

**THE EFFECT OF OWNERSHIP STRUCTURE, COUNTRY GOVERNANCE, AND
FINANCIAL DEVELOPMENT ON THE CAPITAL STRUCTURE OF UNLISTED
EASTERN EUROPEAN FIRMS**

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ABSTRACT

This paper investigates the determinants of capital structure for a sample of 20,713 unlisted firms from 11 eastern European countries over the period 1994-2004. We employ usual firm-specific financial variables as well as country-specific variables that describe the degrees of governance structure and financial development of each country. Using regression analysis, our results indicate that firm ownership concentration and country governance structure are insignificant explanatory variables to the degree of leverage of the firms in our sample. On the other hand, indicators of country financial development are robust determinants of capital structure. However, the marginal explanatory power of country-specific variables is small. We conclude that firm-specific characteristics are decisive in capital structure.

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The Effect of Ownership Structure, Country Governance, and Financial Development on the Capital Structure of Unlisted Eastern European Firms

Abstract: This paper investigates the determinants of capital structure for a sample of 20,713 unlisted firms from 11 eastern European countries over the period 1994-2004. We employ usual firm-specific financial variables as well as country-specific variables that describe the degrees of governance structure and financial development of each country. Using regression analysis, our results indicate that firm ownership concentration and country governance structure are insignificant explanatory variables to the degree of leverage of the firms in our sample. On the other hand, indicators of country financial development are robust determinants of capital structure. However, the marginal explanatory power of country-specific variables is small. We conclude that firm-specific characteristics are decisive in capital structure.

1. Introduction

What is the importance of country governance structure and financial development as determinants of firms' capital structure? Are the differences between firm's financial decisions just driven by their own characteristics or is there an important role of country-specific measures of governance and financial development?

In order to address these questions we investigate the determinants of capital structure for a sample of 20,713 unlisted firms from 11 Eastern Europe countries over the period 1994-2004. The sample is constituted by countries that had a different history in the last decade regarding their governance structure and financial development.

To the best of our knowledge, this is the first paper to examine how the firm-specific financial variables as well as country-specific variables that describe the degrees of governance structure and financial development of each country affect corporate debt policy for a large sample of unlisted firms in transition economies many of them belonging to the former USSR.

Most of the research on capital structure theories derives from large listed firms in developed countries based in a single country analysis. That is the case of Titman and Wessels (1988) for the US, Bevan and Danbolt (2002), Ozkan (2001) and Bennet and Donnelly (1993) for the United Kingdom and Miguel and Pindado (2001) for Spain. It was only in the last decade that some studies have been carried out in a multi country setting to compare differences in the capital structure between countries. We can highlight the pioneer work by Rajan and Zingales (1995), using a sample of large firms for the G7 countries. Their main findings were that the determinants of capital structure in US are the same for the other countries and debt levels do not differ among bank-oriented and market oriented countries. Wald (1999) for a sample with France, Japan, United Kingdom and United States highlights that tax policies, agency problems and information asymmetries and shareholder/creditors conflicts are determinant for differences among countries. Using both developed and developing countries is their sample Demirgüç-Kunt and Maksimovic (1999) find that institutional differences among develop and developing countries help to explain capital structure in particular the variation in the use of long-term debt. In addition, Booth et al (2001) find for a sample of 10 developing countries that capital structure choices are affected by the same variables as in developed countries. Nevertheless, they found that differences across countries are driven by growth in GDP, inflation and capital market development. More recently Fan, Titman and Twite (2003) find that institutional factors are important and critical determinants of firm's financial decisions. Finally, Jong, Kabir and Nguyen (2008) contributed to the international analysis of capital structure by finding that conventional firm-specific factors explain leverage relatively well in both developed and developing countries. They reject the assumption that the impact of firm-specific factors is the same across countries. They also found evidence of a direct impact of country-specific variables on the capital structure and of an indirect impact because country-specific factors influence the firm-specific determinants. However, the firm-specific factors continue to dominate the determinants of capital structure.

However, as pointed out by Giannetti (2003) and highlighted by Bartholdy and Mateus (2008), a gap in research still exists regarding international differences on firm's capital structure and their determinants. The reason why institutional differences do not seem to be important in earlier papers even if theory and common sense would suggest the opposite, was because previous papers just use large listed firms. Unlike large firms, Small and Medium Sized Enterprises (SMEs) tend to operate locally and are funded by local financial institutions whilst large listed firms are often partly financed by international financial markets making it difficult to interpret national differences in determining the capital structure of large firms. Therefore, SMEs are the idyllic vehicle if one wants to test cross-country variability. They should provide a potentially stronger test of robustness of the factors determining capital structure, since they do not have access to international capital markets, being less likely to be influenced by international standards.

There are a few papers that address firm's capital structure decisions for unlisted firms in an international setting but with focus in developed countries. Giannetti (2003) finds significant differences in how leverage and maturity are determined across countries for eight European countries, being most of those differences revealed only for unlisted firms. Hall, Hutchinson and Michaelas (2004) using a sample of SMEs across eight European countries find that differences in SME capital structures between countries are due to firm-specific determinants, instead of country-specific ones. More recently Bartholdy and Mateus (2008), with a sample of 19,752 unlisted European firms from sixteen European countries find that besides firm-specific characteristics, regulatory environment for business and measures of the impact of laws and regulations on business activity as well as macroeconomic factors do affect SMEs capital structure. Indeed, countries where laws are designed to expand the access to credit have SMEs with higher debt levels.

The aim of this paper is therefore twofold. First, it tests whether the traditional firm-specific variables are determinants of capital structure for Eastern Europe unlisted firms. Second, it tests whether differences among countries in terms of firm ownership structure and country-

specific measures of governance and financial development have important effects or not on firm's capital structure.

In this paper a panel data analysis is used with firm-specific explanatory variables including industry, year, and degree of independence dummies and country-specific variables such as country dummies, governance structure and financial development factors. We use factor analysis on governance structure and financial development indicators given that in multiple regressions the simultaneous inclusion of highly correlated exogenous variables would implicate in high multicollinearity and, consequently, in high variance and covariance of the estimates.

The results suggest that most of firm characteristics variables are in line with previous evidence and also indicates partial support for both the Static Trade-Off and Pecking Order theories. Furthermore, shocks to leverage are persistent, an indication of high adjustment costs. In addition, ownership concentration and country governance structure do not play a relevant role for unlisted firm's financial decisions. Finally, the degree of financial development is positively correlated with leverage, a strong indication that the financial institutional environment of a country is important for the financial decisions taken by its firms.

The remaining of the paper is structured as follows: the next section presents the details of the research methods, the data sources, and describes the variables used in the empirical model. Section 3 reports and comments the estimation results. Section 4 concludes the paper.

2. Data, Variables, and Research Methods

2.1. Data Sources and Collection Procedures

The sampling for this study focused initially on 16 countries from Eastern Europe and the former Soviet Union: Bosnia-and-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Republic of Macedonia, Romania, Russia, Serbia-and-Montenegro, the Slovak Republic, Slovenia, and Ukraine. Observations are yearly during the period 1994-2004 (subject to availability) and the unit of analysis is each firm.

Data on country-level governance structure and financial development is taken, respectively, from the World Bank's "Governance & Anti-Corruption" website¹ described in detail in Kaufmann, Kraay and Mastruzzi (2006) and from the Financial Development Database² described in detail by Beck, Demirgüç-Kunt, and Levine (2000).

The initial sample comprises private, unlisted firms, whose accounting data is available in the Amadeus (Analyse Major Databases from European Sources) Database by Bureau Van Dijk. Table 1 (Panels A and B) shows that 71,990 firms and 305,796 observations are found in the initial sample. Russia (20,157 firms and 58,394 observations) and Romania (16,190 firms and 67,092 observations) stand out in the sample. Since there were not any unlisted firms for Bulgaria, this country was dropped from the study.

A few selection procedures were taken in order to assure a homogenous and consistent sample. First, in order to exclude very small firms and keep the sample homogenous, we dropped all firms whose value of total assets was under US\$1,000,000. Next, we filtered the accounting database to weed off observations that presented substantial differences in the main groups and subgroups of the Balance Sheet (accounting inconsistencies). In order to do that, we computed the differences between each accounting group and the sum of its subgroups. The observations were dropped wherever such difference was larger than US\$10,000.³ Both procedures resulted in the exclusion of 34,994 firms and 171,359 observations.

Finally, after imposing the filters described above, we kept in the sample only firms with at least three consecutive observations. This last filter excluded 16,280 firms and 28,527 observations, as shown in Table 1. These procedures eliminated all firms from Bosnia-and-

¹ <http://www.worldbank.org/wbi/governance>

² http://siteresources.worldbank.org/INTRES/Resources/FinStructure_60_05_final.xls

³ This amount represents a maximum of 1% of the value of the total assets of the firms in the sample.

Herzegovina and Slovenia. Also, since only one firm from Croatia and two from the Republic of Macedonia remained in the sample, we chose to exclude these two countries from the study.

Therefore, the final sample consisted of the following 11 countries: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Serbia-and-Montenegro, Slovak Republic, and Ukraine. The final sample is comprised of 20,713 firms (28.77% of the initial sample) and 105,901 observations (34.63% of the initial sample), organized as an unbalanced panel since not all firms have observations for every year in the sample period.

Table 1 also depicts the distribution of firms and observations among the countries in this study. Russia, Poland, and Czech Republic present the biggest number of observations in the final sample, while Estonia, Latvia, Lithuania, and the Slovak Republic lie in the other end. Regarding the distribution of observation throughout the sample period, presented in Table 2, 1994 is the year with the least number of observations (only 747). The number of observations increase till they reach a maximum in 2002 (19,618), declining to 18,284 in 2003 and 6,185 in 2004.

Table 3 (Panels A, B, and C) presents main average accounting information from the Balance Sheet and the Earnings Statement, standardized by total assets, in three periods: 1994-1998, 1999-2004, and 1994-2004. For the whole period, Liabilities represent, on average more than 50% of total funding of unlisted firms, except for Serbia and Montenegro, and Ukraine. Short-term debt predominates in the debt structure, especially in terms of operating and trade credit (suppliers, salaries, taxes). This pattern is observed in all countries of our sample, and suggests that firms rely on spontaneous financing, on average.

Comparing the first and the second halves of our sample period (1994-1998 and 1999-2004), we observe that firms have in general increased their liabilities (with the exceptions of Estonia, Serbia-and-Montenegro, and Ukraine). Romanian and Russian firms stand out by increasing its share of liabilities by more than 50%. We cannot observe any substantial differences regarding the short- to long-term composition of financing between the two periods.

2.2. Variables

The dependent variable is an indicator (a proxy) of capital structure measured by three different leverage ratios: Total Liabilities to Total Assets (henceforth LR1); Total Debt to Total Assets (LR2); and Long Term Debt to Total Assets (LR3).

Firm-specific determinant factors for the capital structure choice are chosen from those often suggested in the literature. The set of firm-specific explanatory variables is the following: size, growth opportunities, profitability, business risk, tangibility, the tax rate, and firm age. We describe each of these in more detail below:

- The size of the firm is measured by:

$$Size = \text{Log}(TotalAssets) \quad (1)$$

- Growth opportunities of the firm are assessed by:⁴

$$Growth = \frac{IntangibleFixedAssets}{TotalAssets} \quad (2)$$

- Profitability is measured according to the usual return on assets ratio:

$$Profitability = \frac{EBIT}{TotalAssets} \quad (3)$$

Where EBIT stands for earnings before taxes and interest.

- Business risk is measured by a proxy of operational leverage:⁵

$$BusinessRisk = \frac{GrossProfit}{EBIT} \quad (4)$$

- The degree of tangibility of assets, an indicator of collateral value, is given by:

$$Tangibility = \frac{TangibleFixedAssets}{TotalAssets} \quad (5)$$

- The effective average tax rate of the firm is used as a proxy for the effect of tax shields:

$$EffectiveTaxRate = \frac{EBT - NE}{EBT} \quad (6)$$

⁴ Since that, according to the literature, growth opportunities would be associated to intangible assets of the firm.

⁵ Strictly speaking, operational leverage is usually measured as the ratio of change in revenues to the change in operating profits. However, data limitations prevented us to use this indicator. We then adopted the ratio of Gross Profit to EBIT as a second-best alternative. Since operating leverage is rooted on the amount of fixed costs in the cost structure of the firm, our indicator although imperfect is a reasonable approximation.

Where EBT stands for earnings before taxes and NE stands for net earnings. In case the numerator and denominator are both negative, the quotient is multiplied by -1 (minus one) to obtain a negative tax rate, since the firm had compensated previous losses. If the numerator is positive and the denominator is negative the quotient is also multiplied by -1 to obtain a positive tax rate, because the firm paid taxes even though its earnings before taxes were negative. In all other cases, there is no need to change the result of this ratio.

- Finally, the age of the firm, a possible proxy of reputation, is measured by:

$$FirmAge = \text{Log}(\text{YearofFinancialStatement} - \text{YearofIncorporation}). \quad (7)$$

Table 4 (Panels A, B, and C) presents the descriptive statistics for dependent and explanatory variables. Firms from Serbia-and-Montenegro and Ukraine present, on average, low values of total leverage (measured by LR1), while the firms from the remaining countries are clustered together near the overall average of 0.5432. In terms of total debt (LR2) and long-term debt (LR3), Hungary, Romania, and Ukraine present relatively low leverage, while firms from the Czech Republic, Estonia, Latvia, and the Slovak Republic are more intensively indebted.

In terms of independent variables, Hungarian firms are, on average, more profitable, riskier, and have more growth opportunities (larger share of intangible assets) than those from the other countries.

Table 5 (Panels A, and B) shows the correlations matrices for dependent and explanatory variables. Correlation among dependent variables reveals that LR1 is moderately correlated to the other two variables. It indicates that this variable indeed measures a different aspect of capital structure, as expected from the construction of this variable. LR2 and LR3, on the other hand, are strongly correlated.

In terms of explanatory variables, Table 5 indicates a positive association between Size and Firm Age, suggesting that older firms tend to be bigger. In general, correlations among explanatory variables are close to zero, suggesting that multicollinearity should not be a problem in the regression analysis.

Besides the above variables, the sector of activity of each firm is also included as an explanatory variable, given the possible systematic effects that the nature of the firm's activities may have over its leverage, in particular the total leverage measures. The sector of activity is represented by a set of dummy variables based on the two first digits of the NACE⁶ Primary Code. In our final sample, the firms are distributed along 26 sectors of activity, according to their 2-digit NACE Primary Code.⁷

The number of firms and observations by industry segment is presented in Table 6 (Panels A, and B). Observations are concentrated in two industries: 15 – Manufacture of food products and beverages (17.50% of the firms and 17.37% of the observations) and 45 – Construction (17.34% of the firms and 16.25% of the observations). Least representative industries are 16 – Manufacture of tobacco products, 19 – Tanning and dressing of leather, manufacture of luggage, handbags, saddlery, harness and footwear, 23 – Manufacture of coke, refined petroleum products and nuclear fuel, 30 – Manufacture of office machinery and computers, and 37 – Recycling (less than 1% of firms and observations). In the remaining industries, firm participation in the sample varies between 1.49% (32 – Manufacture of radio, television and communication equipment and apparatus) and 8.05% (29 – Manufacture of machinery and equipment) of the total number of firms.

In order to capture the effect of events common to a given year or country, we included dummy variables for each year of the sampling period as well as for each particular country. This initial set of explanatory variables, i.e., firm-specific and industry, year, and country dummies become henceforth what we call the “basic model” for the regression analysis.

⁶ NACE – Nomenclature statistique des activités économiques dans la Communauté Européenne.

⁷ A list of NACE industry codes contemplated in this paper and their respective description is provided in Appendix 1.

Next, in order to address the main objective of this study, we refine the basic model by adding variables that proxy for firm ownership structure, country governance structure, and the level of financial development of each country.

Firms are classified according to their ownership concentration, i.e., their degree of independence with respect to their shareholders, in the Amadeus database. The “Independence Indicator” signals the various levels of ownership concentration according to the following scale (in a decreasing order of independence): A⁺, A, A⁻, B⁺, B, B⁻, C and U.⁸

Thus, we created a set of dummy variables based on the above classification (“A”, “B”, “C” and “U”), which proxy for the ownership structure of the firm. The distribution of firms and observations among the different levels of independence, presented in Table 7 (panels A and B), reveals that 47.08% of the firms and 45.32% of the observations are under level U – unknown degree of independence; 36.29% of the firms and 37.39% of the observations are under level C – lower degree of independence; 7.37% of the firms and 7.65% of the observations are under level B⁺ – medium degree of independence; 6.21% of the firms and 6.42% of the observations are under level A⁺ – higher degree of independence; and the remaining firms under the other levels of independence (3.05% of the firms and 3.22% of the observations). The data indicates, in general terms, a low level of independence (high level of ownership concentration) of the firms in the sample. Such evidence should not be surprising, given that we are studying unlisted firms.

Regarding the variables that describe the governance structure in each country of the sample, we selected the following indicators from the World Bank and described by Kaufmann, Kraay and Mastruzzi (2006, p. 4): Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.⁹

⁸ For a detailed description of these variables, we refer the reader to Bureau Van Dijk (2005) and Appendix 2 of this paper.

