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Comparing the Impact of Credit Constraints on the Growth of SMEs in a Transition Country with an Established Market Economy

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Abstract

In this paper we compare the role of internal finance on the growth of firms between a leading transition country, Slovenia and an established market economy, Belgium. We find that firms in Slovenia are more sensitive to internal financing constraints than their Belgian counterparts. This would suggest that although Slovenian firms are no longer recipients of soft budget constraints, capital markets are not yet functioning properly.

Keywords: financial constraints, transition economics, manufacturing
JEL: G32, P2, L6

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Introduction

The industrial landscape at the start of the transition period in Central and Eastern Europe (CEE) consisted of large, inefficient and vertically integrated state owned firms. Absent from this picture was the presence of small and medium sized enterprises (Roland, 2000). However, the privatization and restructuring of these state owned enterprises and the introduction of market forces in CEE implied the emergence of new small firms and a decline of old inefficient ones. Moreover, one of the main economic reform priorities of politicians in transition countries and a policy strongly endorsed by external providers of financial aid was the development of the small and medium sized enterprise (SME) sector. In October 2003 the European Investment Bank (EIB) launched a global loan of 100 million euros to support SMEs in Hungary, Romania and Slovenia. On signing the loan in Venice the EIB president stated that "The development of small and medium-sized enterprises is important first of all in countries where the SME sector is not yet a deeply–rooted part of the European scene…. [also a] sector that encourages entrepreneurship and represents an important source of job creation".) Indeed the emergence of the SME sector is one of the success stories of transition with SMEs constituting the younger and more dynamic elements within transition economies.

This policy of actively encouraging the development of the SME sector in CEE mirrors policies adopted by the European Council in Lisbon in March 2000 where SMEs were placed at the heart Europe's future economic prosperity: "commit Member States to focus… on small companies as the main engines for job–creation in Europe and to respond to specifically to their needs" (Lisbon European Council 2000). In addition, in December 1991 the Commissioner for Enterprise and

Information Society designated a SME envoy to the European commission. This appointment responded to the objectives of the European charter for small enterprises that called for both greater representation of SMEs at both community and national levels and the adoption of a 'think small first' approach.

Although the emergence of the SME sector in CEE has certainly been one of the good news stories of the transition process, it is a sector that remains underdeveloped. One reason put forward for the SME sector being smaller in CEE is that firms that are unable to raise external finance are forced to rely solely on internal finance thus constraining their growth.[1] This problem would be further exacerbated if financial systems are not functioning properly and studies would indicate that this appears to be the case in CEE (Konings et al, 2003, Gros and Suhrchke, 2000, Budina Garretsen and de Jong, 2000 and Anderson and Kegels, 1997). However, although Slovenia has made progress in key areas, it lags behind some of the most advanced transition countries when it comes to implementing some specific reforms, namely financial sector development. The EBRD in its 2002 report recommended that although the local financial sector is relatively sound a vigorous privatisation of state-owned banks would further enhance competition.[2] Furthermore, the report recommended that not only must access to finance for SMEs be improved, there must also be greater diversification in the range of financial products available to SMEs. In addition, banks must change their criteria for lending to SMEs away from loan collaterals towards cash flow analysis. Moreover, a study by the Slovene Entrepreneurship Observatory in 2000 found that SMEs find access to financing as their main obstacle to their business development and growth. This development of the SME sector would also have social benefits in Slovenia by helping to overcome regional differences.

[1] Previous studies to look at this issue from a qualitative approach were Pissarides (1998) and Klappe, Sarria- Allende and Sulla (2002).

