

The Nexus between Bank Sources and Firms Capital Expenditures in SEE Countries

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Abstract: Considering that financial sources and investment opportunities are the starting point of the business decision to invest, this research focuses on answering whether a country's financial system contributes to the growth of firm investment, with regard to the endogenous economic growth theory based on which the financial system affects economic growth through capital accumulation. To test the impact of external funds on the value of capital expenditures, the linear regression model is used, and the results support the hypothesis that bank loans have a positive impact on the value of new fixed assets. For robustness check, the logistic regression is utilized. In this model the dependent variable is dichotomous, considering the fact if the business in the respective year had purchased fixed assets or not, while as an explanatory variable, among others, are bank loans representing the fact if the business in the same period had a credit or not with any commercial bank. The results show a positive and significant connection between the bank loans and the newly purchased fixed assets. These findings imply that firm investments in SEE countries are not financially constrained from banks.

Keywords: investments; external financing; economic growth; fixed assets

JEL Classification: D92; G31; G32

1. Introduction

Investments are considered as one of the main determinants of economic growth. Private investments represent firm's capital expenditures, which improve the reproductive capacity. Identifying profitable investments is a challenge in itself, but for businesses in countries with underdeveloped financial systems even when profitable projects that require external financing are identified financial obstacles are present, among others, high interest rates on loans. Different risks, whether institutional or even related to normal business operations affect the cost of financing, thus, affecting the level of interest rates applied by banks which are high and common in countries with high uncertainty, while access to finance usually decreases, among others, due to insufficient collateral. This paper tries to explore

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whether a country's financial system contributes to the growth of the investment rate, measured through buying productive assets, while taking into consideration the endogenous economic growth theory based on which the financial system affects economic growth through capital accumulation. Thus, the main objective of this research is the empirical measurement of the banking sector's impact, at a firm level, on the access of businesses to bank funds and the impact of these funds on business investments in some Western Balkan countries such as: Albania, Croatia Macedonia, Kosovo, Serbia and Slovenia.

When firms want to grow, they need to increase their fixed assets which enable more output. So, according to the Packing order theory, they calculate the desired growth rate enabled by own funds usage and then look at the possibility of external financing. That is why business decisions to invest cannot be independent of their capital structure. Corporate finance enables to calculate the firm's desired growth rate, either by using only own funds, which represent the ratio between retained earnings and firm assets, or a combination with the usage of external financing. In this way, the research aims to answer the question whether a more developed financial system, measured by firm's access to finance, has a positive impact on increasing capital expenditures. In order to answer the research question the utilized econometric model is based on the model applied by FHP, (1988) which is quite used in analyzing the finance-investment link (Aivazian, Ge & Qi, 2005; Franklin & Muthusamy, 2011). Unlike FHPs which use the dividend payment as a measure of financial constraint, this research uses bank sources or leverage due to the fact that the use of dividend payment is criticized by Budina et al. (2000, p.15) as an inadequate measure of financial constraint as firms in transition countries do not have a long operation history and therefore do not have the possibility of paying dividends. However, they agree that one of the ways of measuring finance-investments link in transitional countries is to determine presence of financial constraints.

2. Literature Review

Literature generally suggests that the firm investment decision depend, among others, to the firm liquidity. The problems with liquidity are caused either by the lack of own funds or the inability to borrow external funds (Guariglia, 2008, p.2). For this purpose, an important approach in analyzing the impact of financial constraints on investment growth is the one used by Fazzari, Hubbard and Petersen (1988), shortly known as FHP, called investment-cash flow sensitivities (ICSF). According to this approach, firms are financially constrained if they use their own funds to finance their investments, arguing that, if a firm has limited access to external funds it means that the investments are financed by own funds, therefore this is called the investment cash flow sensitivity. Following the model used by FHP many authors