⁹ For a detailed description of these variables, we refer the reader to Kaufmann, Kraay, and Mastruzzi (2006) and Appendix 3 of this paper.

The range of these indicators are in the interval $[-2.5, +2.5]$, the higher the grade, the better the quality of the indicator. Such indicators are available for the following years: 1996, 1998, 2000, 2002, 2003, and 2004. In order to avoid the exclusion of the intermediary years 1997, 1999, and 2001, for which no indicators are available, we computed the midpoint between the neighboring years, assuming a smooth linear transition between these years.

Table 8 presents descriptive statistics for country governance indicators. Based in the mean values, we verify that there are considerable differences among the countries in terms of governance structure. Hungary presents the highest average values for “Voice and Accountability”, “Political Stability”, “Rule of Law”, and “Control of Corruption” indicators, and Estonia the highest mean values for “Government Effectiveness”, and “Regulatory Quality”. In the other end of the spectrum, Serbia and Montenegro displays the lowest averages for “Voice and Accountability”, “Political Stability”, “Regulatory Quality”, and “Rule of Law”, while Ukraine has the lowest mean values for “Government Effectiveness”, and “Control of Corruption”. In general, we observe that among the countries analyzed, the Czech Republic, Estonia, Hungary, and Poland present the best governance structures; in an intermediary block are Latvia, Lithuania, and the Slovak Republic; and, finally, Romania, Russia, Serbia and Montenegro, and Ukraine are the countries with the comparatively worst governance structure.

The correlation matrix for these indicators, shown in Table 9, suggests that they are highly correlated. Correlation coefficients range from 0.853 to 0.969, all statistically significant at the 1% level.

With respect to the financial development variables, we adopt the following indicators of financial development and structure across countries and over time, collected from the World Bank: “Deposit Money Banks versus Central Bank Assets”, “Central Bank Assets to GDP”, “Deposit Money Banks Assets to GDP”, “Liquid Liabilities to GDP”, “Private Credit by Deposit Money Banks and Other Financial Institutions to GDP”, “Financial System Deposits to GDP”,

“Stock Market Capitalization to GDP”, “Stock Market Total Value Traded to GDP”, and “Stock Market Turnover Ratio”.¹⁰

The World Bank database¹¹ contains updated information until 2003, thus excluding the last year of our sample period. Descriptive statistics of these indicators are presented in Table 10. Average values of “Deposit Money Banks versus Central Banks Assets” suggest that almost all financial system assets are represented by deposit money banks (89.95% in Romania up to 99.80% in Lithuania), with the exception of Hungary, Russia, and Ukraine.

Regarding “Central Bank Assets to GDP”, it is usually small (from 0.03% in Lithuania to 8.59% in Ukraine), except for Hungary where it represents 28.73% of the country’s output.

The size of bank deposits relative to the economy as a whole is more representative in the Slovak Republic (73.54%) and in the Czech Republic (62.86%). On the other extreme are Lithuania, Romania and Ukraine, where bank assets represent on average only 16.90%, 15.07% and 11.23% of GDP, respectively.

“Liquid Liabilities to GDP”, a measure of the importance of the financial sector as a whole, confirm the results discussed above, indicating a higher importance of the financial system in the Slovak Republic and in the Czech Republic, and a lesser importance in Lithuania, Romania and Ukraine.

The indicators “Private Credit by Deposit Money Banks and Other Financial Institutions to GDP” and “Financial System Deposits to GDP” are proxies for the level of activity of the financial system. Again the Slovak Republic and the Czech Republic display a relatively more

¹⁰ For a detailed description of these variables, we refer the reader to Beck, Demirgüç-Kunt and Levine (2000) and Appendix 4 of this paper.

¹¹ The database includes other indicators of size, activity, and efficiency of the financial system of each country, however we do not include them in this study for the following reasons: I) Data availability for the sample in the period of analysis; and, II) Reduced number of observations, which implicates in a substantial reduction in sample size. We also do not include the indicators “Private Credit by Deposit Money Banks to GDP”, and “Bank Deposits to GDP”, because the values are identical to “Private Credit by Deposit Money Banks and Other Financial Institutions to GDP” and “Financial System Deposits to GDP”, respectively.

intense level of financial activity contrasting to Lithuania, Romania and Ukraine. It comes as no surprise that financial activity is higher where the size of the financial system is bigger.

The stock market size in relation to the size of the economy, a measure of its relative importance, is higher in the Czech Republic, Russia, Hungary, and Estonia. Regarding the level of activity and overall liquidity, the indicator “Stock Market Total Value Traded to GDP” suggests that Hungary, Estonia, and Czech Republic have the most active stock markets, while the values of “Stock Market Turnover Ratio” indicate that liquidity is higher in Serbia and Montenegro,¹² the Slovak Republic, Poland, Hungary, and Russia.

The correlation matrix for financial development indicators, presented in Table 11, confirms that the level of financial activity (intermediation) is higher in those countries where the financial system is more important (bigger) relative to the whole economy.

2.3. Factor Analysis

In multiple regressions, the concomitant inclusion of highly correlated exogenous variables would implicate in high multicollinearity and, consequently, in high variance and covariance of the OLS estimates – i.e. less precise estimation (Gujarati, 2004). In order to avoid the problems of multicollinearity, we employ factor analysis on the governance structure and financial development indicators given that such indicators presented high and significant correlations.

According to Malhotra (2001, p. 504) “factor analysis is a generic name that denotes a class of processes employed mainly for data reduction and summarization.” It can be employed, among other finalities and in particular in this study, to “identify a new, smaller set of uncorrelated variables that substitutes for the original set of correlated exogenous variables in the

¹² Notice that the mean value for this indicator for Serbia and Montenegro is based on a single observation.

multivariate analysis” (Malhotra, 2001, p. 504). Next, we describe the steps taken to perform the factor analysis.

According to Malhotra (2001, p. 506), proper use of factor analysis requires I) at least four to five times more observations than variables; and II) correlated variables. Moreover, according to this author, the convenience of factor analysis can be formally tested by the following statistics:

- Bartlett’s Test of Sphericity, whose null hypothesis is that the variables are not correlated in the population; and,
- Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, which compares the magnitudes of the partial correlation coefficients in order to verify if pairwise correlations can be explained by other variables. Small values for this statistic (smaller than 0.5) indicate that factor analysis may be inadequate.¹³

Once sampling adequacy is determined, it must be chosen a method of factor analysis adequate to its objectives. In this study, we adopt the Principal Component Analysis (PCA) which, according to Malhotra (2001, p. 507), takes into account the total data variance and is recommended “when the main concern is to determine the minimal number of factors that account for the maximum data variance for subsequent multivariate analyses.”

The maximum number of factors or principal components that can be extracted through the analysis is equal to the number of variables in the initial set. However, factor analysis is usually employed with the goal to reduce the initial set to a minimum number of factors that account for a large part of the variance present in the original data. Thus, some procedure must be employed to sort out the number of factors that would be extracted. In this study we determine the number of factors based on their eigenvalues (the amount of variance associated to the

¹³ According to some authors, such as Kaiser and Rice (1974), the value of the KMO statistic must be larger or equal to 0.8 in order to confirm the propriety of the factor analysis.

factor). We keep only those factors whose eigenvalues are larger than one, since factors with an eigenvalue smaller than one are no better than a single variable (Malhotra, 2001).

According to Malhotra (2001, p. 510), factors initially extracted can be rarely interpreted because they are usually correlated with many variables. In order to facilitate their interpretation, the factors must be rotated. Through this procedure, it is expected that each factor presents significant correlations only with a few variables, and that each variable presents significant correlations only with a few factors (with a single one if possible). Still, according to such author, the rotation may be orthogonal or oblique (non-orthogonal). If the objective is to obtain uncorrelated factors, orthogonal rotation is employed, but if correlated factors are admissible, then oblique rotation may be preferred.

2.3.1. Factor Analysis of Governance Structure Indicators

As described above, the first step consists in the evaluation of the sampling adequacy of factor analysis to the sample at hand. The sample of governance structure indicators comprises 99 observations (eleven countries times nine years) and six variables, resulting in an observation-to-variable ratio of 16.5 – well above the minimum suggested in the literature (Malhotra, 2001). Formal tests of sampling adequacy presented in Table 12 indicate the propriety of factor analysis to this sample. The null hypothesis that the variables are not correlated is rejected by the Bartlett's test of sphericity at 1% significance level, and the value of the KMO statistic (0.904) is above the critical value of 0.5 suggested by Malhotra (2001).

Tables 13 and 14 present the results of the PCA analysis for the governance indicators. The results suggest that only one component (factor) has the eigenvalue larger than one, responding for 93.268% of total variance of the initial set. The remaining factors contribute marginally in explaining the variance of the data, thus being dropped in the study. The factor loadings of the remaining factor, i.e., its correlations with the indicators (variables) of the initial set are high, ranging from 0.942 (“Political Stability”) to 0.989 (“Rule of Law”). We interpret this single factor (henceforth “Governance Factor”) as a global index for country governance

structure, given its large factor loadings. Since only a single factor has been extracted, it is not necessary to rotate the factors.

Therefore, instead of utilizing the six original variables in the forthcoming regression analysis, only the factor extracted from the PCA analysis will be included. This procedure avoids multicollinearity problems and increases the degrees of freedom of the estimation. Mean values for the Governance Factor are presented alongside other descriptive statistics broken down by country in Table 15. Therefore we can classify the countries in our sample according to the quality of their governance structure in the following decreasing order: Hungary, Estonia, the Czech Republic, Poland, Lithuania, the Slovak Republic, Latvia, Romania, Ukraine, Russia, and Serbia and Montenegro.

2.3.2. Factor Analysis of the Financial Development Indicators

We repeat the procedure laid down above to the financial development indicators. First, we check the sampling adequacy of factor analysis to the sample. The sample comprises 73 observations and nine variables resulting in an observation-to-variable ratio of 8.11, above the recommended minimum (Malhotra, 2001). Formal tests of sampling adequacy, presented in Table 16, indicate the convenience of factor analysis to this sample. The null hypothesis that variables are not correlated in the population is rejected at the 1% level by the Bartlett test of sphericity. Also, the KMO statistic presented a value (0.578) above the critical value of 0.5, as suggested by Malhotra (2001).

Results for the PCA analysis, shown in Tables 17 and 18, reveal that only three factors have eigenvalues larger than one, responding for 86.548% of the initial variables set's total variance. Therefore, we dropped the remaining factors from the study, given their low share in explaining the original data variance.

Upon analyzing the initial matrix of components in Table 18, we identify some indicators with large loadings (correlations) in more than one factor, which could pose interpretation problems. So, we rotate the factors by the Varimax method, chosen because: 1) it is an

orthogonal method (since the objective is to obtain uncorrelated factors); II) this method “minimizes the number of variables with large loadings in one factor, supporting the interpretation of the factors” (Malhotra, 2001, p.511); III) according to Mingoti (2005, p. 122), “the Varimax method is one of the most utilized in practice, and generally results in simpler solutions than other methods”; and, IV) according to Jolliffe (2002, p. 271) “a choice has to be made from a large number of possible rotation criteria (...) fortunately, as noted already, different choices of criteria, at least within orthogonal rotation, often make little difference to the results”.

The three rotated factors (Table 18) can be interpreted as follows: the first factor (henceforth “Intermediation Factor”) is an index that measures financial sector development, in particular financial intermediation development (deposit money banks), in terms of importance (size) of the sector and its level of activity (deposit volume) in relation to the economy as a whole; the second factor (henceforth “Stock Market Factor”) is an index that measures the development of the stock market in terms of importance (size) of this market to the economy as a whole, as well as its levels of activity and liquidity; the third factor (henceforth “Central Bank Factor”) is a comparison between the relative importance (size) of the banking sector and the central bank to the economy as a whole. Small values of this factor indicate that the monetary authority has a relatively more relevant role in the economy, while large values of this factor indicate instead that banks are relatively more important.

It is important to underscore that, according to Jolliffe (2002, p. 63), “of course, if m [the number of components] is very much smaller than p [the number of original variables], then the reduction of dimensionality alone may justify the use of PCA, even if the PCs have no clear meaning.”

Table 19 present descriptive statistics for the rotated factors.¹⁴ Based on these factors, we can rank the countries in our sample according to the development of their financial sector development (Intermediation Factor) in the following decreasing order: the Slovak Republic, the Czech Republic, Hungary, Poland, Estonia, Latvia, Ukraine, Romania, and Lithuania. Regarding the development of the stock market (Stock Market Factor), the decreasing order is the following: Hungary, the Czech Republic, Estonia, Poland, Lithuania, the Slovak Republic, Latvia, Romania, and Ukraine. Finally, regarding the importance of the monetary authority in comparison to the banking sector (Central Bank Factor), the ranking is (now in increasing order): Hungary, Ukraine, Poland, the Slovak Republic, Romania, Latvia, the Czech Republic, Lithuania, and Estonia.

2.4. Outliers Exclusion Procedures

A handful of variables in the sample presented aberrant observations, i.e., extreme large or small values in relation to average values, as can be seen in Table 4. According to Maddala (2001), such extreme values (also referred to as outliers) may unduly influence parameter estimates and, therefore, should be excluded from the sample.

Such is the case of the dependent variables, LR1, LR2 and LR3, and some exogenous variables (Growth Opportunities, Profitability, Business Risk, Tangibility, and Tax Rate). As mentioned previously, these variables are obtained from financial ratios and may be case that extreme values are a result of measurement or recording errors. In such case, aberrant observations do not correspond to the true value of the variables and their exclusion would be justifiable, without prejudice to the integrity of the results. However, since we can not be sure about which observations are errors, their exclusion may not be an adequate solution.

¹⁴ Russia and Serbia and Montenegro are excluded from this factor analysis because they do not have common observations for all indicators in the sample of financial development indicators.

Given this tradeoff, we choose to perform the analysis both with and without outliers. The criterion for excluding outliers is to trim the top and bottom 0.5% of the observations of the variables that presented extreme values. This procedure resulted in the exclusion of 274 firms and 6,948 observations, representing respectively 1.32% and 6.56% of our sample. The sample distribution without outliers by year, industry and independence level, as well as their descriptive statistics and correlations are not reported for concision sake, but are available upon request. We apply the same criteria to the main average accounting information from the Balance Sheet and the Earnings Statement.

2.5. Panel Data Analysis

Panel data analysis presents several advantages for the treatment of economic problems where cross-sectional variation and dynamic effects are relevant. Hsiao (1986) raises three advantages possessed by panel data sets: since they provide a larger number of data points, they allow increase in the degrees of freedom and reduce the collinearity among explanatory variables; they allow the investigation of problems that cannot be solely addressed by either cross-section or time series data sets; and they provide means of reducing the missing variable problem. Baltagi (1995) adds to these the usually higher accuracy of micro-unit data respective to aggregate data and the possibility of exploring the dynamics of adjustment of a particular phenomenon over time.

In principle, classic time series methods can be applied to panels simply by “pooling” all cross-section and time series observations together. Indeed, this approach is often used. Moreover, in a typical panel, there are a large number of cross-sectional units and only a few periods. This is the type of panel that is examined in this paper, where there are a large number of firms from different countries observed over a period of only eleven years. In such case, the econometric techniques should focus more on cross-sectional variation (heterogeneity) instead of time variation. Time variation that is common to all firms, in this case, can be controlled for by dummy variables.

The main advantages of such method for the investigation of the problem proposed in this paper is that observations of firms from different countries can be pooled together in order to increase the degrees of freedom. Also, by pooling together countries (besides firms) we can infer in what extent the relationships among the variables hold across different countries and determine if country-specific factors help explain the variation observed by other authors.

Pooling together firms, on the other hand, assumes that parameters (slopes and intercepts) are constant across firms. This is, of course, a very strong assumption and subject to potential biases (Hsiao, 1986). That would be the case if the effects of a given independent variable are different for different kinds of firms, for instance small and large firms. Moreover, it is not possible to use fixed-effects formulations that could potentially prevent intercept biases because we include key variables that are fixed for all years in a given firm (case of independence and industry dummies) and that are fixed for all firms of the same country in a given year (case of governance structure factor and financial development factors). Likewise, the usual procedure to use the Hausman test statistic for the difference between the fixed-effects and random-effects estimates, as suggested by Hsiao, 1986, becomes moot. The careful choice of firm-specific variables (such as firm size) helps control for these possible biases. Nevertheless, this remains a limitation of this research.

Estimation of panel data models can be done by Ordinary Least Squares in the case of simple pooling formulation and by Generalized Least Squares for the random-effects formulation (Hall and Cummins, 1997).

2.6. Empirical Model

A Panel Data analysis is performed according to the following (augmented) model:

$$LR_{it} = \beta_0 + \sum_{k=1}^K \beta_{1k} Y_{ikt} + \sum_{l=1}^L \beta_{2l} Z_{ilt} + v_i + \varepsilon_{it} \quad (8)$$

Where LR_{it} is the stacked vector of the dependent variable (the i^{th} -firm leverage ratio on the t^{th} -period), Y_{ikt} is the matrix of K firm-specific explanatory variables (including industry,

year, and degree of independence dummies), Z_{it} is the matrix of L country-specific variables, that is, country dummies, governance structure and financial development factors, β_0 is the intercept of the model, β_{1k} and β_{2l} are the matrices of coefficients, v_i is the firm-specific error term in the random-effects model, and ε_{it} is a vector of error terms.

