financial stability and Hubert model to forecast oil and gas production, which can be useful in assessing impact of oil revenues on financial stability.

In most empirical papers, besides the impact of financial deepness on price and financial stability, structural indicators of financial markets are also analyzed. For instance, the degree of dollarization of bank liabilities serves as a good example. High dollarization speeds up inflation and high inflation leads to adverse process. In other words, high inflation decreases the confidence in the national currency, and financial resources allow to transform into alternative foreign currencies (see Levy-Yeyati, 2006). According to empirical studies, high dollarization of bank loans adversely impacts the sustainability of banking sector and gives rise to financial markets crisis (De Nicolo et al., 2005; Honohan, Shi, 2003; Laeven, Valencia, 2012).

Another structural indicator of financial markets is the share of the foreign capital. This is particularly relevant in the banking sector. Although foreign capital contributes to the quality and efficiency of the financial services, it might pose some threats to financial stability as well. Specifically, competition among foreign and domestic participants in the banking industry can diminish values of the banks and negatively affect financial stability (see Claessens et al., 2001).

III. DATA AND EMPIRICAL ANALYSIS

Researchers have studied financial deepness and economic growth as well as their relation with financial stability. Credit-to-GDP, domestic corporate securities to GDP and foreign corporate loan to GDP ratios were used to measure financial deepness. We have used financial deepness and macroeconomic indicators of 64 middle- and high-income countries (including Azerbaijan) for the analysis. The database covers annual data from 2000 to 2017 and panel model was used. In order to define development impact of financial markets on economic growth, volatility of this growth, price and financial stability indicators were divided into

macroeconomic, financial, demographic and institutional groups. We have used Global Financial Development Database of the World Bank, Heritage Foundation and IMF's International Financial Statistics as well as Financial Soundness Indicators. For banking sector measurement, i) number of banks ii) number of bank branches iii) number of banking sector employees and iv) assets of banking sector were used.

Using quarterly data of 64 middle- and high-income countries approximated for the sample 2000-2017, we have analyzed the relationship between financial deepness and economic growth and its implications on financial stability. In general, the followings seem more relevant to research in Azerbaijan that stem from the empirical research conducted.

1. How financial deepness affects i) economic growth, ii) macroeconomic destabilization (volatility of economic growth rate) iii) inflation and iv) financial stability?
2. If the impact is non-linear, in what shape it is and what is the distance from optimal level?
3. At what optimal level of financial markets, maximum level of economic growth and minimum level of macroeconomic, price and financial destabilization is achieved?

To investigate these problems, we have used panel regression methodology conducted by Rioja, Valev (2004), Arcand et al. (2015); Sahay et al. (2015) and finance-volatility nexus, Easterly et al. (2000); Beck et al. (2014); Sahay et al. (2015). The regression equation for each of 4 purposes (i) Economic growth, ii) low macroeconomic non-stability (volatility of economic growth rate), iii) low inflation and iv) financial stability) of the macroeconomic policy (Y_1, \dots, Y_4) is shown below:

$$Y_n = GDP_{it} = \alpha_i + \beta_1 * FD_{j,it} + \beta_2 * FD_{j,it}^2 + \sum_{m=1}^{M1} \gamma_m * controls_{m,it} + \varepsilon_{it} \quad (1)$$

here: i – number of countries (64 countries), t – evaluation period (2010-2017), n – number of mentioned purposes of the macroeconomic policy (4 purposes), $Y_n = GDP_{it}$ – average growth rate of GDP, $Y_2 = \sigma GDP_{it}$ – deviation of growth rate of GDP from average indicator, $Y_3 = CPI_{it}$ – average inflation level during the period, $Y_4 = CRISIS_{it}$ – share of years that crisis happened in the banking sector. Z-score indicator was used as an alternative indicator of financial stability. This index was calculated for the banking sector and defines distance until bankruptcy. $FD_{j,it}^2$ – financial markets development level (deepness) main indicator is loan to

GDP ratio-, CONTROLS indicate control factors such as macroeconomic, financial, institutional and demographics. Analysis was conducted for 64 countries including Azerbaijan and covers period of 2010-2017.