[2] Banks that are majority owned by the state have 50% of market share in terms of assets in Slovenia

Employment in some regions of Slovenia is provided by micro firms while in other regions large firms still act as the main providers of employment. Therefore SME development would create employment opportunities in the under-developed regions while facilitating the restructuring of large-scale enterprises by providing alternative opportunities of employment. (EBRD, 2002 and Observatory of European SMEs 2002)

Accessing external finance, however, is not necessarily a problem that is exclusive to SMEs in CEE. A recent report by the DG Enterprise found that SMEs in the EU require external finance for business expansion with 20% of SMEs considering access to finance as a barrier to growth. Furthermore, this ability to access finance differs across EU countries. For instance, only 6% of SMEs in Belgium report finance as a major restriction for firm growth as opposed to approximately 19% of SMES in the UK and Denmark (European Commission (2000 and 2002)). Therefore comparing the role of internal finance on the growth of firms between a leading accession country and an EU country where access to finance is deemed relatively easy makes for an interesting comparison.[3]

In this paper we make a quantitative exploration to investigate how the quantity of internal finance constrains the growth of SMEs across the entire manufacturing sector of a leading transition country, Slovenia and compare it to an established market economy Belgium. We make several important contributions to the literature in this paper. Firstly, we investigate the effects of internal finance on firm growth, which despite the relevance as highlighted above has yet to be explored using a quantitative approach in the context of transition. This differs from the literature on transition countries that focused on traditional firm growth analysis attempting to unravel the

[3] They find that only SMEs in the Netherlands consider access to finance to be less of a problem than Belgian firms. Only 5% of Dutch firms viewing a lack of funds to be a business constraint.

relationship between firm size, age and growth (eg. Konings and Xavier, 2002). We also see whether increases in competitive pressure due to the liberalization of markets and trade has resulted in a hardening of budget constraints. Secondly, we also address the effects of firm characteristics, such as size on firm growth. For instance, one expects that different size categories may face differences when attempting to access external finance. Thirdly, we us a General Method of Moments estimation technique, a technique that has generally not been implemented in the firm growth literature.

The outline of this paper is as follows. In section II we outline the theoretical framework while in section III we discuss the data. We present the results in section IV and conclude in section V.

Slovenia

Slovenia is a small open economy and a former republic of the Yugoslav Federation, from which it became independent in 1991. Slovenia's macroeconomic stabilisation program started in 1992 and as in other transition countries it also experienced a sharp decline in its GDP in the early transition years. However, its recovery started early on and it is one of the few countries that have now reached a level of GDP that is higher than its pre-transition level. GDP per capita is in excess of 70% of the EU average putting the Slovenian economy of all the transition economies closest to the EU. Privatisation of state owned enterprises started mostly in 1995 after a new law on privatisation was adopted in November 1994. In 1995 the EU Association Agreements and EFTA Agreements were also signed and in December 2002 Slovenia was accepted as a future member of the EU.

From the late 1980s onwards there was a considerable increase in the number of privately owned firms and in later years foreign owned firms in Slovenia. However, policy makers adopted a gradual approach to major structural reforms particularly in the areas of firm privatisation and the hardening of firm's budget constraints. At the time a special restructuring fund was set up to provide assistance to firms taking the form of soft loans and subsidies to firms in financial difficulties. These policies of financial support for loss-making enterprises led to the softening of firms' budget constraints.

In the autumn of 1992, many companies in bad financial situation entered into the pre-bankruptcy programme under the supervision of the State Development Fund (SDF) for restructuring. The State Development Fund (SDF) established in April 1990 and abolished in 2002 was an enterprise-restructuring agency for the restructuring of

loss making enterprises. It took over enterprises in financial difficulties for possible restructuring. The SDF went through different stages. In 1997 it was transformed into the Development Corporation of Slovenia (DCS) ("Slovenska razvojna druzba – SRD"). This transformation granted the DCS new powers and widened the scope of its activities so as to include the financing and restructuring of enterprises that had not yet been privatised as well as privatised enterprises in financial distress (EBRD, 1998).

The SDF however lacked experts to govern the enterprises. There were hardly any managers willing to accept the risk of governing an enterprise in financial difficulties. Consequently, the efficiency of the SDF and of the DCS was largely questionable in terms of attracting new investors interested in modernising firms. Combined, both the SDF and DCS were important in relaxing firms' budget constraints and in providing them with subsidies. However, with the abolishment of the DCS, enterprises in the DCS were transferred to investment companies, pension funds and other agencies. This had the effect of firms now being forced to adopt market orientated practices.

