

The Role of Stock Market Development in Economic Growth: Evidence from Some Euronext Countries

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Abstract

In this article we explore causality relationship between stock market and economic growth based on the time series data compiled from 5 Euronext countries (Belgium, France, Portugal, Netherlands and United Kingdom) for the period 1995:Q1 to 2008:Q4. Granger causality test was used to find causality relationship between stock market proxies through market capitalization, total trade value, turnover ratio and economic growth (GDP and FDI). Causal relations were investigated for each country. The results of the study suggest a positive links between the stock market and economic growth for some countries for which the stock market is liquid and highly active. However, the causality relationship is rejected for the countries in which the stock market is small and less liquid.

Key words: Financial market, Economic growth, Granger causality, Euronext

1. Introduction

The link between financial stock market and economic growth becomes the field of research more and more explored. Luintel and Khan (1999) explored bi-directional causality test between financial development and economic growth; they found that the financial stock market affects economic growth. Levine and Zervos (1996a, b), in their research on the relationship between the stock market development and economic growth provided empirical evidence on the major theoretical debates about the linkages between stock markets and long-run economic growth using data on 41 countries from 1976 to 1993. Their result showed that stock market liquidity is positively and significantly correlated to current and future rates of economic growth, capital accumulation, and productivity improvements, even after controlling for economic, political and other factors. The main question is: Does Euronext stock market affects European countries' economic growth? According to what has been found in the literature, we can answer by positive correlation between financial stock market and economic growth measures by GDP and FDI (Rajan and Zingales, 1998; Levine, 1997; Bencivenga, 1991; Levine and Zervos, 1998; Spears, 1991; Wachtel, 2002; Trabelsi, 2002; Rioja and Valev, 2003; Paudel, 2005; Demetriades and Hussain, 1996). Levine and Zervos (1998) measure stock market development along various dimensions: aggregate stock market capitalization to GDP and the number of listed firms (size), domestic turnover and value traded (liquidity), integration with world capital markets, and the standard deviation of monthly stock returns (volatility). The results provide a strong and significant relationship between stock market development and economic growth. Numerous studies have been analyzing the role of stock markets in economic growth; most of them have focused on individual stock market, and some on merged market. This paper we will focus theoretically and empirically on the role of Euronext stock markets on the economic growth of the European countries (Belgium, France, Netherlands, Portugal and the United Kingdom). Section I presents a theoretical and empirical overview of stock market development and economic growth, while section II describes the Euronext stock market and section III provides an econometric assessment for the role of Euronext stock markets in economic growth during the period 1995-2008.

2. Financial stock market's impact on the economic growth: theoretical and empirical overview

Levine (1991) found a positive relation between financial stock market and economic growth by issuing new financial resources to the firms. Filer et al. (1999) examined stock market-growth nexus and exhibited positive casual correlation between stock market development and economic activity. Spears (1991) reported that in the early stages of development, financial intermediation induced economic growth. The financial stock market facilitates higher investments and the allocation of capital, and indirectly the economic growth. Sometimes investors avoid investing directly to the companies because they cannot easily withdraw their money whenever they want. But through the financial stock market, they can buy and sell stocks quickly with more independence. Levine and Zervos (1998) measured stock markets development along with different magnitude and have suggested strong statistically significant relationship between initial stock market development and subsequent economic growth. An efficient stock market contributes to attract more investment by financing productive projects that lead to economic growth, mobilize domestic savings, allocate capital proficiency, reduce risk by diversifying, and facilitate exchange of goods and services (Mishkin 2001; and Caporale et al, 2004). Stock market liquidity is still a reliable indicator of future long-term growth (Levine, 1996). Wachtel (2002); Trabelsi (2002); and Rioja and Valev (2003) have shown empirically that the financial system has a significant role and provides an important contribution to economic growth. Many other researchers argue that there is a positive correlation between financial development and economic growth (Goldsmith, 1969; Shaw, 1973; McKinnon, 1973 and King & Levine, 1993). They found that financial development is an important determinant of future economic growth of a country. Atje and Jovanovic (1989) found also a significant impact of the level of stock market development and bank development. Rajan and Zingales (1998) argued that stock market size is correlated to growth of financial dependent firms. Levine (1997) and Bencivenga (1991) believe that more liquid markets can create long-term investment and hence economic growth through lower transaction cost. Similarly, Atje and Jovanic (1993) concluded that stock markets have long-run impacts on economic growth. Paudel (2005) states that stock markets, due to their liquidity, enable firms to acquire much needed capital quickly, hence facilitating capital allocation, investment and growth. Luintel and Khan (1999) found also bi-directional causality relationship between financial development and economic growth in the sample of 10 countries.

