Charles University in Prague

Faculty of Social Sciences
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MASTER THESIS

The determinants of access to finance. Evidence for transition economies

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Academic Year: **2012/2013**

Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature, and the thesis has not been used to obtain a different or the same degree.

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Prague, July23, 2013

Signature

Acknowledgments

I would like to express myappreciation and gratitude to Ph.D. Roman Horvath for supervising the present master thesis, and especially for the valuable comments and recommendations, as well as for very positive working attitude.

Also, I would like to thank Ph.D. Candidate Adrian Babin for his assistance with econometric software and his meaningful advices on present thesis.

Last but not the least, I would like to thank my family and friends for their support and belief.

Abstract

The thesis provides an empirical analysis of impact of country-level and firm-level determinants on access to finance in transition economies. Generalized Ordered Logit model is applied on survey data for transition countries, combined with financial market indicators. The results show that higher concentration in banking sector, as well as higher financial deepening have a positive impact on access to finance, while volatile macroeconomic environment, higher implication of foreign-owned and state-owned banks seems to be perceived as increasing obstacles in accessing external financing. Combining indexes for liberalization in banking sector and liberalization of securities markets proved that before liberalization process firms had better access to finance. One of the possible explanations is that before liberalization state banks were forced by politicians to issue more loans, while after reforms the political pressure was removed, imposing stricter conditions for loan granting. Inclusion of corruption variable yields expectable results that higher corruption level is associated with worse access to finance. The results for firm-level variables indicate that larger firms and firms from service sector benefits from better access to finance. Also, companies that apply for an external audit face fewer obstacles in accessing finance, than those that do not. Inclusion of control variable for crisis period increases the consistency and robustness of results.

Keywords	Access to finance, Determinants, Transition economies, Generalized Ordered Logit

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Acronyms

BEEPS	Business Environment and Enterprise Performance Survey
EBRD	European Bank for Reconstruction and Development
CPI	Consumer Price Index
EU	European Union
GDP	Gross domestic product
IFC	International Finance Corporation
IMF	International Monetary Fund
OECD	Organization of Economic Co-operation and Development
FSDI	Financial Sector Development Indicators (by World Bank)
SME	Small and medium enterprises
TC	Transition Country
UK	United Kingdom
US	United States of America
WBES	World Business Environment Survey
WDI	World Development Indicators

Master Thesis Proposal

Author:	Alina Cazachevici
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Defense Planned:	September 2013

Proposed Topic:

The determinants of access to finance. Evidence for transition economies

Topic Characteristics:

Access to finance is very important both for microeconomic and for macroeconomic level. Wider access to finance can foster economic productivity, increase the output per capita and have a positive impact on the distribution of employment. Thus, the study of determinants of access to finance is very important for policy making in the banking field and securities market sectors. Also, the review of previous studies of access to finance leads to the conclusions that the factors that influence the access are highly dependent on the sample and methodology of the analysis, so that a more focused sample selection must be applied.

Thus, the purpose of the thesis is to analyze main determinant of access to finance in transition economies. The study will include the assessment of impact of several firm-level variables, as well as country-level indicators.

The study will be based on the analysis of data for 28 countries, categorized as transition economies by World banks, based on the firm individual perception of obstacles in obtaining access to finance. The data will be estimated as pseudo-panel data, containing information for year 2002, 2005 and 2009.

Hypotheses:

H1: High share of foreign-banks in banking assets increase access to finance.

H2: Bank sector and securities market liberalization help eliminate obstacles in access to finance.

H3: Higher level of corruption is associated with lowed access to finance.

H4: Companies that operate in service sector of economy benefit from a better access to finance.

H5: Firms that apply for external audit of financial statement face fewer obstacles in obtaining finance.

Methodology:

Database for the thesis will constructed as a combination firm-level information, extracted from Business Environment and Enterprise Performance Survey (BEEPS, World Bank) and country-level indicators, provided by World Banks and EBRD. The econometric model chosen for the analysis is Generalized Ordered Logit model (gologit2). The dependent variable is a binary variable, which takes values from 0 to 4, numbers representing the codification of enterprises' assessment of obstacles in

obtaining finance (ranging from 0 for "no obstacle" to 4 for "very severe obstacle"). Explanatory variables include firm-level variables (size, sectorial dummy, dummy for ownership type, and dummy for whether the financial reports of the firm are audited or not) and country-level variables (changes in CPI, index for corruption perception, indicators for financial depth, concentration in banking sector, banking sector liberalization index, and others).

Outline:

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1. The importance of access to finance
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3. Internal determinants of access to finance
III. Empirical estimations
4. Description of the data and the methodology
5. Model and variables
6. Assumptions and hypothesis
IV. Empirical results and interpretations
V. Conclusions

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Author **Supervisor**

1:Introduction

Finance is one of the motors that keep the machinery of economics running and producing more and more output. The importance of finance cannot be undervalued, since the lack of it generally leads to shortage in other production recourses. The linkage between finance and economic growth had been analyzed in number of studies (King & Levine(1993), Gregorio & Guidotti(1995), Aterido, Hallward-Driemeier, & Pages(2007) and others). Better access to finance implies better production resources allocation, which translates into faster economic growth. Therefore, understanding of influence of different factors on access to finance is important for policy making that aims to foster economic growth. While it is quite evident that a better access to finance has a positive impact on the evolution of the economy, there is no general opinion on the effect of the determinants of access to finance (for example Clarke, Cull, & Pería (2006) versus Detragiache, Gupta, & Tressel (2006) regarding the impact of presence of foreign-owned banks, or Brown, Jappelli, & Pagano (2009) versus Hainz & Nabokin (2009) regarding the effect of information sharing). The fact that same factors are regarded as positive and negative in different studies, leads to conclusion that the respective field of research is not yet saturated, and the results of analysis of access to finance can still be improved and extended.

The main purpose of the current thesis is to focus on the determinants of access to finance in transition economies. Since such economies did not follow a “natural” path of formation of free market economies, they are characterized with

strong specifics and particularities, which require that these countries to be studied separately from developed economies in order to achieve consistent results. Also, another objective of the current study is to combine both country-level and firm-level determinants of access to finance in an integral analysis that would assure a more complete vision on the question of access to finance. Particularly, the study is orientated towards determinants that are subject to policy making in transition economies, such as CPI evolution or participation of foreign-owned banks, but also includes control variables that increase consistency of results, such as corruption level, firm size or dummy for companies that apply for external audit services. The proposed econometric model is Generalized Ordered Logit, as it proved to be efficient in estimations where the dependent variable is contracted as ordinal variable that can take several ranged values.

This thesis is structured as follows: Chapter 2 provides a comprehensive analysis of the existing studies on the matter of access to finance. The chapter contains review of works that study the importance of access to finance on both macroeconomic and microeconomic level. It also includes a discussion on the impact of different country-level and firm-level factors that are perceived as increasing or decreasing obstacles in accessing external financing; Chapter 3 presents the overview situation on the financial markets in transition economies. Also, it reflects the methodological framework that will be applied in during empirical analysis, the main hypothesis of the present thesis, as well as provides description of the dependent and explanatory variables and the intuition behind them; Chapter 4 contains the empirical results obtained by application of methodology presented in the chapter 3, possible flows and solutions of outlined methodology, and final results based on improved approach and their interpretations; Chapter 5 summaries the findings of the thesis and resents the concluding remarks. The references list and the annexes that contain information on country-level indicators used in the analysis and detailed empirical results can be found at the end of the present thesis.

2:Theoretical background

2.1 Chapter overview

This chapter contains an overview of recent studies on the question of access to finance: its impact for the economic development, and the factors that have a significant influence on it. First section makes references to works that provide evidence on how exactly the access to finances is related to macroeconomic and microeconomic environment. It outlines the importance of understanding of role and mechanism of change of access to finance.

Second and third section presents the existing studies on the influence of specific determinants, external and internal for firms, on the way the access to finance is perceived by the enterprises. The conclusions from the cited studies are not unambiguous, the same factors being regarded as having positive impact in one literature, and negative effect in other. This leaves space for further research and analysis.

2.2 The importance of access to finance

The question of access to finance is widely studied in the literature, but mostly, from the angle of two aspects: what are the determinants of access to finance, and how access to finance influences firms' choices and activities. On the microeconomic level, access to finance represents an important growth constrain, especially to SME (Beck & Demirguc-Kunt, 2006), and on the macroeconomic level, a better financial intermediation translates to a better resource allocation, and leads to acceleration in total factor productivity growth, with positive impact on the long-term economic growth (Beck, Levine, & Loayza, 2000).