II Theoretical Framework

An old theme in industrial organization deals with the dynamics of firm size and industry structure, which goes back to Gibrat's law of proportionate effect. Gibrat (1933) showed that the firm size distributions he examined were approximately log normal in form and explained this by postulating a "law of proportionate effect", stating that a firm's growth rate could be modelled as a random variable whose mean was proportional to the firm's current size. In recent years, however, various empirical studies starting with Evans (1987a,b) and Dunne, Roberts and Samuelson (1989) have shown that Gibrat's law fails to hold. They rather point out a negative relationship between firm growth and size and a negative relationship between firm growth and age of the firm. These are findings that were interpreted in the context of theoretical approaches that highlight the role of learning in explaining the dynamics of firm size and industry structure as in Jovanovic (1982) and Erickson and Pakes (1989).

However, although there has been a growing literature investigating the role of financial constraints on firm performance, there has only been a couple of empirical studies to date that quantitatively look at the effect of internal finance as measured by cash flow on the growth of firms (Carpenter and Petersen, 2002 and Wagenvoort, 2003). These studies follow on from the work of Fazzari, Hubbard and Petersen (1988) where they investigate the effect of cash flow on investment. Fazzari et al. find that the investment rate of a firm depends on the cash flow that is available to the firm.[45] Carpenter and Petersen develop a model of firm growth whereby the firms

[4] However, this approach received strong critiques from Kaplan and Zingales (1997, 2000). Kaplan and Zingales in both articles put forward the argument that cash flow sensitivities are not informative about potential financial constraints. However, Fazzari et al. (2000) reply to the criticisms stating that there is

growth of total assets is subject to financing constraints for *small* firms in the United States.[6] They find that a firm facing a binding cash flow constraint exhibits approximately a one to one relationship between the growth of its assets and internal finance. Furthermore, firms that have access to external finance exhibit a much weaker relationship. However, by small firms the author means small firms in the US context. Therefore applying this model to European firms raises some issues regarding the industrial structure that is present in Europe where micro firms (<10 employees) form a significant portion of the industrial make-up. As a result it is important to take into account the different sub groups within the SME size group when investigating the role that cash flow plays on firm growth. For example, one might a priori expect that a micro firm with 5 employees finds it more difficult to raise external finance than a firm with 200 employees. Therefore, in our study we look at the effect of cash flow on the growth of SMEs taking into account the effects for different sub groups. By doing this we bring together the traditional growth of firms literature with the more contemporary model proposed by Carpenter and Petersen.

In part we start by estimating the following general specification capturing firm growth:

$$glta_{it} = \alpha_i + \beta_1 (cf / k)_{it} + \beta_2 (dturnover / k)_{it} + \gamma_k + \lambda_t + \gamma\lambda_{kt} + \varepsilon_{it} \qquad \text{(i)}$$

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a wide range of cases where there is a relationship between cash flow sensitivities and the relative financial constraint of the firm.

[5] Fazzari et al. study also initiated numerous studies that looked further into how the amount of internal funds effected investment sensitivity for example (Gertler and Gilchrist,1994, Van Ees and Garretsen ,1994 and De Greyse, 2001.) Other studies look at whether the wedge between internal and external funds is attributable to the managerial discretion hypothesis or to the imperfect capital market hypothesis (Hadlock, 2002 and Van Cayseele, 2003).