Further, Levine and Zervos (1998) found strong statistically significant relationship between stock market development and economic growth. The result of Filer et al. (1999)' studies show that there is positive causal correlation between stock market development and economic activity. Rajan and Zingales (1998) argued also that stock market size is correlated to growth of financial dependent firms so that stock markets can give a big boost to economic growth (Levine, 1996; Garcia and Liu, 1999). Mauro (2000) concluded that stock market is a stable predetermining factor of economic growth in emerging economies. Levine (1997) showed the positive effect of the financial market on the economic growth in the figure 3.

3. Euronext Stock market

Based in Paris, Euronext was form following a merger of Amsterdam Stock Exchange, Paris Bourse and Brussels Stock Exchange in 2000. One year later, Euronext acquired the shares of the London International Financial Futures and Options Exchange. The Euronext was renamed Euronext Lisbon in 2002 after it merged with the Portuguese stock exchange Bolsa de Valores de Lisboa e Porto. In 2007, the Euronext became NYSE Euronext after the merger that has been made with New York Stock Exchange. The trend of the market capitalization was increasing from 1995 to 2007. Surprisingly it falls down on 2008 due to the financial crisis. The trend of the market capitalization is resumed in the figure 1. At the same time, the total trade value in those countries was also at its highest value in 2007. As we can see in the table 1, the total trade value was 256 in billion USD for the Belgium in 2007 but it falls to 211 in billion USD in 2008, 3,420 in billion USD for France in 2007 to 3,260 in billion USD in 2008, 144 in billion USD for Portugal in 2007 to 82 in billion USD in 2008, 1,803 in billion USD for Netherlands in 2007 to 1,140 in billion USD in 2008 and 10,324.50 in billion USD for United Kingdom in 2007 to 6,484.29 in billion USD in 2008.

The stock traded turnover ratio reached its highest value on 2008 for Belgium (76.09) and France (152.45), on 2007 for Portugal (122.20), Netherlands (207.80) and United Kingdom (270.10). Turnover ratio is used as an index of comparison for market liquidity rating and level of transaction costs. The trend of turnover ratio has been summarized in figure 2.

As we can see in figure 1, just after the merger of the Amsterdam Stock Exchange, Paris Bourse and Brussels Stock Exchange in 2000, the market capitalization of the concerned countries falls and stay down for three years (2000, 2001, 2002) and started increasing on 2003.

4. Data and methodology

4.1 Data

The data analyzed in this paper consists of economic and financial time series of some European countries. These include Gross Domestic Product (GDP) in current USD, Foreign Direct Investment (FDI), stock Total Traded Value (TTV), Turnover Ratio (TR) and Market Capitalization (MC). Stock market development is a multi-dimensional concept. It is usually measured by stock market size, liquidity, volatility, concentration, integration with world capital markets, and the legal rules (regulation and supervision) in the market (Garcia and Liu, 1999). Markets that are liquid should be able to handle heavy trading without large price swings (Levine, 1996). Data have been collected from Word Development Indicator Website. The data set of the study consists of 14 annual observations covering 1995 to 2008. In order to obtain more data for our statistics analysis, we used Boot, Feibes and Lisman (1967) derivative method to change annual data to quarterly data, using the following matrix:

$$\begin{array}{c|c|c|c|c|c}
 \begin{array}{c} x_1 \\ x_2 \\ x_3 \\ x_4 \\ \\ x_5 \\ x_6 \\ x_7 \\ \\ x_8 \\ \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \end{array} & & & \begin{array}{c} 3499 \\ 2697 \\ 1911 \\ 1173 \\ \\ 531 \\ 49 \\ -241 \\ \\ -339 \\ -277 \\ -119 \\ 87 \\ 309 \end{array} & \begin{array}{c} -1488 \\ -464 \\ 528 \\ 1424 \\ \\ 2128 \\ 2512 \\ 2512 \\ \\ 2128 \\ 1424 \\ 528 \\ -464 \\ -1488 \end{array} & \begin{array}{c} 309 \\ 87 \\ -119 \\ -277 \\ \\ -339 \\ -241 \\ 49 \\ \\ 531 \\ 1173 \\ 1911 \\ 2697 \\ 3499 \end{array} & \begin{array}{c} \\ \\ \\ \\ \\ t_1 \\ t_2 \\ t_3 \\ \\ \\ \end{array} \\
\end{array} = \frac{1}{9280}$$

4.2. Statistics

Granger Causality test

This study uses Granger-causality test proposed by Granger (1969) for testing statistical causality between stock market development and the economy growth. Granger causality may have more to do with precedence, or prediction, than with causation in the usual sense. It suggests that while the past can cause/predict the future, the future cannot cause/predict the past.

