

SOURCES OF CAPITAL STRUCTURE: EVIDENCE FROM TRANSITION COUNTRIES

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Sources of Capital Structure: Evidence from Transition Countries *

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Abstract

This study explores the significance of firm-specific, institutional, and macroeconomic factors in explaining variation in leverage using a sample of firms from nine Eastern European countries. Country-specific factors are the main determinants of variation in leverage for small unlisted companies, while firm-specific factors explain most of the variation in leverage for listed and large unlisted companies. Around half of the variation in leverage related to country factors is explained by known macroeconomic and institutional factors, while the remainder is explained by unmeasurable institutional differences (e.g. law and enforcement). These findings are in line with the results for Western European countries in Jõeveer (2005) and show that country characteristics are not more significant determinants of leverage in these transition economies.

Abstrakt

Tato studie zkoumá význam specifických firemních, institucionálních a makroekonomických faktorů pro vysvětlení rozdílů v kapitálové struktuře firem z devíti tranzitivních ekonomik. Specifické faktory na úrovni země jsou klíčové pro vysvětlení rozdílů v kapitálové struktuře pro malé nekótované firmy, zatímco firemní faktory jsou důležité pro velké a kótované firmy. Okolo poloviny variace v kapitálové struktuře související s faktory zemí se dá vysvětlit měřenými makroekonomickými veličinami a rozdíly v institucionálním prostředí, zatímco zbytek je vysvětlen nekvantifikovanými institucionálními rozdíly (např. vynutitelnost práva). Výsledky jsou shodné se studií Jõeveer (2005) zaměřenou na západoevropské ekonomiky a ukazují, že specifické podmínky dané země nejsou v tranzitivních ekonomikách významnějšími determinanty kapitálové struktury než v ekonomikách západních.

Keywords: Capital structure, Eastern Europe

JEL classification: G32

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1 Introduction

The firm capital structure is irrelevant in efficient financial markets as shown by Modigliani and Miller (1958).¹ Subsequent theoretical work has taken into account the imperfections of financial markets and has shown that firm capital structure emerges from three sources: firm-specific, country of incorporation institutional, and macroeconomic factors. Empirical research has focused on finding the best set of determinants of leverage (Titman and Wessel 1988; Frank and Goyal 2004), though lack of comparable firm-level cross-country data has somewhat hindered the exploration of significant country factors. In the current paper I evaluate the significance of all three sources.

The importance of country of incorporation for firm leverage has been analysed in a few cross-country studies. Booth, Aivazian, Demirgüç-Kunt, and Maksimovic (2001) show on a sample of firms from ten developing countries that country fixed effects explain a large share of leverage variation, but they do not decompose the country effects to show what country characteristics matter. On a sample of firms from developing Asian and South American countries, Schmukler and Vesperoni (2001) explore the relation between leverage and financial liberalization. Using data on Western European firms Giannetti (2003) shows that financial development and creditor protection are significant determinants of leverage. Jõeveer (2005), also using Western European firm data, shows that half of the country explanatory power is determined by six country macroeconomic and institutional factors while another half is explained by an unmeasurable institutional difference. All above mentioned studies confirm that the country of incorporation does matter for the capital structure of the firm.

Rajan and Zingales (1995) conclude their paper with: "... a better understanding of the influence of institutions can provide us enough inter-country variation so

¹Rubinstein (2003) notes that Williams (1938) already expressed the same idea.

as to enable us to identify the fundamental determinants of capital structure.” My paper overcomes the lack of inter-country variation by studying firm-level data from nine Eastern European countries over 1995-2002, where the institutional and other country-specific determinants of capital structure noted in the capital structure theory (e.g. adjustment costs of capital, asymmetric information between owners and investors, capital market conditions) are expected to be especially significant. Therefore, firms from Eastern European countries, where modern financial markets emerged only during recent decades, are an excellent sample to study. The methods and speed with which the missing institutions were introduced differed across countries (Berglof and Bolton 2002), providing large variation in country factors. The leverage of firms in early transition has been studied by Cornelli, Portes, and Schaffer (1998) and in later transition by Nivorozhkin (2005) and De Haas and Peeters (2006). My study complements these existing studies by investigating and evaluating the importance of the country of incorporation.

The empirical methodology of this paper follows that of Jõeveer (2005). There is no stylized facts about the sources of leverage variation in transition countries, so unlike previous studies on transition economies I make use of the variation available in the cross-country data. First, I perform an Analysis of Variance (ANOVA) in order to detect the importance of size, industry, and country factors for leverage variation. Second, regression analysis is used to compare the direction of the effect of the various leverage determinants in transition countries to the effects found in the existing capital structure studies.

The paper is organized as follows. In the next section I provide an overview of the related research. In Section 3 I introduce the data and the estimation strategy. Section 4 contains the results, followed by a concluding section.

