

## **Integration between the Romanian and the Euro Area Financial Markets and its Impact on the Growth Rate of Romanian Listed Companies**

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**Abstract:** The paper aims at investigating the impact of integration between the Romanian and the euro area financial markets, with focus on the banking and stock market segments, on the growth rate of Romanian listed firms. Previous research has showed that financial integration accelerates growth especially for firms acting in industries more dependent on external finance. The paper uses quarterly firm-level data and a panel fixed effects model in order to control for firm heterogeneity. The model specification controls for firm-level attributes and the development in the two segments of the domestic financial market. The paper brings evidence on the significant impact of financial integration on firms' growth with regard to both price- and volume-based measures. Integration in banking markets positively impacts on growth while integration in stock markets seems to tighten firm's growth opportunities. Additionally, the Gibrat's law is rejected. The findings have implications on researchers and Romanian policy makers alike. They call for action to deepen the integration in the banking markets. The paper contributes to the debate on the relationship between financial development and financial integration respectively, on growth in an emerging economy.

**Keywords:** financial integration; banking market; stock market; sales growth; Romanian companies.

**JEL Classification:** F36; G15; G30

### **1. Introduction**

The increasing financial connections between economies gave rise to new directions for research on the determinants of growth, both on macro and microeconomic level. Such directions of research are especially relevant for contexts where the level of financial integration between domestic economies is quite high as is the case for the euro area countries or even the European Union (EU) countries not belonging to the Economic and Monetary Union (EMU). Both these groups of countries are additionally characterized by a high level of political integration and this was found by Friedrich et al. (2013) to be the key factor in explaining the larger positive impact of financial integration on growth for firms in European transition countries. In this context, the present paper is concerned with the impact of financial integration on

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growth at microeconomic level, using firm-level data – as opposed to industry-level data used in Friedrich et al. (2013), for Romanian listed companies.

Besides the positive impact documented above for the European transition countries group, of which Romania is part of, a few additional arguments can be mentioned as reasons that justify the research question being investigated in this paper. First, it is well known the high presence of foreign-owned banks on the Romanian banking market. According to the National Bank of Romania statistics (BNR, 2014), 60% of the credit institutions acting domestically have a dominant share of the foreign capital ownership and hold 80.2% of the aggregate net balance sheet assets. This argument can be considered relevant to the extent that previous literature agrees that a high presence of foreign banks is indicative of a high degree of international financial integration (Owen & Temesvary, 2014; Popov & Ongena, 2011). The second argument is also related to the banking segment of the financial market and shows that the average quarterly level for 2007-2013 of the share of foreign claims held by banks located in the euro area to foreign claims reported by banks located in the EU countries, on Romanian counterparts, is 79.8% (author's own calculations based on BIS data (2014)). Third, given that the research reported in this paper is also concerned with the impact of integration in stock markets between Romania and the euro area on the growth rate of Romanian companies, it is worth mentioning that the proportion of holdings by monetary financial institutions (MFIs) located in the euro area of shares and other equities on Romanian counterparts compared to their total holdings in the EU member states outside the euro area, has an quarterly average value (2007-2013) of 4.15%. This level is understandably far below the level for UK (69.56%), even below that for Poland (11.87%) but comparable to that for the Czech Republic (4.29%) and above those for Bulgaria (2.26%) and even for Denmark (1.06%) (Author's own calculations based on ECB data, 2015). These arguments could be taken as support for the existence of a certain level of integration between the Romanian and the euro area financial (banking and stock) markets and, consequently, this level of integration can be expected to exert a significant influence on the growth rate of the Romanian (listed) companies.