It should also be noted that in the regression equation for control factors of dependent variables of $Y_n = GDP_{it}$ vs $Y_2 = \sigma GDP_{it}$ we have followed methodology developed by King, Levine (1993a), King, Levine (1993b), Ramey, Ramey (1995), Levine, Zervos (1998), Easterly et al. (2000), Durlauf et al. (2005), Aghion et al. (2005), Beck et al. (2014), Sahay et al. (2015) and Arcand et al. (2015).

For $Y_3 = CPI_{it}$ equation I have referred to Lee (1992), Cottarelli et al. (1998), Blot et al. (2015), and for $Y_4 = CRISIS_{it}$ equation we have referred to researches conducted by Kaminsky, Reinhart (1999), Domac, Martinez-Peria (2003), Boyd et al. (2004), Beck et al. (2006), Schularick, Taylor (2012), Anginer et al. (2014), Sahay et al. (2015).

$\alpha_{k,j}$ – shows difference among countries for the frequency of the crisis happened with (k=1) being permanent economic growth rate, (k=2) volatility of growth rate, (k=3) inflation and loan market. Coefficients of the equation $\beta_{j,1}$ (j=1,...,4) shows linear and quadratic components of financial markets development on each of the 4 purposes of the macroeconomic policy. For the reference, in theoretical and empirical researches, reverse U shape relationship for GDP growth is also defined. If we consider this fact, then for equation (1) we can indicate that there is U shape relationship for the volatility of economic growth rate, inflation and financial stability.

In order to analyze parameters of the regression equation, we have used 2-Step Generalized Method of Moments to solve endogeneity problem. As for the instrumental variables, we have used current and first lag of the institutional explanatory variables. This was especially used to explain different levels of development of financial markets among countries. We have found optimal level at $-0.5\beta_{j,2}/\beta_{j,1}$ (j=1...4) after regression equation was solved.

If non-linear relationship is observed for any of 4 purposes of the macroeconomic policy and if development indicators of financial sector are important in the given area, then we can find optimum level for each of 4 purposes of the macroeconomic policy. Optimization process can be described as below:

$$FD_{j,it} = \mu_1 \frac{Y_{1,it}}{\sigma_1} + \mu_2 \frac{Y_{2,it}}{\sigma_2} + \mu_3 \frac{Y_{3,it}}{\sigma_3} + \mu_4 \frac{Y_{4,it}}{\sigma_4} \rightarrow \max_{FD_{j,it}} \rightarrow FD_{j,it}^* \quad (2)$$

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Here: μ_1, \dots, μ_4 – shows weights depending on the priorities that regulator attains to the purposes ((1) – (4)). The purpose that has highest priority gets $\mu_1 = \dots = \mu_4 = 1/4$, the second gets $\mu_1 = \dots = \mu_3 = 1/3$ and $\mu_4 = 0$.

$\sigma_1, \dots, \sigma_4$ indicates standard deviation of Y_1, \dots, Y_4 during the period that is analyzed. Normalizing standard deviations helps to measure them and conduct arithmetic operations.

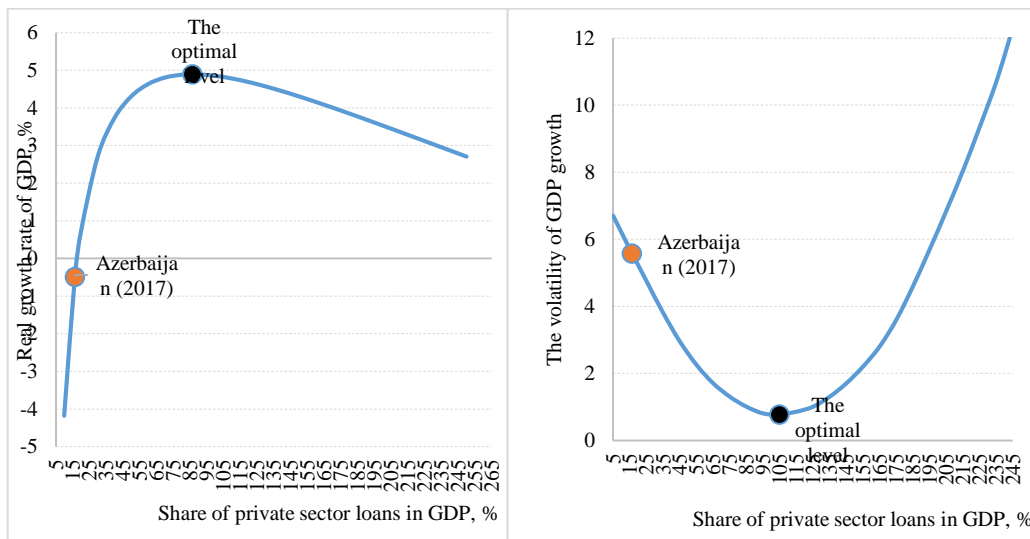
$Y_{1,it} \dots \dots, Y_{4,it}$ - is the empirical writing of non-linear function of development indicators of macroeconomic policy purposes.

