

Stock market – economy growth nexus in an emerging country. The case of Romania

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Abstract. *The accelerated development of emerging stock markets in recent decades, obstructed by the economic crisis of 2008 that has not lost its pulse in the European perimeter, led to reviving interests regarding the role of stock markets within economies. The aim of this paper is to identify the nature of the linkage between stock market and economic growth in Romania. Using the VEC model, we demonstrated that before the financial liberalisation and global crisis, the domestic environment led to stock market development, but after, the evolution of this component of the nominal economy was predominantly due to the international context.*

Keywords: emerging stock market, domestic economic development, international economy, VECM, economic crisis.

JEL Classification: E44.

Introduction

Irrespective of the nature of the national financial system, it is desired that the emerging stock markets to become viable and modern, able to support sustainable economic growth. Although stock market is considered the barometer of economic activity, it seems that the position of stock market in the economy is far from being ideal. Moreover, given the fact that the literature in the field provides diametrically opposite opinions related to the nexus stock market-economic growth, we decided to study the nature of this relation in Romania. In other words, the answers that we try to offer in the following pages concern, indisputably, the contribution of stock exchange development to the economic welfare of a nation in transition.

The results of our research demonstrate that, in the period 1997-2014, the stock market exerts a higher influence on economic growth than vice-versa. The explanation relies in the fact that this period covers the global crisis and financial liberalisation, which is synonymous with higher interdependencies between domestic stock market and external environment. In conclusion, Romanian stock market is more dependent on the international environment than on the national one, but, only starting with the end of 2006.

The remainder of this paper is structured as follows. Section 2 describes the literature review. Section 3 presents the data and the methodology used. Section 4 reports our empirical results. Section 5 concludes.

Literature review

Even though there is a wide literature in the field, there is no unanimous view about the direction of the linkage between economic growth and stock market development. After the start given by Schumpeter in his work "The theory of economic development", many partisans shared the idea that financial development is "a supplier of advance" (Goldsmith, 1969; Mckinnon, 1973; Shaw, 1973). A very important critical point of view is that of Joan Robinson. The author stated in her work, "The Generalisation of the General Theory and Other Essays" the reverse of Schumpeter hypothesis: economic development creates demand for financial instruments, and not vice versa. The list of pros and cons can continue endlessly, but one particular dispute is of great interest: the one between the two Nobel prizes of 1995 and 1990. Thereby, while Robert Lucas strictly opposed the direction financial development - real sector development, his opponent, Merton Miller embraced it.

However, at present, in the literature we find four different views, namely: a unidirectional relation that highlights either that economic growth promotes stock market development or vice versa, a bidirectional relation and, not least, no connections between this two variables.

Firstly, the authors Thorsten Beck and Ross Levine “strongly reject the notion that overall financial development is unimportant or harmful for economic growth” (Beck and Levine, 2004: pp. 440). In other words, they argue that stock market development have an important role in the process of economic growth for the 40 analysed countries. Another landmark study in the relation from stock market to economic development is the one of Levine (2005). The author used five functions and two channels to emphasize the connection from stock market to economy, demonstrating that more developed financial systems ease financing constraints, and hence, long-term economic growth. In addition, Yu et al. (2012) emphasised that, in undeveloped countries, Levine’s relation “positive finance-growth” on the short-run is non-existent or very weak because of the ill-enforced legal systems and political instability. However, the authors leave room for discussion by stating that, in these countries, this tandem is possible, for certain, but only on the long-run. This opinion is also shared by Cooray (2010) who argues that the stock market promotes the long-run growth for the 35 analysed developing countries. The study of Wu et al. (2010) also reinforces the long-run positive effect of stock market development on economic development in 13 EU countries. However, the authors insistently underline the short-term negative impact of stock market liquidity on economic development; the reason is intuitive: on the short-run, financial liberalization is always linked with speculative bubbles, excessive liquidity, financial crises, higher volatility and low growth.