The regressions are run for five different specifications for each dependent variable, all based on the augmented model presented in (11) above. Standard errors are heteroskedasticity robust according to the method proposed by White (1980). The specifications are as follows:

- Specification I: basic model, that is, traditional firm-specific variables plus dummies for industry, year, and country.
- Specification II: basic model plus ownership dummies.
- Specification III: basic model plus governance structure factors.
- Specification IV: basic model plus financial development factors.
- Specification V: basic model plus ownership dummies, governance structure factors and financial development factors.

3. Empirical Results

3.1. Estimation Results

Tables 20, 21 and 22 present the results of our estimation of the regression of three proxies of capital structure over the five specifications described above. Each specification is estimated as a simple pooling and with random effects. As noted earlier, there is no point in testing for fixed effects since some of the key variables of interest are either time or country invariant. Simple pooling estimation revealed the presence of positive autocorrelation in the residuals. In order to address such problem, we included an MA(1) term in the residuals by applying a Marquardt nonlinear least squares algorithm (Fair 1984, p. 210-214).

There is little evidence that Business Risk and Tax Effects are relevant in explaining the degree of leverage of our sample. Such insignificance may perhaps be explained by their poor proxies, e.g., our proxy for the tax incentives to leverage does not consider the investor's tax rate

while operating leverage as a proxy for business risk is also limited. It is also possible that the inclusion of industry dummies may have captured most of these effects, since they are generally associated to the business characteristics of each activity.

Other firm-specific variables presented statistical significance. Firm Size has a positive effect on leverage, in line with the extensive evidence presented in the empirical literature regarding this determinant, and a result that usually is taken as supportive of the Static Trade-off Theory. Growth Opportunities negatively influence the degree of leverage. That is, firms with more growth opportunities (more intangible assets), resort to less debt. This evidence supports the Static Trade-off Theory under a bankruptcy cost argument: growth opportunities are of little value in the event of liquidation of the firm. Notice that for LR2, Growth Opportunities are negative and significant *before* the introduction of Financial Development factors in the model, but become insignificant once such variables are included.

Profitability is robustly negative and significant across all dependent variables and specifications. Such result is in line with the findings of the mainstream of the empirical literature in capital structure and it is often interpreted as support for the Pecking Order Theory since more profitable firms have more internally generated cash-flow and thus avoid external funding.

Tangibility is usually a proxy of real collateral available to the firm that might raise its credit limits. Our estimation yielded contradictory results: a negative and significant effect for LR1 and a positive and equally significant effect for LR2 and LR3. Such disparity may be explained by the nature of each proxy of capital structure: unlike LR2 and LR3, LR1 (total liabilities to total assets) is a broader measure of financing, including all sorts of trade, operating and fiscal credits. Strictly speaking, LR2 (debt to total assets) and LR3 (long term debt to total assets) are better proxies of capital structure, but given the nature of the firms in our sample (unlisted firms), we think it may contain information regarding the financing patterns of such firms. We explain this result as follows: LR1 measures the role of trade credit in the financing of the firm. Firms with more tangible assets resort to bank credit since they can offer collateral.

Firms with a larger share of intangible assets, on the other hand, are (more) financially restricted by the market and therefore, once they have used up all their financial credit, turn more intensively to trade credit in their financing. Hence, this explains the negative coefficient captured in our analysis.

Another curious result regards Firm Age, a proxy for firm reputation. Although it is insignificant for LR1 and LR2, it is significantly negative for LR3. The logic behind reputation is that firms with better reputation have a lower degree of information asymmetry and thus may sustain higher levels of debt. Our results, though only for the long term measure of leverage, indicate exactly the opposite. We guess that the age of the firm is too rough a measure for a complex construct such as firm reputation.

The autoregressive error term is consistently positive and strongly significant, an indication that shocks to capital structure are persistent. Such evidence indicates that, for the firms in our sample, adjustment costs to a desired target level of capital structure are substantial.

Ownership Concentration, represented by the degree of independence proxy, is generally not significant. It suggests that either ownership structure is irrelevant to capital structure or that our proxy does not capture its true effect. Indeed, about half of our sample is classified under the “unknown” (U) degree of independence in the database.¹⁵

The Country Governance factor is robustly insignificant. It clearly suggests that country governance does not influence the capital structure decision of the firms – a result that questions the notion that institutions are important for financing. Also, it may be the case that institutional characteristics are captured by other variables in our model, or that the World Bank’s governance indicators are not good measures. Alternatively, the characteristics of the sample (transition economies only) induce little cross-country institutional variation which may explain why the country governance factors are not significant in our regressions.

¹⁵ See our robustness checks below.

A different result emerges from the Financial Development factors. As expected, our results robustly show that more developed banking systems (Intermediation factor) and more developed stock markets (Stock Market factor) positively and significantly influence the degree of leverage of the firms. This indicates that more financial development relaxes the financial constraints that firms usually face in less developed markets. Moreover, when such indicators are included in the model, other variables become insignificant (Growth Opportunities, Tax Effects, and some Independence indicators). Variation of the Central Bank factor, on the other hand, does not seem to influence the capital structure of the firms in our sample. This evidence, combined with the results for the Governance factor, indicates that the *financial* institutional setting is more relevant to firm leverage than the *political and legal* institutional environment of the country. Moreover, our results indicate that stock market development has a positive impact even for unlisted firms, suggesting that more development of the stock market promotes the overall relaxation of financial restrictions in the economy.

A final word regards the small gain in explanatory power that country-specific variables aggregate to the model. As it can be observed across specifications, although adding country-specific variables does increase adjusted R^2 , the gain is very small. It suggests that, despite the importance of country-specific factors such as financial development, firm-specific characteristics command most of the explanation of the capital structure decision. We perform a Wald test to assess the gains in explanatory power from one specification to the next, and we reject that there are any differences. Our results are summarized in Table 23.

3.2. Robustness Checks

A number of additional estimations are performed to verify the robustness of these results. First, we estimate the models with and without outlier observations, as mentioned above. Then, we redefine the Ownership Concentration variables in their various levels (A^+ , A , A^- , B^+ , B , B^- , C and U) to verify if these subtler definitions capture any new information. Next, we exclude all firms rated “U”, that is, firms whose ownership is unknown. We also redefine the

continuous variable Firm Age into a dummy variable (younger than 10 year and older than 10 years). We finally perform random effects estimation of the model.¹⁶ None of these alternative estimations yielded very different results than those reported here. For the sake of concision, we omit such results, but they are available upon request to the authors. We conclude from these tests that the results reported here are robust.

4. Summary and Concluding Remarks

This paper investigates the determinants of capital structure for a sample of 20,713 unlisted firms from 11 eastern European countries over the period 1994-2004. Besides traditional firm-specific financial variables, we include a measure of ownership concentration and country-specific measures of governance structure and financial development.

Our findings indicate partial support for both the Static Trade-off Theory and Pecking Order Theory. Unlike other empirical studies, the size of the firm does not seem to be a relevant explanatory variable in our sample. However, the role of growth opportunities, profitability and tangibility is in line with previous evidence. We also document that shocks to the dependent variable are persistent, an indication of high adjustment costs. More important, we could not find a relevant role for ownership concentration nor country governance structure in capital structure. However, the degree of financial development is positively correlated with the degree of leverage, a strong indication that the financial institutional environment of a country is important for the financing of its firms. However, the marginal explanatory power of country-specific variables is small. Firm characteristics are the most important drivers of capital structure.

Of course, the study presented here has its shortcomings. Some variables are poor empirical proxies for the theoretical constructs. That may be the case of Business Risk, Reputation, and Ownership Concentration. Also, our random effects estimation is doomed by

¹⁶ However, autocorrelation in the random effects estimation could not be circumvented.

residual autocorrelation, which suggests that dynamic panel data estimation may be necessary. Finally, our model ignored macroeconomic factors that may also influence the results.

The main conclusion of this study is that the financial environment is a major determinant of capital structure, whereas political and legal institutions have not come out relevant. Policymakers should therefore prioritize the strengthening and development of the financial system.

Directions for future empirical research include the investigation of ownership structure, country governance, and financial development as determinants of capital structure in countries from other regions, where more heterogeneity in such variables may offer additional understanding of the problem. Also, the study of possible interaction effects that may arise between firm-specific and country-specific determinants, as documented by Jong, Kabir and Nguyen (2008) may be a promising research path.

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Appendix 1 – Industry Codes and Description

| Code | Industry Name |
|------|---|
| 15 | Manufacture of food products and beverages |
| 16 | Manufacture of tobacco products |
| 17 | Manufacture of textiles |
| 18 | Manufacture of wearing apparel; dressing and dyeing of fur |
| 19 | Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear |
| 20 | Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials |
| 21 | Manufacture of pulp, paper and paper products |
| 22 | Publishing, printing and reproduction of recorded media |
| 23 | Manufacture of coke, refined petroleum products and nuclear fuel |
| 24 | Manufacture of chemicals and chemical products |
| 25 | Manufacture of rubber and plastic products |
| 26 | Manufacture of other non-metallic mineral products |
| 27 | Manufacture of basic metals |
| 28 | Manufacture of fabricated metal products, except machinery and equipment |
| 29 | Manufacture of machinery and equipment n.e.c. |
| 30 | Manufacture of office machinery and computers |
| 31 | Manufacture of electrical machinery and apparatus n.e.c. |
| 32 | Manufacture of radio, television and communication equipment and apparatus |
| 33 | Manufacture of medical, precision and optical instruments, watches and clocks |
| 34 | Manufacture of motor vehicles, trailers and semi-trailers |
| 35 | Manufacture of other transport equipment |
| 36 | Manufacture of furniture; manufacturing n.e.c. |
| 37 | Recycling |
| 40 | Electricity, gas, steam and hot water supply |
| 41 | Collection, purification and distribution of water |
| 45 | Construction |

Appendix 2 – Definitions of the Degree of Independence Indicators

According Bureau Van Dijk (2005, p. 8), one of the following degrees of independence is attached to each firm in the database:

- Indicator A (high degree of independence): attached to any company with no recorded shareholders, excluding collectively named shareholders, with an ownership over 24.99% (either direct or total). This is further qualified as:
 - A⁺: if the summation of direct ownership is 75.01% and higher or if there is a total percentage over 75.01%. This means that the company surely cannot have a unique shareholder with 25% or higher. If these percentages are under 75.01%, then:
 - A⁺: Companies with 6 or more identified shareholders, whose ownership percentage is known.
 - A: As above, but includes companies with 4 or 5 identified shareholders.
 - A⁻: As above, but includes companies with 1 to 3 identified shareholders. Also, the Amadeus Database gives this notation to a company that is mentioned as being the Ultimate Owner of another company, even when they do not comply with the first criteria.

The logic behind these last three qualifiers is that the probability of having missed an ownership percentage over 24.99% is the lowest when the greatest number of shareholders is known.

- Indicator B (medium degree of independence): attached to any company with no recorded shareholders, excluding collectively named shareholders, with an ownership over 49.99% (either direct or total), but having one or more shareholders with an ownership percentage over 24.99%. This is further qualified as:

- B⁺: if the summation of direct ownership is 50.01% and higher or if there is a total percentage over 50.01%. This means that the company surely cannot have a unique shareholder with 50.00% or higher. If these percentages are under 50.01%, then:
 - B⁺: Companies with 6 or more identified shareholders, whose ownership percentage is known.
 - B: As above, but includes companies with 4 or 5 identified shareholders.
 - B⁻: As above, but includes companies with 1 to 3 identified shareholders.
- Indicator C (lower degree of independence): attached to any company with a recorded shareholder, excluding collectively named shareholders, with an ownership over 49.99% (either direct or total). This indicator is also given to a company when it has an Ultimate Owner.
- Indicator U (unknown degree of independence): attached to all companies not falling into the above categories, indicating an unknown degree of independence.

Appendix 3 – Definitions of Governance Structure Indicators

According Kaufmann, Kraay and Mastruzzi (2006, p. 4), the six dimensions of country governance are the followings:

- **Voice and Accountability:** the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media.
- **Political Stability:** perceptions of the likelihood that government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism.
- **Government Effectiveness:** the quality of public services, the quality of the civil services, and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.
- **Regulatory Quality:** the ability of the government to formulate and implement sound policies and regulations that permits and promotes private sector development.
- **Rule of Law:** the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.
- **Control of Corruption:** the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.

Appendix 4 – Definitions of Financial Development Indicators

Below are the definitions of the financial development indicators used in the present study, according to Beck, Demirgüç-Kunt and Levine (2000):

- Deposit money banks versus central banks assets: it measures the size of the deposit money banks relative to central banks and equals the ratio of deposit money banks assets to the sum of deposit money and central banks assets. This variable is defined by Beck, Demirgüç-Kunt and Levine (2000, p. 6) as a relative size measure.
- Central banks assets to GDP: it is measured as the size of the central banks relative to Gross Domestic Product (GDP).
- Deposit money banks assets to GDP: it is measured as the size of the deposit money banks relative to GDP. According to Beck, Demirgüç-Kunt and Levine (2000, p. 6) the last two variables gives evidence of the importance of the financial services performed by these two financial sectors relative to the size of the economy and are considered as absolute size measures.
- Liquid liabilities to GDP: it is a measure of absolute size based on liabilities and equals currency plus demand and interest-bearing liabilities of banks and others financial intermediaries divided by GDP. This variable, according to Beck, Demirgüç-Kunt and Levine (2000, p. 7), “is a typical measure of financial ‘depth’ and thus of the overall size of the financial sector, without distinguishing between the financial sectors or between the use of liabilities”.
- Private credit by deposit money banks and others financial institutions to GDP: it is measured as credit issued to the private sector by intermediaries other than the central bank and equals claims on the private sector by deposit money banks and other financial

institutions divided by GDP. According to Beck, Demirgüç-Kunt and Levine (2000, p. 7), this variable is a measure of “the activity of financial intermediaries in one of its main function: channeling savings to investors”.

- Financial system deposits to GDP: it is measured as demand, time and saving deposits in deposit money banks and other financial institutions as a share of GDP, and it is a measure of general financial system activity.
- Stock market capitalization to GDP: it is an indicator of the size of the stock market and equals the value of listed shares divided by GDP.
- Stock market total value traded to GDP: it measures the activity or liquidity of the stock market and it is defined as total shares traded on the stock exchange divided by GDP.
- Stock market turnover ratio: it is an indicator of the efficiency of the stock market and it is defined as the ratio of the total value of total shares traded and market capitalization.

According to Beck, Demirgüç-Kunt and Levine (2000, p. 17), this variable measures “the activity or liquidity of a stock market relative to its size”, and so “a small but active stock market will have a high turnover ratio whereas a large, but less liquid stock market will have a low turnover ratio”.

