The Causality Direction Between Financial Development and Economic Growth. Case of Albania

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Abstract – There is an ongoing debate about the fact that is the financial development that cause economic growth or the vice versa. This paper begins with a review of economic theory for the causality relationship between financial development and economic growth. Later using a time series data which employed quarterly data from 2002 – 2012 we will try to investigate about this relationship in the case Albania. Based on that analysis we show that in Albania exist a bi – directional causality relationship between financial development and economic growth.

Index Terms – financial development, economic growth, "supply leading" hypothesis, "demand following" hypothesis, bi – directional causality

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1 Introduction

Financial system, which is playing a crucial role in channeling funds to productive users and the allocation of risk, is subject of various theoretical and empirical studies. Various economists, as Kasekende (2008) support the argument that countries characterized by efficient financial systems have faster economic development and vice versa. Most economists define economic growth as a positive change in national income or the level of production of goods and services by a country during a given period of time. For a long time, in terms of perfect markets, the financial system was not thought to play an important role in economic growth. In developing markets and with the creation of imperfections, this view was rejected. A sustained and long-run economic growth depends on the ability to increase the rate of accumulation of human and physical capital, the allocation of factors of production and technological progress in the traditional way, the financial system is associated with the first two. Also, it contributes even to technological progress. During periods of rapid technical progress, the financial system is necessary to facilitate technological advantages in capital formation so countries can benefit from this development in terms of a high economic growth rate. However, there is another group of economists as Lucas (1988) and Stern (1989) who argue that financial development plays a very small role on growth.

Although it is believed that the development of the financial system that causes economic growth, it is difficult to determine because different studies conducted in different periods have different results. This makes that the causal relationship between them, should not be defined because it is specific for different countries, depending on economic and financial conditions.

2 Literature Review

It is an undeniable fact that technology plays an important role in the economic development of a country. On the other hand, technological process requires huge investments, which are financed by the financial system, placing it in the middle of economic development process. Despite economists agree on the existence of a positive relationship between financial development and economic growth, what remains unclear is the causality relationship between them. Based on the literature of financial development and economic growth there are three possible hypotheses about causality relationship. If it is financial development causes economic growth, then this hypothesis is known as the "supply leading " because it is assumed that financial development increases the supply of financial services thereby stimulating economic growth . Similarly, if economic growth resulting in increased demand for financial services, which in turn promotes the development finance as known as the hypothesis of "demand following". It may also happen that financial development and economic growth also cause each - other, it is theoretically known as "bi –directional causality" hypothesis. Identifying the direction of this relationship is important because it has important implications for policy development, and thus helps to explain the fact why countries are characterized by different rates of growth.

Schumpeter (1911) has supported the view that the development of the financial system and its efficient operation through efficient allocation of savings and financing successful businesses facilitates technological innovation causing an increase in the overall level of

production. McKinnon (1973) and Shaw (1973) saw financial development as a strategy to achieve rapid economic growth. They argued that the development of the financial system pushes individuals to increase savings and stimulate financial intermediation, thus increasing the supply of credit to the private sector. This in turn will stimulate investment and growth. King and Levine (1993) analyses 77 developing and developed countries. Empirical results show that financial development not only following economic growth, but it's also important for economic growth. Demirguc - Kunt and Levine (2008) found that countries with financial developed system tend to develop quickly economically. Precisely they noted that financial intermediations, as well as financial markets are important for economic growth. Moreover, each of them is positively associated with economic growth, so policy makers should not only give priority to financial sector policies, but should be careful to policies that define financial development as a mechanism for promoting economic growth. On the other hand, Robinson (1952) based on the neoclassical growth model stressed that the financial system has a very small impact on investment and physical capital, and thus on economic growth. He thought that was the economic activity leading by encouraging financial institutions to finance companies. Also, Lucas (1988) believed that the roles of financial factors were overestimated because the financial system responds passively to industrialization and economic growth. Liang and Reichert (2006) to assess the relationship between financial development and economic growth in developing and developed countries were based on the model presented by Odedokun (1996). They concluded that in both cases was economic growth that causes financial development, but this relationship appeared stronger in the case of developing countries. Despite the above hypothesis, Patrick (1966) noted that in the early stages of growth, financial development through "supply leading" hypothesis promotes the formation of real capital. Innovation and development of new financial services create new opportunities for investors and savers, creating the conditions for sustainable economic growth. But while financial development and economic growth continues, characteristics of "supply leading" hypothesis begin to diminish, and gradually begin to emerge and dominate characteristics of "demand following" hypothesis. Demetriades and Andrianov (2004) argue that financial development through creating conditions for new opportunities stimulates economic growth. On the other hand, economic growth means increased savings in the banking sector, thus increasing credit to the private sector (a financial development indicator).