have expanded and analyzed it for different industries and countries. Thus, Aivazian, Ge and Qi, (2005, p.284) assessing the impact of leverage on investments of publicly traded companies show that the leverage has a negative impact on the investment decision, suggesting that the capital structure has a significant impact on the firm's investment policies. Similarly, Franklin and Muthusami (2011) analyze the impact of leverage on investment decisions for Indian pharmaceutical firms using a similar model as Aivazian et al. (2005) and conclude that leverage has a positive impact on small and large firms, while having a negative impact for medium-sized firms. They justify these results by the change of the country's monetary policy. Using the balance sheet and the income statement data of 1003 firms in Bulgaria for the period from 1993 to 1996, Budina et al. (2000) noted that Bulgarian firms were financially constrained because financial markets were underdeveloped. They use the cash flow variable as a proxy for firm liquidity and the change in sales as a proxy for investment opportunities.

However, the approach used by the FHP or the use of ICFS as a measure of financial constraint has been criticized by some authors such as Kaplan and Zingales (1997) which through another model show that the investment cash-flow sensitivity should not be interpreted as a financial constrain. They criticize FHP regarding the classification of firms as financially constrained and unconstrained by using the dividend payment, which according to them is not an accurate indicator in this case. Also, the usage of Cash-flow variable as a measure of financial constraints is criticized, as it is argued that this does indeed reflect *investment opportunities* (Alti, 2003, p.718; Silva & Carreira, 2012, p.6). Similarly, Denga et al. (2017, p.192) raising doubts as to what ICFS actually measures, conclude that this variable "measures the thirst for investment" but not the firm's financial constraint.

Empirical literature for SEE countries emphasizes that financial constraint is an important factor of firm's growth, thus, the finance-investment link is analyzed in many researches. Using the firm level data, namely the data conducted by BEEPS in the rounds of 1999, 2000 and 2005, Hashi and Toci (2010) analyze the firm's financial constraints in some countries of Southeast Europe by using different variables such as: the proportion of firm's investment expenditure financed by the firm internal funds and bank loans; the difficulty of obtaining a loan; assessing the impact of interest rates and the value of the collateral. They find that small firms compared to large ones were more financially constrained, because they were more likely to rely on own funds, their loan application to be rejected, or not apply for credit at all, to face high interest rates and high collateral requirements. BEEPS data was also used by Leitner (2016) which analyzed the impact of financial constraints on firm growth, measuring firm growth in terms of sales and employment. This analysis has been done by comparing ten new EU member states (including Turkey) with the Western Balkan countries and comparing two periods: before the financial crisis (using the data for 2007) and after the financial crisis (using the survey data

for 2011 and 2012). The analyses showed that the rejection of the application for credit, namely the firm's financial constraint, had a negative impact on employment growth, and this is noticed especially in the pre-financial crisis period for Western Balkan countries. Meanwhile, Krasniqi and Mustafa (2011) analyze the impact of financial constraints on investment behavior of firms in Kosovo by testing the investment cash flow sensitivity with the use of switching regression and ordinary least square (OLS) regression, and concluding that firms in Kosovo are not financially constrained, suggesting policy orientation towards promoting investment and improving the environment of doing business.

The literature in this field, suggests that firms in transition countries with less developed financial systems operate at lower leverage rates, thus, relying heavily on own funds. Leverage low levels are caused either by demand and supply side market failure. Supply side issues are mainly due to insufficient financial development caused, among others, by market concentration, high interest rates, required collateral; that are usually required at the double level of credit value, short-term lending etc. Also, regarding the scope of the credit supply side market failure, there is a great influence from macroeconomic environment such as the proper functioning of the legal system. Demand side problems are related to macroeconomic problems that are mainly related to economic growth, hence growth and development of businesses, as well as, opportunities to invest in profitable projects.

3. Methodology and Findings

3.1. Data and Econometric Model

This paper uses data obtained from surveys conducted by EBRD in cooperation with the World Bank. This project is named Business Environment and Enterprise Performance Survey (BEEPS) and covers a wide range of topics related to the business environment including: access to finance, corruption, infrastructure, crime, competition, and performance indicators. The data sample consist of 2733 businesses surveyed by BEEPS in 6 countries of Southeast Europe (Albania, Croatia, FYR Macedonia, Kosovo, Serbia and Slovenia) and conducted in four rounds for the period 2002 to 2013.

