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Evolving Importance of Securities Market to Ensure Economic Growth: Evidence from Armenia

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Abstract

This research aims to reveal the importance of securities market in ensuring economic growth in Armenia. In order to make the research more substantial, we also examined the impact of other financial market segments, such as insurance market and credit market, on the economic growth. To estimate the relationship between financial market segments and economic growth, an empirical research was conducted using correlation and regression techniques. The research reveals that the most significant impact on the economic growth among Armenian financial market segments has the credit market of Armenia. There is no significant relationship between economic growth and insurance, as well as corporate securities market. It is pointed out in the research, that the evolving importance of the role of securities market in the economic growth is not yet demonstrated in Armenia, which, perhaps, results from the absence of interaction between securities market and economy in Armenia.

Keywords: financial market; securities market; economic growth; Armenia; regression analysis.

JEL classification: G23; O11.

1. INTRODUCTION

Being the most important component of the state policy of economic development in a number of countries, the role and importance of the securities market is crucial in ensuring economic growth of the country. This is evidenced (Ghysels *et al*., 2014) by the "Securities Markets Program" of the European Central Bank announced on May 10, 2011, which aims to provide depth and liquidity in those market segments, which are dysfunctional, with the ultimate goal of serving already developed securities market as a mechanism of monetary policy impact on the economy.

The interactions between securities market and economic growth have been studied by a number of renowned economists from around the world, such as Bagehot W., Schumpeter J., Robinson J., Levine R. and others. Various analyzes have been made to reveal the potential link between the financial market (including securities market) and economic

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growth. In this research we have observed the impact of the financial market on the economic growth in general and its different segments in particular (more specifically the banking system and the securities market)

As for the evidence of securities market importance in Armenia, we found out that the existing researches on securities market mainly describe the current state of its segments and reveal development issues and perspectives. Thus, the role of the securities market and the financial market as a whole, in ensuring economic growth, is not yet well discussed and observed in Armenia.

Scientific contribution of this paper

The main scientific contribution of this paper is the results achieved for Armenia by estimating the impact of different segments of financial markets on Gross domestic product (GDP). The estimation was conducted by using quantitative methods and models, the efficiencies of which were proven by foreign experience. Specifically, correlation and Ordinary least squares (OLS) regression techniques have been used to estimate empirically the relationship between financial market segments and economic growth in Armenia.

Interactions between financial market segments and economic growth have been largely discussed in previous literature, but almost in all researches only the equity market and the banking system have been considered as the main factors of economic growth. In contrast to that, in our model we also examined the impact of government bonds, insurance and credit markets on the economic growth, as the latters are also important for the economic growth, especially in developing countries. This is another contribution of this paper, which adds up to the existing knowledge in this sphere.

This paper consists of seven sections. The second section summarizes the literature concerning the relationship between economic growth and financial market segments, securities market, banking system and etc. Following this, the method and database are presented in the section three, while the fourth and fifth sections analyze the results of the correlation analyses and regression model and the effects of financial market segments on the economic growth, the sixth and final section contains respective conclusions.

2. REVIEW OF PREVIOUS LITERATURE

Economists Bagehot (1873) and Schumpeter (1912) consider, that the developed financial market is a necessary factor for the economic growth. They emphasize the critical importance of the banking system in economic growth and highlight circumstances when banks can actively spur innovation and future growth by identifying and funding productive investments. In contrast, Lucas (1988) states, that economists “badly over-stress” the role of the financial system, and Robinson (1952) argues that banks respond passively to economic growth.

Researchers Garretsen *et al.* (2004) found direct link between economic growth and development of the financial market, in particular. According to their research, 1% economic growth leads to 0.4% growth in market capitalization to GDP ratio.

Economists Rajan and Zingales (1996) point out that financial development is an element of economic growth forecast, as the capital market reflects the present value of future growth opportunities.

Economists Levine and Zervos (1998) believed that liquidity in capital market is a good way to predict GDP per capita, as well as physical capital and productivity growth, but

other indicators of capital market development, such as size of the market and international integration, are not essential to explain economic growth.