3 The Model

The early econometric models of economic growth dating back to Barro (1991), where the depended variables do not included any indicator of financial development. Just two years later, King and Levine (1993) expand the model

presented by Barro including four financial development variables. Including in their analysis of a sample of 80 countries, with the help of a cross - section analysis, they had concluded that financial development cause economic growth.

To study the causality between financial development and economic growth, in econometric research despite cross - section analysis, have recently begun to dominate the panel – data and time series analysis. Because different analysts have used different econometric methods associated with various analyzed countries, different time periods or depended variables; has made the empirical results to be different.

To analyze the causality between financial development and economic growth, in this paper it will be used a time – series analysis because it is focused specifically in the case of Albania.

3.1 The Data

Another important issue is defining financial development and economic growth indicators, which then will be included in the model. In the papers presented by different authors, are used terms such as financial intermediation, finance, financial development, financial system, financial markets, etc... But despite this, all use indicators related to financial intermediation carried the banking system. This, because the banking system has a primary importance in the financial system, as well as in developing countries is the only one that attracts private savings to a large extent.

Related financial development, monetary aggregates provide some possible indicators, among them De Gregorio and Guidotti (1995) suggested the use of less liquid aggregates like M2 or M3 to GDP. Since M3 aggregate depends more on other than on financial development indicators (Dushku, 2010) and because in most literature is used more M2 aggregate, then in this paper will be use the latest indicator. This indicator measures the degree of monetization in an economy, thus reflecting the actual size of the financial sector.

In developing countries such as Albania, the M2 aggregate is represented by money outside the banking system. In this way, an increase of this indicator may reflect a growing in using more money. For this reason, Demetriades and Hussein (1996) proposed using the deposit rate to GDP as a better representative of financial development.

As financial development indicator can be used even the ratio of domestic credit to GDP. This indicator, which includes claims of banking system against public sector, private sector and individuals, occupies the largest share in the assets side of the balance sheet of the financial system.

Domestic credit is divided in loans to private and public sector (Attention: We are analyzing only the credit and not total borrowing, which includes borrowing by government securities). Of the two, private sector credit is what generates more investment and as a result a greater productivity. Given this reasoning, the fourth indicator that will be used to directly measure the financial intermediation is the ratio of private sector credit to GDP

As mentioned above, the greater weight of domestic credit goes to the private sector. From this we can say that the ratio of private sector credit to total domestic credit reflects the internal distribution of assets in the economy, and thus made it the last indicator to be used for measuring financial development.

Based on the definition of economic growth, a positive change in national income or the level of production of goods and services by a country over a period of time, as its indicator will be used the GDP growth estimate basic prices.

The data set employed quarterly data on all indicators mention above from 2002 – 2012

3.2 The Methodology

To test the causality between financial development and economic growth this paper will be based the method introduced by Granger in 1969. Under this approach, economic growth is caused by financial development if it can be better predicted by past values of financial development and economic growth.

$$GDP(t) = \sum_{j=1}^{p} A_{11j}GDP_{t-j} + \sum_{j=1}^{p} A_{12j}FIN_{t-j} \\ + u_t \tag{1}$$

Also, financial development will be caused by economic growth if it can be better predicted by past values of economic growth and financial development.

$$FIN(t) = \sum_{j=1}^{p} A_{21j}FIN_{t-j} + \sum_{j=1}^{p} A_{22j}GDP_{t-j} \\ + v_t \tag{2}$$

In equations (1) and (2), p is the maximum number of observations in the sample, matrices A containing model coefficient and ut vt residuals (predicted errors) for each time series.