The utilized econometric model is as follows:

$$I_{jkt} = \alpha + \theta_{jkt} + \lambda_{jkt} + \eta_{jkt} + x_{jkt} + u_{jkt}$$

I – current year investments, θ – financial sources, λ – investment opportunities, η – interest rates as an obstacle to invest, x – a matrix of variables that represent the firm's characteristics, μ – error term, j – observation, k – country and t – time

Investments are a function of income and other macroeconomic variables, inter alia interest rates, which are mathematically expressed as: $I = f(Y, r)$. Investments are defined as purchases of fixed assets that may be tangible such as: land, buildings and machinery used in production, and also the purchase of intangible assets such as licenses etc. In this paper the dependent variable represent new investments in fixed assets and is constructed based on BEEPS questions: “In fiscal year (last complete fiscal year), how much did this establishment spend on purchases of: New or used machinery, vehicles, and equipment?” and the next question: “In fiscal year (last complete fiscal year), how much did this establishment spend on purchases of: Land and buildings including expansion and renovations of existing structures?”.

Variables about the financial sources are constructed considering the BEEPS question where the respondent was asked to show the proportion of each financial sources used to buy new fixed assets. The financing sources are represented below:

Own funds (OwnS) which are represented by: cash flow, retained earnings and issuance of new shares or increase of capital by the owner. Cash flow represents the income before extraordinary items plus depreciation and amortization in relation to the value of total assets (Almedisa & Campello, 2008, p.11). The cash flow is used either as a finance source or as a proxy for investment opportunities (Cleary & D'Espailler, 2007, p.20; Franklin & Muthusamy, 2011, p.7). Retained earnings also show the firm's profitability and represent the own funds for financing of investments, which are cheaper compared to external sources. Issuance of new shares or increase of capital by the owner is one of the forms of own financing, which according to the Pecking order theory is last used, since the issue of shares implies reduction of shareholder's ownership.

Bank sources (BankS) are another financial source for investments. Leverage is usually used to show the value of financing from external sources, while in this research the bank sources represent the proportion of bank debt used to finance a firm's investment.

The model will also include a variable that shows the proportion of investments financed by *trade credits* (TC) as it is an indicator of financial constraints, because in countries where financing costs are high and where the legal system is not performing well, firms trade between each other with a waiting period of payment. For example, a firm can buy a machine from another firm and agree that payment is to be made after a certain deadline, but due to poor functioning of the legal system, the buyer may not realize the payment at the due time, so these crediting types are believed to be a very important part of the capital structure in countries where firms are financially constrained by banks.

In addition to financing from commercial banks and own funds, businesses can borrow from other non-bank institutions, loans from friends and relatives, etc. In this paper, this kind of financing is referred to as “*other sources*”.

Firm’s characteristics are represented by some variables like: previous period *Fixed Assets* intending to capture business needs for more assets; *Sector* is an important variable included in the model, because different sectors have different needs for fixed assets; *Size* is a variable that is used to evaluate firm’s behavior in terms of investing in fixed assets based on their number of employees; *Age*, is used with the same intention as size, as it is believed that small firms are less likely to buy new fixed assets because of financial constraints; *Firm’s legal status* is a variable used to find out which of these types of businesses invest more; while a dummy variable compares Kosovo with other SEE countries to find out differences between companies in different countries.