Remaining in the same register, Choong et al. (2010) demonstrate that stock market development is a must in promoting economic growth, especially in the presence of private capital flows. However, they do not forget to clarify that this nexus is valid only after stock market has reached a certain minimum level of development. Also the studies developed by Liu and Hsu (2006), Rousseau and Sylla (2005), N’zue (2006) proved that the stock market development had positive effects on economic growth. To conclude, the supporters of this hypothesis argue their findings through: efficient allocation of capital, risk diversification, development of entrepreneurship, adoption of new technologies etc.

Second, the critical position states that the only possible direction is from economy toward stock market. From their perspective, economic growth drives demand for financial vehicles and, hence, stock market responds accordingly (Zang and Kim, 2007). In addition, the adherents of this idea assume that, especially in developing nations, optimizing resources allocation and corporate governance through the banking sector, and not stock markets, is materialized in economic development (Stiglitz, 1985; Stulz, 2000). Furthermore, according to Luintel, capital markets are considered as being responsible for increasing information asymmetry (Luintel et al., 2008).

Thirdly, at the confluence of the two above mentioned opinions, we find a bidirectional relation between capital markets development and economic progress. In this regard, Enisan and Olufisayo (2009) show that, in the case of four sub-Saharan African countries, economic growth demands greater stock market development and greater stock market activity induces economic growth. Also the authors Hondroyiannis et al. (2005) validate

the bidirectional relation between Greek real economic activity and stock market on the long-run, but they insist to mention that economic performance is only partially related to stock market's contribution.

Fourthly, in the literature we find a neutral viewpoint. We make a digression to add that this belief comes only from the studies of underdeveloped markets. Naceur and Ghazouani (2007) argue that the development of the overall financial system, therefore the stock markets also, is unimportant in the case of MENA region. Moreover, the authors highlight that the undeveloped financial sector can even hamper the economic growth in this area. Moreover, when Shirai (2004) addresses the role of Chinese stock market in the economic development by addressing the three functions, i.e. financing role, improving firms' performance and signalling information regarding issuers to public investors through stock prices she concludes: the stock market has contributed little to financing firms' investment, the privatisation has not helped firms to improve their performance and the informational infrastructure has to be improve. Therefore, she concludes that the true state of Chinese stock market is far from being developed and, since, for contributing to economic growth. For the new EU member states, Fink et al. (2005) points out that the "artificially" inflated stock market capitalisation by a large number of listed companies, whose shares were not traded at all can explain the underdevelopment of stock markets and their lack of influence on growth. In addition, Chakraborty (2010) did not find any support for impact of stock market development in enhancing economic growth in India.

In these circumstances, the literature reviewed on the topic offers a generous unexploited niche. First, we mention the divergence of existing opinions. Second, although the literature in the field is vast, the mainly targeted markets are those from Asia, and to a lesser extent those from Eastern Europe. In our research we try to cover these gaps.

Data and methodology

We attempt to highlight the linkage between stock market development and economic growth in the case of an emerging market – Romanian market. We assume that the connection between the nominal and the real economy is a bidirectional one.

The variables that will be studied are Bucharest Exchange Trading index (BET) and Gross domestic product (GDP) – total, constant prices, reference year 2000 prices and seasonally adjusted. Both aggregate values are expressed in the national currency. We chose BET index because is the reference index of Bucharest Stock Exchange (BVB).

The frequency of the data is quarterly and the time spam of the analysis is between Q3 1997 and Q4 2014. We chose this period for several reasons. First, BET index has been launched on 19th September 1997. Second, we could analyse the stages of BVB development: from a stock market not far from the embryonic status to a stock market

with the status of frontier market (by Financial Time Stock Exchange, Bloomberg's Morgan Stanley Capital International, Standard & Poors, and Dow Jones classifications) or emerging market (by International Monetary Fund classification).

The data is collect from Thomson Reuters Datastream. The two variables are expressed in logarithms in order to stabilize the variance, i.e. \ln_GDP and \ln_BET .

In our attempt to validate the bidirectional linkage between stock market and economic growth we use a Vector Error Correction Model (VECM).

The steps and notations of the equations below are following closely the methodology of Lutkepohl (2004).