Aterido, Hallward-Driemeier, & Pages(2007) state that improved access to capital markets seems to benefit more to the growth of non exporters firms compared to the growth of companies that supply to the international market. The results of the analysis of dataset for 102 developing and 5 high-income countries (provided by World Bank Enterprise Surveys) show that low access to finance, as well ashigh corruption, poorly developed business regulations have negative impact on the distribution of employment(Aterido, Hallward-Driemeier, & Pages, 2007).According to Demirguc-Kunt, Klapper, & Panos(2009), wealthier households with a better access to bank financing are more likely to becomeentrepreneurs and survive the early period of adjustment. Beck, Kunt, & Maksimovic(2002) find that firms that face higher obstacles in obtaining finance grow slowly, which denotes the importance of the development of country financial systems. Schmukler(2007) also states that low level of access to finance, especially through bank credit, prevents lower-income households, as well as small firms from financing high profitability investment projects, which has an unfavorable effect long-term growth and poverty mitigation.

King & Levine(1993) perform an analysis of data for 80 countries for 1960-1989 period to study the relationship between finance and economic growth. The findings show that financing conditions influence the activity of firms that translates into productivity increase in four ways. First, financial systems analyze the enterprises and stimulate the most promising ones. Second, financial systems permit risk diversification, which is very important in the investment activities. Third, financial systems contribute to allocation of resources to more efficient projects. And forth, financial systems reveal the potential gains for entering innovational projects, instead of sustaining only the existing project, which apply only existing techniques. Thus, better financial systems contribute to a faster economic growth by accelerating the rate of productivity increase and growth of *per capita* output (King & Levine, 1993). This conclusion is in line with the findings by Gregorio & Guidotti(1995) that

show that the main channel of transmission from financial development to economic growth lays in the effect of efficient allocation of in investment, rather than merely its volumes of investment. Ndikumana(2005) studies the data for 99 developing and developed countries for period between 1965 and 1997, and concludes that the structure of the financial system has no independent impact on the investment, therefore it is the financial development that makes the investmentmore sensitive to output increase.

Thus, the importance of financial systems, and hence, the access to finance cannot be underestimated, since it has an important impact both on the macroeconomic and microeconomic level. Further literature overview focuses on the studies that analyze the factors that determine the level of access to finance. Therefore, policies targeting financial systems and access to finance may have an important effect on the rates of long-term economic growth.

2.3 External determinants of access to finance

Beck, Demirguc-Kunt, & Maksimovic (2004) study the effect of the structure of the banking sector on the on the access to bank loan, for individual firms. The authors use 74 country–level indicators for developed and developing countries, and firm–level data composed of survey of over 100.000 companies in 80 countries also both developed and developing (the data is provided by World Business Environment Survey, conducted in 1999-2000). The ordered probit model is applied to test for impact of banking sector structure. Control variables included in the model are: inflation rate, GDP *per capita* growth, and dummies for state or foreign control of a firm, whether the company is exporting or not, dummy for type of firm's domain of activity (manufacturing or services) and number of competitors. Also, a dummy for firm size was included in the analysis, in order to separate the effect of the structure of banking sector on companies of small, medium and large size (the variable is constructed based on number of employees).

The estimations by Beck, Demirguc-Kunt, & Maksimovic (2004) show that in banking systems with higher concentration, firms face higher obstacles in obtaining loan finance. The effect is strong for small and medium sized companies, compared to large sized ones. Also, including GDP and an interaction term with bank concentration per capita shows that results are significant only for low-income

countries. Thus, the authors emphasize that controlling for economic development of a county, and it's level of institutional and environmental development is important for analyzing the impact of competitiveness on the banking sector, on the access to finance for individual firms (Beck, Demirguc-Kunt, & Maksimovic, 2004).

Peachey and Rey (2004) also confirm the influence of bank consolidation, quoting their previous work: in countries with wider bank competition, the rate of growth for SME is faster. They bring the example of Poland, were SME segment experienced a growth from 30% share of GDP in 1995 to 55% in 2009, with banks now providing more 50% of the corporate financing to SME, and attracting around 50% of deposits also from this segment.

Also Peachey and Rey (2004) study access to finance on data for 163 countries, covering 95% of world population. The data is provided by IMF International Financial Statistics, and merged with indicators like GDP, price data and population, from World Bank Development Indicators. The authors examine the balance of cash in circulation and deposits mobilized, in order to divide countries into a spectrum containing categories from countries with very repressed access to finance to intermediate stages of widening access, and to countries with full access to finance, typically characteristic for developed economies. The analysis shows that in order moving from the first stage, with the worse conditions of access to finance, requires a 10 to 20% of deposit to GDP ratio, depending on the cash to deposits ratio. Countries with cash to deposit ratios over 30% are qualified as having "repressed" access to finance. Contrary, countries, which can be graded as in transition to full access, can be described by 20–40% range of deposits to GDP ratio, and cash to deposits ratio below 20%.

The paper (Peachey & Rey, 2004) also contains an estimate of number of bank accounts *per capita* within the zoning described above. The obtained magnitude is 0.1 account or less *per capita* for "repressed" access, 0.2–0.5 account *per capita* for intermediate stage, and above 0.5 accounts *per capita* for moving towards full access economies. The impact of other economic variables, as participation of the labor force, poverty-rates and GDP *per capita*, along with some social indicators (as balance between young and old, adult literacy and young to adults ratio) is also assessed.

Figure 2.1 depicts the relationship between cash to deposit ratio and total household and enterprise deposits' share in GDP. Countries with advanced industrial economies are depicted in white circles; light-grey circles represent major offshore centers; and dark grey – all other countries.

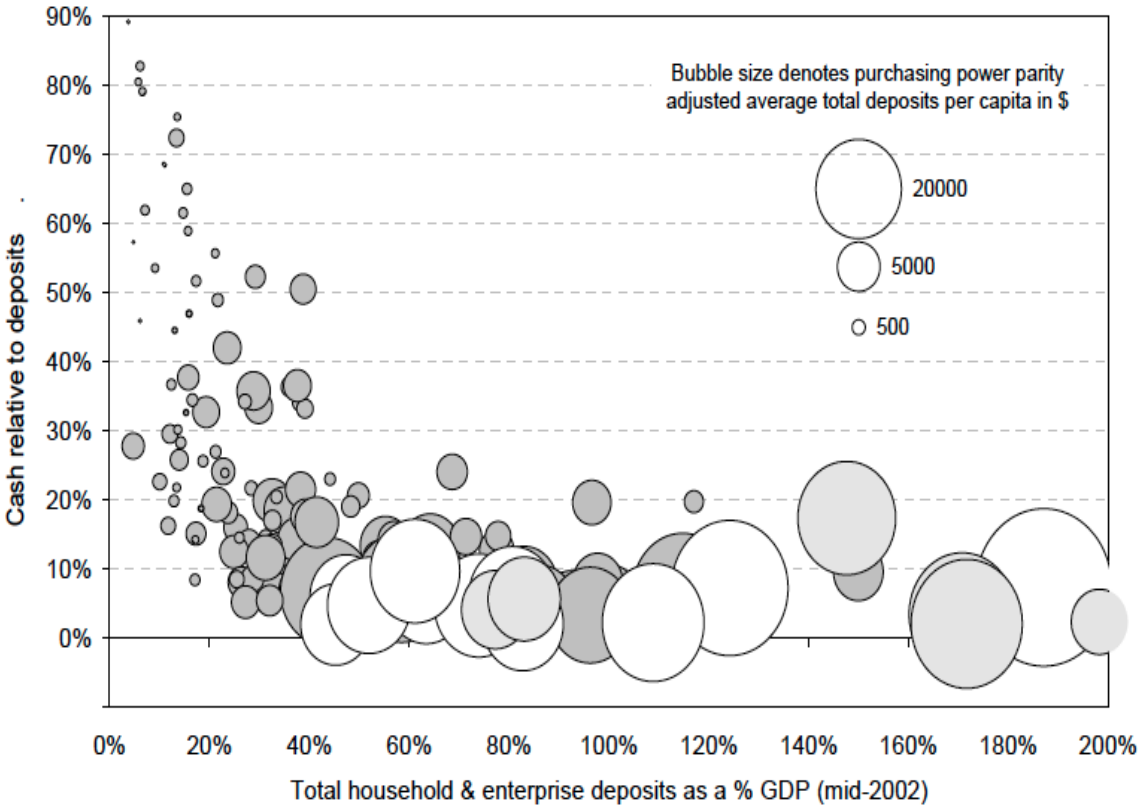


Figure 2.1: Use of cash versus deposit

Source: Peachey & Rey (2004).