IV. RESULTS

As can be seen from Graph 1, economic growth speeds up as financial depth grows. Until loan to GDP ratio reaches 86.5% (optimal point) this indicator positively impacts economic growth and afterwards negatively. In Azerbaijan loan to GDP ratio reached its peak of 38.5% in 2015 and afterwards decreased and then stabilized at 38.5% in 2017.

In countries where financial intermediation was weak, economic growth was also volatile. (Graph 1). Thus, when loan to GDP ratio was 104.4%, volatility was minimum and then increased. As financial intermediation in Azerbaijan was weak, we can assume that volatility of the economic growth was high. Results of the research indicates that as financial intermediation improves (up to optimal point), volatility will decline.

Graph 1: Interaction between financial intermediation and economic growth and its volatility



According to my findings, optimal points where financial deepness and financial stability crosses are as below:

Table 1: Optimal size of financial depth

	Middle to high income countries	Azerbaijan (2017)
Ratio of private sector loans to GDP	96%	16.4%
Ratio of domestic corporate loans to GDP	22%	1%
Ratio of corporate foreign debt to GDP	15%	16.7%

The ratio of private sector loan to GDP in Azerbaijan (16.4%) is well below the optimal level of 96% (See Table 1). In addition, the domestic corporate securities market is not well developed which also indicates that financial system is at its early development stage (bank centered financial sector). Meanwhile, foreign debt of corporate sector accounts for 16.7%, which is higher than optimal level.

	GDP growth rate		Volatility of GDP growth rate	
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
	<i>Base</i>	<i>Extended</i>	<i>Base</i>	<i>Extended</i>
1. Financial variables				
Bank loans to private sector / GDP - log, %	17.155*	17.245*		
	(9.548)	(9.501)		
Bank loans to private sector / GDP (square) - log, %	-1.975*	-1.945*		
	(1.081)	(1.088)		
Bank loans to private sector /GDP, %			-0.107**	-0.125**
			(0.046)	(0.06)
Bank loans to private sector /GDP (square), %			0.0003*	0.001*
			(0.0001)	(0.000)
2. Macroeconomic variables				
Inflation (CPI) - log, %	-0.826***	-0.450*		
	(0.292)	(0.313)		
GDP per capita (lag = 1) - log, USD	-2.095***	-2.748***		
	(0.483)	(0.575)		
GDP per capita, thousand USD			0.027	-0.031
			(0.028)	(0.060)
Resource rent /GDP (lag = 1) - log, %		-0.162		
		(0.223)		
Volatility of national			0.009	0.006*

currency, national currency / USD				
			(0.006)	(0.004)
Oil export / GDP, %				0.058**
				(0.026)
3. Demographic variables				
Population growth rate, %		0.390		
		(0.351)		
Coefficient of demographic cost of children, log		-3.788***		
		(1.423)		
Coefficient of demographic cost of elderly person, log				0.209 (0.195)
Number of observations	267	249	277	272
The optimal level	76.875***	86.519***	121.039***	104.443***
	(15.384)	(18.547)	(19.604)	(16.442)

Considering the importance of the banking sector for Azerbaijan, its impact was analyzed separately. For banking sector measurement, i) number of banks ii) number of bank branches iii) number of banking sector employees and iv) assets of banking sector were used. Each of these parameters are formed according to demand to bank services. If we assume that financial systems of developed countries are competitive and efficient, then banking system of these countries can serve as benchmark.