TABLE 1: SAMPLE OF FIRMS AND OBSERVATIONS BY COUNTRY

PANEL A: FIRMS BY COUNTRY

| Country | Initial Sample | Inconsistencies | Total Assets < US\$ 1Mi | Sub-Total 1 | Continuous Obs < 3 | Sub-Total 2 | Final Sample | % of Initial Sample | % of Total Final Sample |
|-----------------------|----------------|-----------------|-------------------------|---------------|--------------------|---------------|---------------|---------------------|-------------------------|
| Bosnia-Herzegovina | 156 | 155 | 153 | 127 | 127 | - | - | 0.00% | 0.00% |
| Croatia | 2,215 | 2,215 | 1,129 | 3 | 2 | 1 | - | 0.00% | 0.00% |
| Czech Republic | 7,460 | 1,068 | 4,353 | 4,435 | 1,706 | 2,729 | 2,729 | 36.58% | 13.18% |
| Estonia | 2,231 | 790 | 1,912 | 891 | 357 | 534 | 534 | 23.94% | 2.58% |
| Hungary | 3,898 | 579 | 2,987 | 2,928 | 1,062 | 1,866 | 1,866 | 47.87% | 9.01% |
| Latvia | 948 | 71 | 769 | 527 | 182 | 345 | 345 | 36.39% | 1.67% |
| Lithuania | 1,204 | 145 | 837 | 664 | 409 | 255 | 255 | 21.18% | 1.23% |
| Poland | 6,659 | 2,959 | 4,646 | 5,315 | 1,644 | 3,671 | 3,671 | 55.13% | 17.72% |
| Republic of Macedonia | 48 | 36 | 36 | 20 | 18 | 2 | - | 0.00% | 0.00% |
| Romania | 16,190 | 2,603 | 11,111 | 5,410 | 2,779 | 2,631 | 2,631 | 16.25% | 12.70% |
| Russia | 20,157 | 4,586 | 11,441 | 11,816 | 6,724 | 5,092 | 5,092 | 25.26% | 24.58% |
| Serbia-Montenegro | 4,044 | 490 | 596 | 1,342 | 464 | 878 | 878 | 21.71% | 4.24% |
| Slovak Republic | 872 | 584 | 445 | 443 | 296 | 147 | 147 | 16.86% | 0.71% |
| Slovenia | 1,497 | 1,458 | 1,267 | 5 | 5 | - | - | 0.00% | 0.00% |
| Ukraine | 4,411 | 3 | 2,283 | 3,070 | 505 | 2,565 | 2,565 | 58.15% | 12.38% |
| Total | 71,990 | 17,742 | 43,965 | 36,996 | 16,280 | 20,716 | 20,713 | 28.77% | |

Sub-Total 1 = Initial Sample - Firms excluded by inconsistencies in balanced sheet and Total Assets < US\$ 1 Million

Sub-Total 2 = Sub-Total 1 - Firms with continuous observations < 3

Final Sample = Sub-Total 2 - Firms of Croatia and Republic of Macedonia

TABLE 1: SAMPLE OF FIRMS AND OBSERVATIONS BY COUNTRY (continued)**PANEL B: OBSERVATIONS BY COUNTRY**

| Country | Initial Sample | Inconsistencies | Total Assets < US\$ 1Mi | Sub-Total 1 | Continuous Obs < 3 | Sub-Total 2 | Final Sample | % of Initial Sample | % of Total Final Sample |
|-----------------------|----------------|-----------------|-------------------------|----------------|--------------------|----------------|----------------|---------------------|-------------------------|
| Bosnia-Herzegovina | 752 | 437 | 361 | 215 | 215 | - | - | 0.00% | 0.00% |
| Croatia | 13,222 | 13,090 | 4,825 | 5 | 2 | 3 | - | 0.00% | 0.00% |
| Czech Republic | 31,444 | 1,352 | 10,251 | 20,353 | 3,056 | 17,297 | 17,297 | 55.01% | 16.33% |
| Estonia | 13,652 | 837 | 9,991 | 3,442 | 579 | 2,863 | 2,863 | 20.97% | 2.70% |
| Hungary | 23,942 | 709 | 10,896 | 12,688 | 1,881 | 10,807 | 10,807 | 45.14% | 10.20% |
| Latvia | 5,429 | 96 | 2,931 | 2,437 | 308 | 2,129 | 2,129 | 39.22% | 2.01% |
| Lithuania | 4,044 | 199 | 2,037 | 1,953 | 727 | 1,226 | 1,226 | 30.32% | 1.16% |
| Poland | 42,251 | 5,770 | 14,381 | 22,601 | 3,232 | 19,369 | 19,369 | 45.84% | 18.29% |
| Republic of Macedonia | 162 | 65 | 78 | 41 | 35 | 6 | - | 0.00% | 0.00% |
| Romania | 67,092 | 5,609 | 43,533 | 19,226 | 4,855 | 14,371 | 14,371 | 21.42% | 13.57% |
| Russia | 58,394 | 4,588 | 24,298 | 30,830 | 11,463 | 19,367 | 19,367 | 33.17% | 18.29% |
| Serbia-Montenegro | 7,903 | 493 | 1,700 | 5,723 | 876 | 4,847 | 4,847 | 61.33% | 4.58% |
| Slovak Republic | 3,113 | 1,106 | 1,054 | 1,235 | 495 | 740 | 740 | 23.77% | 0.70% |
| Slovenia | 12,298 | 11,321 | 4,839 | 6 | 6 | - | - | 0.00% | 0.00% |
| Ukraine | 22,098 | 3 | 8,413 | 13,682 | 797 | 12,885 | 12,885 | 58.31% | 12.17% |
| Total | 305,796 | 45,675 | 139,588 | 134,437 | 28,527 | 105,910 | 105,901 | 34.63% | |

Sub-Total 1 = Initial Sample - Observations with inconsistencies and Total Assets < US\$ 1 Million

Sub-Total 2 = Sub-Total 1 - Observations of firms with continuous observations < 3

Final Sample = Sub-Total 2 - Observations of Croatia and Republic of Macedonia

TABLE 2: NUMBER OF OBSERVATIONS BY YEAR AND COUNTRY

| Year | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine | Total | % of Total |
|--------------|-------------------|----------------|----------------|---------------|------------------|---------------|----------------|---------------|---------------------|--------------------|----------------|----------------|-------------------|
| 1994 | 693 | | | 4 | | 24 | | | | 26 | | 747 | 0.71% |
| 1995 | 1,112 | | | 56 | 11 | 468 | 752 | | | 40 | | 2,439 | 2.30% |
| 1996 | 1,262 | | 332 | 94 | 34 | 88 | 911 | | 1 | 56 | | 2,778 | 2.62% |
| 1997 | 1,313 | 37 | 1,005 | 148 | 49 | 88 | 1,049 | | 101 | 66 | 2 | 3,858 | 3.64% |
| 1998 | 1,423 | 281 | 1,206 | 196 | 70 | 2,170 | 999 | 1,998 | 81 | 82 | 1,107 | 9,613 | 9.08% |
| 1999 | 1,669 | 302 | 1,385 | 238 | 90 | 2,584 | 1,125 | 613 | 762 | 100 | 1,997 | 10,865 | 10.26% |
| 2000 | 1,984 | 370 | 1,500 | 269 | 130 | 2,997 | 1,293 | 1,501 | 815 | 121 | 2,333 | 13,313 | 12.57% |
| 2001 | 2,423 | 400 | 1,600 | 296 | 159 | 3,319 | 1,542 | 5,028 | 764 | 121 | 2,549 | 18,201 | 17.19% |
| 2002 | 2,596 | 508 | 1,724 | 331 | 253 | 3,415 | 2,287 | 5,064 | 868 | 75 | 2,497 | 19,618 | 18.52% |
| 2003 | 2,182 | 511 | 1,616 | 302 | 250 | 3,151 | 2,218 | 4,779 | 876 | 41 | 2,358 | 18,284 | 17.27% |
| 2004 | 640 | 454 | 439 | 195 | 180 | 1,065 | 2,195 | 384 | 579 | 12 | 42 | 6,185 | 5.84% |
| Total | 17,297 | 2,863 | 10,807 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 | 105,901 | |

TABLE 3: SUMMARY OF AVERAGE ACCOUNTING INFORMATION FROM THE BALANCE SHEET AND THE EARNINGS STATEMENT, STANDARDIZED BY TOTAL ASSETS

PANEL A: PERIOD 1994 - 1998

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|-----------------------------------|-------------------|----------------|----------------|---------------|------------------|---------------|----------------|---------------|---------------------|--------------------|----------------|
| Number of Observations | 5,803 | 318 | 2,543 | 498 | 164 | 2,838 | 3,711 | 1,998 | 183 | 270 | 1,109 |
| Assets | | | | | | | | | | | |
| <i>Current Assets</i> | 51.6% | 46.3% | 53.3% | 52.4% | 55.1% | 50.1% | 44.4% | 45.6% | 47.9% | 50.5% | 33.0% |
| Stocks | 20.1% | 17.5% | 17.5% | 23.5% | 27.0% | 21.7% | 17.8% | 16.3% | 23.0% | 17.2% | 15.3% |
| Debtors | 22.2% | 18.4% | 24.4% | 21.9% | 21.4% | 24.3% | 15.8% | 17.9% | 15.8% | 24.7% | 13.6% |
| Others | 9.4% | 10.4% | 11.4% | 7.0% | 6.7% | 4.1% | 10.8% | 11.5% | 9.1% | 8.6% | 4.1% |
| <i>Fixed Assets</i> | 48.4% | 53.7% | 46.7% | 47.6% | 44.9% | 49.9% | 55.6% | 54.4% | 52.1% | 49.5% | 67.0% |
| Intangible | 0.7% | 0.5% | 1.0% | 1.7% | 0.4% | 1.2% | 0.3% | 0.2% | 2.5% | 0.7% | 0.6% |
| Tangible | 44.8% | 49.7% | 49.2% | 43.4% | 42.7% | 47.0% | 54.0% | 52.6% | 43.9% | 46.3% | 64.9% |
| Others | 2.8% | 3.6% | -3.5% | 2.5% | 1.7% | 1.9% | 1.3% | 1.6% | 5.8% | 2.5% | 1.5% |
| Shareholders Funds + Liab. | | | | | | | | | | | |
| <i>Current Liabilities</i> | 39.4% | 38.8% | 40.6% | 38.0% | 39.7% | 40.3% | 36.0% | 34.1% | 33.4% | 39.3% | 26.5% |
| Loans | 10.3% | 11.0% | 0.8% | 6.0% | 8.0% | 9.9% | 6.8% | 3.0% | 5.0% | 10.3% | 1.3% |
| Creditors | 27.0% | 20.9% | 3.0% | 19.4% | 22.1% | 18.2% | 13.5% | 28.8% | 22.6% | 26.4% | 11.7% |
| Others | 2.1% | 6.9% | 36.8% | 12.7% | 9.6% | 13.4% | 15.7% | 2.3% | 5.8% | 2.7% | 13.5% |
| <i>Non Current Liabilities</i> | 17.2% | 18.7% | 9.5% | 15.2% | 10.9% | 10.4% | 7.5% | 1.8% | 11.0% | 18.7% | 15.6% |
| Long Term Debt | 14.3% | 14.1% | 0.9% | 12.9% | 13.9% | 10.5% | 3.5% | 1.6% | 10.2% | 16.6% | 2.2% |
| Others | 2.9% | 4.6% | 14.8% | 2.3% | 3.3% | 5.1% | 4.0% | 0.2% | 0.8% | 2.1% | 13.4% |
| <i>Shareholders Funds</i> | 43.5% | 42.5% | 49.9% | 46.8% | 49.4% | 50.8% | 56.5% | 64.1% | 55.7% | 41.9% | 57.9% |
| Capital | 33.0% | 18.1% | 30.5% | 30.8% | 25.7% | 23.4% | 44.7% | 7.0% | 48.2% | 30.2% | 14.9% |
| Others | 10.5% | 24.4% | 19.4% | 16.0% | 23.7% | 27.5% | 11.8% | 57.1% | 7.5% | 11.7% | 42.9% |
| Income Statements Items | | | | | | | | | | | |
| Sales | 129.4% | 177.3% | 214.8% | 171.0% | 173.2% | 182.3% | 112.6% | | 100.4% | 115.6% | 8626.8% |
| Costs of Goods Sold | 119.6% | 160.8% | 26.0% | 140.0% | 139.6% | 170.8% | 0.0% | 161.1% | 0.0% | 135.7% | 8556.6% |
| Gross Profit | 16.0% | 19.0% | 191.6% | 26.7% | 34.8% | 12.5% | 0.0% | -1.7% | 0.0% | 0.6% | 70.2% |
| EBITDA | 11.9% | 15.2% | 37.2% | | | 16.3% | 16.1% | | 8.7% | 12.1% | 243.3% |
| Depreciation | 5.0% | 6.0% | 7.6% | | | 5.2% | 2.6% | | 3.5% | 5.0% | 301.6% |
| EBIT | 6.9% | 9.1% | 23.0% | 10.0% | 15.1% | 10.2% | 13.5% | -8.0% | 5.2% | 7.0% | -58.3% |
| Financial Profit | -5.2% | -2.0% | -0.4% | -1.0% | -1.1% | -2.6% | -2.6% | -4.5% | -1.3% | -2.8% | 224.3% |
| Profit Before Tax | 1.7% | 7.1% | 22.2% | 8.3% | 13.7% | 7.6% | 10.9% | -12.4% | 3.9% | 4.2% | 166.0% |
| Taxation | 0.0% | 1.3% | 3.7% | 2.1% | 2.4% | 3.7% | 2.7% | 19.2% | 0.2% | 2.5% | 27.7% |
| Profit After Tax | 1.7% | 5.8% | 18.7% | 6.2% | 11.4% | 4.0% | 8.2% | -31.7% | 3.7% | 1.7% | 138.3% |
| Interest Paid | 7.0% | 3.0% | 3.8% | | | 2.5% | 3.2% | | 1.8% | 4.5% | |
| Costs of Employees | 21.8% | 25.5% | 33.2% | | | 24.1% | 25.4% | | 13.8% | 21.5% | 1002.4% |
| Employees | 398 | 167 | 274 | 285 | 234 | 398 | 622 | 1,386 | 1,068 | | 1,357 |

TABLE 3: SUMMARY OF AVERAGE ACCOUNTING INFORMATION FROM THE BALANCE SHEET AND THE EARNINGS STATEMENT, STANDARDIZED BY TOTAL ASSETS (continued)

PANEL B: PERIOD 1999 - 2004

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|-----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Number of Observations | 11,494 | 2,545 | 8,264 | 1,631 | 1,062 | 16,531 | 10,660 | 17,369 | 4,664 | 470 | 11,776 |
| Assets | | | | | | | | | | | |
| <i>Current Assets</i> | 54.6% | 47.7% | 56.4% | 49.6% | 56.4% | 52.6% | 52.3% | 59.5% | 49.2% | 50.3% | 40.4% |
| Stocks | 21.4% | 17.3% | 17.0% | 20.6% | 23.4% | 16.3% | 18.0% | 22.4% | 20.1% | 15.3% | 17.2% |
| Debtors | 25.8% | 20.4% | 29.7% | 24.0% | 26.6% | 39.7% | 22.3% | 26.9% | 19.2% | 26.0% | 13.6% |
| Others | 7.4% | 9.9% | 9.7% | 5.0% | 6.4% | -3.5% | 12.0% | 10.2% | 9.9% | 9.1% | 9.6% |
| <i>Fixed Assets</i> | 45.4% | 52.3% | 43.6% | 50.4% | 43.6% | 47.4% | 47.7% | 40.5% | 50.8% | 49.6% | 59.6% |
| Intangible | 0.7% | 0.5% | 2.8% | 0.6% | 0.4% | 1.5% | 0.8% | 0.8% | 1.2% | 1.0% | 0.6% |
| Tangible | 41.5% | 46.6% | 39.9% | 47.3% | 38.9% | 43.1% | 43.9% | 37.2% | 46.3% | 44.1% | 55.2% |
| Others | 3.3% | 5.2% | 0.9% | 2.4% | 4.2% | 3.2% | 3.0% | 2.4% | 3.3% | 4.6% | 3.8% |
| Shareholders Funds + Liab. | | | | | | | | | | | |
| <i>Current Liabilities</i> | 42.4% | 35.9% | 44.9% | 39.4% | 39.7% | 47.3% | 51.3% | 53.8% | 34.2% | 43.6% | 35.0% |
| Loans | 8.3% | 8.9% | 0.7% | 9.9% | 9.5% | 10.2% | 4.7% | 10.4% | 6.0% | 7.7% | 3.9% |
| Creditors | 32.1% | 20.8% | 86.2% | 23.1% | 23.5% | 21.4% | 13.1% | 41.5% | 25.6% | 32.9% | 16.5% |
| Others | 2.1% | 6.2% | -41.9% | 6.4% | 6.7% | 16.6% | 33.5% | 1.9% | 2.6% | 3.0% | 14.6% |
| <i>Non Current Liabilities</i> | 16.1% | 17.0% | 8.7% | 19.8% | 11.2% | 10.2% | 15.4% | 5.9% | 9.5% | 17.0% | 6.8% |
| Long Term Debt | 12.7% | 13.0% | 0.6% | 18.7% | 10.1% | 9.6% | 3.3% | 4.7% | 8.7% | 14.0% | 3.2% |
| Others | 3.4% | 4.1% | 11.9% | 1.1% | 1.2% | 5.7% | 12.1% | 1.2% | 0.8% | 2.9% | 3.6% |
| <i>Shareholders Funds</i> | 41.5% | 47.0% | 46.4% | 40.8% | 49.2% | 43.8% | 33.4% | 40.3% | 56.4% | 39.5% | 58.2% |
| Capital | 28.5% | 14.4% | 20.9% | 26.5% | 22.9% | 27.4% | 18.3% | 7.7% | 44.3% | 32.2% | 19.7% |
| Others | 13.0% | 32.7% | 25.5% | 14.3% | 26.3% | 16.4% | 15.0% | 32.6% | 12.1% | 7.3% | 38.6% |
| Income Statements Items | | | | | | | | | | | |
| Sales | 144.1% | 166.4% | 223.5% | 165.5% | 152.7% | 162.2% | 134.4% | | 88.8% | 139.3% | 104.2% |
| Costs of Goods Sold | 138.3% | 149.2% | 27.0% | 142.0% | 121.4% | 128.9% | 0.0% | 184.0% | 0.0% | 145.8% | 90.5% |
| Gross Profit | 16.9% | 19.5% | 160.3% | 25.5% | 32.0% | 35.3% | 158.2% | 2.6% | 0.0% | 16.2% | 25.7% |
| EBITDA | 11.9% | 15.3% | 22.5% | 14.3% | | 11.9% | 15.2% | | 10.7% | 9.7% | 7.8% |
| Depreciation | 5.1% | 5.7% | 7.5% | 8.0% | | 5.7% | 3.6% | | 3.4% | 5.1% | 3.9% |
| EBIT | 6.7% | 9.6% | 13.9% | 5.7% | 7.7% | 5.7% | 10.9% | -7.7% | 7.3% | 4.2% | 3.8% |
| Financial Profit | -2.7% | -1.4% | -0.8% | -1.6% | -0.7% | -2.3% | -3.4% | -1.7% | 1.5% | -1.9% | -4.2% |
| Profit Before Tax | 4.0% | 7.8% | 14.4% | 4.1% | 7.0% | 3.4% | 7.5% | -9.4% | 8.9% | 2.3% | -0.4% |
| Taxation | 1.0% | 0.3% | 1.5% | 1.3% | 1.0% | 2.0% | 1.9% | 4.9% | -0.1% | 1.5% | 1.8% |
| Profit After Tax | 2.9% | 7.5% | 11.2% | 2.8% | 6.0% | 1.4% | 5.6% | -14.3% | 9.0% | 0.8% | -2.2% |
| Interest Paid | 6.4% | 2.1% | 1.8% | 3.2% | | 2.4% | 2.5% | | 1.4% | 5.5% | 7.8% |
| Costs of Employees | 25.6% | 25.4% | 39.4% | 35.0% | | 25.7% | 22.9% | | 11.0% | 25.8% | 12.6% |
| Employees | 383 | 163 | 194 | 239 | 187 | 236 | 61 | 892 | 735 | 360 | 900 |