2 Capital structure in transition economies

The importance of studying the capital structure of firms in transition economies was first pointed out by Cornelli, Portes, and Schaffer (1998). Since modern financial markets in those countries emerged in the early 1990's, in terms of capital structure theories it meant that local country factors could be especially significant in explaining firm leverage.

The two most influential theories of capital structure—trade-off theory and pecking order theory—find that country institutional factors matter to firm leverage. Trade-off theory argues that firms balance the tax benefits of loans with potential bankruptcy costs to achieve an optimal leverage level (see Miller 1977 for a discussion). Hence, local tax levels as well as bankruptcy codes matter. In pecking order theory of capital structure, firms prefer internal funds to outside sources since the latter are mispriced due to the asymmetric information between owners and investors (see Myers 1984). Hence, the transparency of the firm's activities is important. This asymmetric information is expected to be especially large in transition economies, meaning that firms are less likely to turn to outside sources of finance even if the investment opportunities exceed the internal funds. Also the market timing theory reveals that due to changes in macroeconomic factors the cost of equity capital and debt varies, causing the leverage to vary as well (see Baker and Wurgler 2002).

Frank and Goyal (2004) note that seven variables—median industry leverage, market-to-book ratio, collateral, profit, dividend paying, logarithm of assets and expected inflation—perform best in explaining the leverage of US firms. My study augments Frank and Goyal's (2004) work by evaluating the determinants of leverage in a cross-country setting, which gives a larger variation in country characteristics. I add to the analysis besides inflation five additional country-specific variables: GDP growth, domestic credit provided by the banking sector to GDP, stock market

capitalization to GDP, share of foreign owned banks, and government consumption to GDP.²

GDP growth has been used in previous studies (Frank and Goyal 2004, Kojczyk and Levy 2003 in their analysis of aggregate nonfinancial corporate profit growth) to proxy the growth opportunities and the overall economic conditions. GDP growth is expected to be positively related to leverage. The ratio of domestic credit provided by the banking sector to GDP proxies funds available in the local market. It is expected to be positively related to leverage. The ratio of stock market capitalization to GDP proxies the development of the financial sector. Giannetti (2003) has shown that this indicator is negatively related to the leverage of Western European firms. The share of foreign owned banks is an important indicator in Eastern Europe because under socialism there was no competitive banking system, hence there was a lack of knowledge and experience of modern banking in the early 1990's. A higher share of foreign owned banks reflects a higher quality of the banking system as well as larger competition between banks. The latter translates into more funds available in the domestic market and hence to higher leverage of firms.³ Note that the share of foreign owned banks is highly correlated (73%) with the ratio of FDI to GDP. Hence, the higher share of foreign owned banks might be interpreted as a greater interest among foreign investors in general in a given economy. Higher corporate taxes have been found to be negatively related to leverage (Desai, Foley, and Hines 2004, Giannetti 2003). Due to data unavailability I use the fraction of government consumption to GDP as a proxy for residents' tax burden.

Capital structure studies on firms from transition economies have generally focused on the level of leverage and on the firm-specific determinants of leverage.

²Note that Frank and Goyal (2004) experimented with several country-specific variables but all others besides inflation were less robust determinants.

³See Giannetti and Ongena (2005) for more details about the influence of foreign bank entry on domestic firm activities in Eastern Europe.

Cornelli, Portes, and Schaffer (1998) use data on Hungarian and Polish firms from the early 1990s to report stylized facts about firm leverage in transition countries. They find that the level of leverage is lower than in Western economies and that the fraction of short-term financing dominates long-term debt. They estimate a simple static leverage regression, where the explanatory variables are tangibility, size, profitability and a dummy for state ownership. In contrast to studies on Western firms, these authors find that the share of tangible assets, which proxies the available collateral, is negatively related to leverage in the case of transition countries. They offer two explanations for this: first, that pre-transition firms financed their fixed assets with equity and therefore the relationship to debt is negative; second, that the book value of fixed assets might differ from the market values. The authors thus report that Eastern European firm capital structure behaves differently from Western European structure with respect to firm-specific characteristics. The lack of country-specific variability in their study, however, means they are unable to measure the significance of institutional and macroeconomic factors, which is the target of the present paper.

Later studies by Nivorozhkin (2005) and De Haas and Peeters (2006) explore the dynamic capital structure of firms in transition countries. In a dynamic capital structure framework actual leverage deviates from desired levels because of adjustment costs. Both papers use data from the Amadeus database available from Bureau Van Dijk and adopt the methodology of Banerjee, Heshmati, and Wihlborg (2004); this methodology allows both the desired leverage and the adjustment speed to vary across firms and over time. De Haas and Peeters (2006) analyse ten countries over the period 1993-2001. Nivorozhkin (2005) analyses five countries over 1997-2001. Both papers show that firms are moving towards their leverage targets and conclude that Eastern European capital markets need to deepen further for the leverage to reach the Western European level.