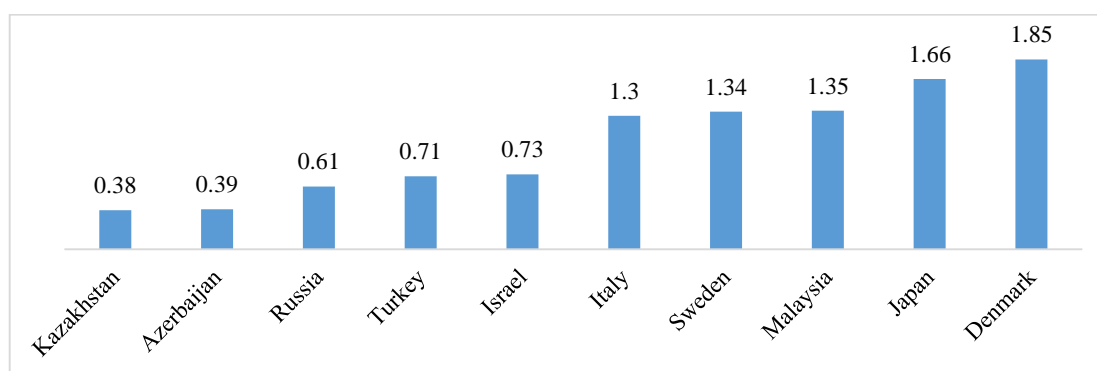
Table 2. List of factors that size of banking sector depends

Banks	Branches	Employees	Assets
GDP	GDP	GDP	GDP
Population	Population	Population	
Foreign liabilities	Size of the country	Size of the country	
Savings	Foreign liabilities	Foreign liabilities	

According to our analysis, as financial depth increases in Azerbaijan, economic growth speeds up. (Graph 1 and Graph 2). Until loan-to-GDP ratio reaches 86.5% (optimal point) this indicator positively impacts economic growth and afterwards negative. Loan to GDP reached its peak of 38.5% in Azerbaijan and afterwards stabilized at 16.4% in 2017.

Currently financial sector in the country is bank-based and accordingly banks play important role in the financial markets. In this regard, defining optimal size of the banking sector is also important for the efficiency of monetary policy.

Graph 2: Size of the banking sector, 2015 (Bank assets/GDP)

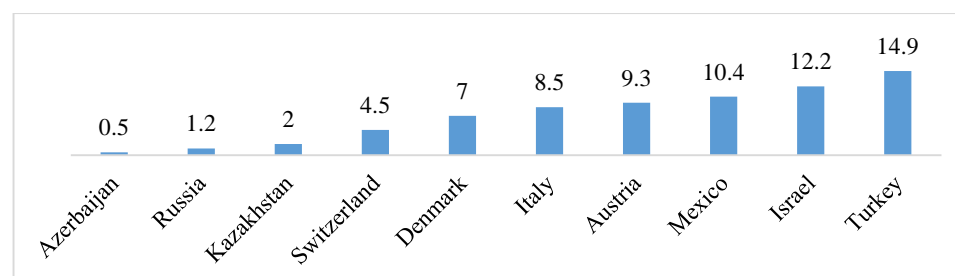


Source: WB and IMF

Size of the banking sector should be such that it provides effective services according to economic, demographic, financial and geographic characteristics of the country. In efficient and competitive banking system, supply is determined by demand. Demand, on the other hand, is determined by fundamental factors such as economic, demographic and geographic. For instance, demand for payment systems within the country depends on GDP, population and size of the country. At the same time, in several countries foreign demand also plays an important role.

According to banking sector indicators, Azerbaijan lags behind developed countries. In terms of banking sector depth ratio, Azerbaijan's banking assets to GDP (0.39) lags behind countries in the region such as Turkey (0.71) and Russia (0.61) (Graph 2).