Given the context described above, this paper seeks to investigate whether integration between the Romanian and the euro area banking and stock markets impacts on the growth rate of Romanian listed companies, controlling for the level of development in the domestic banking and stock markets. To investigate this research question, the paper uses a quarterly panel dataset for the period 2007-2013 for a sample of Romanian companies listed on the Bucharest Stock Exchange (BSE) and employs a panel data regression which controls for the firm-specific (unobservable) effects. The empirical results show that financial integration does indeed impacts on the growth in sales for the sampled companies with respect to both banking and stock markets. Specifically, the results show that increased banking markets – as shown by lower interest rate spreads (over the whole euro area) on euro-

denominated loans provided to non-financial corporations (NFCs) and increased level of cross-border lending from the euro area MFIs to the Romanian non-MFI sector – contributes to higher growth in sales for the Romanian listed companies. As regards the stock market, a higher overall excess return of the domestic Romanian market compared to the euro area as a whole, positively correlates with the growth in sales which means that more integrated stock markets does not favour Romanian firms' growth. These significant effects maintain in the presence of controls for the domestic development in the both segments of the financial market. The controls used – the level of non-governmental credit to GDP and the share of market capitalization to GDP, respectively – positively correlates with growth in sales meaning that better developed domestic banking and stock markets lead to better growth opportunities for the Romanian listed companies.

The remainder of the paper is structured as follows: section 2 reviews the previous literature on the relationship between financial integration and growth, section 3 presents the data and the method, and section 4 gives the empirical results and discusses them; section 5 summarizes the paper.

## **2. Financial Integration and Growth**

### **2.1. Financial Integration and Growth at Macro- and Microeconomic Level**

The issue of the determinants of corporate growth in a Romanian context is largely under-researched. During the documentary work conducted for the purpose of this research, the author did not come across with any paper investigating this issue exclusively for Romanian listed companies. However, there were identified several cross-country studies which included Romania among the sampled countries. At international level, one of the determinants of growth whose impact is frequently investigated in the previous literature is access to finance, both access to finance and growth viewed either from a microeconomic (including industry-level) or macroeconomic perspective. These previous attempts laid the ground for studying the impact of financial integration on growth so that the issues of financial development and financial integration, respectively, are not always separately studied in the previous literature. The focus on this paper is on the effects at microeconomic level i.e. at firm level.

The impact of financial development and financial integration, respectively, on growth was often investigated by using industry-level data as this mitigates some of the methodological issues usually involved in cross-country studies, according to Rajan & Zingales (1998). They were among the first authors to explore the causality contained in the finance-growth relationship and show that financial markets development further leads to economic growth in industries that are dependent on external finance and this is explained by the fact that more developed financial

systems lead to lower cost of external finance. These results are consistent with those in Bena & Ondko (2012) who showed, using firm-level data, that financial development ameliorates the allocation of capital by channelling the external financing to firms operating in industries with better growth opportunities and thus in greater need of external finance. Furthermore, Lucey & Zhang (2011) showed that the benefits on leverage stemming from increased credit markets integration are stronger for high growth than for low growth firms, located in emerging countries. Adopting the same methodological approach as in Rajan & Zingales (1998), Friedrich et al. (2013) show that financial integration is responsible for increasing the growth gap between industries dependent on external financing and those less dependent, from European emerging countries including Romania while no effect is documented for other emerging or for developed countries and this is explained by political integration of those countries that preceded their financial integration.

At firm-level, previous studies (Coricelli et al., 2012; Rahaman, 2011; Honjo & Harada, 2006) have proved that firms' access to finance impacts on their growth rate. Using data for both listed and unlisted firms, Rahaman (2011) shows that firm's financial structure has a significant and large effect on its growth rate; this is especially true for more financially constrained firms for which internal funds contribute more to financing their growth. Honjo & Harada (2006) have previously shown that the impact of financial structure on growth varies with the type of measure used to proxy firms' growth; specifically, for growth in sales they document a positive impact. However, by taking a different approach of the finance-growth relationship, Coricelli et al. (2012) have empirically argued that the relationship between leverage and productivity increase at firm-level is non-monotone and identify a point beyond which an increase in leverage becomes counterproductive. The findings of this study were derived from a sample of firms coming from Eastern European countries including Romania.

Based on these previous findings, there are expectations that financial integration between Romania and the euro area could indeed affect Romanian firms' growth especially for those firms more dependent on external finance.