The study also shows the division by regions in terms of access to finance: Sub-Saharan Africa is strongly positioned in worse access to finance category (which mainly reflects the level of poverty in the aria); industrially developing countries from Asia, and Asia as a whole are pretty advanced in finance access; although most advanced transition economies of Central Europe succeeded in widening the access to finance after the decline of 1990s, the CIS countries are still outsiders in this process; Central and South America results show that this regions made less progress than expected, in spite of strong economical potential, which is particularly true for the larger economies of the aria (Peachey & Rey, 2004).

In conclusions to the analysis, the authors disagree with the statement that the fact that in poor countries the banking sector is mostly small relative to GDP determines higher costs for the banking systems, thus financing being accessible only

to privileged elite (Peachey & Rey, 2004). Thus, new policies in recycling deposits in form of credits should be applied, that would stimulate efficiency in the use of cash by the economy. In order to expand the deposits to GDP ratio and to widen access to finance, it is necessary to reduce the extent to which an economy relies on cash.

Cetrorelli (2003) conducted an analysis the effect of bank concentration and bank deregulation on the structure of industry sectors of European markets. Fixed-effects model was applied on the data for 29 OECD countries, extracted from the data set provided by United Nations Industrial Development Organization (UNIDO). The model for the effect of bank concentration had the following specification: firm size as dependent variable and country-specific, industry specific and time-specific components of firm size as control variables. In order to control for the dependence on external source of finance, which also depends on firm age, bank concentration variable is multiplied by an indicator variable for dependence on external financing, which is equal to one for mature firms (above ten years old) with dependence on external finance higher than medial level. The results show that bank concentration exhibits positive and significant impact on firm size (controlling county, industry and time for fixed effects), which indicates that, in countries with higher bank concentration, sectors were old firms are more dependent on external financing, are characterized with firms of disproportionally larger size (Cetrorelli, 2003). Also, taking in consideration that membership of EU may lead to more vigorous competitions, a term of interaction for EU member countries was included in the regression. The estimated coefficient for the respective variable is negative and significant, leading to conclusion that EU membership is associated with a more competitive environment, which translates into a better access to finance (Cetrorelli, 2003).

Interesting results on assessing the effect of bank competition in U.S. are obtained by Cetrorelli & Strahan (2006). The results obtained by the authors shows that a higher competition on the U.S. market reduces the size of a typical firm, increases number of establishment and increases the share of establishments in the smallest size group. On the other hand, changes in completion do not influence large-sized companies. This result is not surprising, since the large firms have access to financing through commercial papers, equity market, and other instruments of capital market. The analysis is based on panel data set of manufacturing firms that operated in U.S. between 1977 and 1994, consisting of survey conducted by Census Bureau, and provided by The County Business Patterns. Three separate regressions were run, with number of establishments, firm size and a measure of entire size distribution in the industry sector, as dependent variables. Control variables included employment

share, market trends (as proxy for any local market, time-varying effect on industry structure), industry trends and bank dependence variable.

Another work by the same authors (Peachey & Roe, 2006) "Access to Finance: what does it mean and how do Savings Banks Foster access" provides evidence that saving banks facilitate the development towards a wider access to finance for transition economies. Although savings banks are not a substitute for commercial banks or microfinance institutions, they to play an important in the spectrum of institutions that foster access to finance.

Foreign banks participation also has a major influence for firm's access to finance, but the effects that the participation can be different. Clarke, Cull, & Pería (2006) combine firm-level data coming from enterprise survey (about 3000 entries) with the indicators of foreign banks participation across 35 developing countries. The firm-level data consists of survey conducted by World Business Environment Survey (WBES) in 1999. Marco indicators are extracted from World Development Indicators (World Banks). The dependent variables of the regression are: the response of enterprise managers to questions about whether high interest rates, access to long-term loans, and access to non-bank equity represents an impediment to enterprise operations and growth All variables are limited dependent variables, with four discrete values corresponding, in ascending order, to no obstacle, minor obstacle, moderate obstacle, and major obstacle. The explanatory variables are: size, foreign bank participation, interaction term between size and foreign bank participation, a vector for the firm characteristics and a vector for the country characteristics. The interaction term between size and foreign bank participation was added in order to test whether the activity of foreign banks has the same impact on firms of all sizes. The results show that a higher share of assets of foreign banks in total banking assets is associated with the fact that high interest rates and access to long-term loans are perceived as lesser obstacles in firm's operation and growth. The estimates for interaction term between foreign bank participation and firm size reject the hypothesis that foreign bank participation is more benefic for large companies. Hence, the authors conclude that "…foreign bank participation may improve the perceptions of SME managers that high interest rates and limited access to long-term loans affect adversely their possibility of obtaining external financing" (Clarke, Cull, & Pería, 2006).

Detragiache, Gupta, & Tressel (2006) study the effect of foreign bank penetration on the development of the financial sector in poor countries. The analysis is restricted to the list of countries, defined by World Bank as low income or lower

middle income, counting in total 89 countries (some emerging economies like Russia or Brazil are also included in the dataset). In the country-level regressions, several countries (China P.R., Eritrea, Jordan and Thailand) are excluded as being outliers with respect to private credit share. A cross-sectional regression consists of share of private credits in GDP as dependent variable, and the share of total banks assets held by foreign banks as explanatory variable. The matrix of control variables include GDP *per capita* growth, lack of corruption index, assets of state-owned banks, credit information index, population, and other country-level indicators. Bank-level regression contains logs of loan-loss provisions of the bank as dependent variable, vectors for bank level characteristics, and one for country-level fixed effects, and a dummy variable that equals to one if the bank is foreign-owned. The results of estimation showed that an increase in the share of foreign-owned banks leads to a decline in the private credit of about six percentage points of GDP. Bank-level regression yields that foreign-owned banks provision less for bad loans, compared to domestic banks (Detragiache, Gupta, & Tressel, 2006). The concluding statements of the paper are that while there are some benefits of foreign banks entrance on the domestic market, these benefits are not warranted. Entry by foreign banks may results in cream skimming which increases overall operating costs, and decreases aggregate welfare. Also, in all possible equilibrium, foreign-owned bank entry will probably only benefit more transparent firms, while other firms will either be indifferent or worse off (Detragiache, Gupta, & Tressel, 2006).

Clarke, Cull, & Pería (2006) use data on the share of foreign-owned banks it total banking sector assets in over 100 developing countries between 1995 and 2002. The authors regress the changes in foreign banks participation on several variables: matrix that contains data on inflation and output growth, banking index (which provides an image on the level of restriction of banking restrictions in the country, provided by Heritage Foundation), property right index (which measures the level of protection of property rights), markets size (log of GDP in averaged from 1995 to 2002), initial foreign participation (share assets held by foreign-owned banks in 1995-96), regional dummies, and a dummy for crisis period. The results of estimation show that foreign banks participation had increased considerably in Eastern Europe, Central Asia and Latin America. At a lower rate, foreign bank participation also increased in Africa. On the other hand, the mentioned indicator remained the same, or even decreased in East and South Asia, in the Middle East and North Africa. The empirical study shows that countries that experienced baking crisis between 1995 and 2002 tend to have a high foreign-owned banks participation rate, than those who did not experience crisis in banking segment. Additional regressions reflect that participation of foreign-owned banks tended to increase as a result of banking crisis,

rather than before to them. Also, post-crisis increase in share of foreign bank in total banking assets to not coincide with a better provision of credit to private sector, which leads the author to the conclusion that this happened “because foreign entrance acquired distressed bank, with a higher share of loans that needed to be written of” (Clarke, Cull, & Pería, 2006). By contrast, countries with high bank participation before the crisis tend to have high and stable level of credit to private sector.

Hainz & Nabokin (2009) state that the impact of foreign-state banks is significant on the use of loans, but not on the access to finance. The authors state that firms are more likely to have a loan in countries with higher share of foreign-owned bank, but their presence does not improve the access itself.