3.1.1 Investment Opportunities

Regarding the financial sector impact on economic growth measured by investment, many economists point out that the financial sector affects the identification of investment opportunities (King & Levine, 1993; Rajan & Zingales, 1998). Measuring the investment opportunity is very challenging and this becomes even more difficult for transition countries, so different authors use different proxies. Krasniqi and Mustafa (2011) express this variable through management expectations for better business performance in the future or vice versa, however, using a qualitative variable that expresses an individual’s expectation about future investment opportunities, whether that individual is a manager or a business owner, may lead to unreliable conclusions. Therefore, Krasniqi and Mustafa go beyond this and test their results also by employment growth rate, a common indicator used for transitional countries. Meanwhile in the literature studying investment opportunities in countries with a developed financial system, respectively in those systems in which capital markets are developed, Tobin’s Q (also known as **q** ratio) is used, which is defined as the ratio between a physical asset’s market value and its replacement value. If a company’s market value is greater than its replacement value then this is seen as an opportunity to invest. Adam and Goyal (2008) examine different indicators and find that market to *book-assets ratio* is the best measure that can be used to show the opportunity to invest. Therefore, the **q** ratio is widely used in papers that are focused on large companies listed on the stock markets, while for countries with no capital markets and which are mainly composed of small and medium-sized enterprises the data for **q** ratio is not available, researchers have used different gauges to express the opportunity to invest such as: cash flow (Whited, 2006), increase in the number of employees (Krasniqi & Mustafa, 2011), increase in turnover (Budina et al., 2002; Franklin and Muthusamy, 2011).

In this research the opportunity to invest will be expressed by two variables: firm's sales growth and employment growth. Sales growth represents the turnover realized over a year and is included as an explanatory variable for investment opportunity, with the justification that the increase in sales leads to the demand for more investments in fixed assets and working capital. So, this variable represents the difference between the sales of the current period and those of the two previous periods and will have a binary value, taking the value of 1 if the business has a positive sales change and 0 otherwise. Employment growth will be used similarly to sales growth, thus, this variable is calculated by finding the difference in the number of employees in the last fiscal year compared to the two previous periods. If the business has a positive change takes the value 1, otherwise 0.

Literature suggests a non-monotonous relation between the cost of external financing and investment cash-flow sensitivity. The investment cash-flow sensitivity decreases when the cost of external financing is low and vice versa (Lyandres, 2007). This paper also tries to test the impact of high interest rates on investments and we have to admit that it is difficult to measure the value of investments that have not been undertaken because of the high interest rates, since there is no accurate indication of this decision. For this reason, we use two variables: *first*, by asking businesses about their impressions of how much are access to finance an obstacle to finance their operations with bank loans, we can estimate somehow the lack of investment due to the lack of access to bank loans. This question is put forward by the BEEPS survey as: "Is access to finance, which includes availability and cost, interest rates, fees and collateral requirements, No Obstacle, a Minor Obstacle, a Moderate Obstacle, a Major Obstacle, or a Very Severe Obstacle to the current operations of this establishment?" and businesses that have responded that this is not an obstacle or is a minor obstacle are considered to not see access to finance as a barrier, unlike businesses that say access to finance is a moderate, major or even a very severe obstacle; *second*, by taking in consideration the impact of interest rate policies put in place by commercial banks in SEE countries as an obstacle to the growth of business investments, which will be assessed through the question: "If your firm did not apply for a loan, what were the main reasons?" and the options to answer were: does not need a loan; application procedures for bank loans are too burdensome; collateral requirements for bank loans are too strict; interest rates are too high; it is necessary to make informal payments to get bank loans; did not think it would be approved; others. Thus, the variable that expresses interest rates as an investment barrier is built by setting binary values, for answers "interest rates are too high" the value of 1 is applied, otherwise 0.

3.2 Results and Interpretation

The linear regression model and the Logistic model are used to test the impact of bank loans on the value of new investments (i.e. the value of buying new fixed assets). The utilized empirical model is tested in two ways: firstly by showing the direct link between the value of new fixed assets and the proportion of different types of their financial sources, secondly by testing the link between the probability of buying fixed assets and have a credit with a commercial bank. Models 1 and 2 include only firms that in the fiscal year undertook new investments, while model 3 analyzes firms that invested compared to those that did not. Diagnostic tests show that the data does not have problems with heteroscedasticity, except when a dummy variable compares Kosovo to the other SEE countries, so the “Robust standard error” command in Stata is used to adjust the standard error measurements in OLS. The Ramsey RESET shows that the model has no excluded variables. While, the Kernel density test shows that the data has normal distribution. The Variable Inflation Factor (VIF) indicates that the data do not have multicollinearity problems. For the M3 model, the LR test shows that all regressors have a significant impact on the probability of buying fixed assets as its value is 206.06 or has a significant level of 1%, therefore OLS and Logistic model are accepted as appropriate in this case.