Researchers Greenwoods and Smith (1997) have examined the general economic equilibrium model, where financial markets promote growth through reallocation of savings and risks, and the growth contributes to the development of securities market, in turn and the balance is achieved as a result of the dynamic interaction between the real and financial sectors of the economy. At the same time, they pointed out that participation in securities market requires certain expenses from agents, which diminish in parallel with market growth. Here comes the threshold effect, after reaching which securities market development starts to play a positive role in boosting economic growth. Before that point, securities market development has a negative or neutral character.

After reviewing the researches on interconnection between securities market and economic growth, we will give a look to the theories and models, where the authors tried to estimate influence of different segments of financial market (securities market or banking sector) on economic development, revealing the one that had greater effect on economic growth, rather than just focusing on the interaction between financial market and economic growth.

Thus, economists Arestis *et al.* (2001) used the autoregression vector to conduct an empirical research in five developed markets. The research showed that though the capital market had an impact on economic growth, the impact of banking system on the latter however, was stronger. They argued that bank-oriented financial systems are able to boost higher-long-term economic growth, rather than market-based financial systems.

According to another economist, Ergungor (2008), countries having a stable legal system are characterized by a stronger influence on economic growth from the banking system, while the countries with a more varied legal system are strongly influenced by the capital market development.

A group of economists point out that banks and securities market institutions offer separate services and both have their specific influence on economic development. Specifically, Demirguc-Kunt *et al.* (2011) emphasized in their research that "Acemoglu Acemoglu and Zilibotti (1997), Allen and Gale (2000), Boot and Thakor (1997), Dewatripont and Maskin (1995), Holmstrom and Tirole (1993) argued, that banks have a comparative advantage in reducing the market frictions associated with financing standardized, shorter-run, lower-risk, well-collateralized endeavors, while decentralized markets are relatively more effective in custom-designing arrangements to finance more novel, longer-run, higher-risk projects that rely more on intangible inputs".

Economic theory also emphasizes the importance of financial structure-the mixture of financial institutions and markets operating in an economy. For example, *Demirguc-Kunt et al.* (2011) emphasized in their research that "Allen and Gale (2000) theory of financial structure and comparative analyses of Germany, Japan, the United Kingdom and the United States suggests, that (1) banks and markets provide different financial services; (2) economies at different stages of economic development require different mixtures of these financial services to operate effectively (Boyd and Smith, 1996) and (3) if an economy's actual mixture of banks and markets differs from the "optimal" structure, the financial system will not provide the appropriate blend of financial services, with negative effects on economic activity".

Economists Demirguc-Kunt and Levine (2001) showed in their research, that the banks and securities market are also developing in parallel with economic growth and, at the same time, securities markets tend to develop more rapidly than banks. Therefore, it can be concluded, that the economy becomes more market-based during the time of economic

development. However, the authors do not answer to the following question, "Whether the demand for services in the securities market or in the banking system is higher when the economy grows?"

Demirguc-Kunt *et al.* (2011) were the first researchers who discussed this issue in their research on "The evolving importance of banks and securities market". They examined the impact of financial structure on the economic development. Particularly they calculated financial structure gap and its impact on economic growth, using methodology of regression analysis. Both correlation and regression analyses revealed that the impact of banking services (proportion of private sector loans to the GDP was considered as a banking service indicator) on economic development declines during economic growth, while the influence of securities market indicators, such as trade volume, market capitalization, increases. Demirguc-Kunt *et al.* (2011) stated, that the sensitivity of economic development to changes in the banking system decreases in parallel with economic development, while the sensitivity of economic development to changes in securities market increases, as countries grow. Put it differently, as economies grow, the marginal increase in economic activity, associated with an increase in banking development, falls, while the marginal boost to economic activity, associated with an increase in securities market development, rises.

Thus, despite the fact that the economists do not have a single opinion on the need of the securities market in ensuring high economic growth, the majority of researchers attest the importance of the securities market in fostering economic growth. Furthermore, economists argue whether the banking sector or the securities market has more influence on the economic development.