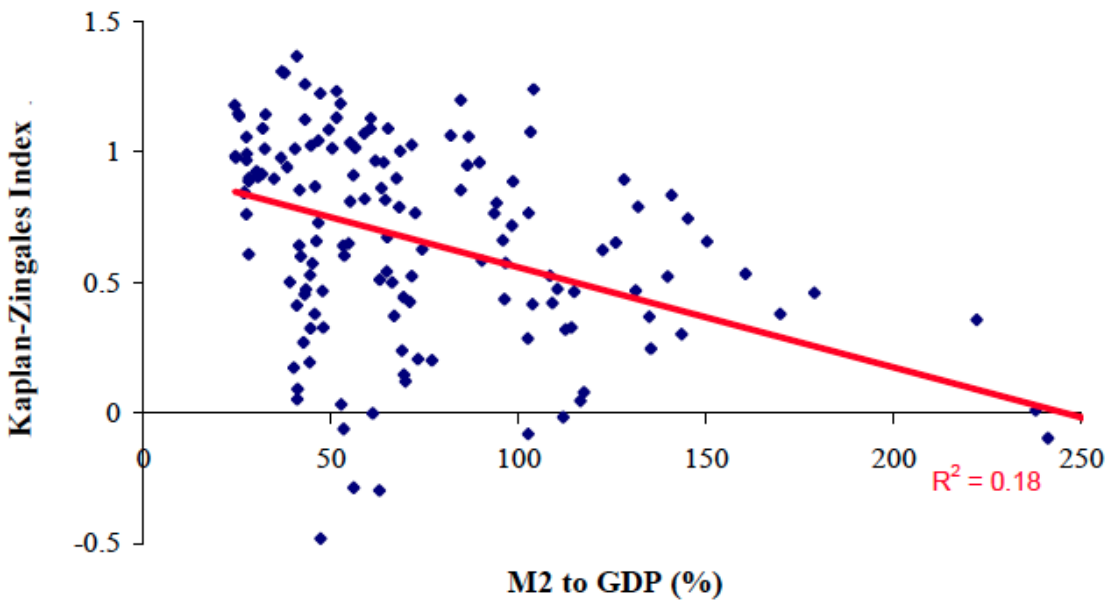
The role of state-owned banks on the level of access to finance also should not be disregarded. Beck, Demirguc-Kunt, & Maksimovic (2004) analyze cross-section data on firms access to credit for 74 countries (provided by WBES), and the results show that state-owned banks might be helping in increasing access to finance in countries with low concentration in banking sector, and that bank concentration has an impact on access to finance only in banking systems with state-owned banks. Richer countries tend to have higher level of institutional development, which translates into fewer restrictions on in banking segment, and a lower share of state-owned banks in the banking system. General conclusion on the impact of state-owned banks would be that they contribute to a lower access to finance for firms (Beck, Demirguc-Kunt, & Maksimovic, 2004).

Volz (2008) also studies the determinants of access to finance in TCs based on the data extracted from BEEPS database for year 2005. The dependent variable of the regression is the enterprise qualification of access to finance (from 1 from “no obstacle” to 4 for “major obstacle”). A qualitative response regression model, more exactly, Ordered Logitmodel is applied on the dataset. Explanatory variables contain one firm-level variable – size, and several country-level variables: financial deepening in the country, share of foreign-owned and state-owned banks, variables for macroeconomic environment, and other indicators. The obtained results show that a heavy relianceon foreign and state-owned banks has adverse effects on theaverage firms’ access to finance. Also, the authors find that a higher concentrationin the banking sector leads to better financing conditions for firms.

De Haas, Ferreira, & Taci(2007) find that foreign-owned banks are relatively highly involved in mortgage lending and lending tosubsidiaries of foreign-owned firms, in the same time lending relatively less to large domestic firms. Beside, the

study yields the unsurprising result that state-owned banks tend to lend more to state-owned firms than private banks do.

Another factor to be considered for influence on access to finance is the financial depth of the banking sector. Claessens & Tzioumis (2006), state that "Monitoring the supply-side of financing is important since firms' access to finance is more depend on financial development compared to household financing". The authors show the relationship between financial depth and financing constrains based on the data collected in the FSDI. Financial constrain is measured by the median Kaplan-Zingales index across non-financial listed firms. The mentioned index is based on the premise that firms, which face financial constrain, can be defined as those that face a wedge between external and internal funds (Kaplan & Zingales, 1997). The index takes higher value for firms that are financially constrained. Figure 2.2 reflects the negative relationship between financial constrain and depth.



Sample : 30 countries during the period 2000-2004

Figure 2.2: Financial depth and financing constrains

Source: Claessens & Tzioumis (2006)

Beck et all (Beck, Demirguc-Kunt, Laeven, & Maksimovic, The determinants of financing obstacles, 2006) study the firm-level data for 80 developed and developing countries around the world, provided by WBES. The authors regress the variables for financial obstacle (which, as mentioned earlier, can take value from 1 to 4, from "no obstacle" to "major obstacle" correspondingly) on firm and country characteristics. Firm characteristics include log of age, size (log of sales or size

dummies), ownership dummies, sectorial dummies and dummies for listed firms and business-group firms. The estimations show that higher level of financial intermediary development, higher GDP *per capita*, more liquidity on stock marker and a more efficient legal system contribute to a better access to finance. But, one of the most important determinants, according to the authors, is institutional development (Beck, Demirguc-Kunt, Laeven, & Maksimovic, The determinants of financing obstacles, 2006).

Cull & Xu(2005) study the survey for Chinese firm conducted by World Bank (jointly with the Enterprise SurveyOrganization of China), that captures the period between 2000 and 2002. The authors find that access to bank loans by private firms was positively and statistically significantly associated with reinvestment rates. The analysis of data for Chinese firms also shows that astransition progresses and as competition tightness, the complexity of transactions also rises. Hence, the role if financial institutions becomes more important for firm growth(Cull & Xu, 2005).

Brown, Jappelli, & Pagano(2009) investigate if information sharing among banks had an impact on credit market performance in the TCs of Eastern Europe and former Soviet Union. Country-level data on information sharing is extracted from the World Bank/IFC “Doing Business” database, and is combined with firm-level data in credit availability, provided by BEEPS, provided by EBRD and World Bank. The cross-sectional and panel analysis show that information sharing is associated with improvements in access to finance, and also lower costs of credits, especially in TC with lower level of investment protection. Cross-sectional estimates lead to conclusion that information sharing and firm-level accounting transparency are substitutes in increasing access to credit financing. Panel estimates suggest that information sharing plays a substitution role in the protection of creditor rights only in the country where the level of respective protection is low, but not also in countries where creditor rights are also efficiently protected by law (Brown, Jappelli, & Pagano, 2009).Contrary, De Haas, Ferreira, & Taci(2007) state that all types of bank customerstend to profit from legal improvements.

Hainz & Nabokin (2009) come to conclusion that information sharing is not equally benefic for firms of all sizes. Thus, small firms do not benefit more from information sharing than medium and large-sized ones, and firms from countries, where the level of protection of creditor rights is weak, benefit less from better information sharing. And, in contrast, for opaque firms access to finance is easier in countries that have information sharing agreements.

2.4 Internal determinants of access to finance

Size is one of the most important determinants of how access to finance is perceived by firms. Also Beck et all (Beck, Demirguc-Kunt, Laeven, & Maksimovic, The determinants of financing obstacles, 2006), in the paper mentioned above, find that small firms report significantly higher obstacles to finance than middle-sized firms, and both of these categories report higher financial obstacles than large firms. They also conclude that reported financial obstacles tend to get lower with the increase of age of enterprise. Also, the ownership of the firm has its impact on reported obstacles in access to finance: foreign-owned firms report lower values of obstacles. On the other hand, state-owned companies report higher values of obstacles, but the results is only significant at 10% level, and only in one specification. Regarding the domain of activity, manufacturing, agriculture and construction firms report higher values of obstacles in access to finance (Beck, Demirguc-Kunt, Laeven, & Maksimovic, The determinants of financing obstacles, 2006).

Bougheas, Mizen, & Yalcin(2006) analyze the data for about 50.000 small, medium and large sized UK companies in order to assess what firm characteristics determine a company's level of access to bank and market finance. The data is provided by the Financial Analysis Made Easy (FAME) database. The authors observe that firms with higher share of real assets tend to have a better access to long-term debt and reduce their short-term debt. This confirms previous findings by Oliner & Rudebusch(1996) that suggest that small firms tend to finance through short-term debt because of severe credit market imperfection that they face. According to the authors, monetary contractions redirect credit from small firms to large firms.

Also Bougheas, Mizen, & Yalcin(2006) show that the ratio of tangible assets increases access to long-term debt, reducing the proportion of short-term debt. Onwards, firms with more senior debt are less likely to obtain further access to credit.