Table 1. Investment model: The impact of different financial sources on capital expenditures

	(OLS)	(OLS)	(Logit)
	Model 1	Model 2	Model 3
Explanatory variables	New fixed assets	New fixed assets	Probability to invest
BankS.	0.0775*** (0.0188)	0.104*** (0.0107)	
OwnS.	-0.0422* (0.0256)	0.0181 (0.0146)	
TC	-0.0134 (0.0251)	0.0172 (0.0144)	
OtherS.	-0.119*** (0.0210)	-0.0173 (0.0128)	
Profitability			0.561*** (0.153)
Loan Commerc.Bank			0.232** (0.105)
ΔSales	-0.00909 (0.0483)	0.0944** (0.0371)	0.248** (0.104)
ΔEmpl.		0.109*** (0.0336)	0.564*** (0.101)
Tot. Fixed Assets (t-1)		-0.0271*** (0.00589)	
Interest rates	-0.289*** (0.0529)		-0.0766 (0.135)
Access to finance		-0.114*** (0.0317)	
<i>Size(small <20emp.)</i>			

medium (20-99 emp.)	0.443*** (0.0514)	0.391*** (0.0367)	0.523*** (0.115)
large (>=100 emp.)	0.978*** (0.0667)	1.059*** (0.0458)	1.009*** (0.178)
Sector (Manufact.)			
Retail	0.247*** (0.0747)	-0.0786 (0.0597)	-0.597*** (0.130)
OtherSec.	-0.0134 (0.0479)	-0.179*** (0.0382)	0.279** -0.597***
S.A		0.785*** (0.0471)	
LLC		0.128*** (0.0453)	
Partner.		-0.167*** (0.0455)	
Other forms		0.0272 (0.0542)	
Age	0.00326 (0.00322)	0.00409 (0.00254)	0.00190 (0.00725)
Agesq	-1.24e-05 (3.54e-05)	-1.92e-05 (2.96e-05)	-6.78e-05 (7.22e-05)
KS vs. SEE	-0.330*** (0.0774)	-0.351*** (0.0558)	-0.108 (0.143)
Constant	5.009*** (0.135)	4.564*** (0.0936)	-0.848*** (0.192)
Observations	1,640	2,733	2,003
R-squared	0.222	0.357	
Test for heteroskedasticity	0.3549	Robust	
Test for omitted variables: Prob > F	0.3888	0.2987	
Mean VIF	1.98	1.93	
LR chi2(11)			206.06 ***
Log likelihood			-1257.9012
Pseudo R2			0.0759
Linktest (_hatsq)	0.235	0.615	0.876
lfit			0.1587

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The link between bank sources (BankS) and the value of new fixed assets is shown to be positive and significant impact on both models; therefore, according to the M1 model we can say that: ceteris paribus, with the increase of bank loans by 1%, investments in fixed assets will increase by approximately 0.0775%, respectively based on model M2 with 0.104%. For the same purpose, in the M3 through the Logistic model we present the link between the probability of buying new fixed assets if there is a bank credit in firm's capital structure and the results show that the effect is positive and significant at 1% level; therefore, businesses that have loans with commercial banks comparing with them who do not have, ceteris paribus, are likely to invest in fixed assets for 0.232 log-odds. All three applied models confirm the positive relationship between new fixed assets and banks sources.