Generally, economic growth is a systematic process, affected by a number of factors other than capital market. Moreover, capital market development is an outcome of a number of factors. There are certain mutual relationships between these factors, which make it difficult to define or distinguish certain relationship between capital market development and economic growth.

3. METHOD, DATABASE

In order to estimate the relationship between financial market segments and economic growth in Armenia, an empirical research has been conducted, especially, correlation and OLS regression techniques have been used.

As an information source for the research, publically available data of National Statistical service of Armenia, Central Bank of Armenia and NASDAQ OMX ARMENIA OJSC has been used. Particularly, GDP in market prices has been used to describe the economic growth and influences of different factors, such as the GDP components (spending (both consumer and government), investments, Net export), indicators describing securities market (issue and trade volumes, yield of government bonds, trade volume of corporate bonds and equities, stock market capitalization), insurance market (insurance premium) and credit market in Armenia (credits given both by banks and by credit organizations) on GDP have been estimated. Quarterly data of the above mentioned indicators for the period of 2006-2016 (2nd quarter) has been used for the estimation.

The abovementioned indicators are introduced in Annex 1 of current research in more details.

The statistical data of the variables, such as maximum and minimum values, mode, median, standard deviation etc. are also calculated and represented below.

Table no. 1 – Descriptive data of the variables

	Mean	Median	Max.	Min.	Std. Dev.	Kurtosis	Jarque-Bera
GDP	967335.1	939865.8	1292849.	609623.2	201256.2	1.816753	2.6150
INVEST	270566.8	258953.0	453214.8	172889.6	42040.02	10.48977	126.76
NX	195357.6	211427.8	263654.9	68999.86	48794.37	2.534894	3.9787
CREDIT_VOLUME	1245667.	1145989.	2398208.	214275.5	731692.8	1.580979	3.6704
INS_PREMIUM	4852.733	3863.205	10413.81	627.3207	3316.942	1.406327	4.8598
GB_ISSUE_VOLUME	27756.03	28108.78	76853.53	7545.829	13437.26	5.581743	16.950
GB_SEC_VOLUME	32289.24	32712.33	71550.48	9922.766	14810.04	3.318675	3.8999
GB_SEC_YIELD	10.90182	11.87166	15.11553	5.930609	2.822473	1.900099	3.7796
MARKET_CAP	58090.86	53243.92	121562.4	19503.78	25511.38	3.293613	3.9135
STOCK_VOLUME	702.1253	90.35745	14743.16	0.811549	2336.500	32.66948	1745.2
CBOND_VOLUME	635.8990	470.6450	3682.420	0.000000	710.1188	10.94740	158.35

Source: author's calculation

Table no. 1 shows the average value of GDP which equals to 967335.1. The value of median is below the average, leading to a positive skewness. This fact indicates, that most observations have a median value below the average, but there are also some observations, such as government bond market indicators, higher than the average, which generates the downward skewed distribution. Taking into consideration standard deviation values of the variables, the higher standard deviation has CREDIT_VOLUME. Standard deviation of GDP is also among the highest, which means that GDP varied mostly over the specified period of time. This indicator informs about the level of the economic development of the country. The variations of other indicators are relatively small.

4. CORRELATION ANALYSIS

Correlation analysis has two main objectives: first of all, to identify whether the variables are correlated or not and the direction thereof, second, to reveal possible multicollienarity issues between variables, which significantly reduces the quality of the regression model. So, if multicollienarity occurs, one or more correlated variables should be omitted from the model.

Before performing a regression analysis, we have conducted a correlation analysis of the abovementioned indicators, the results of which are presented in Annex 2 of this research.

The correlation analysis highlights the fact, that GDP is significantly (in 50% significance level) correlated with consumer and government spendings, credit volumes offered both by banks and credit organizations, insurance premiums, indicators describing government bond market and stock market capitalization. At the same time, it is worth to mention, that the relationship is positive in case of all above mentioned factors.

According to the correlation analysis, the most significant impact on GDP has the credit market. Particularly, the correlations between credit volumes (both given by banks and credit organization), bank credits, credit organization credits and GDP are 0.970, 0.969 and 0.977, respectively.