Based in this method, based hypotheses to be tested were:

H0: A12j = 0; for j = 1...p this hypothesis implies that financial development does not cause growth

H1: A22j = 0; for j = 1...p this hypothesis implies that economic growth does not cause financial development

If the first hypothesis is rejected, indicate that financial development causes economic growth, thus supporting the hypothesis of "supply-leading". Also, the rejection of the second hypothesis suggests that economic growth causes financial development confirming the hypothesis of "demand following". If both hypotheses are accepted then the variables are independent of each - other, but if they rejected both simultaneously, then we can say that there is a bi – directional causality between financial development and economic growth.

If the variables included in the model are I (1) and cointegrated, the traditional Granger Causality test is based on Fisher's values can't be used due to non-normal distribution. In this case, an accurate estimate will be obtained from the evaluation of the VECM model (Vector Error Correction Model). The model limits the long run behavior of endogenous variables in order to congregate towards their cointegrated relationship

The VECM model can be presented as follows:

$$\Delta GDP_{t-1} = \sum_{j=1}^{p} A_{11j}\Delta GDP_{t-j} \\ + \sum_{j=1}^{p} A_{12j}\Delta FIN_{t-j} \\ + \emptyset_1 \varepsilon_{1t-1} + u_t \tag{3}$$

$$\Delta FIN_{t-1} = \sum_{j=1}^{p} A_{11j}\Delta FIN_{t-j} \\ + \sum_{j=1}^{p} A_{12j}\Delta GDP_{t-j} \\ + \emptyset_2 \varepsilon_{2t-1} + v_t \tag{4}$$

Where ε_{1t-1} and ε_{2t-1} represent errors time lags resulting from the following cointegrated equations:

$$GDP_t = \alpha + \psi FIN_t + \varepsilon_{1t} \tag{5}$$
$$FIN_t = \delta + \varphi GDP_t + \varepsilon_{2t} \tag{6}$$

In this model, the causality relationship between financial development and economic growth follows the steps below:

The first step is testing if each of the variables included in the model, are stationary and cointegrated in the same order. For this test will be used ADF test (Augmented Dickey - Fuller), which is based on the evaluation of the following three regressions:

$$\Delta y_t = \delta y_{t-i} + u_t \tag{7}$$
$$\Delta y_t = \alpha + \delta y_{t-1} + u_t \tag{8}$$
$$\Delta y_t = \alpha + \beta T + \delta y_{t-1} + u_t \tag{9}$$

As noted, equation (7) implies neither constant nor trend variable, equation (8) includes only constant, and finally,

equation (9) also includes constant and trend. Are these gradually add-ons that eliminate a possible autocorrelation.

In this case, the basic hypothesis is that the series are not stationary ($\delta = 0$) and will be rejected if δ is statistically significant ($\delta \neq 0$). If statistical values calculated by ADF test are greater than the McKinnon critical value, the basic hypothesis is accepted. If the series are not stationary in their levels, then they can return into stationary taking their first difference. After all variables are returned in stationary I (1), then the next step has to do with testing for cointegrated connection between variables. This is accomplished through the methodology presented by Johansen (1988) and Johansen and Juselius (1990) which is based on a VAR model presented as follows:

$$y_t = \mu + A_1 y_{t-1} + \cdots + A_p y_{t-p} + \varepsilon_t \qquad (10)$$

This can be rewritten in the form:

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \qquad (11)$$

Where

$$\Pi = \sum_{i=1}^{p} A_i - I \text{ dhe } \Gamma_i = -\sum_{j=i+1}^{p} A_j \qquad (12)$$

In equation (12), Γ_i and Π represent vectors involving respectively matrices of short and long run coefficients.

This method to determine the order of cointegration is based on two tests: trace statistic and maximum eigenvalue. If variables are cointegrated, this indicates the existence of a long-run causality relationship and thus can be proceed with testing direction defined by equations (1) and (2).