The analysis of difference in access to finance for private and public firms shows that these two categories face different credit supply conditions based on their specific characteristics, and show different response to changes in monetary policies (Bougheas, Mizen, & Yalcin, 2006). Thus, for private firms size, risk profile, profitability and age are more important as indicators of access to short-term and long-term debts, while the ratio of tangible assets is less important. In conclusions, the authors state that smaller, younger and more risky firms are affected more by

monetary contractions than larger, older and more secure companies, the result which could be expected.

Hainz & Nabokin(2009) in their study on determinants of finance, construct two regressions equations: one for use of finance, and one for access to finance, both dependent variables being binary. The variables for use takes value equal to 1 if firm has a loan and zero if otherwise. The authors use this codification in order to differentiate between firms that are financial constrained and those that do not exhibit demand for loans. This way, only firms that demand a loan can be included in the analysis of access to finance, which would make the study more accurate. The variable for access takes value equal to one if a firm has a loan, and zero if a firm had applied for one, but had been rejected. The authors use BEEPS data for 24 TCs, which sum up to 6659 firm observations. The model applied is probit estimations.

The estimation for the use of loan, applied by Hainz & Nabokin (2009), show that show that small-sized firms and state-owned firms are less likely to have loans. On the other hand, more transparent, and more profitable firms (according to 2003 data) are more likely to use loans for financing. Age impact proved to be insignificant. Sectorial analysis shows that use of loan is less in almost all segments is less than in basic category, which include mining and quarrying.

For the access for loans, Hainz & Nabokin (2009) find that small-sized firms and state-owned firms less often have access to finance. Also, transparent and profitable firms (according to 2003 data) more often have access to finance. Sectorial analysis shows that only firms activating in real estate, renting and business services have worse access to finance through loan than in the base sector (Hainz & Nabokin, 2009). Volz (2008) as well concludes, based on the analysis of TCs data, that a large proportion of firms– and especially small-sized firms – have much worse access to finance. The importance of firm size is also confirmed by De Haas, Ferreira, & Taci(2007), which denote that small banks are more likely to lend to SMEs than large banks,while large banks have a comparative advantage in lending to large firms.

As for age of firms, the authors (Hainz & Nabokin, 2009) conclude that firms in the age categories between 0 and 10 years and between 16 and 30 years are less likely to use a loan. As for access, the age variable does not seem to have a different impact on firms of different sizes. One mentionable fact is that firms with age between 16 and 30 years less frequently exhibit demand for loan. Also, the authors mention that insignificance of age on access to finance might hold only in that particular sample, which contains many firms that were founded and the start of transition period in 1989 (Hainz & Nabokin, 2009). The stated results lead authors to

the conclusion that information about the use of loans is not enough to identify neither the categories of firms that should be supported, neither the reforms that can be undertaken on the country level to enhance access to finance. Also, the results yield that in normal conditions sector-specific programs orientated to improve access to finance are senseless.

Cull & Xu(2005), based on the study of Chinese firms' performance, provide evidence that the growth of employment, the total factor productivity and profitability are positively related to access to finance. This reveals the tendency of Chinese banks to direction the financing towards better performing firms.

From the analysis of the studies mentioned above, a conclusion can be drowned: the impact of different determinants of access to finance is not unambiguous, and differ from sample to sample (both in time and country list chosen), and varies in dependence of techniques and models used in the analysis. Thus, a more specific approach should be approved when selecting the sample for studying the factors that influence the level of accessibility of finance.

3:Empirical study

3.1 Chapter overview

This chapter provides outlines on the methodological framework, applied in order to determine what factors do exercise influence on the access to finance for individual firms, and in what direction. It contains a section that describes general situation in the banking sector in transition economies. It also includes data description, model specification, reasoning for choice of variables and author's prediction on the sign on of the estimated coefficients for the mentioned determinants.

3.2 Characteristics of banking sector in TCs

Transition economies, or transition countries, are the economies that are going through the change from centrally planned system to free market system (Fischer, Sahay, & Vegh, 1996). The list of such countries for Central and Eastern Europe and central Asia includes former Yugoslavian countries and former Soviet Union Republics and its satellite states like Hungary, Bulgaria and Poland (The Internation Bank for Reconstruction and Development/World Banks, 2002). Turkey, Mongolia,

and, recently, Kosovo, are also considered transition economies (EBRD, 2012), while Czech Republic is mention as the first country to graduate from the EBRD program (starting with 2007).

Financial markets in TCs had a different path of formation than in countries with developed economies. During the planned economy period, financial markets were only represented by the banks, which had the role of recordkeeping for the planning process and payment intermediates among state entities (Bonin & Wachtel, 2003). So they did not perform the function of resource storage and reallocation that a bank normally has in a market-based economy. Stock markets in TCs formed as a result of mass-privatization, during which most of the property rights were mandatory transmitted from state to private ownership (Claessens S. D., 2001). Thus, stock markets did not execute the function of capital raising, but were a mechanism of transmission of property rights, or, later, consolidation of property rights. Therefore, it is not surprising that financial market in transition countries are mostly dominated by banks (Bonin & Wachtel, 2003). Although financial markets in all TCs have its own specifics, Volz (2008) affirms that there are three common characteristics for financial markets in TCs: financial depth in TCs is relatively small compared to develop countries, even until now; banking activities are dominant; and, in most TCs, banking segment can be characterized by high participation of foreign players and a high concentration ratio. The conditions of formation and initial scopes of stock markets it TCs translated into another common characteristic of most such markets: low liquidity and very high volatility of prices (Andjelic & Djakovic, 2012).

Regulation of financial markets in TCs is also a matter of discussions and debates (Fischer, Sahay, & Vegh, 1996), as implication in capital market "natural" mechanism may lead to undesired results. An example could be the law in Moldova from 2000 that prohibited any over-the-counter transactions with stakes higher than 1% of total shares issued by a company (total amount of transaction between two parties during one year could not exceed that limit). This lead to stagnation in the process of consolidation of ownership, to drastic decrease in new share issue, and diminished or even stopped the growth and development of many enterprises (analysis of CNPF[1] Moldova database).

[1]National Commision for Financial Markets of Moldova

Figure 3.1 and 3.2 depicts the share to private sector in GDP, compared to the share of stock markets capitalization in GDP, in TCs, in 2002 and 2009 respectively.