Compared with the indicators characterizing the securities market in Armenia (excluding stock market capitalization), the impact of the factor characterizing the insurance market on GDP is more significant. Particularly, the correlation between insurance premiums and GDP is 0.798.

As for the correlation between indicators characterizing securities market and GDP, the most significant correlation for about 0.9 is shown between market capitalization and GDP. GDP is also significantly correlated with government bond market factors, particularly the

correlations between the issue volume, trade volume, yield and GDP are 0.564, 0.680, 0.705, respectively. As for the trade volumes of corporate bonds and equities, their impact on GDP is not significant, according to the correlation analysis.

Thus, according to the correlation analysis, GDP is significantly correlated with the indicators characterizing credit, insurance and government bonds markets of Armenia, while the impact of the indicators, characterizing corporate bonds and equity markets of Armenia, is not significant. The latter, perhaps, is the consequence of underdevelopment of the Armenian corporate securities market. However, discussing the impact of Armenian securities market on GDP, it should be noted that the impact can't be distinct, due to the primary and secondary segments of securities market, indicators of which impact on GDP through different channels. Thus, the impact of the primary market is straightforward, since the issuers attract funds through the primary market creating new value. We can't say the same about the secondary market, the influence of which on GDP is indirect.

However, it is worth to mention, that as of the end of Q2, 2016 Bank credit-to-GDP ratio exceeded 40%, government bonds' issue volume to GDP ratio stood at 7.3%, whereas insurance premium to GDP ratio was only 0.58%. As for the corporate securities market indicators, volume of stocks and corporate bonds traded relative to GDP was less than 0.1%. Under such circumstances, it is obvious that the impact of Armenian corporate securities market on GDP can't be significant, and, at the same time, a significant correlation of insurance premiums to GDP is quite disputable, given the low share of it in GDP.

Moving forward to the multicollinearity issue of the variables, we can state that such issue is revealed between GDP expenditure components and some financial market indicators. Particularly, consumer and government spending are highly correlated with credit market indicators, having correlation coefficient of more than 0.95 (Annex 2). In addition, GDP expenditure components are highly correlated with market capitalization: the correlation coefficient is 0.94. Objectively, high correlation coefficient can be seen between consumer and government expenditures also, as well as between credits given by banks and by credit organization: 0.908 and 0.985, respectively.

Based on the abovementioned multicollinearity issues and aiming to have a high-quality model, we have omitted expenditure components of GDP from it. Otherwise, that would cause a decrease in the significance level of financial market indicators (caused by multicolienarity issue). At the same time, in order to solve multicollinearity issues between the credits given by banks and by credit organizations, total volume of credits has been calculated (as the sum of credits given both by banks' and credit organizations) and used.

As for the correlations between other indicators, it's worth to mention, that their correlation coefficients are less than 0.9, resulting in no multicollinearity issue for those cases.

5. REGRESSION ANALYSIS

The model estimating the impact of different segments of financial markets on GDP in Armenia will be the following:

$$GDP = f(INVEST, NX, CREDIT\_VOLUME, INS\_PREMIUM, GB\_ISSUE\_VOLUME, GB\_SEC\_VOLUME, GB\_SEC\_YIELD, MARKET\_CAP, STOCK\_VOLUME, CBOND\_VOLUME)^{*} \quad (1)$$

*Model for estimating the impact of different segments of financial markets on GDP in Armenia. Prior to conducting the OLS regression analysis the seasonality of the datasets has been removed by the tool Census X-13. The regression analysis was conducted via Eviews software package with the useof OLS technic.

The table below (Table no. 2) introduces main results of the OLS regression analysis (for more details please see the Annex 3 of this research).