## **2.2. How Integrated are the Romanian and Euro Area Financial Markets?**

In the introductory section there were presented three descriptive arguments which pointed towards a certain general level of integration between the Romanian and the euro area banking and stock markets. However, to provide an empirically documented answer to this question is not an easy task given that previous literature do not count studies aiming at empirically assessing the level of integration between the Romanian and the euro area (European) financial markets. Consequently, the findings presented here are derived from studies carried out on groups of countries which include Romania. Moreover, given that Romania is not yet part of the euro

area it is reasonable to assume that the Romanian financial market is less connected to the euro area financial markets. Among the studies that considered Romania, together with other Central and East European (CEE), for instance, can be mentioned the following: Guidi & Ugur (2014), Pungulescu (2013), Demian (2011). Demian (2011) assessed the integration level in stock markets for six CEE countries including Romania, using cointegration tests, and revealed that the integration level among these countries and with EU developed countries increased over time (2001-2009). Moreover, the study identified cointegration relationships even before those countries joined the EU which means that a EU membership effect on financial integration is not confirmed and the author attributes this non-significant effect to the greater importance of economic ties with developed EU countries. The results in Demian (2011) regarding the lack of significance for the political integration seem to be later contradicted by those in Friedrich et al. (2013) as it was highlighted earlier. Regarding the integration level between the 12NMS (new member states) and the core UE states (UE15), Pungulescu (2013) has showed that integration is incomplete for either group of countries and that patterns previously seen for EU15 during the 1990 were later found in the 12NMS financial markets' evolution. Of great relevance for this paper is that, according to Pungulescu (2013), Romania is among the NMS that exhibit the highest convergence speed in money market interest rates. A recent study by Guidi & Ugur (2014) showed that the degree of integration between five South East European (SEE) countries, including Romania, and the developed financial markets in Germany and UK is low. Specifically, although the static cointegration tests confirmed that these markets are cointegrated, the dynamic cointegration tests revealed that the degree of cointegration varies in time, especially for the financial crisis period.

Although these findings are somewhat mixed, they do not completely preclude the existence of a significant impact of integration between the Romanian and euro area financial markets on the growth rate of Romanian listed companies. The next section presents the methodology used for exploring the existence of such significant effects.

### **3. Methodology**

#### **3.1. Data**

The empirical tests conducted in this paper are based on a sample of 41 Romanian listed companies for which quarterly financial statements data was collected for 2007-2013. Data was retrieved from Thomson Reuters Eikon; however, when incomplete data was available, it was manually collected from companies' financial statements and, when even this was not possible and to a limited extent, averages for the two neighbour periods were used. To measure the degree of integration between the Romanian and the euro markets, financial data retrieved from the European Central Bank (ECB), National Bank of Romania (BNR) and Eurostat online

databases was used. Data coming from BNR, BSE and Eurostat was used in order to assess the level of development in the domestic credit and stock markets. The specific variables and the related data are described in the next sub-section.

### 3.2. Variables

Following recommendations in previous literature, the dependent variable is given by the growth in sales (GRS) between two consecutive periods (quarters), measured as the difference in log levels of sales ( $\ln(\text{sales}_{(t)}) - \ln(\text{sales}_{(t-1)})$ ). Alternative measures of firm's growth include growth in employment (Rahaman, 2011; Honjo & Harada, 2006) and growth in fixed assets other than land (Rahaman, 2011). The explanatory variables used fall into three categories, namely: firm-level variables, financial markets integration variables and domestic financial markets development. They will be described next.

Although the focus on this paper is on financial integration variables, firm-level variables were used as controls. Four such firm-level variables were used based on the previous literature, namely: size, internal financing, access to external financing and leverage. Size (LNS), measured as  $\ln(\text{sales})$ , was used to investigate the impact of firm's size on its growth rate. Alternative measures of size are related to employment, tangible assets other than land and total assets. The inclusion of a measure of size allows testing if Gibrat's law holds. The expected sign for  $\ln(\text{sales})$  is negative according to Rahaman (2011). Should a significant impact be confirmed, the Gibrat's law does not hold in the current context. The law states that a firm's growth is independent of its size (Daunfledt & Elert, 2013) thus a non-significant correlation between size and growth is expected. The other three firm-level variables relate to internal financing, external financing and capital structure. Their inclusion, together with their expressions and expected signs were inspired from Rahaman (2011). To proxy for a firm's availability of internal funding, the return on equity (ROE) – net income to shareholders' equity – was used. The expected sign is positive as more profitable firms are more able to support their growth. A measure of a firm's access to external finance (EXF) – total debt to total liabilities – was included in order to capture information about the firm's financial constraints with respect to external finance; however, unlike Rahaman (2011), total debt was used instead of short-term. The expected sign is positive as less constrained firms are expected to be better able to finance their growth using external finance. Lastly, the impact of a firm's financial structure was captured through the financial slack measure (FINS) –  $(\text{tangible assets} / \text{total liabilities} - 1)$  – which provides information on the extent to which a firm makes use of its leverage capacity and is expected to be negatively correlated with growth. The choice of other firm-level variables was limited given that this research is based on quarterly not yearly financial statements data.