TABLE 3: SUMMARY OF AVERAGE ACCOUNTING INFORMATION FROM THE BALANCE SHEET AND THE EARNINGS STATEMENT, STANDARDIZED BY TOTAL ASSETS (continued)

PANEL C: PERIOD 1994 - 2004

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|-----------------------------------|-------------------|----------------|----------------|---------------|------------------|---------------|----------------|---------------|---------------------|--------------------|----------------|
| Number of Observations | 17,297 | 2,863 | 10,807 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 |
| Assets | | | | | | | | | | | |
| <i>Current Assets</i> | 53.6% | 47.5% | 55.7% | 50.2% | 56.3% | 52.2% | 50.2% | 58.1% | 49.2% | 50.4% | 39.8% |
| Stocks | 21.0% | 17.3% | 17.1% | 21.2% | 23.9% | 17.1% | 17.9% | 21.7% | 20.3% | 16.0% | 17.0% |
| Debtors | 24.6% | 20.2% | 28.5% | 23.5% | 25.9% | 37.5% | 20.6% | 26.0% | 19.0% | 25.5% | 13.6% |
| Others | 8.0% | 10.0% | 10.1% | 5.5% | 6.4% | -2.4% | 11.7% | 10.4% | 9.9% | 8.9% | 9.1% |
| <i>Fixed Assets</i> | 46.4% | 52.5% | 44.3% | 49.8% | 43.7% | 47.8% | 49.8% | 41.9% | 50.8% | 49.6% | 60.2% |
| Intangible | 0.7% | 0.5% | 2.4% | 0.9% | 0.4% | 1.4% | 0.7% | 0.8% | 1.2% | 0.9% | 0.6% |
| Tangible | 42.6% | 46.9% | 42.1% | 46.4% | 39.4% | 43.7% | 46.5% | 38.8% | 46.2% | 44.9% | 56.0% |
| Others | 3.1% | 5.0% | -0.1% | 2.5% | 3.9% | 3.0% | 2.6% | 2.4% | 3.4% | 3.8% | 3.6% |
| Shareholders Funds + Liab. | | | | | | | | | | | |
| <i>Current Liabilities</i> | 41.4% | 36.2% | 43.9% | 39.0% | 39.7% | 46.3% | 47.3% | 51.7% | 34.1% | 42.0% | 34.3% |
| Loans | 8.9% | 9.1% | 0.7% | 9.0% | 9.3% | 10.2% | 5.2% | 9.6% | 5.9% | 8.6% | 3.7% |
| Creditors | 30.4% | 20.8% | 66.6% | 22.2% | 23.3% | 20.9% | 13.2% | 40.2% | 25.5% | 30.5% | 16.1% |
| Others | 2.1% | 6.3% | -23.4% | 7.8% | 7.0% | 16.1% | 28.9% | 1.9% | 2.8% | 2.9% | 14.5% |
| <i>Non Current Liabilities</i> | 16.4% | 17.2% | 8.9% | 18.7% | 11.1% | 10.3% | 13.3% | 5.5% | 9.5% | 17.6% | 7.5% |
| Long Term Debt | 13.2% | 13.1% | 0.7% | 17.3% | 10.5% | 9.7% | 3.4% | 4.4% | 8.7% | 15.0% | 3.1% |
| Others | 3.2% | 4.1% | 12.5% | 1.4% | 1.4% | 5.6% | 10.0% | 1.1% | 0.8% | 2.6% | 4.4% |
| <i>Shareholders Funds</i> | 42.2% | 46.5% | 47.2% | 42.2% | 49.2% | 44.8% | 39.3% | 42.8% | 56.3% | 40.4% | 58.2% |
| Capital | 30.0% | 14.8% | 23.2% | 27.5% | 23.3% | 26.8% | 25.1% | 7.7% | 44.5% | 31.5% | 19.3% |
| Others | 12.1% | 31.8% | 24.1% | 14.7% | 25.9% | 18.1% | 14.2% | 35.1% | 11.9% | 8.9% | 38.9% |
| Income Statements Items | | | | | | | | | | | |
| Sales | 139.1% | 167.6% | 221.6% | 166.6% | 155.1% | 165.2% | 128.8% | | 89.2% | 130.6% | 105.0% |
| Costs of Goods Sold | 132.0% | 150.5% | 26.8% | 141.5% | 123.5% | 146.5% | 0.0% | 181.6% | 0.0% | 142.0% | 91.3% |
| Gross Profit | 16.6% | 19.5% | 191.2% | 25.8% | 32.4% | 25.8% | 36.8% | 2.2% | 0.0% | 10.4% | 25.7% |
| EBITDA | 11.9% | 15.3% | 25.0% | 14.3% | | 12.3% | 15.4% | | 10.6% | 10.5% | 7.8% |
| Depreciation | 5.1% | 5.8% | 7.5% | 8.0% | | 5.7% | 3.3% | | 3.4% | 5.1% | 3.9% |
| EBIT | 6.8% | 9.5% | 15.8% | 6.7% | 8.5% | 6.4% | 11.5% | -7.7% | 7.2% | 5.2% | 3.8% |
| Financial Profit | -3.6% | -1.4% | -0.7% | -1.4% | -0.7% | -2.3% | -3.2% | -2.0% | 1.4% | -2.3% | -4.2% |
| Profit Before Tax | 3.2% | 7.7% | 16.0% | 5.1% | 7.8% | 4.0% | 8.4% | -9.7% | 8.7% | 3.0% | -0.4% |
| Taxation | 0.7% | 0.4% | 2.0% | 1.5% | 1.2% | 2.2% | 2.1% | 6.4% | -0.1% | 1.8% | 1.8% |
| Profit After Tax | 2.5% | 7.3% | 12.8% | 3.6% | 6.6% | 1.8% | 6.2% | -16.1% | 8.8% | 1.1% | -2.2% |
| Interest Paid | 6.7% | 2.2% | 2.4% | 3.2% | | 2.4% | 2.7% | | 1.4% | 5.1% | 7.8% |
| Costs of Employees | 24.3% | 25.5% | 38.3% | 35.0% | | 25.5% | 23.5% | | 11.1% | 24.2% | 12.7% |
| Employees | 388 | 163 | 207 | 249 | 193 | 261 | 207 | 955 | 749 | 360 | 937 |

TABLE 4: DESCRIPTIVE STATISTICS OF DEPENDENT AND EXPLANATORY VARIABLES

| PANEL A: DESCRIPTIVE STATISTICS - INDIVIDUAL SAMPLES | | | | | | | | | | |
|---|----------|----------|----------|----------|------------|---------------|---------------|-------------|------------|----------|
| | LR1 | LR2 | LR3 | Size | Growth | Profitability | Business Risk | Tangibility | Tax Rate | Ln(Age) |
| Mean | 0.5432 | 0.1333 | 0.0697 | 8.5938 | 0.0102 | 0.0533 | 3.3244 | 0.4454 | 0.4178 | 2.2172 |
| Median | 0.5124 | 0.0374 | 0.0000 | 8.3690 | 0.0005 | 0.0561 | 1.1400 | 0.4413 | 0.1075 | 2.0794 |
| Maximum | 48.7889 | 13.1455 | 9.2011 | 17.4140 | 137.6547 | 481.4702 | 19,969.9800 | 153.0324 | 2,383.0000 | 6.2186 |
| Minimum | (8.0333) | (0.4078) | (0.4078) | 6.9078 | (0.1189) | (1,487.7170) | (13,943.4900) | (1.9898) | (465.6875) | 0.0000 |
| Std. Dev. | 0.4319 | 0.2277 | 0.1797 | 1.1829 | 0.4260 | 7.0376 | 189.5102 | 0.5257 | 12.1872 | 1.0022 |
| Skewness | 29.63 | 9.35 | 11.29 | 1.11 | 320.32 | (151.22) | 31.26 | 231.07 | 110.47 | 0.64 |
| Kurtosis | 2,837.44 | 320.46 | 353.04 | 4.67 | 103,502.80 | 28,845.84 | 5,344.99 | 67,055.19 | 17,492.61 | 3.59 |
| Jarque-Bera Probability | 3.55E+10 | 4.42E+08 | 4.83E+08 | 34024.16 | 4.70E+13 | 3.58E+12 | 8.62E+10 | 1.98E+13 | 1.31E+12 | 7429.198 |
| Observations | 105,900 | 104,924 | 94,169 | 105,901 | 105,336 | 103,304 | 72,508 | 105,874 | 102,906 | 89,539 |

| PANEL B: DESCRIPTIVE STATISTICS - COMMON SAMPLE | | | | | | | | | | |
|--|----------|----------|----------|----------|----------|---------------|---------------|-------------|------------|----------|
| | LR1 | LR2 | LR3 | Size | Growth | Profitability | Business Risk | Tangibility | Tax Rate | Ln(Age) |
| Mean | 0.5178 | 0.1588 | 0.0837 | 8.6269 | 0.0073 | 0.0374 | 3.6570 | 0.4640 | 0.4066 | 2.1952 |
| Median | 0.4820 | 0.0729 | 0.0000 | 8.3893 | 0.0003 | 0.0507 | 1.1614 | 0.4635 | 0.0109 | 2.0794 |
| Maximum | 20.5093 | 9.4406 | 9.2011 | 17.3000 | 0.9924 | 481.4702 | 19,969.9800 | 153.0324 | 2,383.0000 | 6.2186 |
| Minimum | (0.3394) | (0.4078) | (0.4078) | 6.9078 | (0.0802) | (1,487.7170) | (13,943.4900) | (1.9898) | (465.6875) | 0.0000 |
| Std. Dev. | 0.3717 | 0.2375 | 0.1947 | 1.2245 | 0.0326 | 8.3604 | 185.1030 | 0.6856 | 13.4598 | 1.0335 |
| Skewness | 9.55 | 7.41 | 11.73 | 1.09 | 11.21 | (132.54) | 40.76 | 196.90 | 117.34 | 0.68 |
| Kurtosis | 357.96 | 182.70 | 373.51 | 4.52 | 185.85 | 22,321.46 | 6,173.27 | 43,809.43 | 18,736.21 | 3.39 |
| Jarque-Bera Probability | 2.95E+08 | 7.58E+07 | 3.21E+08 | 16451.89 | 7.91E+07 | 1.16E+12 | 8.88E+10 | 4.48E+12 | 8.19E+11 | 4732.774 |
| Observations | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 | 55,970 |

TABLE 4: DESCRIPTIVE STATISTICS OF DEPENDENT AND EXPLANATORY VARIABLES (continued)

| PANEL C: DESCRIPTIVE STATISTICS BY COUNTRY | | | | | | | | | | | |
|---|------------|---------|----------|---------|-----------|---------|---------|---------|--------------|-------------|---------|
| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
| LR1 | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,806 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 |
| Mean | 0.5784 | 0.5346 | 0.5280 | 0.5777 | 0.5081 | 0.5517 | 0.6066 | 0.5723 | 0.4366 | 0.5963 | 0.4181 |
| Std. Dev. | 0.6036 | 0.2646 | 0.3496 | 0.3139 | 0.2406 | 0.3570 | 0.3935 | 0.4258 | 0.2724 | 0.2944 | 0.4542 |
| Maximum | 48.7889 | 2.2415 | 16.5223 | 2.8890 | 1.8128 | 9.8217 | 16.9171 | 17.0490 | 1.0000 | 1.6778 | 20.5093 |
| Minimum | -0.3394 | 0.0005 | -8.0333 | 0.0026 | 0.0008 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| LR2 | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,801 | 2,129 | 1,226 | 18,398 | 14,371 | 19,367 | 4,847 | 740 | 12,885 |
| Mean | 0.2217 | 0.2221 | 0.0117 | 0.2629 | 0.1915 | 0.1568 | 0.0856 | 0.1404 | 0.1463 | 0.2362 | 0.0677 |
| Std. Dev. | 0.2654 | 0.2181 | 0.0544 | 0.2746 | 0.1837 | 0.1945 | 0.1571 | 0.2720 | 0.2284 | 0.2113 | 0.2192 |
| Maximum | 13.1455 | 1.1061 | 0.9633 | 2.8138 | 1.1636 | 3.0178 | 1.7729 | 9.4406 | 1.9927 | 0.9568 | 9.2011 |
| Minimum | -0.4078 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | -0.0289 | 0.0000 | 0.0000 | -0.0003 | 0.0000 |
| LR3 | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 7,312 | 2,129 | 1,153 | 11,206 | 14,371 | 19,367 | 4,847 | 740 | 12,884 |
| Mean | 0.1323 | 0.1310 | 0.0069 | 0.1733 | 0.1045 | 0.0975 | 0.0335 | 0.0443 | 0.0871 | 0.1498 | 0.0310 |
| Std. Dev. | 0.1951 | 0.1669 | 0.0446 | 0.2548 | 0.1448 | 0.1588 | 0.1091 | 0.2083 | 0.1488 | 0.1894 | 0.1970 |
| Maximum | 3.3932 | 1.0081 | 0.9294 | 2.8138 | 1.0981 | 1.5943 | 1.7355 | 8.9834 | 0.9967 | 0.8247 | 9.2011 |
| Minimum | -0.4078 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | -0.0003 | 0.0000 |
| Size | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,807 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 |
| Mean | 8.7214 | 8.1653 | 8.5852 | 8.1329 | 8.1928 | 8.7460 | 8.2391 | 8.6931 | 9.0727 | 8.5218 | 8.4805 |
| Std. Dev. | 1.2151 | 0.9706 | 1.2377 | 0.9492 | 0.9351 | 1.1155 | 0.9792 | 1.2063 | 1.3570 | 1.1870 | 1.2207 |
| Maximum | 14.9826 | 14.3010 | 17.4139 | 13.7626 | 12.0244 | 14.6302 | 15.9156 | 17.3000 | 16.1072 | 12.9260 | 17.2486 |
| Minimum | 6.9080 | 6.9093 | 6.9078 | 6.9086 | 6.9097 | 6.9078 | 6.9078 | 6.9078 | 6.9079 | 6.9100 | 6.9078 |
| Growth | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,800 | 2,129 | 1,226 | 18,821 | 14,371 | 19,357 | 4,847 | 740 | 12,885 |
| Mean | 0.0071 | 0.0052 | 0.0239 | 0.0088 | 0.0043 | 0.0142 | 0.0067 | 0.0078 | 0.0122 | 0.0089 | 0.0057 |
| Std. Dev. | 0.0275 | 0.0273 | 1.3250 | 0.0396 | 0.0147 | 0.0489 | 0.0463 | 0.0399 | 0.0446 | 0.0419 | 0.0337 |
| Maximum | 0.7301 | 0.4720 | 137.6547 | 0.6940 | 0.1911 | 0.8560 | 0.9583 | 0.9924 | 0.6642 | 0.5006 | 0.9964 |
| Minimum | -0.1189 | -0.0183 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | -0.0004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