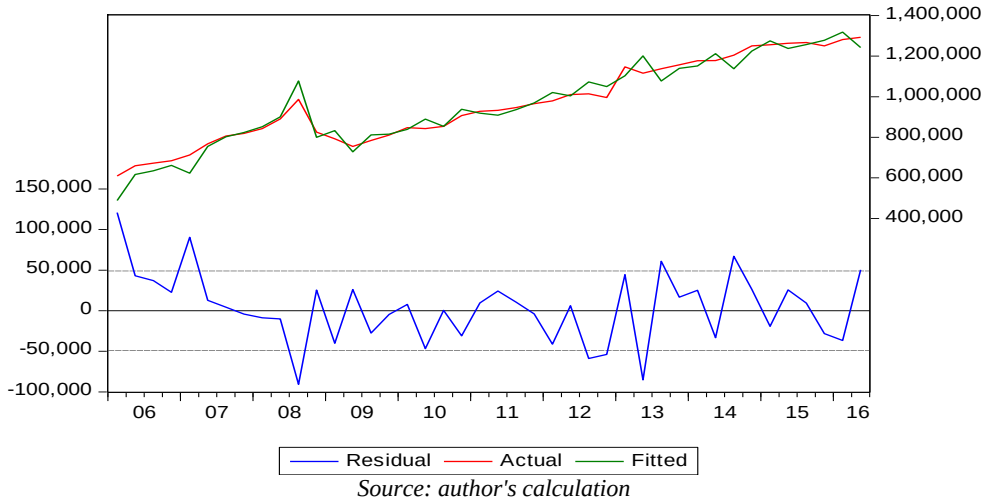
Table no. 2 – Main results of OLS regression analysis

Dependent Variable	Independent variables	Coefficient	P-value	R^2
GDP	Total Investments	2.067490	0.0000	0.953766
	Net export	-0.508027	0.0558	
	Total credits	0.251858	0.0000	
	Insurance premium	-0.617082	0.9162	
	Issue volume of government bonds	-3.145645	0.0085	
	Trade volume of government bonds	3.011253	0.0035	
	Yield of government bonds	15768.93	0.0082	
	Market capitalization	-0.033444	0.9774	
	Trade volume of stocks	7.297897	0.0644	
	Trade volume of corporate bonds	12.59048	0.3563	

Source: author's calculation

As can be seen from the abovementioned table, R squared equals to 0.95 for the derived model, which means, that GDP at 95% is explained by the independent variables used in the model. Moreover, more than 50% of the independent variables are significant at 5.5% level of significance which also stands for the quality of the model.

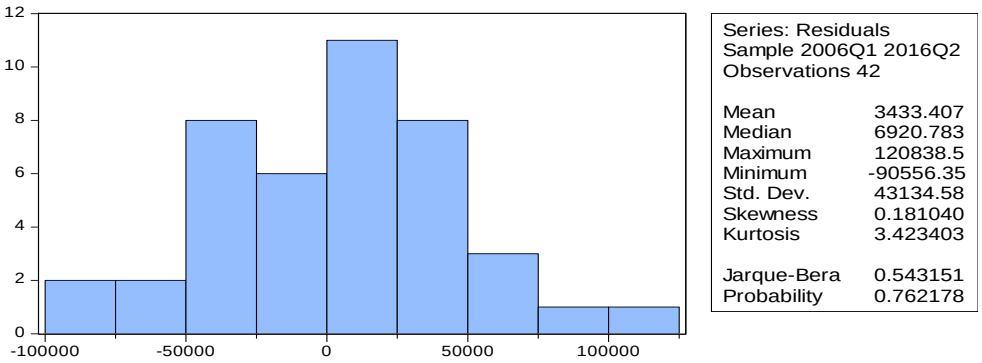
The model's credibility is also evidenced by the Figure no. 1 presented below, which shows the distribution of model's residuals. According to that, residuals are fluctuating between ± 50,000 and deviation beyond the range is temporary.



Source: author's calculation

Figure no. 1 – Distribution of actual, fitted values and residuals of the model

The residuals are also distributed normally, which can be seen from the Figure no. 2 presented below.



Source: author's calculation

Figure no. 2 – Results of Histogram - normality test describing the normality of the residual's distribution

Another credible evidence of the model can be stated by the absence of heteroscedasticity and serial correlation. The results of mentioned tests can be found below, in Tables no. 3 and no. 4, respectively.