[6] They require firms to have assets between $5 and $100 in the year that they enter the sample.

where, $glta_{it}$ stands for the growth rate of firm i at time t defined as the growth of total assets, *dturnover* is the growth of real turnover, *cf* is the real cash flow of the firm, *k* is the level of capital stock (proxied by total assets), λ_t are time dummies, γ_k represents unobserved firm heterogeneity, $\gamma\lambda_{kt}$ are the year and sector interaction dummies that account for shocks and changes over time and within sectors and ε_{kt} is a white noise error term. In addition, we normalise by the capital stock to control for size effects and deflate nominal values of turnover and cash flow by PPI at the 3 digit nace level. Coefficient β_1 captures the sensitivity of firm level growth to the level of internal cash flow of the firm and is the coefficient that we are most interested in this study. The theory of Carpenter and Petersen suggests that β_1 should have a coefficient around one. The greater the magnitude of this coefficient the stronger the relationship between cash flow and growth. Conversely, a smaller magnitude implies a weaker relationship and we interpret this to mean that a firm has access to external finance or in the case of a transition economy soft budget constraints. The variable *dturnover* in equation (i) controls for demand at the firm level. In other words firms that have a high demand for their product are more likely to grow than firms with low demand for their products.

To control for the unobserved firm level fixed effect we will estimate equation (i) in first differences or

$$\Delta glta_{it} = \varphi + \beta_1 \Delta\left(cf / k\right)_{it} + \beta_2 \Delta\left(dturnover / k\right)_{it} + \gamma\lambda_{kt} + \Delta\varepsilon_{it}\,. \qquad \text{(ii)}$$

It is also possible that cash flow is endogenous as it is a credible proposition that higher growth rates lead to higher changes in cash flow, in addition, there may also be

measurement error. Therefore, we estimate equation (ii) in the standard first differences applying a Generalized Method of Moments (GMM) estimation. We use lags of real cash flow as instruments choosing lag dates form lag two onwards that are not correlated with the differenced error term in the regression. Furthermore, as the panel progresses, the number of instruments that can be used increases thus increasing the efficiency of the estimates. Therefore, we compute a Sargan test to test for over identifying restrictions that indicate the validity of the instruments used.

III DATA

We use individual firm level data for the period 1993-2000 for Belgium and 1994-2001 for Slovenia. Our data consist of all manufacturing companies that have to report full company accounts to the national statistical offices or central banks. Therefore we do not have to deal with the empirical issues that arise in official statistics that often apply a standard cut off level, generally only reporting those firms that operate with at least 5-10 employees. This practice, however, results in underestimating the role micro-enterprises play in many countries. For Slovenia we use the company accounts of virtually all the manufacturing sector that was available at the Slovenian Central Statistical Office[7]. The data that we have at our disposal covers micro, small and medium sized enterprises as well as the large ones. Furthermore, the data is based on a standard format of company accounts with the data covering variables such as operating revenues, number of employees and total fixed assets. The database used for Belgium is a commercial database collected by

[7] We would like to thank José Damijan and Stefan Bojnec for making the data available for this research . Studies to use this data set include Simoneti et al (2004), Konings and Xavier (2002), De Loecker and Konings (2003),

"Bureau Van Dijk", a quoted software and consulting company and sold under the name 'Belfirst'.[8] The availability of data varies between countries, depending on the national legislation regarding accounting practices. The data quality for Belgium is particularly good because in Belgium all companies have to report by law their financial statements (full or abbreviated depending on the size of the company) to the Central Bank. In our sample we have 108,184 firms reporting employment for Belgium covering around 90% of total manufacturing as a whole. For Slovenia we have 34,028 firms reporting employment corresponding to about 80% of total Slovenian manufacturing.

In determining firm size we apply the definitions as proposed by the European Commission.[9][10] We perform our estimations on two data sets. The first data set defines the size of the firm on a year on year basis while the second takes into account entry, determining the size of the firm as its size when it enters the sample. We also control for potential outliers by removing observations that are in the 1% tail for each of the regression variables. This is a standard procedure used in the literature on financing constraints that prevents making repeated judgements about what exactly constitutes an outlier.

[8] Belfirst data set is a subset of the 'Amadeus' data set. Previous papers that have used Amadeus dataset include Konings, Van Cayseele and Warzynski (2001, 2004) Budd, Konings and Slaughter, (2004) Huizinga, (2003) Wagenvoort, (2003) and Klapper, Sarria- Allende and Sulla, (2002).