Regarding the impact of financial markets integration, two segments were considered: banking market and stock market. To measure financial integration, two types of measures are generally used – price- and quantity-based measures (ECB, 2014; Friedrich et al., 2013; Lucey & Zhang, 2011). To proxy for banking (credit) markets integration, both types of measures were used. As price-based measures, several interest-rate spreads – IRS (over the euro area as a whole) to euro-denominated loans granted by MFIs to NFCs were used, as follows: interest rate-spreads for new loans with a maturity / period of initial rate fixation of up to 1 year and not exceeding EUR 1 million (IRS1); interest rate-spreads for new loans with a maturity / period of initial rate fixation of up to 1 year and exceeding EUR 1 million (IRS2); interest rate-spreads for outstanding loans with a maturity of over 5 years and total amount (IRL). As quantity-based measure, the share of cross-border loans (quarterly flows) granted by MFIs from the euro area to the Romanian non-MFI sector to GDP (coded CRE) was used. Based on previous literature, more integrated banking (credit) markets are expected to expand financing options for firms in need of external finance.

Stock market integration was more difficult to assess. The measure employed in this paper is based on excess returns between the Romanian and the euro area stock markets (BET). The stock market returns are taken as quarterly changes in BETC and EURO STOXX indices for the Romanian and euro area stock markets, respectively. The impact of this variable should be interpreted with caution. One way to interpret it could be derived from Guidi & Ugur (2014) who showed that on less integrated stock markets there are diversification benefits so as with respect to the five SEE countries included in their study. This could suggest that larger excess returns means less integrated markets. Although in a different context, O'Connor (2013) finds, contrary to expectations, that equity market liberalization does not lead to an increase but to a decrease in a firm's externally-financed growth rate. Consistent with the measure used in this study, larger excess returns could also mean larger growth opportunities for the Romanian companies stemming from less integrated Romanian and euro area stock markets.

According to the previous findings, the research design employed in this paper controls for the development in the domestic credit and equity markets. In order to do so, the following two measures were used: the share of quarterly non-governmental loans (flows) to quarterly GDP (CRN); for the credit market, the share of stock market capitalization (quarterly change) to quarterly GDP (MC). More developed credit and equity markets are expected to expand firms' growth opportunities and to foster the impact of financial markets integration variables.

### 3.3. The Empirical Model

To investigate the effect of financial markets integration variables on Romanian firm's growth rate, a panel data regression model was used. It controls for firm-specific (unobservable) effects. All the three categories of explanatory variables are introduced with one lag in order to help explaining the causality relationship (Honjo & Harada, 2006) and to alleviate endogeneity problems (Lucey & Zhang, 2011).

The model to be estimated can be stated as follows:

$$GRS_{it} = c + LNS_{it(-1)} + ROE_{it(-1)} + EXTF_{it(-1)} + FINS_{it(-1)} + IRS_{it(-1)} + CRE_{it(-1)} + BET_{it(-1)} + CRN_{it(-1)} + MC_{it(-1)} + a_i + \varepsilon_{it}$$

where: GRS, LNS, ROE, EXF, FINS, IRS, CRE, BETC, CRN, MC are as they were defined before;  $i$  denotes the firm,  $t$  denotes the period (quarter),  $a_i$  the firm-fixed effect and  $\varepsilon$  the disturbance term.

### 4. Results and Discussion

This section presents and discusses the main results and checks their consistency compared to the previous results in literature.