Table no. 3 – The results of Breusch-Godfrey serial correlation test

Parameter	Value
F-statistic	1.507338
Obs*R-squared	3.587454
Prob. F(2,30)	0.2378
Prob. Chi-Square(2)	0.1663

Source: author's calculation

Table no. 4 – The results Breusch-Pagan-Godfrey heteroscedasticity test

Parameter	Value
F-statistic	0.599515
Obs*R-squared	6.806199
Scaled explained SS	4.890273
Prob. F(10,31)	0.8019
Prob. Chi-Square(10)	0.7436
Prob. Chi-Square(10)	0.8984

Source: author's calculation

In order to check the significance of the model, VIF test also has been conducted, results of which evidence the absence of the multicollinearity in the model (test results are presented below, in Table no. 5).

Getting back to the P-values of the independent variables and accepting significance level of 5%, it can be concluded, that the impact of total investments, net export, total credits and indicators characterizing government bond market on GDP is significant. As for the insurance premiums and indicators characterizing corporate securities market, their impact on GDP is not significant at the current 5% significance level.

Table no. 5 – The result of VIF test for multicollinearity

Variable	VIF	1/VIF
credit_volume	19.6	0.051018
market_cap	15.22	0.065702
gb_sec_yield	6.56	0.152428
ins_premium	6.4	0.156154
gb_issue_volume	4.65	0.214861
gb_sec_volume	4.33	0.230839
nx	2.77	0.360756
invest	2.19	0.456968
cbond_volume	1.72	0.580633
stock_volume	1.58	0.631135
Average VIF |	**6.5**	

Source: author's calculation

Credit market, which is an indicator of banking system, has the most significant impact on GDP, compared with other financial market segments of Armenia. It is significant with 5% significance level and it's coefficient equals to 0.25. Perhaps, this might be a result of developed banking system and high value of credits-to-GDP ratio, which exceeds 40%.

The regression analysis also highlights the significant impact of government bonds markets in Armenia. Particularly, all government bonds market indicators used in the model are significant at 5% significance level.

There is no significant relationship between GDP and insurance, as well as corporate securities markets (P-value is greater than 0.05). This can be explained by the fact that both corporate securities (both equities and corporate bonds) and insurance markets are underdeveloped in Armenia, which can be evidenced with their small shares in GDP (it does not exceed 1%).

After revealing the significance of independent variables, the direction and size of the impact shall be discussed. For that reason, first of all we will represent the model in digital form:

$$\begin{gathered} GDP = 2.07 \times INVEST - 0.5 \times NX - 3.14 \times GB\_ISSUE\_VOLUME + \\ + 3.01 \times GB\_SEC\_VOLUME + 15768.93 \times GB\_SEC\_YIELD - \\ - 0.03 \times MARKET\_CAP - 0.61 \times INS\_PREMIUM + 7.97 \times STOCK\_VOLUME + \\ + 12.59 \times CBOND\_VOLUME + 0.25 \times CREDIT\_VOLUME \end{gathered} \quad (2)$$

The strongest impact on GDP has the Government bond market of Armenia, particularly, the impact of issue volume of government bonds is negative and equals to -3.145. The negative impact of government bonds issue volume on GDP may be explained by the main purpose of government bonds allocation, that is to cover the state budget deficit. It means, that there are relatively frequent issues of government bonds during the contraction phase of the economy, in order to maintain the state debt and stipulate further economic growth. As for the impact of Government bond trade volume, it is positive and equals to 3.011.

The coefficients of the total investments and net export are also relatively high: 2.06 and -0.5, respectively.

As for the last significant variable - total credit, its impact on GDP is relatively low, despite the high level of significance: its coefficient is positive and equals to 0.25.

Comparing with the results from existing studies, it can be pointed out, that the evidence coming from the foreign literature is not always in line with the results achieved for Armenia. Particularly, the link between equities market and economic growth is emphasized in several researches (Garretsen *et al.*, 2004; Rajan and Zingales, 1996; Levine and Zervos, 1998) whereas we haven't revealed significant impact of Armenian equities market on economic growth. At the same time, we share the opinions of the economists Bagehot (1873), Schumpeter (1912) and Arestis *et al.* (2001) who argue, that the banking system has the most significant influence on economic growth.