The results in the table above does not support the “cash flow sensitivity hypothesis” as the internal resources that are expressed through own funds (OwnS) show negative and significant impact on new fixed asset investments, while in model 2 this relationship is positive but non-significant. This indicates that businesses in SEE countries are not financially constrained. However, in model 3, the variable expressing Profitability, i.e. whether the business is profitable or not, indicates a positive and significant impact at 1% level, which means that profitable firms comparing to non-profitable, *ceteris paribus*, invest more in fixed assets for 0.561 log-odds, this because of the wish for further growth and development.

Similar behaviors as own funds also point the trade credits (TC), which are common in countries with low levels of economic development, insufficient development of the banking sector and low performance of the legal system. As expected, apparently these resources are used more to finance day-to-day business operations than to finance investment. Meanwhile, other financing sources (OtherS) which include family loans, various funding from state agencies, etc. have a negative and significant impact on the value of firm new fixed assets, this is explained by their volume which are insufficient to finance costly projects.

Both proxies used to express the opportunity to invest: the sales growth and the employment growth show a positive and significant impact on the value of new fixed assets, in two of three applied models. Based on M2 the sales growth shows a significant impact at 5% level, indicating that: *ceteris paribus*, businesses with an increase in sales compared to those who do not have an increase in sales will invest about 0.094% more, while businesses with an increase in the number of employees compared to those who do not have an increase in number of employees will invest more for 0.109%. While according to the M3 model, it can be said that businesses with an increase in sales compared those who do not have increases in sales, have the probability to invest in fixed assets for 0.248 log-odds while keeping all the other factors constant. Also, businesses with an increase in the number of employees compared to those who do not have an increase in number of employees have the probability to invest in fixed assets for 0.567 log-odds, keeping all the other factors constant.

The variable showing the fixed assets of the past period has a negative and significant impact in the value of new investments. Similar results for transitional countries are also found by Arsov and Naumoski (2016) according to whom firms with high fixed asset value need less investment. Looking in terms of firm size, it is confirmed that large and medium-sized businesses invest in fixed assets more than small ones. Regarding the firm’s sector, further analysis of sector levels are needed since there are different results shown in three of the applied models. While, regarding business legal organization it is noted that Shareholder companies and Limited liability companies compared to Sole proprietorship invest more in fixed assets.

Literature also suggests that the cost of capital employed is one of the main obstacles towards new investment. Regarding this issue our results show that the interest rate on loans, as an indicator of the cost of external financing, shows a negative and significant impact on the value of new fixed assets (M1), but not on the probability to invest (M3). So we can say that businesses that consider interest rates as an obstacle to invest comparing with those who do not consider them as an obstacle, invest less for 0.289%, keeping all the other factors constant. Similarly, according to model 2, businesses that see access to finance as a barrier for investments compared to those who do not have this problem, will invest in fixed assets less for 0.114%. Also, in model 3 the interest rate has a negative impact on the decision to buy or not to buy fixed assets, but this is not significant. This shows that in cases where businesses identify profitable projects, the interest rate is not a major obstacle to invest.

4. Conclusions

In order to test the impact of bank loans on the value of new investments the linear regression model is used, which supports the hypothesis that the lending growth from banks has a positive effect on the value of investments undertaken by businesses. For robustness check, the logistic regression is utilized, which tests the probability of purchasing new fixed assets depending on the fact if the business in the same period had credit or not with any commercial bank, and a positive and significant connection between the loan and the new business venture is found.

Since economic theory suggests that investments are a function of liquidity and investment opportunities, the impact of sales growth and employment growth are used as a proxy for investment opportunity, and the results show a positive relationship between these variables and the new fixed asset purchase.

All the results of the applied models reject the cash flow sensitivity hypothesis and we can conclude that businesses in Kosovo and some SEE countries are not financially constrained, as their investments show no significant relationship with own funds, rather they show positive and significant sensitivities with bank loans. This can serve as a basis to conclude that the development of the banking sector has a positive impact on increasing the financing of businesses with loans and consequently on the growth of their investments. New fixed assets, in addition to generating additional income for the business, also serve as collateral for possible loan requirements, thus, they have shown positive links between leverage and investment, in line with several researches of the same nature.

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