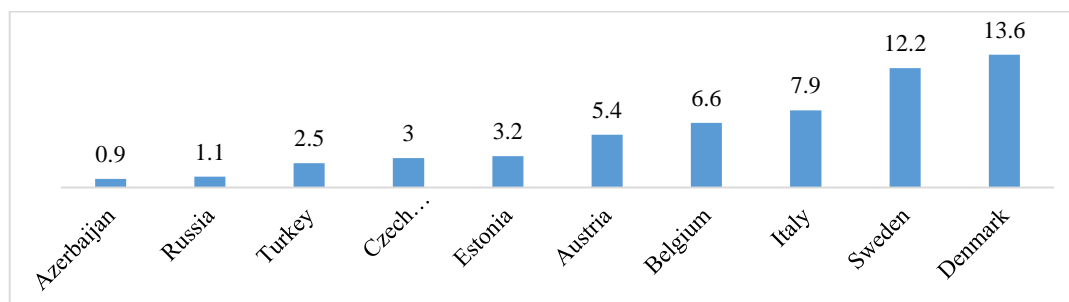
Graph 3: Average asset size, 2015 (total assets/number of banks)



Source: WB and IMF

The reason why Azerbaijan has a low value (0.5) on this indicator can be explained both by having low bank assets compared to optimal value and having number of banks that are higher than optimal value. In developed countries, size of the bank assets is close or higher than GDP. The same trend is observed for average asset size of the banking sector as well.

Graph 4: Asset size per employee

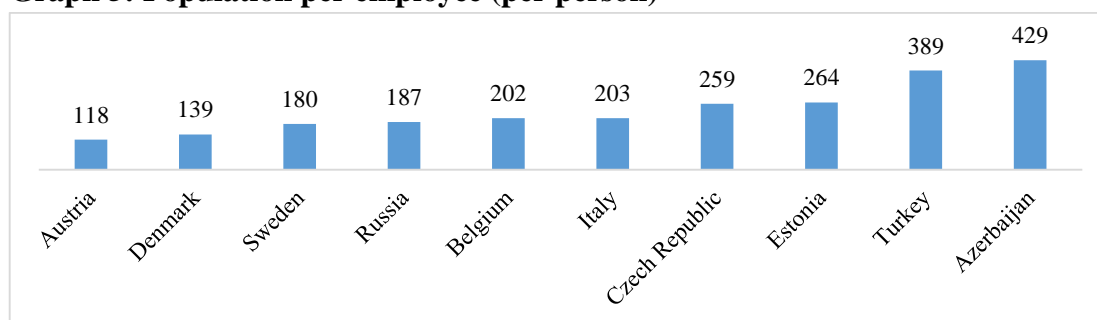


Source: WB and IMF

With regards to banking sector employee's indicators, reason of having less asset size per employee can be explained by low asset size. Asset size per employee in developed countries such as Austria (5.4 mln. US dollars), Sweden (12.2 mln. US dollars) and Denmark (13.6 mln. US dollars) is more than 5 mln. US dollars.

Number of people working in the banking sector is less than the optimal size which explains why Azerbaijan has low value for population per employee (Graph 4).

Graph 5: Population per employee (per person)



Source: WB and IMF

To assess optimal size of the banking sector in Azerbaijan, we have used elasticity relationship between size of the banking and economic, demographic and geographic fundamentals in developed countries for 2015. Size of the banking assets and number of banks, bank branches and number of employees in banking sector depends on the factors explained in table 1.

Using econometric relationship described in table 1, we have assessed optimal level for Azerbaijan's banking sector to reach efficiency level in developed countries (Table 3). Optimal level for Azerbaijan were calculated using coefficients in Table 2.