The current paper differs from existing studies on firms from transition economies by focusing on sources of capital structure with a special interest in country-specific factors. The cross-country yearly firm-level data used in this study are an excellent basis on which to evaluate the importance of firm-specific, country institutional and macroeconomic factors for firm capital structure determination.

3 Data and methodology

The data used in this paper are taken from the Amadeus database available from Bureau Van Dijk. This database contains firm-level data from all over Europe. The Amadeus database is available in different sizes. Firms in this study are taken from Amadeus Top 1 million companies.⁴ The analysis is based on eight years of data (1995-2002) for nine countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia). The database consists not only of stock-market-listed firms but, more importantly, also covers unlisted companies. Klapper, Sarria-Allende, and Sulla (2002) report that 86% of Eastern European firms in the Amadeus sample for 1999 have fewer than 250 employees. The data hence covers small- and medium-sized firms as well as large companies.

The sample is unbalanced and the representativeness across countries varies.⁵ Romania has the greatest coverage. The largest firms are from Poland and Czech and Slovak Republics while the smallest are from Bulgaria, Estonia and Romania (see Table 1).

The methodology used in this paper is adopted from Jõeveer (2005). Hence,

⁴For comparison the firms in De Haas and Peeters (2006) are from the Amadeus Top 200000 companies, which covers fewer firms (smaller firms are not covered).

⁵For the Czech Republic and Estonia I know the size distribution of all firms across industries, which I compared with the size distribution of the Amadeus sample. Amadeus sample overestimates the share of largest firms, which is likely due to the sample selection criteria. Companies in the Amadeus Top 1 million sample have to meet at least one of the following criteria: operating revenue greater than 1 million euros, total assets greater than 2 million euros or number of employees above 10.

the results of the current study are directly comparable to the findings based on Western European firms analysed in Jøeveer (2005). The analysis is divided into two parts. The first part is the Analysis of Variance (ANOVA), which helps to measure the share of different sources in explaining leverage variation. The second part analyses a regression of leverage on firm- and country-specific factors.

I consider four sets of explanatory variables in the ANOVA analysis—size, industry, country, and year. Size and industry represent the firm-specific factors while country dummies capture the effect of the local financial market.⁶ I have split firms into five size classes based on total assets.⁷ Firms from 51 industries are represented (NACE 2 digit classification).⁸

Regression analysis focuses on the estimation of the following two specifications:

$$Y_{ijt} = \alpha + \beta_j + \gamma_t + \delta X_{ijt} + \varepsilon_{ijt}, \quad (1)$$

$$Y_{ijt} = \alpha + \beta_j + \gamma_t + \delta X_{ijt} + \zeta C_{jt} + \varepsilon_{ijt}, \quad (2)$$

where i , j and t are the index of firm, country, and year, respectively. The second equation is the same as the first equation augmented by country-specific time-variant variables (C_{jt}) beside country fixed effects (β_j). X_{ijt} represents firm-specific variables. γ_t is the year effect and ε_{ij} is the random disturbance.

I use six country variables to capture the measurable country effects: GDP growth, inflation (proxies for cost of capital),⁹ domestic credit provided by the

⁶I experimented by adding firm age dummies into the ANOVA analysis; this did not change the pattern of results.

⁷The size classes are following: total assets up to \$1 million, between \$1-2 million, between \$2-5, between \$5-50 million and above \$50 million.

⁸Firms from the financial intermediation sector are excluded from the study due to their specific liability structure. Also, observations with extreme value (if leverage is three times the difference between the 25th or 75th percentile further from 25th or 75th percentile) of leverage are excluded.

⁹I considered interest rate as well as a proxy for the cost of capital, but due to high correlation with inflation it was left out of the final specification.

banking sector to GDP, stock market capitalization to GDP, share of foreign owned banks, and government consumption to GDP.¹⁰ Firm-specific characteristics included in the analysis are: profitability (after-tax profit to total assets ratio), tangibility (tangible fixed assets to total assets ratio), size (logarithm of assets), median industry leverage and age dummies.^{11 12}

I use two leverage measures as in Jõeveer (2005). Broad leverage is defined as total liabilities over total assets, while narrow leverage is defined as debt (both long-term and short-term) over the sum of debt and shareholder's funds. The advantage of the former measure is that it is available for all firms in the data set; the shortcoming is that it is likely to overstate the true level of leverage. Since the theory of capital structure refers to the part of liabilities, which is used for financing (in total liabilities some short-term items might be used for transactions only), the narrow leverage would seem to be a more relevant measure. But it is still possible that trade credit is used for financing as well and it would therefore be amiss to exclude it from the capital structure study (see the discussion in Rajan and Zingales 1995). The two leverage measures differ greatly from each other (see Table 1). The average of broad leverage is around 60%, whereas the mean of narrow leverage reaches 40% only for Latvian and Polish firms but is as low as 5% for Hungarian firms. Compared to results for Western European firms in Jõeveer (2005), both leverage measures are smaller for Eastern European firms. Smaller firm indebtedness in Eastern Europe compared to Western Europe might be explained by the fact that domestic credit provided by the banking sector (to GDP) is around 40% in the former and more than 100% in the latter region.