TABLE 4: DESCRIPTIVE STATISTICS OF DEPENDENT AND EXPLANATORY VARIABLES (continued)

| PANEL C: DESCRIPTIVE STATISTICS BY COUNTRY. Continuing... | | | | | | | | | | | |
|--|------------|-------------|------------|-----------|------------|------------|-------------|------------|--------------|-------------|-------------|
| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
| Profitability | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,181 | 2,129 | 1,190 | 19,335 | 14,371 | 19,367 | 4,847 | 740 | 10,984 |
| Mean | 0.0678 | 0.0952 | 0.1581 | 0.0667 | 0.0854 | 0.0636 | 0.1154 | -0.0770 | 0.0723 | 0.0525 | 0.0382 |
| Std. Dev. | 0.1256 | 0.1435 | 4.1000 | 0.1419 | 0.1171 | 0.1640 | 0.1863 | 15.9421 | 0.1292 | 0.1069 | 1.3945 |
| Maximum | 1.1481 | 1.1002 | 319.2755 | 1.6783 | 0.7866 | 3.1083 | 3.2966 | 481.4702 | 4.5155 | 0.5939 | 130.4637 |
| Minimum | -2.2384 | -1.3463 | -3.7384 | -1.0480 | -0.6052 | -2.4271 | -2.6564 | -1487.7166 | -0.5368 | -0.6328 | -8.7496 |
| Business Risk | | | | | | | | | | | |
| Count | 17,076 | 2,860 | 2,111 | 2,029 | 1,190 | 6,689 | 4,824 | 19,321 | 4,743 | 717 | 10,948 |
| Mean | 2.6153 | -1.9501 | 29.6507 | 5.5160 | -3.2562 | 2.4799 | 0.9836 | 1.9672 | 0.0000 | -0.1716 | 6.6529 |
| Std. Dev. | 70.4971 | 199.8256 | 599.8381 | 47.4783 | 243.2294 | 84.2675 | 229.9745 | 71.2095 | 0.0000 | 60.1776 | 326.3505 |
| Maximum | 7508.3319 | 278.8708 | 18175.1832 | 1231.2573 | 1741.5258 | 3023.9999 | 5471.7288 | 5851.9995 | 0.0000 | 381.9538 | 19969.9806 |
| Minimum | -2648.5416 | -10635.6901 | -8540.1359 | -314.1009 | -7902.3857 | -3552.0003 | -12527.5424 | -4498.7509 | 0.0000 | -1494.3571 | -13943.4934 |
| Tangibility | | | | | | | | | | | |
| Count | 17,297 | 2,863 | 10,806 | 2,129 | 1,226 | 19,353 | 14,371 | 19,357 | 4,847 | 740 | 12,885 |
| Mean | 0.4259 | 0.4694 | 0.4210 | 0.4644 | 0.3943 | 0.4366 | 0.4648 | 0.3878 | 0.4618 | 0.4488 | 0.5602 |
| Std. Dev. | 0.2213 | 0.2434 | 1.4892 | 0.2113 | 0.2121 | 0.2438 | 0.2255 | 0.2263 | 0.2196 | 0.2139 | 0.2374 |
| Maximum | 1.0000 | 0.9874 | 153.0324 | 0.9769 | 0.9585 | 0.9984 | 0.9980 | 0.9979 | 0.9856 | 0.9313 | 4.4132 |
| Minimum | -1.9898 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Tax Rate | | | | | | | | | | | |
| Count | 17,174 | 2,698 | 10,159 | 2,118 | 1,190 | 19,325 | 14,360 | 19,355 | 4,846 | 735 | 10,946 |
| Mean | 0.0289 | 0.0268 | 0.2226 | 0.5861 | 0.1409 | 0.3638 | 0.3078 | 1.0925 | -0.0162 | 0.5658 | 0.5319 |
| Std. Dev. | 5.2703 | 0.4974 | 10.5837 | 11.4801 | 0.7279 | 6.6997 | 3.6483 | 23.9984 | 0.7319 | 2.2495 | 10.3134 |
| Maximum | 78.8572 | 10.4914 | 1003.0088 | 521.8142 | 22.4677 | 606.0000 | 344.2047 | 2383.0000 | 11.7500 | 32.4833 | 795.7779 |
| Minimum | -465.6875 | -13.5226 | -290.3734 | -16.6473 | -7.0360 | -55.0000 | -23.8541 | -394.7761 | -43.4919 | -4.9091 | -0.1324 |
| Age | | | | | | | | | | | |
| Count | 16,641 | 2,856 | 9,579 | 2,098 | 1,219 | 17,567 | 13,387 | 9,172 | 4,683 | 740 | 12,614 |
| Mean | 7.0000 | 12.0000 | 7.0000 | 6.0000 | 6.0000 | 25.0000 | 7.0000 | 25.0000 | 27.0000 | 5.0000 | 26.0000 |
| Std. Dev. | 5.8316 | 14.4753 | 3.5938 | 3.0515 | 3.0599 | 34.0018 | 3.4604 | 35.5312 | 35.2268 | 2.8674 | 34.1672 |
| Maximum | 58.0000 | 106.0000 | 55.0000 | 13.0000 | 14.0000 | 259.0000 | 14.0000 | 285.0000 | 502.0000 | 14.0000 | 454.0000 |
| Minimum | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

TABLE 5: CORRELATION MATRICES OF DEPENDENT AND EXPLANATORY VARIABLES**PANEL A: CORRELATION MATRIX (PAIRWISE)**

| | LR1 | LR2 | LR3 | Size | Growth | Profitability | Business Risk | Tangibility | Tax Rate | Ln(Age) |
|---------------|---------|---------|---------|---------|---------|---------------|---------------|-------------|----------|---------|
| LR1 | 1.0000 | | | | | | | | | |
| LR2 | 0.5221 | 1.0000 | | | | | | | | |
| LR3 | 0.3856 | 0.8088 | 1.0000 | | | | | | | |
| Size | -0.0278 | 0.0742 | 0.0577 | 1.0000 | | | | | | |
| Growth | -0.0012 | -0.0002 | 0.0233 | 0.0091 | 1.0000 | | | | | |
| Profitability | -0.0031 | -0.0024 | -0.0011 | -0.0038 | 0.0000 | 1.0000 | | | | |
| Business Risk | 0.0016 | -0.0017 | -0.0017 | 0.0089 | -0.0024 | 0.0001 | 1.0000 | | | |
| Tangibility | -0.1110 | 0.0065 | 0.0362 | 0.0424 | -0.0043 | -0.0028 | 0.0001 | 1.0000 | | |
| Tax Rate | 0.0013 | 0.0002 | -0.0001 | 0.0053 | -0.0002 | 0.0000 | 0.0138 | -0.0011 | 1.0000 | |
| Ln(Age) | -0.0856 | -0.0579 | -0.0865 | 0.1694 | -0.0010 | -0.0036 | 0.0072 | 0.0207 | 0.0059 | 1.0000 |

PANEL B: CORRELATION MATRIX (COMMON SAMPLE)

| | LR1 | LR2 | LR3 | Size | Growth | Profitability | Business Risk | Tangibility | Tax Rate | Ln(Age) |
|---------------|---------|---------|---------|---------|---------|---------------|---------------|-------------|----------|---------|
| LR1 | 1.0000 | | | | | | | | | |
| LR2 | 0.5858 | 1.0000 | | | | | | | | |
| LR3 | 0.5119 | 0.8439 | 1.0000 | | | | | | | |
| Size | -0.0099 | 0.0829 | 0.0456 | 1.0000 | | | | | | |
| Growth | 0.0084 | 0.0269 | 0.0251 | 0.0382 | 1.0000 | | | | | |
| Profitability | 0.0002 | -0.0007 | -0.0012 | -0.0038 | 0.0005 | 1.0000 | | | | |
| Business Risk | 0.0036 | -0.0022 | -0.0015 | 0.0077 | -0.0012 | 0.0000 | 1.0000 | | | |
| Tangibility | -0.1000 | 0.0001 | 0.0264 | 0.0235 | -0.0178 | -0.0027 | 0.0006 | 1.0000 | | |
| Tax Rate | 0.0012 | -0.0075 | -0.0070 | 0.0102 | -0.0022 | 0.0001 | 0.0163 | -0.0001 | 1.0000 | |
| Ln(Age) | -0.1220 | -0.0922 | -0.0957 | 0.1817 | 0.0032 | -0.0034 | 0.0082 | 0.0197 | 0.0085 | 1.0000 |

TABLE 6: NUMBER OF FIRMS AND OBSERVATIONS BY INDUSTRY AND COUNTRY

| PANEL A: FIRMS BY INDUSTRY AND COUNTRY | | | | | | | | | | | | | |
|---|-------------------|----------------|----------------|---------------|------------------|---------------|----------------|---------------|---------------------|--------------------|----------------|---------------|-------------------|
| Industry | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine | Total | % of Total |
| 15 | 325 | 72 | 303 | 93 | 42 | 462 | 446 | 1,053 | 208 | 22 | 610 | 3,636 | 17.50% |
| 16 | 1 | | 5 | 1 | 1 | 8 | 10 | 24 | 4 | | 12 | 66 | 0.32% |
| 17 | 101 | 23 | 46 | 10 | 18 | 102 | 162 | 138 | 13 | 5 | 51 | 669 | 3.22% |
| 18 | 22 | 12 | 34 | 14 | 6 | 58 | 173 | 64 | 11 | 6 | 52 | 452 | 2.18% |
| 19 | 14 | 4 | 12 | | 1 | 21 | 75 | 31 | 11 | 2 | 30 | 201 | 0.97% |
| 20 | 65 | 57 | 38 | 38 | 22 | 89 | 115 | 126 | 14 | 8 | 44 | 616 | 2.97% |
| 21 | 44 | 6 | 37 | 5 | 7 | 72 | 39 | 73 | 22 | 2 | 33 | 340 | 1.64% |
| 22 | 64 | 28 | 73 | 11 | 9 | 123 | 58 | 78 | 23 | 5 | 35 | 507 | 2.44% |
| 23 | 3 | 3 | 5 | | | 16 | 8 | 40 | 2 | 1 | 27 | 105 | 0.51% |
| 24 | 101 | 18 | 86 | 12 | 4 | 173 | 97 | 277 | 51 | 6 | 108 | 933 | 4.49% |
| 25 | 137 | 24 | 128 | 12 | 21 | 184 | 98 | 87 | 40 | 5 | 48 | 784 | 3.77% |
| 26 | 161 | 28 | 84 | 11 | 7 | 222 | 123 | 373 | 41 | 9 | 202 | 1,261 | 6.07% |
| 27 | 92 | 1 | 41 | 4 | 1 | 70 | 57 | 154 | 17 | 2 | 77 | 516 | 2.48% |
| 28 | 233 | 35 | 183 | 13 | 17 | 203 | 146 | 313 | 63 | 12 | 81 | 1,299 | 6.25% |
| 29 | 338 | 19 | 128 | 9 | 8 | 280 | 157 | 355 | 28 | 9 | 341 | 1,672 | 8.05% |
| 30 | 8 | 2 | 13 | | | 16 | 19 | 15 | 4 | | 11 | 88 | 0.42% |
| 31 | 151 | 11 | 73 | 7 | 2 | 117 | 60 | 83 | 27 | 7 | 100 | 638 | 3.07% |
| 32 | 40 | 7 | 61 | 3 | 7 | 41 | 11 | 74 | 8 | 1 | 56 | 309 | 1.49% |
| 33 | 48 | 6 | 40 | 1 | 7 | 54 | 35 | 71 | 18 | 2 | 37 | 319 | 1.54% |
| 34 | 98 | 5 | 49 | 3 | 2 | 102 | 54 | 89 | 26 | 4 | 40 | 472 | 2.27% |
| 35 | 39 | 7 | 22 | 4 | 3 | 54 | 46 | 96 | 5 | 1 | 61 | 338 | 1.63% |
| 36 | 103 | 42 | 43 | 14 | 13 | 112 | 131 | 73 | 15 | 4 | 53 | 603 | 2.90% |
| 37 | 21 | 4 | 11 | 3 | 1 | 23 | 39 | 22 | 16 | 2 | 34 | 176 | 0.85% |
| 40 | 91 | 28 | 31 | 9 | 2 | 257 | 56 | 220 | 36 | 9 | 113 | 852 | 4.10% |
| 41 | 51 | 11 | 35 | 4 | | 160 | 31 | 7 | 13 | | 6 | 318 | 1.53% |
| 45 | 378 | 81 | 285 | 65 | 54 | 653 | 440 | 1,156 | 164 | 23 | 303 | 3,602 | 17.34% |
| Total | 2,729 | 534 | 1,866 | 346 | 255 | 3,672 | 2,686 | 5,092 | 880 | 147 | 2,565 | 20,772 | * |

*The total number of firms is 20.713 and differ from the number reported in this table.

*This difference occurs because some firms (59) changed his industry during the period of the sample

TABLE 6: NUMBER OF FIRMS AND OBSERVATIONS BY INDUSTRY AND COUNTRY (continued)

| PANEL B: OBSERVATIONS BY INDUSTRY AND COUNTRY | | | | | | | | | | | | | |
|--|---------------|--------------|---------------|--------------|--------------|---------------|---------------|---------------|--------------|-------------|---------------|----------------|---------------|
| Industry | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russian | Serbia-Mont. | Slovak Rep. | Ukraine | Total | % of Total |
| 15 | 2,168 | 413 | 1,823 | 611 | 202 | 2,439 | 2,519 | 4,000 | 1,173 | 112 | 2,932 | 18,392 | 17.37% |
| 16 | 6 | | 35 | 9 | 3 | 43 | 49 | 105 | 20 | | 60 | 330 | 0.31% |
| 17 | 677 | 136 | 256 | 64 | 78 | 581 | 901 | 537 | 68 | 16 | 258 | 3,572 | 3.37% |
| 18 | 164 | 63 | 188 | 86 | 34 | 306 | 855 | 247 | 54 | 29 | 272 | 2,298 | 2.17% |
| 19 | 102 | 22 | 72 | | 6 | 109 | 363 | 126 | 57 | 13 | 151 | 1,021 | 0.96% |
| 20 | 378 | 294 | 220 | 234 | 117 | 455 | 582 | 449 | 77 | 44 | 205 | 3,055 | 2.88% |
| 21 | 268 | 39 | 206 | 32 | 36 | 366 | 221 | 281 | 112 | 6 | 160 | 1,727 | 1.63% |
| 22 | 384 | 150 | 412 | 68 | 44 | 613 | 270 | 271 | 109 | 25 | 173 | 2,519 | 2.38% |
| 23 | 23 | 17 | 31 | | | 77 | 39 | 145 | 13 | 8 | 149 | 502 | 0.47% |
| 24 | 666 | 106 | 532 | 84 | 27 | 911 | 575 | 1,084 | 295 | 33 | 536 | 4,849 | 4.58% |
| 25 | 789 | 118 | 757 | 64 | 117 | 968 | 528 | 346 | 220 | 26 | 224 | 4,157 | 3.93% |
| 26 | 1,116 | 147 | 463 | 65 | 40 | 1,157 | 696 | 1,321 | 232 | 58 | 1,019 | 6,314 | 5.96% |
| 27 | 586 | 7 | 249 | 25 | 3 | 363 | 328 | 622 | 91 | 13 | 408 | 2,695 | 2.54% |
| 28 | 1,437 | 180 | 1,077 | 68 | 78 | 1,070 | 744 | 1,284 | 326 | 43 | 415 | 6,722 | 6.35% |
| 29 | 2,081 | 96 | 720 | 61 | 38 | 1,542 | 841 | 1,377 | 157 | 45 | 1,821 | 8,779 | 8.29% |
| 30 | 46 | 11 | 72 | | | 73 | 94 | 59 | 20 | | 53 | 428 | 0.40% |
| 31 | 909 | 59 | 428 | 40 | 10 | 618 | 312 | 352 | 150 | 37 | 519 | 3,434 | 3.24% |
| 32 | 244 | 33 | 338 | 19 | 34 | 215 | 51 | 310 | 43 | 4 | 291 | 1,582 | 1.49% |
| 33 | 320 | 38 | 235 | 3 | 31 | 288 | 223 | 277 | 103 | 9 | 198 | 1,725 | 1.63% |
| 34 | 600 | 27 | 289 | 23 | 7 | 527 | 320 | 340 | 157 | 15 | 205 | 2,510 | 2.37% |
| 35 | 245 | 29 | 132 | 22 | 15 | 294 | 241 | 393 | 26 | 9 | 328 | 1,734 | 1.64% |
| 36 | 630 | 231 | 266 | 62 | 64 | 576 | 636 | 252 | 85 | 25 | 267 | 3,094 | 2.92% |
| 37 | 140 | 16 | 56 | 15 | 6 | 109 | 190 | 87 | 90 | 8 | 155 | 872 | 0.82% |
| 40 | 632 | 148 | 186 | 65 | 6 | 1,463 | 248 | 878 | 195 | 41 | 578 | 4,440 | 4.19% |
| 41 | 410 | 66 | 212 | 28 | | 952 | 149 | 22 | 69 | | 33 | 1,941 | 1.83% |
| 45 | 2,276 | 417 | 1,552 | 381 | 230 | 3,254 | 2,396 | 4,202 | 905 | 121 | 1,475 | 17,209 | 16.25% |
| Total | 17,297 | 2,863 | 10,807 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 | 105,901 | |

TABLE 7: DISTRIBUTION OF FIRMS AND OBSERVATIONS AMONG THE DIFFERENT LEVELS OF INDEPENDENCE**PANEL A: FIRMS BY LEVEL OF INDEPENDENCE AND COUNTRY**

| Indep Ind | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine | Total | % of Total |
|--------------|--------------|------------|--------------|------------|------------|--------------|--------------|--------------|--------------|-------------|--------------|---------------|---------------|
| A+ | 4 | 14 | 20 | 3 | 7 | 22 | 160 | 82 | 9 | | 980 | 1,301 | 6.21% |
| A | 1 | | 1 | 1 | 4 | 2 | 2 | 70 | | | 4 | 85 | 0.41% |
| A- | 14 | 1 | 8 | 7 | 4 | 45 | 43 | 108 | 11 | | 53 | 294 | 1.40% |
| B+ | 49 | 67 | 131 | 31 | 60 | 194 | 380 | 131 | 14 | | 487 | 1,544 | 7.37% |
| B | | | 1 | | | | | 2 | | | | 3 | 0.01% |
| B- | 31 | 3 | 11 | 2 | 4 | 56 | 31 | 92 | 4 | | 26 | 260 | 1.24% |
| C | 454 | 364 | 652 | 151 | 148 | 2,137 | 1,906 | 653 | 112 | 10 | 1,019 | 7,606 | 36.29% |
| U | 2,215 | 98 | 1,065 | 154 | 28 | 1,328 | 110 | 3,977 | 733 | 137 | 22 | 9,867 | 47.08% |
| Total | 2,768 | 547 | 1,889 | 349 | 255 | 3,784 | 2,632 | 5,115 | 883 | 147 | 2,591 | 20,960 | * |

*The total number of firms is 20.713 and differ from the number reported in this table.