The hypothesis of interest is:

$$H_0: \text{Stock market does not Granger-causes economic growth.}$$

According to Granger, X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y. In other words, if past values of X statistically improve the prediction of Y, then we can conclude that X "Granger-causes" Y.

The hypotheses are tested in the context of VAR of the following form:

$$EG_t = \sum_{j=1}^n \alpha_j EG_{t-j} + \sum_{j=1}^n \beta_j SM_{t-j} + u_{1t} \quad (1)$$

$$SM_t = \sum_{i=1}^n \lambda_i SM_{t-i} + \sum_{j=1}^n \delta_j EG_{t-j} + u_{2t} \quad (2)$$

Where, EG is economic growth proxies by real GDP and FDI, and SM is stock market proxies by market capitalization trade value and turnover ratio. To test the hypotheses, the restricted F-test is applied, which is given by:

$$F = [(RSSR - RSSUR)/m] / [RSSUR/(n-k)] \quad (3)$$

Where, m is number of lagged terms and k is the number of parameters and RSSR and RSSUR are residual sum of squares of restricted and unrestricted models respectively. The appropriate lag length is established by Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC).

5. Results interpretation

The results suggest Granger causality relationship between financial market proxies and GDP for France and United Kingdom at 5% level of significance. It is also found that the market capitalization "Granger causes" Foreign Direct Investment at 5% level of significance. Further the null hypothesis that the stock market development does not "Granger

cause" economic growth is rejected at 10% level of significance. The results in tables 2, 3 and 4 indicate that the stock market development does significantly "Granger cause" economic growth in France and United Kingdom. Furthermore, it is found that stock market development does "Granger cause" but not significantly the economic growth of Netherlands. Nevertheless, our findings are negative for Belgium and Portugal, thus, even with the fact that must studies have shown, positive relationship between stock market development and economic growth, we believe that the results are only valuable for develop and liquid financial stock market. The proof has been shown in our results by the case of Belgium and Portugal. The results corroborate with existing empirical works (Levine 1997, Mauro 2000, De Gregorio and Guidotti 1995, GRSOY, C. T., Al-Aali, H. 2000). Bencivenga et al. (1996) maintain that equity markets can increase the average productivity of capital and, in turn, positively affect growth by decreasing liquidity costs.

6. Conclusions

The paper makes a modest contribution on the role of stock market development on economic growth in some Euronext countries for the period from 1995:Q1 – 2008:Q4. The results of the study suggest that the stock market growth and economic growth have long-run relationship. It reveals that the stock market liquidity do help to improve the future economy. The findings are consistent with existing theoretical framework as illustrated by several authors about the relationship between financial market development and economic growth. Nowbutsing (2009) also found that stock market development is an important ingredient for growth in Mauritius since the stock market gives a general idea of an economy health. However, the stock market development effect is not found significant for causation of economic growth in Belgium and Portugal. The causality has been observed only in the countries where the stock market is significantly active and highly liquid. More precisely, the causality runs from stock market proxies to economic growth shows a significant relation between market capitalization, total trade value and turnover ratio on the GDP and FDI. The funds raised by the corporate from the financial markets during the study period thus played an important role for the appreciable growth registered by the Euronext countries economy. Thus, the finding that changes in economic growth is "Granger caused" by changes in financial stock market proxies is important in the sense that it supports to justify the leading role of the stock market in determining economic activities even in developed countries like France and United Kingdom. This study has been constrained because the causality used in the study is "Granger causality". Thus, the need of further research is obvious in order to get more evidence about the bi-directional relationship between the stock markets and economic growth in Euronext countries.