Therefore, briefly, the steps are:

First we test the stationarity of the logarithmic series to find out their integration order. To achieve this we use of Augmented Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Phillips - Perron (PP) tests. The unit root analysis indicates that the two time series are integrated of order 1, $I(1)$.

Y_t is a VAR model of order p with the following standard form:

$$Y_t = v + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + u_t \quad (1)$$

where Y_t is a $(K*1)$ vector of endogenous variables, v is a $(K*1)$ vector of intercepts, A_1, \dots, A_p are the $(K*K)$ fixed VAR coefficient matrices, and $u_t = (u_{1t}, \dots, u_{kt})'$ is an unobservable error term. It is assumed to be a zero-mean independent white noise process with time-invariant, positive definite covariance matrix $E[u_t u_t'] = \Sigma_u$. K is the number of time series variables, in our case two. The vector of endogenous variables recursively arranged, Y_t , is represented as follows:

$$Y_t = \begin{bmatrix} \ln_GDP \\ \ln_BET \end{bmatrix} \quad (2)$$

Further, we investigate the presence of equilibrium relations between the two variables by using the Johansen trace test. In performing this test, we specify the deterministic term and the number of lags. Regarding the deterministic terms, a linear time trend is included properly because both series exhibit a trending behaviour. The number of lags is chosen based on the information criteria in the VAR model. By selecting the orders minimizing different model selection criteria, we perform cointegration rank tests for different numbers of lags, and we test if a VECM specification provides a good representation of the time series.

The presence of cointegration vectors involves the use of VECM with the following specifications:

$$\Delta Y_t = \alpha \beta' Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + \dots + \Gamma_{p-1} \Delta Y_{t-p-1} + CD_t + u_t \quad (3)$$

having r cointegrating vectors (in our case one) and the number of lags resulted in the VAR model minus one.

where α is a $(K \times r)$ matrix of loading coefficients, β' is the $(K \times r)$ cointegration matrix, Γ_j is a $(K \times K)$ short-run coefficient matrix for $j=1, \dots, p-1$ ($p = \text{VAR order}$), C is also a parameter matrix with suitable dimensions, D_t contains the deterministic variable (trend shift dummy).

To check if the fitted VECM provides a good representation of the time series set, we test against the residual autocorrelation, non-normality, ARCH effects, and parameter instability. Based on these tests we chose the model with the following specifications: one lag and one cointegrating vector, i.e. VECM(1,1).

The VEC analysis is finalized, in our case, with the error variance decomposition. We assume that the innovations are orthogonal and consider the VEC form with the following specifications:

$$\Delta Y_t = \alpha \beta' Y_{t-1} + \Gamma_1^* \Delta Y_{t-1} + \dots + \Gamma_{p-1}^* \Delta Y_{t-p-1} + C^* D_t^* + u_t \quad (4)$$

We report the empirical results in the next section.

Empirical results

Table 1 displays the variance decomposition of the two logarithmic series for the entire period that ranges from the third quarter of 1997 to the last quarter of 2014.

Table 1. Error variance decomposition (1997Q3-2014Q4)

Variable	Horizon	lown	lOTHER_VARIABLE
LN_GDP	1	100.0000	0.000000
	2	96.03413	3.965873
	3	88.75550	11.24450
	4	80.25741	19.74259
	5	71.89814	28.10186
	6	64.32975	35.67025
LN_BET	1	89.79560	10.20440
	2	89.73287	10.26713
	3	89.67429	10.32571
	4	89.61956	10.38044
	5	89.56840	10.43160
	6	89.52057	10.47943

Source: own computations.