¹⁰The country-specific variables are taken from the World Development Indicators except for the share of foreign owned banks, which is taken from the EBRD Transition Report.

¹¹Age is included since both Nivorozhkin (2005) and De Haas and Peeters (2006) find it to be a significant determinant of leverage in transition economies.

¹²I have no information about dividend payments nor the knowledge of the market value of the company for unlisted firms. Thus the two significant firm-specific characteristics based on Frank and Goyal (2004)—dividend payment and market-to-book ratio—are not included in the analysis.

Leverage measures used in other studies on transition economies are similar to the ones used in my study.¹³

I perform the analysis separately on listed and unlisted firms. Since I consider being listed as a good signal for financiers both domestically as well as from abroad, I expect that local institutions matter less for listed firms' capital structure.

4 Results

I present the results separately for listed and unlisted firms across the two leverage measures. Table 2 presents the results of the ANOVA analysis for listed firms. Industry dummies explain most of the leverage variation for both leverage measures (Panel A and B). In the second column, besides the four sets of discrete variables, firm tangibility and profitability are included. This increases the adjusted R^2 and decreases the explanatory power of the other variables. In the last column, firm characteristics and measurable time-variant country factors are included. Half of the country effects can be explained by known country characteristics, suggesting that unmeasurable institutional differences between countries explain less than 10% of firm leverage variation. For listed firms the ANOVA results are robust for the leverage measure used.

Results of the ANOVA analysis for unlisted firms are presented in Table 3. The results are not robust for the leverage measure used. For broad leverage, variation in industry characteristics explains more than do country characteristics. For narrow leverage the results are the opposite—country characteristics explain more than firm characteristics. Even after controlling for other firm- and country-specific factors (last column), 26% of narrow leverage variation is explained by unmeasur-

¹³Cornelli, Portes, and Schaffer (1998) conduct their study on two measures, which corresponds to the two measures in the present paper, and find that their results are robust to the leverage measures. Nivorozhkin (2005) uses a leverage measure which corresponds to narrow leverage. De Haas and Peeters (2006) calculate the debt in leverage ratio as total liabilities minus trade credit. The measure they use is thus somewhere between the two measures used in the current paper.

able institutional differences. For broad leverage the comparable number is only 11%. Unmeasurable institutional differences could be related to legal environment (e.g. bankruptcy law, accounting regulations and so on) but it is still puzzling how those institutional differences have different effect on listed and unlisted firms.

For unlisted firms the ANOVA results differ for different leverage measures, then, it is really important which leverage measure is used. The main difference between the two measures comes from the current liability side—narrow leverage takes into account only short-term debt (not all short-term liabilities). Narrow leverage captures the loan capacity of the firm, which seems to be highly country specific for unlisted firms. Broad leverage, on the other hand, also captures non-debt liabilities like trade credit, which is a particularly important source of funds for more financially constrained firms (Petersen and Rajan 1997). Trade credit is also a more important source of funds for Eastern European firms than for Western European firms. Trade credit is 43% of total liabilities in my Eastern European sample while it is only 24% in the Jõeveer (2005) sample of firms from ten Western European countries. The non-debt liabilities in Eastern Europe might have been used as substitutes for debt (if the latter was not available) so that the country-specific variation in broad leverage is eliminated.

The different results obtained for listed and unlisted firms could be explained by the fact that listed firms are larger.¹⁴ To see whether the results differ due to size differences I conducted ANOVA analysis in each of the five size classes. Table 4 presents the results for listed firms. For both leverage measures, industry factors explain the most for all size classes.¹⁵ For unlisted firms (Table 5) the results are different for firms from different size classes. Country factors explain the most for the smallest firm's broad leverage variation. For firms from the four

¹⁴The difference might also be caused by ownership—stock market listed companies are more likely to have foreign owners, which might ease their financing needs. As I do not have the information about the foreign ownership of the firm I can not test this.

¹⁵I combined the three smallest size classes due to lack of observations.

larger size classes, industry factors dominate in explaining the leverage variation. This is consistent with the hypothesis that smaller firms rely more heavily on the local financial market. For unlisted firms' narrow leverage, country factors explain the most for the four smallest size classes. The explanatory shares of country and industry factors are equal for the largest firms. These results on size classes confirm that for the smallest unlisted firms, country factors are the most significant leverage determinants for both leverage measures.¹⁶ Those firms are clearly more constrained by their local financial market than are other firms.