**Table 1. Correlation matrix between the explanatory variables**

	LNS	ROE	EXF	FINS	IRS1	CRE	CRN	BETC	MC
LNS	1								
ROE	0.017	1							
EXF	0.050**	0.003	1						
FINS	-0.264*	-0.011	-0.111*	1					
IRS1	0.001	-0.029	-0.060**	0.074**	1				
CRE	0.033	0.026	-0.206*	0.014	-0.116*	1			
CRN	0.091*	-0.050***	-0.245*	0.03	-0.238*	0.383*	1		
BETC	-0.037	0.017	-0.04	-0.026	0.304*	-0.016	-0.259*	1	
MC	-0.046	0.03	-0.002	-0.028	0.067*	-0.009	-0.252*	0.545*	1

Source: own results; \* - significant at 1%, \*\* - significant at 5%, \*\*\* - significant at 10%.

Before presenting the results of estimating the empirical model, the correlations between the explanatory variables are given in table 1. For reasons of space, variables IRS2 and IRL were eliminated from the results reported in table 1 because their correlations with other variables were high and significant. More specifically, the correlation coefficients between IRS2 and CRE and CRN were -0.515 and -0.605 respectively and significant at 1%. Similarly, the correlation coefficient between IRL and CRN was 0.701 and significant at 1% as well. Consequently, the results reported here refer only to IRS1. The correlations among the remaining variables are at acceptable levels.



The results of estimating the empirical model are given in table 2. From these results it can be noticed that two of the four firm-level variables are statistically significant at 1% and their sign is according to the expectations. Specifically, size and growth are negatively correlated which implies that larger Romanian listed firms grow slower than smaller firms. The significant correlation between size and growth provides support for rejecting Gibrat's law and this is consistent with findings in Honjo & Harada (2006). Moreover, it can be noticed that the coefficient for size is also largest in magnitude among the coefficients for the firm-level variables. A second significant result shows that the availability of internal funds accelerates growth as more profitable firms can devote more funds to support their future growth. Although not significant, the effect of the last two firm-level variables has the hypothesized direction. Therefore, better access to external (debt) finance alleviates firms' financial constraints and thus improves their ability to grow; its statistical significance is, however, close to 10%. Firms that do not fully use their leverage capacity and thus have greater financial slack, grow slower. This is consistent with Honjo & Harada (2006) who showed that debt ratio positively correlates with growth measured as growth in sales.

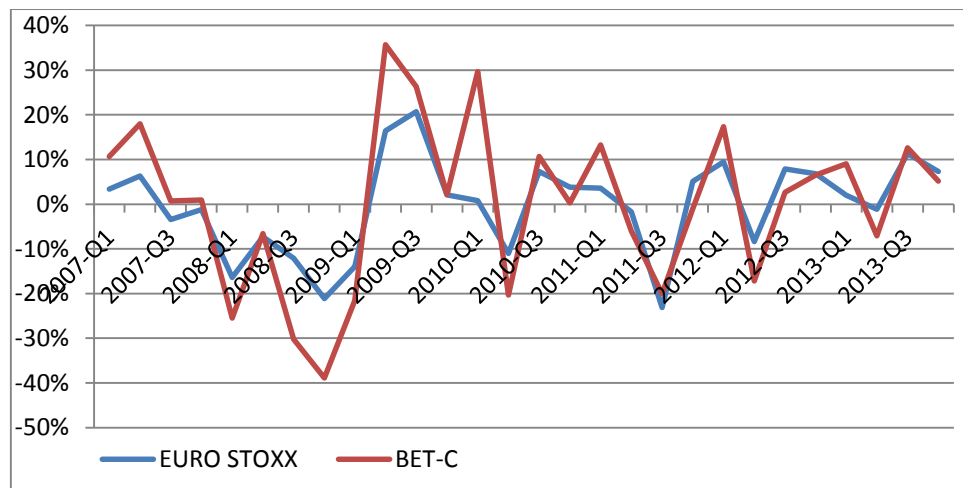
**Table 2. Results of estimating the empirical model**