Table 3: Optimal size of banking sector

Years	Banks		Branches		Employees, thousand		Assets bln. \$	
	Actual	Optimal	Actual	Optimal	Actual	Optimal	Actual	Optimal
2015	43	24	750	1637	22.5	26.1	20.7	48.0
2017	30	20	509	1599	16.2	23.0	16.4	35.8
<p>Elasticity relationship can be written as below:</p> $\ln(\text{number of banks}) = -11.9 + 0.6 \cdot \ln(\text{GDP}) + 0.04 \cdot \ln(\text{Population}) + 0.2 \cdot (\text{foreign debt/liabilities}) + 0.02 \cdot (\text{Savings/GDP})$ $\ln(\text{Branches}) = -12 + 0.02 \cdot \ln(\text{GDP}) + 0.98 \cdot \ln(\text{Population}) + 0.27 \cdot \ln(\text{Size}) + 0.14 \cdot (\text{foreign debt/liabilities})$ $\ln(\text{Employees}) = -9.7 + 0.36 \cdot \ln(\text{GDP}) + 0.65 \cdot \ln(\text{population}) + 0.04 \cdot \ln(\text{size}) + 0.17 \cdot (\text{foreign debt/liabilities})$ $\ln(\text{Assets}) = -2.7 + 1.1 \ln(\text{GDP})$								

As can be seen from the Table 3, number of the banks are higher than benchmark. In 2017 number of the banks are 30, whereas optimal number of the banks for Azerbaijan should be 20. On the other hand, number of the bank branches are three times less than the optimal number, which negatively affects population getting bank services. In 2017 there were 509 bank branches whereas according to our analysis this should be 1600.

Besides, in 2017 number of bank employees in Azerbaijan were around 16000 which is 7000 less than optimal number. Also, size of the assets lags behind optimal number. In 2017 size of the bank assets were 16,4 bln. USD (40% of GDP) whereas this number should be 35,8 bln. USD (88% of GDP).

V. CONCLUDING REMARKS

The paper empirically assesses the impact of financial market development on macroeconomic stability and economic growth. Using annual data over the period 2000-2017, we have employed panel regression in order to undertake the study. The result show that, in countries where financial intermediation was weak, economic growth was also volatile. The financial intermediation in Azerbaijan was weak, and the volatility of the economic growth was high. Results of the research indicates that as financial intermediation improves (up to optimal point), volatility will decline. According to our analysis, as financial depth increases in Azerbaijan, economic growth speeds up. Until loan-to-GDP ratio reaches 86.5% (optimal point) this indicator positively impacts economic growth and afterwards negative.

Currently financial sector in the country is bank-based and accordingly, banks play important role in the financial markets. We have found that in 2017 number of the banks is higher than the optimal level. Conversely, the number of the bank branches are three times less than the optimal number, which negatively affects population getting bank services. Besides, in 2017 number of bank employees in Azerbaijan is less than optimal number. Also, size of the assets lags behind optimal number.

References

- Aghion, P., Howitt, P., Mayer-Foulkes, D. (2005). The effect of financial development on convergence: Theory and evidence, *The Quarterly Journal of Economics*, 120(1), pp.173–222.
- Arcand, J. L., Berkes E., Panizza U. (2015). Too Much Finance? *Journal of Economic Growth* 20(2), pp. 105–148.
- Beck, T., Lundberg, M., Majnoni, G. (2006). Financial intermediary development and growth volatility: Do intermediaries dampen or magnify shocks? *Journal of International Money and Finance*, 25(7), pp. 1146-1167.
- Bernanke, B.S. (1983). Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression, *American Economic Review*, 73(3), pp. 257–76.
- Blot, C., Creel, J., Hubert, P., Labondance, F., Saraceno, F. (2015). Assessing the link between price and financial stability, *Journal of Financial Stability*, 16, pp. 71–88.
- Boyd, J., De Nicolo, G., Smith, B. (2004). Crises in Competitive versus Monopolistic Bank-ing Systems, *Journal of Money, Credit and Banking*, 36(3), pp. 487-506.
- Cecchetti, G., Kharroubi, E. (2012). Reassessing the Impact of Finance on Growth. BIS Working Papers No. 381, Bank for International Settlements.
- Claessens, S., Demirguc-Kunt A., Huizinga H. (2001). How Does Foreign Entry Affect the Domestic Banking Market? *Journal of Banking & Finance*, 25, pp. 891-911.
- Cottarelli, C., Griffiths, M., Moghadam, R. (1998). The Nonmonetary Determinants of Inflation: A Panel Data Study, IMF Working Paper.
- De Nicolo, G., Honohan, P., Ize A. (2005). Dollarization of bank deposits: Causes and consequences, *Journal of Banking & Finance*, 29, pp. 1697–1727.
- De Schryder, S. (2017). Inflation during times of economic slack and deleveraging: a panel data analysis, *Oxford Economic Papers*, 69(3), pp. 612–631.