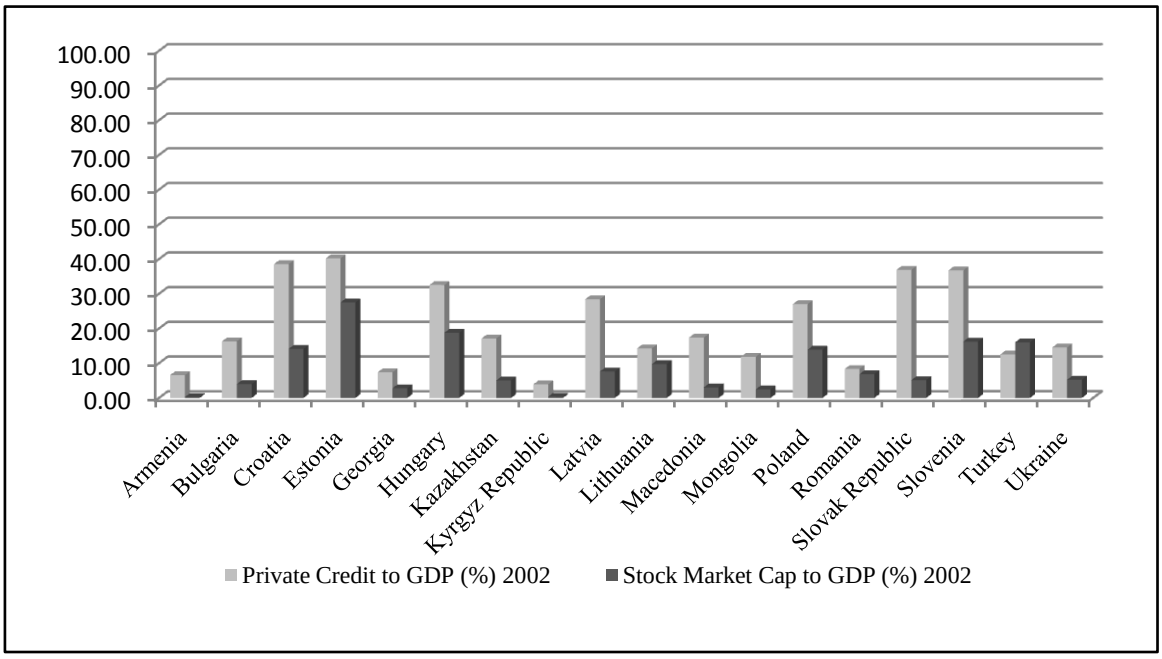


Figure 3.1: Share of Bank private Credit vs. Stock Marker Capitalization, 2002

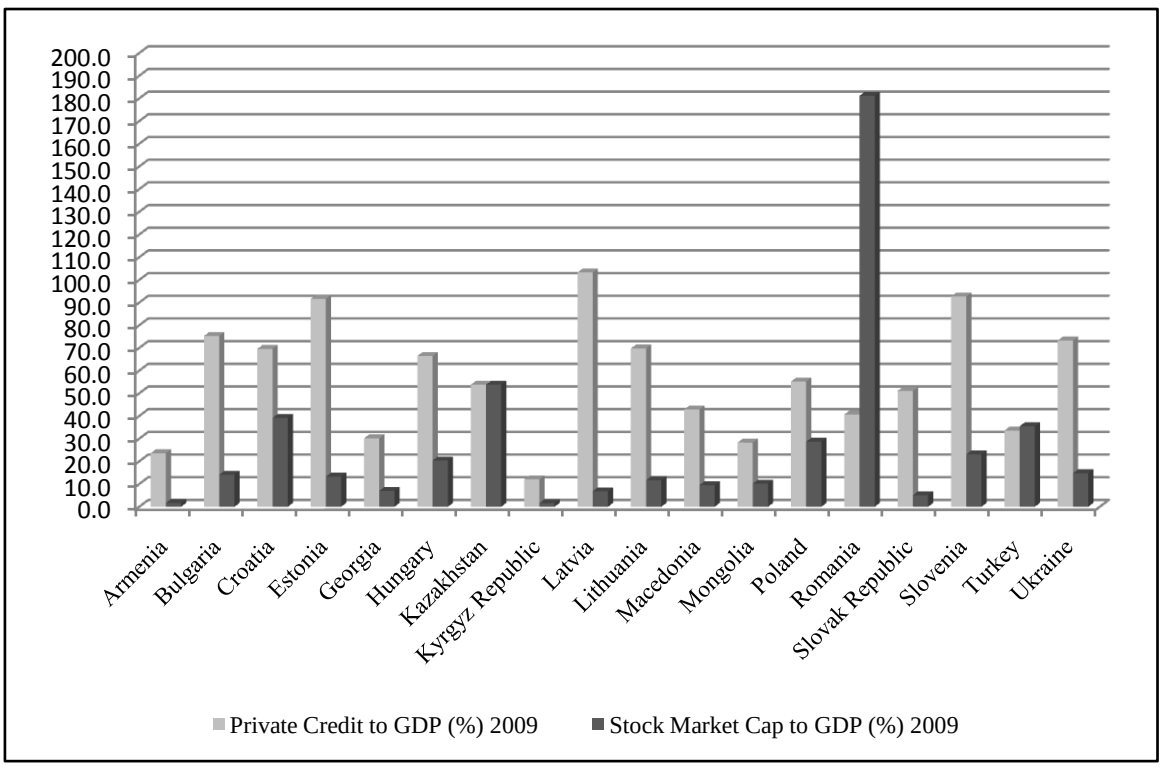


Figure 3.2: Share of Bank Private Credit vs. Stock Marker Capitalization, 2009

Source: The World Bank Databank.

As it can be seen from the figures, although in case of some countries like, Kazakhstan, Romania and Turkey, stock markets play as significant role in resource allocation as banking sector, in most countries banking activities are still dominating on financial markets. The average share of stock market in GDP in Euro area was 33% in 2009, for high-income countries it was 34.5%, while the same ratio for US for the same year was 96.9% (The Global Financial Development Database). Also, an increases in financial deepening is easy noticeable from the figures above.

Figure 3.3 portray the share of foreign-owned banks and state-owned banks in total banking assets in 1996[2]. A bank is classified as foreign-owned or state-owned if foreign, or, respectively, state ownerships exceed more that 50%.

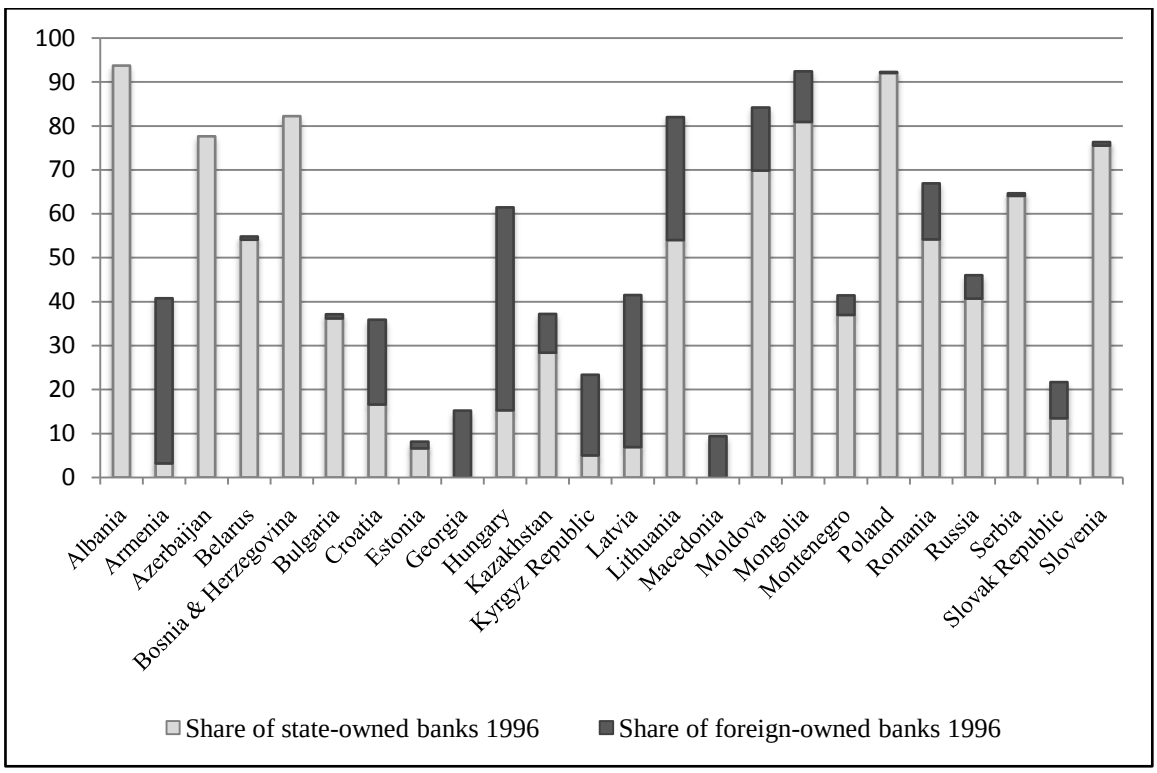


Figure 3.3: Share of state-owned and foreign-owned banks in total bank assets, 1996

Source: EBRD Country Database.

As it easily observable from the diagram, in 1996, state-owned banks have the dominant position on the banking sector. Only a few countries do not follow this trend: in Armenia, Georgia, Kyrgyz Republic and Latvia foreign-owned banks

[2]For Kyrgyz Republic, Lithuania, Romania and Ukraine the information was not available for 1996, the data for 1997 was included in the chart.

dominated the markets, while in Georgia and FYR Macedonia there are no banks with the majority of ownership belonging to the state, according to EBRD Country Database. But the situation will reverse in time.

In Figure 3.4 are presented the shares of the share of foreign-owned banks and state-owned banks in total banking assets, as situation for 2009[3].