The results of the ANOVA analysis are comparable to the findings from Western European countries presented in Jõeveer (2005). Exactly as was the case for the listed firms in Western Europe, industry factors were the most significant determinants of leverage variation irrespective of firm size. For unlisted Western firms the country factors always explained the largest share of narrow leverage variation irrespective of size. For unlisted Western firms' broad leverage, country factors mattered the most for the four smaller size classes while for the largest size class, industry factors turned out to be the most significant. The average firm in Western Europe is larger than in Eastern Europe, which might explain why we observe the change in the explanatory power of country and industry factors in smaller size classes in the Eastern European sample. The firms in size classes 2 to 4 are relatively larger than the average firm in the Eastern European sample than in the Western European sample. Hence, the ANOVA analysis stresses the importance of country factors for small unlisted companies' leverage variation and it is irrelevant whether those firms are drawn from the pool of developed or less developed economies. The financing mix of both Eastern and Western European small firms is, compared to large firms, less dependent on firm-specific technological factors and more dependent on country of incorporation factors. A comparison of the results of

¹⁶Different size classification does not change the findings.

Eastern and Western European firm leverage analyses does not support the initial expectation, that the lesser-developed financial markets in the East might cause country factors to be more pronounced for the firm's capital structure choice.

The results of regression analysis are presented in Table 6.¹⁷ Results of listed firms are reported in Panel A. The coefficient in front of tangibility has a negative sign and is statistically significant. This confirms the results of previous studies on transition countries (Cornelli, Portes, and Schaffer 1998) but contradicts the predictions of theoretical studies and empirical findings from Western countries (Rajan and Zingales 1998). A surprising result is that profitability is estimated imprecisely, so the profitability of Eastern European listed firms does not explain the leverage level. The logarithm of firm size is positively related to leverage, so larger listed firms have higher leverage. This is in accordance with both trade-off theory¹⁸ and pecking order theory¹⁹. Age is a significant determinant of leverage only at the 10% level for the broad leverage measure—firms established in early transition are more levered than firms established before 1987 or after 1995. The country-specific macroeconomic and institutional factors are included in addition to country fixed-effects in columns 2 and 4. The significance and the direction of the effect of country-specific factors vary across leverage measures. As expected, GDP growth and domestic bank credit to GDP are positively related to narrow leverage. The negative coefficients in front of market capitalization to GDP and share of foreign banks in the narrow leverage regression, however, are puzzling.

For unlisted firms (Table 6 Panel B) tangibility is measured imprecisely, such that the amount of collateral available does not convert to higher indebtedness.

¹⁷The OLS estimation results presented here are very similar to the results achieved by fixed effects (available on request).

¹⁸Larger firms face a proportionally smaller bankruptcy cost, so they are likely to have more debt.

¹⁹Larger firms are more transparent so they should face less asymmetry of information. Larger firms should therefore rely more on external finance. Since equity issues are not common in transition countries it is likely that large firms rely more on debt.

Profitability is statistically significant only for the narrow leverage measure, meaning that the more profitable unlisted firms are likely to have less credit. This finding follows the prediction of pecking-order theory. As in Jõeveer (2005), the logarithm of size enters with a negative sign in the broad leverage regression and with a positive sign in the narrow leverage regression. This finding stresses once again that for unlisted firms the two leverage ratios measure different things. Based on age dummies included in the regression, the younger firms are shown to be more levered than older firms. Hence I do not observe that an established reputation would lead to higher leverage as expected. One explanation for this might be that older firms have enough internal funds and do not need debt finance. I find country factors to be more significant and have larger coefficients for narrow leverage than for broad leverage. The signs of country characteristics in the narrow leverage regression are as expected except for the negative sign in front of the share of foreign banks.

The results of regression analysis are in line with previous studies on firms from transition countries. It is interesting that firm-specific factors tangibility, and profitability are only weakly related to leverage. From country-specific factors it is notable that the positive significant coefficient in front of domestic bank credit in the narrow leverage regression appears for both listed and unlisted firms. This result confirms the hypothesis that less local credit causes lower leverage levels.

5 Conclusions

In this paper I study the importance of firm-specific, country institutional, and macroeconomic factors for determining the capital structure of firms. The analysis is based on firm-level data from nine Eastern European countries in 1995-2002. I use both broad and narrow measures of leverage in this paper.

I find that the largest share of listed firms' leverage (irrespective of leverage measure) variation is explained by industry factors. The unmeasurable country

institutional factors explain less than 10% of leverage variation. For unlisted firms, in contrast, the results are not robust to the leverage measure used. For broad leverage the industry factors explain the most while for narrow leverage the country factors dominate. Further, the unmeasurable country institutional differences explain as much as 26% of narrow leverage variation while it explains only 11% for broad leverage variation. The results across size classes show that for smaller unlisted firms, country factors are the most significant explanatory factors for both leverage measures. These results show that for small and unlisted firms the leverage definition is very significant. Smaller firms seem to be more constrained by the financial market in their country of incorporation.