Moreover, we revealed a strong relationship between government bonds market and economic growth and no relationship between insurance market and economic growth, which can be considered as a new insight derived from our study.

6. CONCLUSION

Summarizing the results of international researches on interactions between financial markets (including securities market) and economic growth, as well as respective analysis conducted by us for Armenia, it can be pointed out that:

First, we can't share the opinion of economists, who argue that the equity market has significant role on economic growth. This can be true only for economies with developed equities market, whereas the countries with underdeveloped corporate securities market will not experience the impact of equities market on economic growth.

Second, the strongest impact on GDP has the government bond market. The highest is the impact of issue volume of bonds, which is negative and can be explained by the fact that there are relatively frequent issues of government bonds during the contraction phase of the economy, in order to maintain the state debt and stipulate further economic growth and vice versa.

Third, correlation as well as regression analysis have led to conclusion, that insurance market does not impact on economic growth in Armenia (P-value is greater than 0.05). This also can be explained by the fact, that insurance market is not developed in Armenia, as it is in case of equities market.

Fourth, results achieved in our research are in line with results of research conducted by Arestis *et al.* (2001), who argued that banking system has the most significant impact on economic growth. This is especially true for developing countries, such as Armenia, which has relatively developed banking system. Here we can conclude, that the statement of Demirguc-Kunt *et al.* (2011) stating that "the sensitivity of economic development to changes in the banking system decreases in parallel with economic development, while the sensitivity of economic development to changes in securities market increases as countries grow" works for Armenia.

To sum up, the evolving importance of the role of securities markets in economic growth is not yet demonstrated in Armenia, which, perhaps, is a result of absence of interaction between securities market and economy in Armenia. However, the importance of the role of securities markets in international practice and the steps for its further development once again come to prove, that the development of securities market has no alternative in ensuring stable and long-term economic growth in Armenia. Therefore, the development of Armenian securities, particularly the corporate securities market, can stimulate attraction of investments and further increase of economic growth.

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ANNEX 1

Indicators used to conduct the empirical research

Variable	Type	Indicator	Source	Description	Name in the model	Data type after seasonal adjustment
Dependent variable	Indicator describing the economy	GDP in market prices	National statistical service of RA		gdp	Logarithmic
Independent variable	Indicator describing the economy	Investments	National statistical service of RA		invest	Logarithmic
Independent variable	Indicator describing the economy	Net export	National statistical service of RA		nx	Logarithmic
Independent variable	Indicator describing the economy	Consumer spending	National statistical service of RA		consum_ spend	Logarithmic
Independent variable	Indicator describing the economy	Government spending	National statistical service of RA		gov_ spend	Logarithmic
Independent variable	Securities market indicator	Market capitalizatio n	NASDAQ OMX ARMENIA OJSC		market_ cap	Raw data
Independent variable	Securities market indicator	Stock value traded	NASDAQ OMX ARMENIA OJSC, Central bank of Armenia	Indicator includes stock trade volume both in stock exchange and in OTC	stock_ volume	Logarithmic
Independent variable	Securities market indicator	Corporate bonds value traded	NASDAQ OMX ARMENIA OJSC, Central bank of Armenia	Indicator includes corporate bond trade volume both in stock exchange and in OTC	cbond_ volume	Raw data
Independent variable	Securities market indicator	Government bonds value traded	NASDAQ OMX ARMENIA OJSC, Central bank of Armenia	Indicator includes government bond trade volume both in stock exchange and in OTC	gb_sec_ volume	Logarithmic
Independent variable	Securities market indicator	Government bond yield	NASDAQ OMX ARMENIA OJSC, Central bank of Armenia	Indicator includes government bond yield traded both in stock exchange and in OTC	gb_sec_ yield	Logarithmic
Independent variable	Securities market indicator	Issue volume of government bonds	Central bank of Armenia		gb_issue_ volume	Logarithmic
Independent variable	Credit market indicator	Credit given by Credit organization	Central bank of Armenia		org_ credit	Raw data
Independent variable	Credit market indicator	Banking credit	Central bank of Armenia		bank_ credit	Raw data
Independent variable	Credit market indicator	Total credit	Central bank of Armenia	Is credit given by both banks and credit organizations	credit_ volume	Raw data
Independent variable	Insurance market indicator	Insurance premium	Central bank of Armenia		ins_ premium	Logarithmic