[9] Micro-firm: emp<10&realturnover<2 million euors. SME: emp<250&realturnover< 50 million. Large firms: emp>=250&realturnover>=50 million.

[10] Using this criteria the Slovenian micro firms and SMEs are treated as the same entity because the sample size is virtually the same.

Table 1: Summary Statistics:

	1995	2001*
Ave emp Belgium	36	33
Ave emp Slovenia	64	42
Ave total assets Belgium (Thousands euro)	13142	19510
Ave total assets Slovenia (Thousands euro)	1496	1630
Ave cashflow Belgium (Thousands euro)	1372	1989
Ave cashflow Slovenia (Thousands euro)	108	137

*2000 is the final year for the Belgian data

We see from table 1 that the average employment in the two countries differs considerably. As we expect, average employment level for Slovenian firms is higher than in Belgium but Slovenia experiences a greater decline in employment over the sample period. In addition, Belgian firms have higher average cash flow and total assets.

IV Results

Tables 2A and 2B show the results for the growth equation when estimated using the various specifications and determining the size of the firm as its size the first year it enters the sample. Tables 3A and 3B[11] are the estimations when we use the data set that calculates firm size on a year on year basis and we find similar results. We see from Table 2A and 3A that for Belgian firms the cash flow coefficient is around one with SMEs having coefficients greater than large firms. Slovenian SMEs, however, have a higher coefficient than Belgian SMEs indicating that Slovenian firms have a stronger relationship between cash flow and growth.

Table 2A:Belgium

	SME FD	SME GMM	Large FD	Large GMM
$\Delta(cf/k)$	1.108	0.871	0.825	0.678
	(0.030)	(0.194)	(0.101)	(0.285)
$\Delta(dturnover/k)$	0.103	0.118	0.140	0.122
	(0.006)	(0.001)	(0.027)	(0.063)
Constant	0.006	0.001	0.009	0.006
	(0.001)	(0.001)	(0.002)	(0.002)
Obs	24686	24686	1253	1253
2nd order	No	No	No	No
Serr corr		1.8		-0.865
Sargan		Passes		Passes
		0.392		0.181

FD = first differences

[11] Tables 3A and 3B are in the Appendix section.

Table 2B:Slovenia

	SME FD	SME GMM	Large* FD	Large* GMM
$\Delta(cf/k)$	1.594	1.195	1.56	1.04
	(0.051)	(0.5130)	(0.185)	(0.456)
$\Delta(dturnover/k)$	0.157	0.512	0.218	0.256
	(0.007)	(0.007)	(0.053)	(0.05)
Constant	-0.004	0.022	0.001	0.001
	(0.001)	(0.012)	(0.02)	(0.002)
Obs	13887	13887	670	670
2nd order	No	No	No	No
Serr corr		1.8		0.85
Sargan		Passes		Passes
		0.17		0.35

* large firms are categorised as firms with >=250 employees. Including the turnover criteria results in too small a sample to estimate

Columns (iii) (v) and (vii) in table 2A report the IV GMM estimates where we treat cash flow as being endogenous. We find that for Belgian firms the β_1 coefficients are 0.871 and 0.678 for SME and large firms respectively indicating that internal finance plays a smaller role in the growth of large firms than for the growth of SMEs. This weaker relationship may be due to the fact that large firms have a somewhat easier accessibility to external finance. For Slovenia we also find a positive relationship between the cash flow coefficient and the growth of SMEs and large firms. Furthermore, the magnitude is larger than the corresponding magnitude for Belgian firms. In other words the relationship between firm growth and cash flow is more important for firms in Slovenia than it is for firms in Belgium. Previous studies that have looked at the role of cash flow on investment have found that for the leading accession countries there is a positive relationship between liquidity constraints and

investment (Konings et al., 2003). In addition, they find that in the countries lagging behind in the transition process there is a far weaker relationship indicating the presence of soft budget constraints. Therefore, our finding of a strong positive relationship between cash flow and growth for Slovenian firms indicates that firms are indeed credit constrained and no longer recipients of soft budget constraints, indeed firms appears to be facing hard budget constraints. Furthermore, our findings of relatively low cash flow coefficients for Belgium broadly correspond with the previous findings of the EIB report.