The results of this study are very similar to the findings of Jõeveer (2005) on the sample of Western European firms. Capital structure variation of small- and medium-sized firms is more dependent on country institutional factors, irrespective of the development of the local financial markets. Regression analysis of leverage confirms the existing results based on transition countries. These findings stress the need to deepen our understanding of the role of institutions capital structure.

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TABLE 1 — SUMMARY STATISTICS IN 2000

Country	Leverage 1	Leverage 2	Total Assets	Number of Firms
Bulgaria				
Mean	0.59	0.12	1386	13189
Median	0.58	0	211	
St. dev.	0.36	0.25	12977	
Czech Republic				
Mean	0.61	0.28	10058	7374
Median	0.63	0.16	2100	
St. dev.	0.31	0.33	83557	
Estonia				
Mean	0.62	0.31	1677	5224
Median	0.63	0.21	332	
St. dev.	0.3	0.33	12575	
Hungary				
Mean	0.62	0.05	5738	7923
Median	0.63	0	907	
St. dev.	0.3	0.14	40254	
Latvia				
Mean	0.65	0.4	3699	2178
Median	0.69	0.35	744	
St. dev.	0.28	0.35	22422	
Lithuania				
Mean	0.53	0.34	6693	1143
Median	0.54	0.3	1091	
St. dev.	0.26	0.26	41957	
Poland				
Mean	0.59	0.4	16283	10933
Median	0.59	0.35	3365	
St. dev.	0.37	0.32	114655	
Romania				
Mean	0.76	0.2	1628	23274
Median	0.81	0	161	
St. dev.	0.31	0.32	34299	
Slovak Republic				
Mean	0.59	0.3	10770	1312
Median	0.62	0.17	2120	
St. dev.	0.32	0.34	58098	

NOTES: Leverage 1 is defined as total liabilities to total assets. Leverage 2 is defined as debt to debt plus shareholders' funds. Total assets are in thousands of USD.

TABLE 2 — ANOVA RESULTS FOR LISTED FIRMS
 PANEL A — BROAD LEVERAGE

Source	SSR		SSR		SSR	
Size	4.97	12%	4.00	7%	4.24	8%
	(5)		(5)		(5)	
Industry	25.86	63%	27.64	51%	27.17	49%
	(47)		(47)		(47)	
Country	8.30	20%	8.50	16%	4.91	9%
	(9)		(9)		(9)	
Year	5.88	14%	3.69	7%	0.50	1%
	(8)		(8)		(8)	
Model	41.22		54.00		55.38	
Total	223.16		223.16		223.16	
Firm ch.	No		Yes		Yes	
Country ch.	No		No		Yes	
Adj. R^2	0.17		0.23		0.23	
Obs.	3512		3512		3512	

PANEL B — NARROW LEVERAGE

Source	SSR		SSR		SSR	
Size	7.54	26%	6.29	20%	6.58	19%
	(5)		(5)		(5)	
Industry	9.36	32%	10.67	33%	10.16	30%
	(46)		(46)		(46)	
Country	6.10	21%	6.38	20%	2.53	7%
	(9)		(9)		(9)	
Year	2.29	8%	2.46	8%	1.17	3%
	(8)		(8)		(8)	
Model	28.89		31.94		33.87	
Total	126.16		126.16		126.16	
Firm ch.	No		Yes		Yes	
Country ch.	No		No		Yes	
Adj. R^2	0.21		0.24		0.25	
Obs.	2905		2905		2905	

NOTES: Numbers in cells refer to partial sum of squares (SSR). The numbers in parentheses refer to number of indicators. Broad leverage is defined as total liabilities to total assets. Narrow leverage is defined as debt to debt plus shareholders' funds. Industry is 3-digit NACE. Firm size classes: Class 1 total assets (TA) smaller than \$1 million, Class 2 TA between \$1 and 2 million, Class 3 TA between \$2 and 5 million, Class 4 TA between \$5 to 50 million, and Class 5 TA above \$50 million. Firm characteristics are tangible assets to total assets and profit to asset ratios. Country characteristics are GDP growth rate, inflation, domestic credit to GDP, total market capitalization to GDP, share of foreign-owned banks' assets and government consumption to GDP.