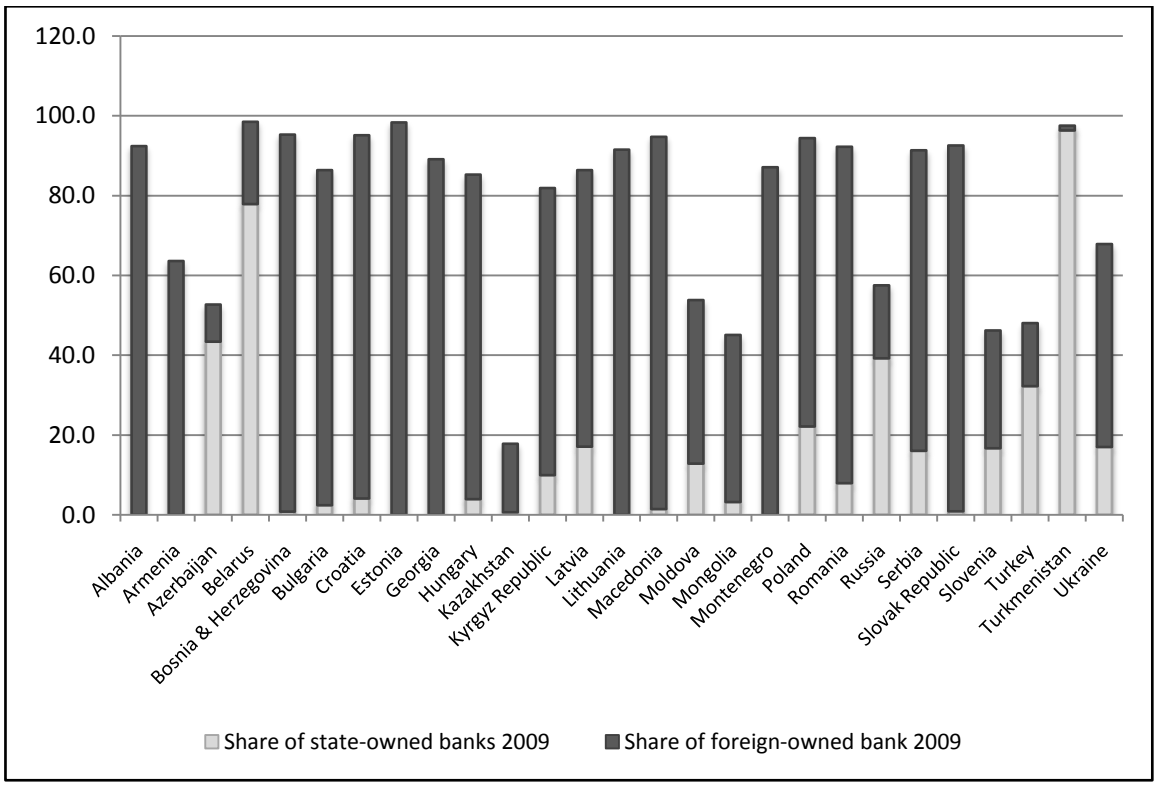


Figure 3.4: Share of state-owned and foreign-owned banks in total bank assets, 2009

Source: EBRD Country Database.

By 2009, the picture is completely different: state-owned banks are not playing the determinant role anymore, as they are forced out by foreign-owned banks. Only in Azerbaijan, Belarus, Russia, Turkey and Turkmenistan state-owned banks still play the most significant role. In most of other countries, the share of state-owned bank approaches zero. In number of states (Albania, Armenia, etc.) the share of assets of state-owned banks is zero or almost zero.

[3]For Belarus, Kyrgyz Republic, Serbia and Turkmenistan the data vor 2008 was included, since the data for 2009 was not available.

Among other trends in evolution of financial markets in TCs can be mentioned a relatively high concentration in banking sector compared to developed European countries (the respective indicator is measured as share of assets of 5 largest bank in total banking assets). Also, since 1989 EBRD measures several transition indicators for assessment of transition progress, among which the index of banking sector reform and the index of reform of securities markets and non-bank financial institutions. The indexes take values of 1.0 for all countries in 1989, and can take maximum value of 4.0, which represents that market fulfills the standards of industrialized market economy. Figure 3.5 depicts the value of the mentioned indexesin 2009.

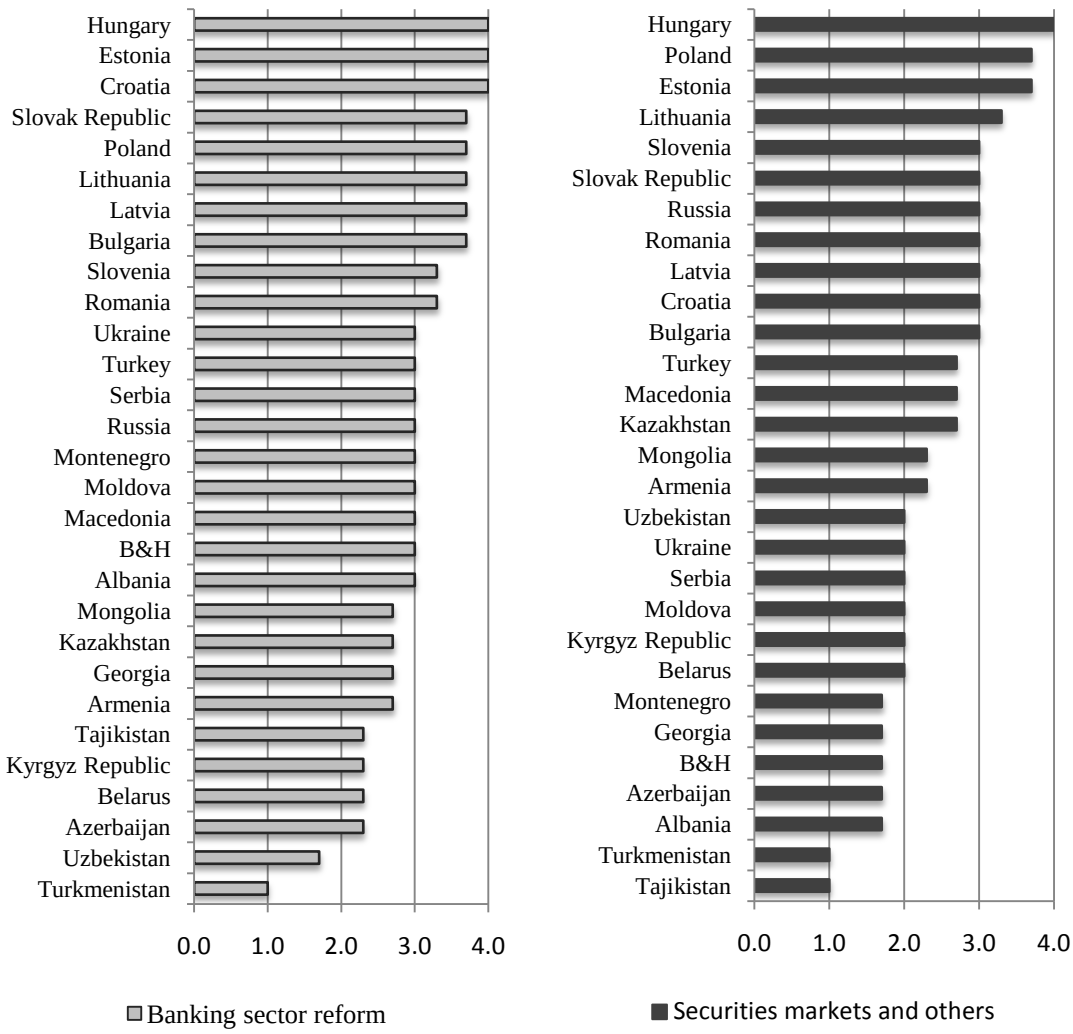


Figure 3.5: Indexes for banking sector reform and Securities market reform, 2009

Source: EBRD Country Database.

It can be seen from the above figure that most of the countries had made significant progress in the field of reformation and liberalization of banking sector and securities market. The “offsiders” of this process are Turkmenistan for banking sector reforms, and Turkmenistan and Tajikistan for the securities market reforms, for which the level of liberalization of respective markets did not change since 1989 (according to EBRD). The absolute leader in financial market liberalization is Hungary, which is receiving highest value for the index of banking sector reform since 1997 and for reform of securities markets and non-bank financial institutions since 2005.

Thus, it can be concluded that since the switch from planned to market-based economy, overall, TCs made significant improvement in developing the financial markets and in providing financial resources to the enterprises. Although the access to finance and these countries is still not as wide as in developed economies, the evolution of the indicators mentioned above permit very optimistic expectations.

3.3 Main hypotheses of study

As it was mentioned in the discussion on the literature overview section, access to finance is highly dependent on evolutions of financial markets, especially in transition economies, but also on some firm specific characteristics. Considering all arguments in favor or in opposition of effects of particular determinants on access to finance, the following hypotheses were formulated for the present study:

H1: High implication of foreign-banks in banking assets increases access to finance.