*This difference occurs because some firms (247) changed his independence indicator during the period of the sample

PANEL B: OBSERVATIONS BY LEVEL OF INDEPENDENCE AND COUNTRY

| Indep Ind | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine | Total | % of Total |
|--------------|---------------|--------------|---------------|--------------|--------------|---------------|---------------|---------------|--------------|-------------|---------------|----------------|---------------|
| A+ | 22 | 75 | 113 | 12 | 41 | 85 | 974 | 409 | 46 | | 5,027 | 6,804 | 6.42% |
| A | 6 | | 8 | 5 | 24 | 14 | 14 | 328 | | | 17 | 416 | 0.39% |
| A- | 106 | 1 | 36 | 48 | 20 | 213 | 295 | 513 | 70 | | 270 | 1,572 | 1.48% |
| B+ | 328 | 342 | 685 | 186 | 322 | 934 | 2,184 | 636 | 80 | | 2,401 | 8,098 | 7.65% |
| B | | | 6 | | | | | 14 | | | | 20 | 0.02% |
| B- | 219 | 17 | 57 | 6 | 21 | 292 | 223 | 417 | 23 | | 128 | 1,403 | 1.32% |
| C | 2,871 | 1,978 | 3,651 | 896 | 691 | 11,000 | 10,105 | 2,810 | 611 | 59 | 4,926 | 39,598 | 37.39% |
| U | 13,745 | 450 | 6,251 | 976 | 107 | 6,831 | 576 | 14,240 | 4,017 | 681 | 116 | 47,990 | 45.32% |
| Total | 17,297 | 2,863 | 10,807 | 2,129 | 1,226 | 19,369 | 14,371 | 19,367 | 4,847 | 740 | 12,885 | 105,901 | |

TABLE 8: DESCRIPTIVE STATISTICS OF COUNTRY GOVERNANCE INDICATORS

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|---------------------------------|------------|---------|---------|---------|-----------|--------|---------|---------|--------------|-------------|---------|
| Voice and Accountability | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.9878 | 0.8856 | 1.0911 | 0.7800 | 0.8833 | 1.0533 | 0.2800 | -0.4733 | -0.5622 | 0.7089 | -0.4533 |
| Std. Dev. | 0.0705 | 0.1250 | 0.0382 | 0.1621 | 0.0938 | 0.0648 | 0.1642 | 0.1647 | 0.5774 | 0.2912 | 0.1753 |
| Political Stability | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.7911 | 0.7733 | 0.8056 | 0.6067 | 0.5567 | 0.5222 | 0.1144 | -0.7956 | -1.3278 | 0.6778 | -0.3767 |
| Std. Dev. | 0.0993 | 0.1470 | 0.1804 | 0.2596 | 0.3215 | 0.1117 | 0.1562 | 0.1970 | 0.3829 | 0.1851 | 0.1930 |
| Government Effectiveness | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.6989 | 0.7778 | 0.7133 | 0.3333 | 0.3922 | 0.6311 | -0.5200 | -0.5833 | -0.7144 | 0.3211 | -0.7933 |
| Std. Dev. | 0.0824 | 0.2357 | 0.1453 | 0.3612 | 0.3212 | 0.1007 | 0.2685 | 0.1570 | 0.2900 | 0.2394 | 0.1400 |
| Regulatory Quality | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.8756 | 1.2467 | 0.9733 | 0.6967 | 0.6100 | 0.6211 | -0.1222 | -0.6856 | -1.1011 | 0.5133 | -0.8178 |
| Std. Dev. | 0.1777 | 0.1764 | 0.2314 | 0.2324 | 0.4068 | 0.1193 | 0.2440 | 0.4562 | 0.5108 | 0.3367 | 0.2565 |
| Rule of Law | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.6022 | 0.5889 | 0.7389 | 0.1989 | 0.2100 | 0.4867 | -0.2956 | -0.9067 | -1.0578 | 0.2100 | -0.8267 |
| Std. Dev. | 0.0549 | 0.1906 | 0.0558 | 0.1928 | 0.2516 | 0.0482 | 0.0559 | 0.0529 | 0.1366 | 0.1297 | 0.0442 |
| Control of Corruption | | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.3933 | 0.5656 | 0.6489 | -0.0711 | 0.1533 | 0.4011 | -0.3622 | -0.8711 | -0.8933 | 0.2111 | -0.9556 |
| Std. Dev. | 0.1087 | 0.2647 | 0.0451 | 0.2897 | 0.1781 | 0.1002 | 0.1047 | 0.1067 | 0.2187 | 0.1846 | 0.0776 |

TABLE 9: CORRELATION MATRIX OF COUNTRY GOVERNANCE INDICATORS

| | Voice_Account | Political_Stability | Gov_Effectiv | Regulatory_Quality | Rule_of_Law | Control_of_Corrupt | Factor 1 |
|---------------------|---------------|---------------------|--------------|--------------------|-------------|--------------------|----------|
| Voice_Account | 1.000 | | | | | | |
| Political_Stability | 0.895(**) | 1.000 | | | | | |
| Gov_Effectiv | 0.901(**) | 0.853(**) | 1.000 | | | | |
| Regulatory_Quality | 0.911(**) | 0.915(**) | 0.931(**) | 1.000 | | | |
| Rule_of_Law | 0.945(**) | 0.926(**) | 0.946(**) | 0.943(**) | 1.000 | | |
| Control_of_Corrupt | 0.920(**) | 0.875(**) | 0.941(**) | 0.915(**) | 0.969(**) | 1.000 | |
| Factor 1 | 0.962(**) | 0.942(**) | 0.962(**) | 0.969(**) | 0.989(**) | 0.970(**) | 1.000 |

**Correlation is significant at the 0.01 level (2-tailed).

| | |
|---------------------|---|
| Voice_Account | Voice and Accountability |
| Political_Stability | Political Stability |
| Gov_Effectiv | Government Effectiveness |
| Regulatory_Quality | Regulatory Quality |
| Rule_of_Law | Rule of Law |
| Control_of_Corrupt | Control of Corruption |
| Factor 1 | First and unique factor extracted by principal component analysis |

TABLE 10: DESCRIPTIVE STATISTICS OF COUNTRY FINANCIAL DEVELOPMENT INDICATORS

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|---|------------|---------|---------|--------|-----------|--------|---------|--------|--------------|-------------|---------|
| Deposit Money Banks vs. Central Banks Assets | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | - | 10 | 10 |
| Mean | 0.9690 | 0.9966 | 0.6274 | 0.9354 | 0.9980 | 0.9179 | 0.8995 | 0.7186 | | 0.9695 | 0.5622 |
| Std. Dev. | 0.0147 | 0.0019 | 0.1890 | 0.0399 | 0.0018 | 0.0588 | 0.0708 | 0.1010 | | 0.0395 | 0.1181 |
| Liquid Liabilities to GDP | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 |
| Mean | 0.6570 | 0.2969 | 0.4488 | 0.2609 | 0.2133 | 0.3620 | 0.2021 | | | 0.6023 | 0.1593 |
| Std. Dev. | 0.0310 | 0.0582 | 0.0157 | 0.0408 | 0.0409 | 0.0540 | 0.0198 | | | 0.0276 | 0.0671 |
| Central Banks Assets to GDP | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 9 | 10 | 10 | 8 | - | - | 10 | 10 |
| Mean | 0.0201 | 0.0009 | 0.2873 | 0.0129 | 0.0003 | 0.0322 | 0.0174 | | | 0.0256 | 0.0859 |
| Std. Dev. | 0.0090 | 0.0006 | 0.1780 | 0.0035 | 0.0002 | 0.0201 | 0.0118 | | | 0.0322 | 0.0305 |
| Deposit Money Banks Assets to GDP | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 |
| Mean | 0.6286 | 0.2229 | 0.3846 | 0.2118 | 0.1690 | 0.3232 | 0.1507 | | | 0.7354 | 0.1123 |
| Std. Dev. | 0.1119 | 0.0595 | 0.0537 | 0.0854 | 0.0255 | 0.0429 | 0.0378 | | | 0.0758 | 0.0503 |
| Private Credit by Deposit Money Banks and Other Financial Institutions to GDP | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 10 | 10 | 10 | 7 | - | - | 10 | 10 |
| Mean | 0.5458 | 0.2036 | 0.2667 | 0.1502 | 0.1222 | 0.2250 | 0.0760 | | | 0.4397 | 0.0720 |
| Std. Dev. | 0.1477 | 0.0604 | 0.0576 | 0.0699 | 0.0196 | 0.0481 | 0.0097 | | | 0.0708 | 0.0643 |
| Financial System Deposits to GDP | | | | | | | | | | | |
| Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | 10 | 10 |
| Mean | 0.5757 | 0.2282 | 0.3768 | 0.1737 | 0.1501 | 0.3085 | 0.1728 | | | 0.6116 | 0.1273 |
| Std. Dev. | 0.0262 | 0.0664 | 0.0082 | 0.0376 | 0.0378 | 0.0534 | 0.0206 | | | 0.0319 | 0.0533 |
| Stock Market Capitalization to GDP | | | | | | | | | | | |
| Count | 9 | 6 | 10 | 8 | 9 | 10 | 9 | 10 | 1 | 9 | 6 |
| Mean | 0.2061 | 0.1843 | 0.1868 | 0.0569 | 0.0999 | 0.1049 | 0.0317 | 0.1913 | 0.0232 | 0.0681 | 0.0499 |
| Std. Dev. | 0.0394 | 0.1074 | 0.1058 | 0.0224 | 0.0385 | 0.0569 | 0.0302 | 0.1289 | | 0.0137 | 0.0151 |
| Stock Market Total Value Traded to GDP | | | | | | | | | | | |
| Count | 10 | 7 | 10 | 8 | 10 | 10 | 10 | 10 | 6 | 10 | 6 |
| Mean | 0.0859 | 0.0927 | 0.1405 | 0.0139 | 0.0142 | 0.0490 | 0.0060 | 0.0547 | 0.0066 | 0.0478 | 0.0045 |
| Std. Dev. | 0.0332 | 0.1150 | 0.1223 | 0.0084 | 0.0083 | 0.0194 | 0.0047 | 0.0587 | 0.0108 | 0.0338 | 0.0028 |
| Stock Market Turnover Ratio | | | | | | | | | | | |
| Count | 9 | 6 | 10 | 8 | 9 | 10 | 9 | 10 | 1 | 9 | 6 |
| Mean | 0.4420 | 0.3222 | 0.6027 | 0.2433 | 0.1776 | 0.6356 | 0.2854 | 0.5454 | 1.2070 | 0.7337 | 0.1025 |
| Std. Dev. | 0.0946 | 0.4016 | 0.3129 | 0.1219 | 0.0966 | 0.4560 | 0.2957 | 1.0474 | | 0.3262 | 0.0682 |

TABLE 11: CORRELATION MATRIX OF COUNTRY FINANCIAL DEVELOPMENT INDICATORS

| | DMB_CBA | LiqLiab_GDP | CBA_GDP | DMB_GDP | PCDM_GDP | FinSys_Dep | Stock_GDP | StockTV_GDP | Stock_Turn | Factor 1 | Factor 2 | Factor 3 |
|-------------|------------|-------------|------------|-----------|-----------|------------|-----------|-------------|------------|----------|----------|----------|
| DMB_CBA | 1.000 | | | | | | | | | | | |
| LiqLiab_GDP | 0.246(*) | 1.000 | | | | | | | | | | |
| CBA_GDP | -0.770(**) | 0.106 | 1.000 | | | | | | | | | |
| DMB_GDP | 0.279(**) | 0.940(**) | 0.013 | 1.000 | | | | | | | | |
| PCDM_GDP | 0.324(**) | 0.912(**) | -0.050 | 0.938(**) | 1.000 | | | | | | | |
| FinSys_Dep | 0.228(*) | 0.985(**) | 0.079 | 0.960(**) | 0.893(**) | 1.000 | | | | | | |
| Stock_GDP | 0.032 | 0.435(**) | 0.063 | 0.302(**) | 0.442(**) | 0.357(**) | 1.000 | | | | | |
| StockTV_GDP | -0.061 | 0.336(**) | 0.222(*) | 0.249(*) | 0.274(*) | 0.298(**) | 0.723(**) | 1.000 | | | | |
| Stock_Turn | -0.074 | 0.369(**) | 0.116 | 0.403(**) | 0.280(*) | 0.400(**) | -0.042 | 0.341(**) | 1.000 | | | |
| Factor 1 | 0.188 | 0.948(**) | 0.037 | 0.971(**) | 0.905(**) | 0.963(**) | 0.157 | 0.183 | 0.322(**) | 1.000 | | |
| Factor 2 | -0.025 | 0.251(*) | 0.112 | 0.159 | 0.245(*) | 0.201 | 0.848(**) | 0.941(**) | 0.544(**) | 0.000 | 1.000 | |
| Factor 3 | 0.945(**) | -0.001 | -0.953(**) | 0.076 | 0.161 | 0.010 | 0.113 | -0.185 | -0.14 | 0.000 | 0.000 | 1.000 |

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

| | |
|-------------|---|
| DMB_CBA | Deposit money banks assets vs. central banks assets |
| LiqLiab_GDP | Liquid liabilities to GDP |
| CBA_GDP | Central bank assets to GDP |
| DMB_GDP | Deposit money banks assets to GDP |
| PCDM_GDP | Private credit by deposit money banks and other financial institutions to GDP |
| FinSys_Dep | Financial system deposits to GDP |
| Stock_GDP | Stock market capitalization to GDP |
| StockTV_GDP | Stock market total value traded to GDP |
| Stock_Turn | Stock market turnover ratio |
| Factor 1 | First factor extracted by principal component analysis |
| Factor 2 | Second factor extracted by principal component analysis |
| Factor 3 | Third factor extracted by principal component analysis |

TABLE 12: FORMAL TESTS OF SAMPLING ADEQUACY – KMO AND BARTLETT’S TESTS

| | |
|---|-----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | 0.904 |
| Bartlett's Test of Sphericity | |
| Approx. Chi-Square | 1,144.406 |
| df | 15 |
| Sig. | 0.000 |

TABLE 13: RESULTS OF THE PCA ANALYSIS OF GOVERNANCE INDICATORS – EIGENVALUES AND TOTAL VARIANCE EXPLAINED

| Component | Initial Eigenvalues | | |
|-----------|---------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % |
| 1 | 5.596 | 93.268 | 93.268 |
| 2 | 0.165 | 2.750 | 96.019 |
| 3 | 0.101 | 1.679 | 97.698 |
| 4 | 0.074 | 1.232 | 98.930 |
| 5 | 0.045 | 0.745 | 99.675 |
| 6 | 0.019 | 0.325 | 100 |

TABLE 14: RESULTS OF THE PCA ANALYSIS OF GOVERNANCE INDICATORS – COMPONENT MATRIX

| Indicators | Component 1 |
|--------------------------|-------------|
| Voice and Accountability | 0.962 |
| Political Stability | 0.942 |
| Government Effectiveness | 0.962 |
| Regulatory Quality | 0.969 |
| Rule of Law | 0.989 |
| Control of Corruption | 0.970 |

TABLE 15: DESCRIPTIVE STATISTICS OF COUNTRY GOVERNANCE FACTOR

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Russia | Serbia-Mont. | Slovak Rep. | Ukraine |
|--------------|--|---------|---------|---------|-----------|--------|---------|---------|--------------|-------------|---------|
| | Governance Indicator - Factor 1 | | | | | | | | | | |
| Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Mean | 0.8538 | 0.9684 | 1.0193 | 0.3778 | 0.4580 | 0.7074 | -0.4850 | -1.3390 | -1.6552 | 0.4182 | -1.3235 |
| Std. Dev. | 0.0644 | 0.2706 | 0.1261 | 0.3537 | 0.3656 | 0.0787 | 0.1549 | 0.1477 | 0.4721 | 0.2818 | 0.0946 |
| Maximum | 0.9331 | 1.3111 | 1.1177 | 0.9000 | 0.9656 | 0.8061 | -0.2494 | -1.1712 | -0.9245 | 0.8580 | -1.2047 |
| Minimum | 0.7536 | 0.5941 | 0.7250 | -0.1175 | -0.0194 | 0.5653 | -0.6770 | -1.6290 | -2.2523 | 0.0806 | -1.4946 |

TABLE 16: FORMAL TESTS OF SAMPLING ADEQUACY – KMO AND BARTLETT’S TESTS

| | |
|---|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | 0.578 |
| Bartlett's Test of Sphericity | |
| Approx. Chi-Square | 901.418 |
| df | 36 |
| Sig. | 0.000 |

TABLE 17: RESULTS OF THE PCA ANALYSIS OF FINANCIAL DEVELOPMENT INDICATORS – EIGENVALUES AND TOTAL VARIANCE EXPLAINED

| Component | Initial Eigenvalues | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.493 | 49.925 | 49.925 | 3.786 | 42.070 | 42.070 |
| 2 | 2.073 | 23.033 | 72.958 | 2.103 | 23.372 | 65.442 |
| 3 | 1.223 | 13.590 | 86.548 | 1.900 | 21.107 | 86.548 |
| 4 | 0.840 | 9.331 | 95.879 | | | |
| 5 | 0.148 | 1.648 | 97.527 | | | |
| 6 | 0.110 | 1.222 | 98.750 | | | |
| 7 | 0.077 | 0.854 | 99.604 | | | |
| 8 | 0.031 | 0.341 | 99.946 | | | |
| 9 | 0.005 | 0.054 | 100 | | | |