TABLE 3 — ANOVA RESULTS FOR UNLISTED FIRMS
 PANEL A — BROAD LEVERAGE

Source	SSR		SSR		SSR	
Size	268.71	6%	266.35	6%	255.70	5%
	(5)		(5)		(5)	
Industry	1469.74	34%	1412.97	31%	1418.39	30%
	(51)		(51)		(51)	
Country	1093.85	25%	1107.77	24%	547.39	11%
	(9)		(9)		(9)	
Year	949.34	22%	915.03	20%	48.99	1%
	(8)		(8)		(8)	
Model	4295.34		4629.87		4770.03	
Total	41696.58		41696.58		41696.58	
Firm ch.	No		Yes		Yes	
Country ch.	No		No		Yes	
Adj. R^2	0.10		0.11		0.11	
Obs.	379324		379324		379324	

PANEL B — NARROW LEVERAGE

Source	SSR		SSR		SSR	
Size	285.51	8%	279.61	8%	282.90	8%
	(5)		(5)		(5)	
Industry	578.33	16%	575.23	16%	578.77	16%
	(51)		(51)		(51)	
Country	1892.11	53%	1890.64	53%	972.83	26%
	(9)		(9)		(9)	
Year	118.71	3%	114.33	3%	55.86	1%
	(8)		(8)		(8)	
Model	3563.85		3585.06		3730.67	
Total	29763.80		29763.80		29763.80	
Firm ch.	No		Yes		Yes	
Country ch.	No		No		Yes	
Adj. R^2	0.12		0.12		0.13	
Obs.	330292		330292		330292	

NOTES: Numbers in cells refer to partial sum of squares (SSR). The numbers in parentheses refer to number of indicators. Broad leverage is defined as total liabilities to total assets. Narrow leverage is defined as debt to debt plus shareholders' funds. Industry is 3-digit NACE. Firm size classes: Class 1 total assets (TA) smaller than \$1 million, Class 2 TA between \$1 and 2 million, Class 3 TA between \$2 and 5 million, Class 4 TA between \$5 to 50 million, and Class 5 TA above \$50 million. Firm characteristics are tangible assets to total assets and profit to asset ratios. Country characteristics are GDP growth rate, inflation, domestic credit to GDP, total market capitalization to GDP, share of foreign-owned banks' assets and government consumption to GDP.

TABLE 4 — ANOVA RESULTS FOR LISTED FIRMS
BY SIZE CLASS

PANEL A — BROAD LEVERAGE						
Source	Size<4		Size 4		Size 5	
Industry	16.43	75%	15.22	64%	9.11	64%
	(41)		(39)		(38)	
Country	0.65	3%	7.17	30%	2.72	19%
	(7)		(9)		(9)	
Year	4.67	21%	2.54	11%	0.75	5%
	(8)		(8)		(8)	
Model	21.91		23.71		14.26	
Total	84.72		100.74		35.69	
Adj. R^2	0.22		0.21		0.35	
Obs.	1156		1651		705	

PANEL B — NARROW LEVERAGE						
Source	Size<4		Size 4		Size 5	
Industry	3.61	56%	7.26	58%	5.73	53%
	(40)		(36)		(35)	
Country	0.25	4%	3.40	27%	3.80	35%
	(7)		(9)		(9)	
Year	2.49	39%	0.96	8%	0.27	2%
	(8)		(8)		(8)	
Model	6.46		12.53		10.84	
Total	31.57		60.45		26.10	
Adj. R^2	0.17		0.18		0.35	
Obs.	1103		1283		519	

NOTES: Numbers in cells refer to partial sum of squares (SSR). The numbers in parentheses refer to number of indicators. Broad leverage is defined as total liabilities to total assets. Narrow leverage is defined as debt to debt plus shareholders' funds. Industry is 3-digit NACE. Firm size classes: Class 1 total assets (TA) smaller than \$1 million, Class 2 TA between \$1 and 2 million, Class 3 TA between \$2 and 5 million, Class 4 TA between \$5 to 50 million, and Class 5 TA above \$50 million.

TABLE 5 — ANOVA RESULTS FOR UNLISTED FIRMS
BY SIZE CLASS

PANEL A — BROAD LEVERAGE										
Source	Size 1		Size 2		Size 3		Size 4		Size 5	
Industry	595.88	24%	232.97	62%	333.23	69%	477.56	81%	97.77	79%
	(51)		(50)		(50)		(51)		(51)	
Country	1163.07	46%	44.42	12%	46.37	10%	22.72	4%	6.14	5%
	(9)		(9)		(9)		(9)		(9)	
Year	658.33	26%	109.44	29%	99.52	21%	71.64	12%	8.70	7%
	(8)		(8)		(8)		(8)		(8)	
Model	2513.39		376.79		481.63		587.57		123.85	
Total	27180.28		4099.03		4877.94		4236.45		520.58	
Adj. R^2	0.09		0.09		0.10		0.14		0.23	
Obs.	242254		42335		46791		43126		4818	

PANEL B — NARROW LEVERAGE										
Source	Size 1		Size 2		Size 3		Size 4		Size 5	
Industry	351.82	24%	81.26	22%	89.61	19%	141.80	24%	44.66	36%
	(51)		(50)		(50)		(51)		(51)	
Country	889.94	60%	297.46	79%	353.14	73%	348.26	59%	43.47	35%
	(9)		(9)		(9)		(9)		(9)	
Year	130.03	9%	21.46	6%	7.64	2%	24.17	4%	5.05	4%
	(8)		(8)		(8)		(8)		(8)	
Model	1473.35		403.09		454.02		516.17		96.89	
Total	17591.97		3542.17		3777.65		3523.31		411.44	
Adj. R^2	0.08		0.11		0.12		0.14		0.22	
Obs.	219906		35190		37293		34074		3829	