- Demirgüç-Kunt, A., Detragiache, E. (2002). Does deposit insurance increase banking system stability? An empirical investigation, *Journal of Monetary Economics*, 49, pp. 1373–1406.
- Domac, I., Martinez-Peria, M.S. (2003). Banking crises and exchange rate regimes: is there a link? *Journal of International Economics*, 61, pp. 41–72.
- Durlauf, S., Johnson, P., Temple, J. (2005). Growth Econometrics. In *Handbook of Economic Growth*, 1A, pp.555–677.
- Easterly W., Islam R., Stiglitz J. E. (2000). Shaken and Stirred: Explaining Growth Volatility. *Annual World Bank Conference on Development Economics*.
- Imanov G.C et.all (2017). Financial stability in Azerbaijan: The application of fuzzy approach. *Buletin Ekonomi Moneter dan Perbankan*, Volume 19, Nomor 3, Januari 2017. p.320
- İmanov G.C. et.all (2017). “Forecasting of oil and gas extraction in Azerbaijan on the basis of Hubbert’s model”, *The jurnal of economic sciences: Theory and practice*, pp.40-52, Volume 71, #1/2014, ISSN 2220-8739.
- Hasanli Y. (2013). The evaluation of mutual substitution elasticity of capital and labour factors by application CES function for economy of Azerbaijan, *The journal of economic sciences: Theory and practice*, p.77-96,2013, Year: 19, Volume 70, #1/2013, ISSN 2220-8739
- Honohan, P., Shi, A. (2003). *Deposit Dollarisation and the Financial Sector in Emerging Economies, Globalization and National Financial Systems* (New York: Oxford University Press).
- Lyutiy, I., Liubkina, O., (2012). Contribution of Banking System into Financial Stability of Ukraine. *The Journal of Economic Sciences: Theory and Practice*. 69(2).
- Kaminsky G., Reinhart C. (1999). The twin crises: The causes of banking and balance-of-payments problems. *American Economic Review*, 89(3), pp. 473–500.
- King, R. G., Levine, R. (1993a). Finance and growth: Schumpeter might be right, *The Quarterly Journal of Economics*, 108(3), pp. 717–37.
- King, R. G., Levine, R. (1993b). Finance, entrepreneurship and growth: Theory and evidence, *Journal of Monetary Economics*, 32(3), pp. 513–42.
- Laeven, L.,Valencia, F. (2012). *Systemic Banking Crises Database: An Update*, IMF Working Paper.
- Law, S. H., & Singh, N. (2014). Does too much finance harm economic growth? *Journal of Banking and Finance*, 41, pp. 36–44.

Lee, B.-S. (1992). Causal Relations Among Stock Returns, Interest Rates, Real Activity, and Inflation, *The Journal of Finance*, 47(4), pp. 1591-1603.

Lee, C. C. (2011). Does Insurance Matter for Growth: Empirical Evidence from OECD Countries, *B.E. Journal of Macroeconomics*, 11(1).

Levine, R., Zervos, S. (1998). Stock markets, banks, and economic growth, *The American Economic Review*, 88(3), pp. 537–58.

Levy-Yeyati, E. (2006). Financial dollarization: evaluating the consequences, *Economic Policy*, 21 (45), pp. 62–118.

Ramey, G., Ramey, V. (1995). Cross-Country Evidence on the Link Between Volatility and Growth, *The American Economic Review*, 85(5), pp. 1138-1151.

Sahay R., Cihak M., N'Diaye P., Barajas A., Bi R., Ayala D., Gao Y., Kyobe A., Nguyen L., Saborowski C., Svirydzhenka K., Yousefi S. R. (2015). Rethinking Financial Deepening: Stability and Growth in Emerging Markets. IMF staff Discussion Note SDN/15/08.