ANNEX 2

Results of correlation analysis

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16
V1	**1.000**															
V2	0.964	**1.000**														
V3	0.956	0.998	**1.000**													
V4	0.933	0.934	0.908	**1.000**												
V5	-0.065	-0.199	-0.197	-0.189	1.**000**											
V6	-0.119	-0.246	-0.271	-0.095	-0.291	**1.000**										
V7	0.970	0.983	0.975	0.954	-0.259	-0.130	**1.000**									
V8	0.969	0.984	0.976	0.953	-0.263	-0.133	1.000	**1.000**								
V9	0.977	0.962	0.951	0.951	-0.200	-0.091	0.987	0.985	**1.000**							
V10	0.798	0.861	0.866	0.767	-0.288	-0.214	0.847	0.850	0.801	**1.000**						
V11	0.564	0.603	0.577	0.687	-0.096	-0.171	0.615	0.616	0.587	0.473	**1.000**					
V12	0.680	0.743	0.743	0.685	-0.385	-0.115	0.744	0.747	0.699	0.775	0.646	**1.000**				
V13	0.705	0.778	0.758	0.823	-0.178	-0.272	0.771	0.774	0.712	0.656	0.795	0.655	**1.000**			
V14	0.079	0.090	0.071	0.183	0.001	-0.027	0.106	0.100	0.185	-0.086	0.189	-0.054	0.043	**1.000**		
V15	0.173	0.153	0.176	0.017	-0.140	0.038	0.189	0.188	0.199	0.037	-0.039	-0.001	-0.086	0.053	**1.000**	
V16	0.900	0.850	0.821	0.944	-0.108	-0.006	0.902	0.899	0.930	0.657	0.701	0.603	0.746	0.270	0.147	**1.000**

where: V1: GDP; V2: TOTAL_SPEND; V3: CONSUM_SPEND; V4: GOV_SPEND; V5: INVEST; V6: NX_NS; V7: CREDIT_VOLUME; V8: BANK_CREDIT; V9: ORG_CREDIT; V10: INS_PREMIUM; V11: GB_ISSUE_VOLUME; V12: GB_SEC_VOLUME; V13: GB_SEC_YIELD; V14: CBOND_VOLUME; V15: STOCK_VOLUME; V16: MARKET_CAP.

Source: author's calculation

ANNEX 3

Results of regression analysis

Dependent Variable: GDP — Range: 2006Q1 2016Q2
Method: OLS — Number of Observations: 42

Variable	Coefficient	Std deviation	t-Statistic	Prob.
INVEST	2.067490	0.179604	11.51140	0.0000
NX	-0.508027	0.256012	-1.984386	0.0558
GB_ISSUE_VOLUME	-3.145645	1.120920	-2.806306	0.0085
GB_SEC_VOLUME	3.011253	0.953412	3.158397	0.0035
GB_SEC_YIELD	15768.93	5591.552	2.820134	0.0082
MARKET_CAP	-0.033444	1.168883	-0.028612	0.9774
INS_PREMIUM	-0.617082	5.820558	-0.106018	0.9162
STOCK_VOLUME	7.297897	3.809847	1.915535	0.0644
CBOND_VOLUME_NS	12.59048	13.45088	0.936034	0.3563
CREDIT_VOLUME	0.251858	0.045092	5.585362	0.0000
R-squared	0.953766	Mean dependent var		967335.1
Adjusted R-squared	0.940763	S.D. dependent var		201256.2
S.E. of regression	48983.21	Akaike info criterion		24.64060
Sum squared resid	7.68E+10	Schwarz criterion		25.05433
Log likelihood	-507.4526	Hannan-Quinn criter.		24.79225
Durbin-Watson stat	1.871836			

Source: author's calculation

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