4 Empirical Results

4.1 Augmented Dickey – Fuller

Table 1. ADF -test results

Time Series	Level			First difference		
	Intercept	Intercept & trend	None	Intercept	Intercept & trend	None
Domestic Credit	0.3018*	0.9900*	0.4547*	0.0002	0.0007	0.2186*
Private Credit	0.2393*	0.9885*	0.4509*	0.0003	0.0009	0.1986*
M2 Aggregate	0.9882*	0.7602*	1.0000*	0.0000	0.0000	0.2491*
Deposit	0.8864*	0.6064*	0.9659*	0.0000	0.0001	0.0001
Private Credit to Domestic Credit	0.6475*	0.1537*	0.3246*	0.0000	0.0000	0.0000
GDP	0.5584*	0.9950*	1.0000*	0.0000	0.0000	0.1973*
Note * means that H₀ hypothesis of unit root is accepted, series are not stationary						

From the above table, we can see that none of the variables is stationary, but with the help of the first difference, all series return into stationary.

4.2 Johansen and Juselius Cointegration Test

Table 2a. Unrestricted Cointegration Rank Test (Trace)

		Eigenvalue	Trace Statistic	P- value	Results
GDP	None	0.454438	24.33785	0.0018	
Domestic Credit	At most 1	0.033941	1.312145	0.2520	cointegrated
GDP	None	0.454917	24.31837	0.0018	
Private Credit	At most 1	0.032597	1.259311	0.2618	cointegrated
GDP	None	0.498365	45.98233	0.0000	
M2 Aggregate	At most 1	0.405586	19.76681	0.0000	not cointegrated
GDP	None	0.508670	35.91509	0.0020	
Deposit	At most 1	0.314562	12.46401	0.0510	cointegrated
GDP	None	0.554474	39.39936	0.0000	
Private Credit to Domestic Credit	At most 1	0.319835	12.71884	0.0004	not cointegrated

Table 2b. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

		Eigenvalue	Trace Statistic	P- value	Results
GDP	None	0.454438	23.02571	0.0016	
Domestic Credit	At most 1	0.033941	1.312145	0.2520	cointegrated
GDP	None	0.454917	23.05906	0.0016	
Private Credit	At most 1	0.032597	1.259311	0.2618	cointegrated
GDP	None	0.498365	26.21552	0.0004	
M2 Aggregate	At most 1	0.405586	19.76681	0.0000	not cointegrated
GDP	None	0.508670	23.45107	0.0121	
Deposit	At most 1	0.314562	12.46401	0.0510	cointegrated
GDP	None	0.554474	26.68052	0.0004	
Private Credit to Domestic Credit	At most 1	0.319835	12.71884	0.0004	not cointegrated

From the above tables it is observed that there is no cointegration between economic growth and the M2 aggregate, and between economic growth and the ratio of private credit to domestic credit. While has shown a positive cointegration between other financial development indicators and economic growth.

4.3 Granger Causality

Based on the results of cointegration test, assessment of causality direction between the not stationary and not cointegrated series will be obtained from the evaluation of the VAR model. The assessment of causality direction between not stationary and cointegrated series will be obtained from the evaluation of the VECM model. The following tables present the analogous results of the two models.

Table 3. Granger Causality test for stationary and not cointegrated series

	FD → EG probability	EG → FD probability
GDP - M2 Aggregate	0.1961*	0.7074*
GDP - Private Credit to Domestic Credit	0.3874*	0.2334*
Note * means that there is no Granger causality relationship		

Table 4. Granger Causality test for not stationary and cointegrated series

	p value for EC coefficient		p value for SR coefficient	
	EG	FD	EG	FD
GDP-Domestic Credit	0.0000	0.0017	0.0053	0.0089
Results	SR: bi - directional causality LR: bi - directional causality			
GDP-Private Credit	0.0452	0.0015	0.0069	0.0249
Results	SR: bi - directional causality LR: bi - directional causality			
GDP - Deposit	0.0005	0.0676	0.1983	0.2486
Results	SR: not evidenced any relation LR: FD caused EG			

5 Conclusions

Based on the above empirical results, we can say that in case of Albania there is a bi – directional causality between financial development and economic growth. This conclusion was reached even by Dushku (2010). Only in the case of deposits was verified the "supply leading" hypothesis. Results also show that there is no Granger causality relationship between economic growth and financial development when as indicator of financial development is used the M2 aggregate and the ratio of private sector credit to total domestic credit. This conclusion can be expected as in developing countries such as Albania, the M2 aggregate is represented by money outside the banking system than financial development. Also the greater weight of domestic credit goes to the private sector and it makes this ratio to be nearly the same at all times and therefore not expected to have an impact.

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