From the table below we can draw several conclusions. First, it seems that there exists a bidirectional relation between national stock market and economic growth in Romania. Second, over all the period, the two variables are explained in the largest proportion by their own innovations. On one hand, the fact that stock market's influence is not the most important in determining economic development was an expected situation. In the analysed period we captured the evolution of Romanian stock exchange from a

“rudimentary” status to a more developed one, but still not with the status of “advanced and mature”. Moreover, given the fact that Romanian financial system is preponderantly a banking one, it is more likely that long-term benefits can be achieved mostly through the banking system progress and in a lesser extent through stock market progress (Mazur and Alexander, 2001; Singh, 2008). On the other hand, the fact that economic growth exerts a small impact on stock market is puzzling. Why the importance of economic growth is so small in stock market development? Moreover, why the importance of stock market innovations on economic growth is noticeably greater than vice-versa? Who is responsible for this abnormal situation?

We will try to answer to these puzzling questions, somehow discordant with the economic theory, by analysing a smaller period of time. We will employ the model on the interval between 1997Q3-2006Q3. The motivations for which we stopped at the end of the year 2006 are multiple. First, in September 2006, was listed the first international financial institution on Romanian capital market, fact that attracted the interest of international investors. Second, Romania became an EU member since January 2007 and the euphoria of foreign international investors could deter the connection between nominal and real economy. Third, in September 2006 the complete liberalization of the capital account occurred in Romania. Fourth, the remaining period covers also the global economic crisis. This is synonymous with an increased contagion of the national economy, and furthermore, a more sensitive domestic stock market to shocks from the international markets.

In Table 2 we display the empirical results for the subperiod 1997Q3–2006Q3.

Table 2. Error variance decomposition (1997Q3-2006Q3)

Variable	Horizon	lown	lOTHER VARIABLE
LN_GDP	1	100.0000	0.000000
	2	98.07887	1.921126
	3	95.63361	4.366392
	4	93.43007	6.569927
	5	91.62036	8.379641
	6	90.17615	9.823845
LN_BET	1	89.57005	10.42995
	2	77.54432	22.45568
	3	64.27809	35.72191
	4	52.94265	47.05735
	5	44.58681	55.41319
	6	38.80307	61.19693

Source: own computations.

The figures in the table above highlight also a bidirectional relation between stock market and GDP, but in terms of magnitude, the situation is different. In this subperiod, the nexus is as in text books: economic growth leads the development of domestic stock market, while the development of stock market exerts an influence on economic growth, but in a lesser extent. Here, is emphasised the fact that a financial institution develops dependently on the national economic environment.

However, the responsible for the results in Table 1 is the period between the end of the year 2006 and 2014; a period that for Romania means joining the trend of international markets: an increased number of foreign and institutional investors, an increased contagion caused by the big degrading. In this period, the feedbacks received from this component, the most dynamic of the nominal economy, acted as a seismograph for the economic evolution. Romanian stock market is considerably more sensitive to shocks from international environment. In this circumstance, we place ourselves near authors like Syllignakis and Kouretas (2010) and Pirovano (2012) who support that local stock markets are more sensitive to external shocks than to domestic ones.

Conclusions

The meaning of capital market – economy relation is not free of controversy, especially in an emerging economy in which the financial system is predominantly a banking one. In our analysis we tried to reveal the nature of the nexus between Romanian stock market development and economic growth. At first sight, when the whole period is studied, we find a bidirectional linkage between the nominal and the real economy, with more pronounced influence coming from stock market to economic growth. However, in attempting to answer the question which is the cause of this unexpected relation, we discovered that the external environment was the main driver of stock market movements beginning with the end of the year 2006.

When analysing the subperiod ranging between 1997Q3-2006Q3, the expected tandem between stock market and economic growth seems to make sense and veracity. In this sense, the connection between nominal and real economy is preponderantly unidirectional – from economy to stock market, but also with reverse impulses, although to a lesser extent. Therefore, the challenge comes, in the second subperiod, from contagion. In this time frame, the international interdependencies of Romanian stock markets, especially in turbulent times are greater, fact that determines international environment to be the driving force of domestic stock market.

These results have many implications. First, these conclusions are important to be known by investors in order to decide on the formation and diversification of the potential portfolio of financial assets. Second, given the fact that the establishment of stock exchange was and still remains an instrument of governments meant to facilitate, optimize and control economic development strategy, it is not allowed for a responsible decision maker to neglect positioning arising from analyses of this kind.

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