NOTES: Numbers in cells refer to partial sum of squares (SSR). The numbers in parentheses refer to number of indicators. Broad leverage is defined as total liabilities to total assets. Narrow leverage is defined as debt to debt plus shareholders' funds. Industry is 3-digit NACE. Firm size classes: Class 1 total assets (TA) smaller than \$1 million, Class 2 TA between \$1 and 2 million, Class 3 TA between \$2 and 5 million, Class 4 TA between \$5 to 50 million, and Class 5 TA above \$50 million.

TABLE 6 – LEVERAGE REGRESSION IN 1995-2002
PANEL A – LISTED FIRMS

	Leverage 1		Leverage 2	
Const.	.038 (.055)	.044 (.081)	-.084 (.047)*	-.12 (.078)
Tangibility	-.217 (.035)***	-.207 (.036)***	-.124 (.025)***	-.113 (.026)***
Profitability	-.002 (.002)	-.002 (.002)	.0002 (.001)	.0005 (.001)
Log assets	.022 (.006)***	.023 (.006)***	.029 (.005)***	.03 (.005)***
Established 1987-95	.042 (.024)*	.043 (.024)*	.026 (.02)	.027 (.02)
Established after 1995	1.00e-05 (.023)	.002 (.024)	-.008 (.018)	-.006 (.018)
Industry leverage	.806 (.058)***	.794 (.059)***	.682 (.071)***	.656 (.071)***
GDP growth		-.003 (.002)***		.005 (.002)***
Inflation		-.00006 (.00003)***		-.00003 (.00003)
Domestic bank credit		.0005 (.0004)		.001 (.0004)***
Market capitalization		-.001 (.001)		-.003 (.001)***
Share of foreign banks		.001 (.0007)**		-.001 (.0006)**
Government consumption		-.002 (.003)		-.002 (.003)
Obs.	3512	3512	2905	2905
R^2	.234	.238	.245	.258

NOTES: Leverage 1 is defined as total liabilities over total assets. Leverage 2 is defined as debt over debt plus equity. Standard errors are in brackets. ***, **, and * denote significance at the 1, 5 and 10 percent level respectively. Standard errors are based on clustering across firms. All regressions include country and year dummies. Tangibility is defined as tangible assets to total assets. Profitability is defined as profit to total assets. Established 1987-95 is a dummy equal to one if the firm was established between 1987-95. Established after 1995 is a dummy equal to one if the firm was established after 1995. Domestic bank credit, total market capitalization and government consumption are measured as ratio to GDP.

PANEL B – UNLISTED FIRMS

	Leverage 1		Leverage 2	
Const.	.145 (.013)***	.371 (.017)***	-.129 (.005)***	-.182 (.013)***
Tangibility	-.015 (.014)	-.015 (.014)	.0007 (.0007)	.0007 (.0007)
Profitability	-.025 (.016)	-.024 (.016)	-.013 (.007)**	-.013 (.006)**
Log assets	-.014 (.0007)***	-.014 (.0007)***	.023 (.0005)***	.023 (.0005)***
Established 1987-95	.059 (.005)***	.065 (.005)***	.087 (.004)***	.091 (.004)***
Established after 1995	.119 (.005)***	.123 (.005)***	.092 (.004)***	.096 (.004)***
Industry leverage	.571 (.013)***	.57 (.013)***	.557 (.016)***	.548 (.016)***
GDP growth		.00006 (.0002)		.007 (.0002)***
Inflation		-.0001 (5.88e-06)***		.00002 (5.30e-06)***
Domestic bank credit		-.00003 (.00008)		.002 (.00008)***
Market capitalization		-.00009 (.0001)		.001 (.0001)***
Share of foreign banks		.0009 (.00009)***		-.0003 (.0001)***
Government consumption		-.011 (.0004)***		-.002 (.0004)***
Obs.	379324	379324	330292	330292
R^2	.123	.126	.118	.123

NOTES: Leverage 1 is defined as total liabilities over total assets. Leverage 2 is defined as debt over debt plus equity. Standard errors are in brackets. ***, **, and * denote significance at the 1, 5 and 10 percent level respectively. Standard errors are based on clustering across firms. All regressions include country and year dummies. Tangibility is defined as tangible assets to total assets. Profitability is defined as profit to total assets. Established 1987-95 is a dummy equal to one if the firm was established between 1987-95. Established after 1995 is a dummy equal to one if the firm was established after 1995. Domestic bank credit, total market capitalization and government consumption are measured as ratio to GDP.

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