TABLE 18: RESULTS OF THE PCA ANALYSIS OF FINANCIAL DEVELOPMENT INDICATORS – INITIAL AND ROTATED COMPONENT MATRIX

| Indicators | Initial Component Matrix | | | Rotated Component Matrix | | |
|---|--------------------------|---------|---------|--------------------------|---------------|----------------|
| | Component | | | Component | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Deposit money banks vs. central banks assets | 0.2130 | -0.8780 | 0.3360 | 0.1876 | -0.0254 | 0.9452 |
| Liquid Liabilities to GDP | 0.9530 | -0.0500 | -0.2260 | 0.9480 | 0.2511 | -0.0006 |
| Central banks assets to GDP | 0.0260 | 0.8840 | -0.3730 | 0.0375 | 0.1117 | -0.9529 |
| Deposit money banks assets to GDP | 0.9350 | -0.1620 | -0.2720 | 0.9712 | 0.1590 | 0.0757 |
| Private credit by deposit money banks and other financial institutions to GDP | 0.9220 | -0.1880 | -0.1370 | 0.9046 | 0.2453 | 0.1607 |
| Financial system deposits to GDP | 0.9430 | -0.0840 | -0.2670 | 0.9632 | 0.2008 | 0.0097 |
| Stock market capitalization to GDP | 0.5430 | 0.2440 | 0.6350 | 0.1567 | 0.8485 | 0.1130 |
| Stock market total value traded to GDP | 0.5910 | 0.5430 | 0.5560 | 0.1833 | 0.9410 | -0.1848 |
| Stock market turnover ratio | 0.5300 | 0.3070 | 0.2110 | 0.3218 | 0.5442 | -0.1402 |

TABLE 19: DESCRIPTIVE STATISTICS OF COUNTRY FINANCIAL DEVELOPMENT FACTORS

| Country Name | Czech Rep. | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Slovak Rep. | Ukraine |
|--|------------|---------|---------|---------|-----------|---------|---------|-------------|---------|
| Financial Development Indicators - Factor 1 (Intermediation Factor) | | | | | | | | | |
| Count | 9 | 6 | 10 | 8 | 9 | 10 | 6 | 9 | 6 |
| Mean | 1.3644 | -0.4711 | 0.1049 | -0.6582 | -0.9526 | -0.1349 | -0.9153 | 1.6992 | -0.8524 |
| Std. Dev. | 0.2629 | 0.4341 | 0.5307 | 0.3315 | 0.2039 | 0.2031 | 0.0889 | 0.2696 | 0.3144 |
| Maximum | 1.7940 | 0.2262 | 0.8806 | -0.0498 | -0.6176 | 0.1970 | -0.8016 | 2.0003 | -0.3452 |
| Minimum | 1.0101 | -0.8852 | -0.6433 | -0.9940 | -1.2618 | -0.3988 | -0.9942 | 1.3131 | -1.1965 |
| Financial Development Indicators - Factor 2 (Stock Market Factor) | | | | | | | | | |
| Count | 9 | 6 | 10 | 8 | 9 | 10 | 6 | 9 | 6 |
| Mean | 0.5418 | 0.5128 | 1.0521 | -0.5640 | -0.2626 | 0.1219 | -0.5985 | -0.4556 | -0.8545 |
| Std. Dev. | 0.4589 | 1.1126 | 1.8998 | 0.1966 | 0.2542 | 0.3539 | 0.1463 | 0.5701 | 0.0644 |
| Maximum | 1.3011 | 1.9097 | 3.8141 | -0.2151 | 0.0645 | 0.7279 | -0.4373 | 0.6163 | -0.7476 |
| Minimum | -0.0403 | -1.0826 | -1.4593 | -0.8775 | -0.6918 | -0.4265 | -0.7676 | -1.0220 | -0.9376 |
| Financial Development Indicators - Factor 3 (Central Bank Factor) | | | | | | | | | |
| Count | 9 | 6 | 10 | 8 | 9 | 10 | 6 | 9 | 6 |
| Mean | 0.4843 | 0.7768 | -1.7209 | 0.3615 | 0.7063 | 0.1918 | 0.2736 | 0.2063 | -1.0794 |
| Std. Dev. | 0.1535 | 0.2039 | 1.4428 | 0.1390 | 0.0785 | 0.3777 | 0.3392 | 0.1854 | 0.5433 |
| Maximum | 0.7377 | 1.0308 | 0.1664 | 0.5247 | 0.7915 | 0.6650 | 0.6839 | 0.3509 | -0.2776 |
| Minimum | 0.3134 | 0.4956 | -3.7218 | 0.1422 | 0.5272 | -0.6728 | -0.1793 | -0.1314 | -1.6957 |

TABLE 20: ESTIMATION RESULTS FOR DEPENDENT VARIABLE LR1

| Model → | I | II | III | IV | V |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Constant | 0.5384 *** 0.0000 | 0.5794 *** 0.0000 | 0.5277 *** 0.0009 | -0.2995 ** 0.0406 | -0.2468 0.1314 |
| Size | 0.0153 0.2483 | 0.0151 0.2521 | 0.0129 0.3318 | 0.0746 *** 0.0000 | 0.0742 *** 0.0000 |
| Growth | -0.1998 *** 0.0000 | -0.2005 *** 0.0000 | -0.1842 *** 0.0001 | -0.3420 *** 0.0001 | -0.3279 *** 0.0009 |
| Profitability | -0.3603 *** 0.0000 | -0.3603 *** 0.0000 | -0.3584 *** 0.0000 | -0.3886 *** 0.0000 | -0.3855 *** 0.0000 |
| Business Risk | -0.0001 0.2416 | -0.0001 0.2472 | -0.0001 0.1806 | -0.0001 0.1466 | -0.0001 0.1284 |
| Tangibility | -0.3177 *** 0.0000 | -0.3177 *** 0.0000 | -0.3172 *** 0.0000 | -0.2557 *** 0.0000 | -0.2548 *** 0.0000 |
| Tax Effect | -0.0052 *** 0.0000 | -0.0052 *** 0.0000 | -0.0051 *** 0.0001 | -0.0017 0.1277 | -0.0016 0.1428 |
| Firm Age | 0.0027 0.8272 | 0.0013 0.9169 | 0.0054 0.6779 | -0.0060 0.7070 | -0.0020 0.9051 |
| MA(1) | 0.8911 *** 0.0000 | 0.8903 *** 0.0000 | 0.8909 *** 0.0000 | 0.9093 *** 0.0000 | 0.9104 *** 0.0000 |
| Ownership Concentration A | | -0.0777 ** 0.0427 | | | -0.0324 0.5194 |
| Ownership Concentration B | | 0.0038 0.4367 | | | 0.0130 0.2166 |
| Ownership Concentration C | | -0.0041 0.7251 | | | -0.0181 0.4499 |
| Country Governance Factor | | | -0.0106 0.9075 | | -0.0142 0.6834 |
| Financial Intermediation Factor | | | | 0.1354 *** 0.0000 | 0.1396 *** 0.0000 |
| Stock Market Factor | | | | 0.0243 *** 0.0000 | 0.0256 *** 0.0000 |
| Central Bank Factor | | | | 0.0537 0.1128 | 0.0576 0.1297 |
| R2 | 0.8208 | 0.8209 | 0.8173 | 0.8583 | 0.8579 |
| R2 adjusted | 0.8205 | 0.8206 | 0.8170 | 0.8580 | 0.8576 |
| Wald | | 5.7003 | | 88.6022 | |
| Wald p-value | | 0.1271 | | 0.0000 | |
| Schwarz | -1.3827 | -1.3823 | -1.3569 | -1.5996 | -1.5917 |
| Akaike | -1.3950 | -1.3953 | -1.3697 | -1.6173 | -1.6107 |
| SSR | 530.5830 | 530.3308 | 512.4924 | 280.5960 | 270.6898 |
| Durbin Watson | 2.0026 | 2.0020 | 2.0352 | 1.6034 | 1.6162 |
| F | 3224.7760 | 3050.3954 | 3025.3524 | 2819.3859 | 2593.9601 |
| F p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Obs. | 36672 | 36672 | 34539 | 24256 | 23256 |
| K | 52 | 55 | 51 | 52 | 54 |

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 21: ESTIMATION RESULTS FOR DEPENDENT VARIABLE LR2

| Sample ? Model → | ALL FIRMS | | | | |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | I | II | III | IV | V |
| Constant | -0.0382 0.4595 | -0.0283 0.5820 | -0.0344 0.7201 | -0.2369 *** 0.0000 | -0.1660 *** 0.0000 |
| Size | 0.0119 0.2875 | 0.0117 0.2933 | 0.0103 0.3675 | 0.0366 *** 0.0000 | 0.0353 *** 0.0000 |
| Growth | -0.0948 *** 0.0000 | -0.0954 *** 0.0000 | -0.0924 *** 0.0000 | -0.1348 * 0.0644 | -0.1294 0.1091 |
| Profitability | -0.1322 *** 0.0000 | -0.1321 *** 0.0000 | -0.1316 *** 0.0000 | -0.1290 *** 0.0000 | -0.1259 *** 0.0000 |
| Business Risk | 0.0000 0.9796 | 0.0000 0.9916 | 0.0000 0.9293 | 0.0000 0.9078 | 0.0000 0.9980 |
| Tangibility | 0.0219 *** 0.0027 | 0.0219 *** 0.0027 | 0.0189 ** 0.0106 | 0.0732 *** 0.0000 | 0.0722 *** 0.0000 |
| Tax Effect | -0.0044 ** 0.0227 | -0.0044 ** 0.0223 | -0.0044 ** 0.0241 | -0.0018 0.3695 | -0.0017 0.3766 |
| Firm Age | -0.0073 0.3221 | -0.0072 0.3204 | -0.0068 0.3350 | -0.0053 0.2858 | -0.0044 0.3792 |
| MA(1) | 0.7824 *** 0.0000 | 0.7823 *** 0.0000 | 0.7797 *** 0.0000 | 0.8135 *** 0.0000 | 0.8124 *** 0.0000 |
| Ownership Concentration A | | -0.0199 ** 0.0378 | | | -0.0189 0.3210 |
| Ownership Concentration B | | -0.0023 0.7137 | | | -0.0075 0.5234 |
| Ownership Concentration C | | 0.0012 0.8413 | | | -0.0051 0.6697 |
| Country Governance Factor | | | -0.0048 0.9618 | | 0.0432 0.1431 |
| Financial Intermediation Factor | | | | 0.0610 *** 0.0000 | 0.0525 *** 0.0001 |
| Stock Market Factor | | | | 0.0214 *** 0.0000 | 0.0183 *** 0.0000 |
| Central Bank Factor | | | | -0.0033 0.8757 | -0.0075 0.7665 |
| R2 | 0.6768 | 0.6769 | 0.6693 | 0.7417 | 0.7387 |
| R2 adjusted | 0.6764 | 0.6764 | 0.6688 | 0.7411 | 0.7381 |
| Wald | | 14.4108 | | 39.7543 | |
| Wald p-value | | 0.0024 | | 0.0000 | |
| Schwarz | -1.6632 | -1.6625 | -1.6512 | -1.8454 | -1.8475 |
| Akaike | -1.6755 | -1.6755 | -1.6640 | -1.8631 | -1.8667 |
| SSR | 399.4371 | 399.3776 | 380.4879 | 218.3074 | 208.4655 |
| Durbin Watson | 2.1973 | 2.1971 | 2.2343 | 1.8947 | 1.9065 |
| F | 1469.9449 | 1389.9576 | 1363.5278 | 1329.5640 | 1208.0727 |
| F p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Obs. | 36548 | 36548 | 34417 | 24132 | 23134 |
| K | 52 | 55 | 51 | 52 | 54 |

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 22: RESULTS FOR DEPENDENT VARIABLE LR3

| Model → | I | II | III | IV | V |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Constant | -0.0651 ** 0.0463 | -0.0592 * 0.0793 | -0.0715 0.3325 | -0.1952 *** 0.0000 | -0.1784 *** 0.0000 |
| Size | 0.0082 0.2207 | 0.0080 0.2363 | 0.0075 0.2729 | 0.0249 *** 0.0000 | 0.0246 *** 0.0000 |
| Growth | -0.0730 ** 0.0123 | -0.0737 ** 0.0114 | -0.0724 *** 0.0000 | -0.1294 ** 0.0394 | -0.1410 ** 0.0456 |
| Profitability | -0.0585 *** 0.0000 | -0.0585 *** 0.0000 | -0.0588 *** 0.0000 | -0.0542 *** 0.0000 | -0.0544 *** 0.0000 |
| Business Risk | 0.0000 0.6053 | 0.0000 0.5802 | 0.0000 0.6190 | 0.0000 0.6534 | 0.0000 0.6959 |
| Tangibility | 0.0684 *** 0.0000 | 0.0684 *** 0.0000 | 0.0648 *** 0.0000 | 0.1052 *** 0.0000 | 0.1027 *** 0.0000 |
| Tax Effect | -0.0017 0.2419 | -0.0017 0.2369 | -0.0017 0.2676 | 0.0001 0.9568 | 0.0001 0.9342 |
| Firm Age | -0.0107 ** 0.0176 | -0.0103 ** 0.0207 | -0.0105 ** 0.0150 | -0.0119 *** 0.0000 | -0.0114 *** 0.0000 |
| MA(1) | 0.7457 *** 0.0000 | 0.7456 *** 0.0000 | 0.7424 *** 0.0000 | 0.7740 *** 0.0000 | 0.7705 *** 0.0000 |
| Ownership Concentration A | | -0.0128 *** 0.0017 | | | -0.0041 0.5628 |
| Ownership Concentration B | | -0.0035 0.4711 | | | 0.0016 0.8251 |
| Ownership Concentration C | | 0.0052 0.3245 | | | 0.0035 0.6824 |
| Country Governance Factor | | | -0.0114 0.8754 | | 0.0111 0.6373 |
| Financial Intermediation Factor | | | | 0.0321 *** 0.0000 | 0.0311 *** 0.0000 |
| Stock Market Factor | | | | 0.0119 *** 0.0000 | 0.0119 *** 0.0000 |
| Central Bank Factor | | | | 0.0069 0.5635 | 0.0043 0.7831 |
| R2 | 0.6326 | 0.6327 | 0.6273 | 0.6882 | 0.6841 |
| R2 adjusted | 0.6321 | 0.6322 | 0.6267 | 0.6875 | 0.6833 |
| Wald | | 31.1272 | | 123.1970 | |
| Wald p-value | | 0.0000 | | 0.0000 | |
| Schwarz | -2.0460 | -2.0454 | -2.0530 | -2.0907 | -2.0971 |
| Akaike | -2.0587 | -2.0588 | -2.0661 | -2.1092 | -2.1171 |
| SSR | 263.3982 | 263.3394 | 245.8446 | 163.1656 | 154.9992 |
| Durbin Watson | 2.0867 | 2.0866 | 2.1290 | 1.9318 | 1.9444 |
| F | 1169.2534 | 1105.7723 | 1095.4426 | 976.9573 | 884.0066 |
| F p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Obs. | 35358 | 35358 | 33251 | 23074 | 22100 |
| K | 52 | 55 | 51 | 52 | 54 |

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 23: SUMMARY OF RESULTS

| INDEPENDENT VARIABLES DEPENDENT VARIABLES | LR1 | LR2 | LR3 | CONCLUSIONS |
|--|---|---------------|---------------|---|
| Size | Positive | Positive | Positive | Supports Static Trade-off Theory |
| Growth Opportunities | Negative | Negative | Negative | Supports Static Trade-off Theory |
| Profitability | Negative | Negative | Negative | Supports Pecking Order Theory |
| Business Risk | Insignificant | Insignificant | Insignificant | No effect (bad proxy or industry dummies effect?) |
| Tangibility | Negative | Positive | Positive | Contradiction in signs suggests role for trade credit |
| Tax Effects | Insignificant | Insignificant | Insignificant | No effect (bad proxy?) |
| Firm Age | Insignificant | Insignificant | Negative | No effect (bad proxy?) |
| MA(1) | Positive | Positive | Positive | Slow adjustment to target level, substantial adjustment costs |
| Ownership Concentration A | Insignificant | Insignificant | Insignificant | No effect |
| Ownership Concentration B | Insignificant | Insignificant | Insignificant | No effect |
| Ownership Concentration C | Insignificant | Insignificant | Insignificant | No effect |
| Country Governance Factor | Insignificant | Insignificant | Insignificant | No effect |
| Financial Development: Intermediation Factor | Positive | Positive | Positive | Intermediation development is important to leverage |
| Financial Development: Stock Market Factor | Positive | Positive | Positive | Stock market development is important to leverage |
| Financial Development: Central Bank Factor | Insignificant | Insignificant | Insignificant | No effect |
| Remark | Country-specific variables add little to the explanatory power of firm-specific variables | | | |