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Table 1: Stocks traded, total value (in billion current US\$)

Date	Belgium	France	Portugal	Netherlands	United Kingdom
1995	15.25	365.00	4.23	248.61	510.13
1996	26.12	277.00	7.15	339.50	578.47
1997	29.71	403.00	20.93	284.87	829.13
1998	55.36	591.00	47.58	420.20	1167.38
1999	59.13	788.00	40.80	478.44	1377.86
2000	38.01	1080.00	54.37	677.21	1835.28
2001	41.11	1080.00	27.28	1033.47	1861.13
2002	33.81	935.00	20.33	462.32	1909.72
2003	42.67	1100.00	21.72	5299.19	2211.53
2004	80.06	1420.00	37.67	747.42	3707.19
2005	126.00	1530.00	41.64	835.75	4167.02
2006	166.00	2500.00	70.23	109.61	4242.08
2007	256.00	3420.00	144.00	1803.44	10324.50
2008	211.00	3260.00	82.55	1140.33	6484.29

Source: World Development Indicator

Table 2: Granger causality test (Belgium and France)

BELGIUM					FRANCE				
Direction of Causality	Obs	F-Value	Causality	Lag	Direction of Causality	Obs	F-Value	Causality	Lags
MC Granger Causes GDP	49	0.10073	No	3	MC Granger Causes GDP	53	1.78620*	yes	3
TTV Granger Causes GDP	53	0.66114	No	3	TTV Granger Causes GDP	53	1.39463*	yes	3
TR Granger Causes GDP	53	1.27965*	Yes	3	TR Granger Causes GDP	53	2.86116*	yes	3
MC Granger Causes FDI	49	0.20527	No	3	MC Granger Causes FDI	49	5.20543*	yes	3
TTV Granger Causes FDI	49	0.12411	No	3	TTV Granger Causes FDI	49	8.01860*	yes	3
TR Granger Causes FDI	49	0.44513	No	3	TR Granger Causes FDI	49	6.40934*	yes	3

Table 3: Granger causality test (Portugal and Netherlands)

PORTUGAL					NETHERLANDS				
Direction of Causality	Obs	F-Value	Causality	Lags	Direction of Causality	Obs	F-Value	Causality	Lags
MC Granger Causes GDP	53	0.28748	No	3	MC Granger Causes GDP	53	0.16113	No	3
TTV Granger Causes GDP	53	0.28748	No	3	TTV Granger Causes GDP	53	1.18485*	Yes	3
TR Granger Causes GDP	53	0.04570	No	3	TR Granger Causes GDP	53	0.38759	No	3
MC Granger Causes FDI	49	0.64824	No	3	MC Granger Causes FDI	49	6.97888*	Yes	3
TTV Granger Causes FDI	49	0.96564	No	3	TTV Granger Causes FDI	49	1.45243*	Yes	3
TR Granger Causes FDI	49	0.71777	No	3	TR Granger Causes FDI	49	0.84270	No	3

Table 4: Granger causality test (United Kingdom)

UNITED KINGDOM				
Direction of Causality	Obs.	F-Value	Causality	Lags
MC Granger Causes GDP	53	3.35047*	Yes	3
TTV Granger Causes GDP	53	4.27965*	Yes	3
TR Granger Causes GDP	53	7.92225*	Yes	3
MC Granger Causes FDI	49	5.80359*	Yes	3
TTV Granger Causes FDI	49	0.37555	No	3
TR Granger Causes FDI	49	0.08659	No	3

* shows that the null hypothesis is rejected at 5% level of significance

Table 5: Descriptive statistics (Belgium)

	GDP	FDI	MC	TTV	TR
Mean	79.05357	14.44385	52.75000	21.07554	7.827321
Median	70.43922	9.938075	45.83750	12.44162	6.172187
Maximum	128.3525	58.89140	112.0613	66.09968	19.83261
Minimum	55.23825	-7.215160	14.25959	2.551032	2.931110
Std. Dev.	21.11764	15.02641	23.90062	18.60419	4.592673
Skewness	0.871303	1.549077	0.819730	1.230038	1.507894
Kurtosis	2.519462	4.689203	2.769538	3.182698	3.907375
Jarque-Bera	7.624383	26.97926	6.395524	14.19916	23.14273
Probability	0.022100	0.000001	0.040854	0.000825	0.000009
Sum	4427.000	751.0800	2954.000	1180.230	438.3300
Sum Sq. Dev.	24527.50	11515.45	31418.19	19036.37	1160.095
Observations	56	52	56	56	56