Variable	Coefficient	t-Statistic	p-value
C	3.464	15.010	0.000*
LNS <sub>(-1)</sub>	-0.405	-15.271	0.000*
ROE <sub>(-1)</sub>	0.047	6.212	0.000*
EXF <sub>(-1)</sub>	0.048	1.511	0.131
FINS <sub>(-1)</sub>	-0.003	-1.246	0.213
IRS1 <sub>(-1)</sub>	-2.559	-2.899	0.004*
CRE <sub>(-1)</sub>	0.341	2.132	0.033**
CRN <sub>(-1)</sub>	0.734	6.062	0.000*
BETC <sub>(-1)</sub>	0.370	4.851	0.000*
MC <sub>(-1)</sub>	0.319	5.373	0.000*

Source: own results; *R-sq.*, 0.277, *Adjusted R-sq.*, 0.243; *F-stat.*, 8.246, *Probab. of F-stat.*, 0.000; \* significant at 1%, \*\* significant at 5%, \*\*\* significant at 10%; *EGLS weights*: cross-section weights; *White (diagonal) covariance matrix method*.

Regarding the impact of financial integration variables which are of interest in this paper, all of the four variables are highly statistically significant. Concerning banking market integration, the results suggests that as new small short-term euro-denominated loans for Romanian NFCs become more expensive, compared to the euro area average (increase in IRS1), they are less able to expand their sales and this is according to expectations. The reaction of Romanian (money market) interest rates, following shocks on the euro area corresponding rate is modelled in Hudea (Caraman) (2014) where evidence of resulting lower interest rate differential is considered as emerging from Romania's membership to the EU. At the same time, the increase in the level of the cross-border lending between the euro area MFIs and the non-MFI Romanian sector, which is equivalent with the deepening of the

integration between the two markets, makes external finance more available to Romanian firms and thus accelerates their growth. The development of the internal credit market, as measured by the level of the non-governmental credit to GDP, has an intrinsic effect and additionally contributes to the growth in sales of Romanian companies. The impact of integration in stock markets is also significant and shows that the excess return in BETC index over the euro area (measured by the relative increase in the EURO STOXX index) is positively associated with growth in sales for Romanian listed companies. Greater excess return suggests that the Romanian stock market offers better investment and growth opportunities compared to the euro area as a whole. It can be easily seen from figure 1 that the evolution of BETC index over the period 2007-2013 closely resembles the evolution in the EURO STOXX index and, additionally, the returns in BETC are larger, especially on the positive side, than those for the euro area (EURO STOXX). Over the period under analysis, the correlation coefficient between the two stock market return series is 0.88 and significant at 1%.



**Figure 1. BETC and EURO STOXX quarterly returns (2007-2013)**

*Source: Author's work using data from Thomson Reuters Eikon and [www.stoxx.com](http://www.stoxx.com)*

As already mentioned in the variables sub-section, this measure of integration in stock markets should be viewed with caution. However, considering the results in Guidi & Ugur (2014), greater excess returns could be considered as stemming from less integrated markets since less integrated equity markets offer better diversification opportunities according to the above study. Consequently, this variable could be viewed as an inverse proxy for integration in stock markets and the positive correlation could suggest that a more integrated Romanian stock market with the euro area stock market leads to lower growth opportunities for the Romanian listed companies. As in the case of credit market development, stock market

development, proxied through the (change in) market capitalization to GDP, positively affects Romanian firms' growth in sales suggesting that a more developed stock market offers better growth opportunities.

## 5. Conclusion

This paper aimed at investigating the impact of integration between the Romanian and the euro area stock markets on the growth in sales for the Romanian quoted firms. The segments whose effects were investigated are banking (credit) and stock markets. Besides confirming the impact of certain firm-level variables, the impact of financial integration is also confirmed. Specifically, more integrated credit markets and less integrated stock markets, respectively, positively impacts on growth in sales. The positive impact on firm-level growth of a more developed financial system – both with respect to the credit and the stock market – is also confirmed. However, the results should be taken cautiously given the short sample period as well as the small cross-sectional dimension of the sample. Further research should consider the improvement of the quality of the data as well as the following directions: alternative ways of assessing the stock market integration; consideration of the interaction effects between domestic financial development and financial integration; the interaction effects between firms' internal funding and external financing constraints; and alternative empirical procedures of estimating the model. The results have implications on policy decisions aiming at deepening the integration between the Romanian and the euro area financial markets, both with respect to the banking and the equity market.

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