However, this degree of severity to which firms are constrained in Slovenia being higher than what firms experience in market economies would appear to imply that financial markets are still not yet fully developed.[12]

[12] We would like to investigate whether firm ownership plays a role on the relationship between internal finance and growth. However, quality ownership data for Slovenian firms is not available at present.

V Conclusion

In this paper we compare the role of internal finance on the growth firms between a leading transition country and an established market economy. For Belgian firms we find that cash flow plays a smaller role in the growth of firms and this relationship is even less for larger firms. For Slovenia we investigate whether firms are recipients of soft budget constraints or in fact they operate in imperfect capital markets. We find that the latter appears to be the case with cash flow being an important determinant of the growth of Slovenian firms. Thus comparing the two countries highlights the differences in functionality between capital markets in the west and a former communist country.

This finding for Slovenia reinforces the EDRD report that calls for financial markets to improve their access to finance for SMEs in Slovenia. Similarly, our findings are in line with the Slovene Entrepreneurship Observatory committee that finds access to finance as the main obstacle to growth for SMEs in Slovenia. However, with regard to this last finding, one must take into account that managers in firms may claim that they are constrained when in fact their constraints are due to their actions as opposed to the state of the capital markets.

One area for further research would be to investigate the different role cash flow plays in the growth of firms taking into account different types of ownership.

Appendix:

Table 3A:Belgium

	SME FD	SME GMM	Large FD	Large GMM
$\Delta(cf/k)$	1.17	0.955	0.809	0.59
	(0.024)	(0.2055)	(0.086)	(0.297)
$\Delta(dturnover/k)$	0.105	0.118	0.147	0.13
	(0.004)	(0.013)	(0.017)	(0.027)
Constant	0.008	0.007	0.005	0.005
	(0.007)	(0.001)	(0.002)	(0.002)
Obs	20615	20615	1390	1390
2nd order	No	No	No	No
Serr corr		1.8		0.5
Sargan		Passes		Passes
		0.260		0.62

Table 3B:Slovenia

	SME FD	SME GMM	Large FD	Large GMM
$\Delta(cf/k)$	1.59	1.24	1.41	1.28
	(0.05)	(0.463)	(0.211)	(0.44)
$\Delta(dturnover/k)$	0.15	0.522	0.194	0.216
	(0.007)	(0.070)	(0.06)	(0.06)
Constant	-0.004	0.023	0.001	0.001
	(0.001)	(0.010)	(0.002)	(0.002)
Obs	13724	13724	645	645
2nd order	No	No	No	No
Serr corr		1.8		0.19
Sargan		Passes		Passes
		0.268		0.396

Table 4A micro – enterprises in Belgium (firm size the year it enters the sample)

	Micro FD	Micro GMM
$\Delta(cf/k)$	1.075	0.846
	(0.038)	(0.234)
$\Delta(dturnover/k)$	0.102	0.123
	(0.008)	(0.019)
Constant	0.005	0.004
	(0.001)	(0.001)
Obs	12533	12533
2nd order	No	No
Serr corr		1.633
Sargan		Passes
		0.363

Table 4B micro – enterprises in Belgium (firm size on a year on year basis)

	Micro FD	Micro GMM
$\Delta(cf/k)$	1.075	0.846
	(0.038)	(0.234)
$\Delta(dturnover/k)$	0.102	0.123
	(0.008)	(0.019)
Constant	0.005	0.004
	(0.001)	(0.001)
Obs	12533	12533
2nd order	No	No
Serr corr		1.633
Sargan		Passes
		0.363

Table 5: Additional Summary statistics

Standard errors reported in parenthesis

	Slovenia	Belgium
glta	0.194	0.05
	(0.311)	(0.056)
cf/k	0.10	0.075
	(0.096)	(0.390)
dturnover/k	0.195	0.075
	(0.561)	(0.390)

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