H2: Bank sector and securities market liberalization help eliminate obstacles in access to finance.

H3: Higher level of corruption is associated with lower access to external financing.

H4: Companies that operate in service sector of economy benefit from a better access to finance.

H5: Firms that apply for external audit of financial statement face fewer obstacles in obtaining finance.

Additionally, the influence on access to finance of size and ownership type of firms, and crisis period (for year 2009) and several other external factors will be assessed.

3.4 Data and methodology description

The dataset for the study is constructed by combination of firm-level information with country level indicators. The information about enterprises is taken from the BEEPS database, provided by World Banks. It represents a survey that examines the quality of business environment in TCs, which concerns different situations of interactions between state and enterprises. It was implemented at a join initiative of the EBRD and the World Bank Group (the World Bank). The survey was conducted in several four rounds: 1999, 2002, 2005 and 2009. For the purpose of present thesis, only last free round will be taken in consideration. The survey for year 2002 contains information on for 27 TCs (East Europe and Central Asia, including Turkey, but excluding Turkmenistan) and approximately 6,500 enterprises. The 2005 survey includes data for 28 countries and about 9,500 firms. The 2009 survey covers data for 29 countries (including Mongolia) for around 11,800 enterprises. The survey contains both quantitative data, along with questions that regard the perception of firms towards different obstacles that they face in their activities.

The question of using survey as an instrument of measure for access to finance in empirical analyses has been raised in several papers (See Volz (2008), Claessens &Tzioumis (2006), Beck, Demirguc-Kunt&Maksimovic (2004) and others). Generally it is accepted that although self-reporting is subjective by nature, surveys are a good way of substitution for lack of official detailed data on SME (Claessens &Tzioumis, 2006). SME are normally not obliged to report detailed financial statements, which makes econometric studies impossible for respective segment. Using financial aggregates also might be inefficient in testing many hypotheses regarding all types of enterprises. Also, Hellman, Jones, Kaufmann, & Schankerman(2000) show that there is little evidence of country-perception bias in BEEPS, and that there is a tight connection between responses and measurable results. Finally, Beck, Demirguc-Kunt, & Maksimovic(2004) find that enterprises

report lower access to finance in countries with higher net interest margins (as a measure of availability of credits), which speaks in favor of efficiency of surveys in measuring access to finance.

Country-level information was extracted from The Global Financial Development Database (The World Banks Data Bank) and from macroeconomic data provided by EBRD. The final sample of countries includes 27 transitions countries[4]. Turkey and Mongolia were omitted since for these countries there was not enough information on country level indicators.

3.4.1 Model specification

Based on stated hypotheses and assumption discussed in the overview of existing studies on question of access to finance (especially on the papers by Volz (2008) and Hainz & Nabokin (2009)), the following specification of the model is considered for estimations:

$$\begin{aligned} \boldsymbol{access_{ij}} = \; & \boldsymbol{\alpha_1 cpidelta_{ij}} + \boldsymbol{\alpha_2 concentr_j} + \boldsymbol{\alpha_3 state_j} + \boldsymbol{\alpha_4 foreign_j} \\ & + \boldsymbol{\alpha_5 fdepth_j} + \boldsymbol{\alpha_6 banklib_j} + \boldsymbol{\alpha_7 secmarlib_j} + \boldsymbol{\alpha_8 corrup_j} \\ & + \boldsymbol{\alpha_9 size_{ij}} + \boldsymbol{\alpha_{10} serv_{ij}} + \boldsymbol{\alpha_{11} audit_{ij}} + \boldsymbol{\alpha_{12} sole_{ij}} \\ & + \boldsymbol{\alpha_{13} private_{ij}} + \boldsymbol{\alpha_{14} partner_{ij}} + \boldsymbol{\varepsilon_{ij}} \end{aligned}$$

Where,

$\boldsymbol{access_{ij}}$**:** Access to finance for firm *i* in country *j*;

$\boldsymbol{cpidelta_{ij}}$**:** Annual change in CPI in country *j*;

$\boldsymbol{state_j}$**:** Share of state-owned banks in total banking assets in country *j*;

$\boldsymbol{foreign_j}$**:** Share of foreign-owned banks in total banking assets in country *j*;

$\boldsymbol{fdepth_j}$**:** Financial depth in country *j*;

[4] List of TC: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz republic, Latvia, Lithuania, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, Tajikistan, Ukraine and Uzbekistan.

$\boldsymbol{banklib_j}$**:** Assessment of reforms in banking sector in country *j*;

$\boldsymbol{secmarlib_j}$**:** Assessment of reforms in securities markets and non-bank financial institutions in country *j*;

$\boldsymbol{corrup_j}$**:** Corruption Perception Index in country *j*;

$\boldsymbol{size_{ij}}$**:** Size of the firm *i* in country *j*;

$\boldsymbol{serv_{ij}}$**:** Service sector dummy for firm *i* in country *j*;

$\boldsymbol{audit_{ij}}$**:** Dummy for audit situation of firm *i* in country *j*;

$\boldsymbol{sole_{ij}}$**:** Dummy variables for sole ownership type of the enterprises, of firm *i* in country *j*.

$\boldsymbol{private_{ij}}$**:** Dummy variables for privately held/limited liability company ownership, respectively, of firm *i* in country *j*.

Additionally, a separate regression will be run with the inclusion of dummy variable for crisis period (year 2009). The specifics of the additional regression will be discussed in the results section.

3.4.2 Dependent variable

The dependent variable is an ordinal variable, which represents the enterprise response to the BEEPS survey question about the assessment of obstacles in accessing finance. The possible responses are: “No obstacle”, “Minor obstacle”, “Moderate obstacle”, “Major obstacle” and “Very severe obstacle”. Last option was introduced only 2009 survey. The variable is codded as following: 0=“No obstacle”, 1=“Minor obstacle”, 2=“Moderate obstacle”, 3=“Major obstacle” and 4=“Very severe obstacle”.

Therefore, the regression model suitable for estimations with ordinal dependent variable is multinomial logistic regression, and more exactly, Generalized Ordered Logit, using Stata command gologit2 (Williams, 2006). The specified model is less restrictive that other models from proportional odds family, whose assumptions may be often violated, and more parsimonious than modelsas Multinomial Logit,which ignore the ordering of categories (Williams, 2006).The Brant test of parallel regression assumption applied on the estimates obtained by Ordered Logit showed that the model does indeed violate the specified assumption.

Another strong point of Generalized Ordered Logit model is that it allows analyzing the changes in explanatory variables coefficient estimates across the categories of explanatory variables (for example, the value of the same explanatory variable for "No obstacle" compared to "Very severe obstacle" response option), which permits a more deep analysis of behavior of variables.

3.4.3Explanatory variable

The description of the explanatory variables, both external and internal, the intuition behind the choice of indicators, as well as sources for data for the variables follows below. Also, predictions for sign of coefficient estimates are also included.

a. External determinants of access to finance

- **Change in CPI**

A volatile macroeconomic environment translates into higher risks associated with investment, and hence, higher risk premium or higher collateral margin is demanded, which narrows the access to finance. The volatility of macroeconomic conditions can be assessed through the changes in CPI index (Volz, An Empirical Examination of Firms' Financing Conditions in Transition Countries, 2008). The data on the yearly change in CPI in TCs for year 2002, 2005 and 2009 was extracted from The Global Financial Development Database. It is expected that higher values of changes in CPI are associated with lower level of access to finance, thus, the coefficient for the variable estimates should be positive.

- **Concentration in banking sector**

As already mentioned in the literature overview, there is no univocal opinion about the effect of concentration in banking sector on access to finance (for example, Beck, Demirguc-Kunt, & Maksimovic (2004) and Volz (2008) obtain opposed results for the impact of concentration on the access to finance). Concentration in banking sector is measures as share of assets 5 largest banks in total banking assets of a country. Highly concentrated banking systems tend to favor large-sized enterprises. On the other hand, Volz (2008) states that "a high concentration in banking might create aquasi-monopolistic situation, which could help banks to establisha mutually beneficial relationship with firms".The value of this indicator for TCs for the years corresponding to surveys was taken from EBRD macroeconomic database. It is

expected that higher concentration in banking sectors leads to worse access to finance, hence the coefficient estimates is expected to have positive sign.

- **Share of state-owned banks in total banking assets**

The implication of state-owned banks can have both positive and negative effect on access to finance. On one hand, state-owned banks are less restrictive in screening the firms that apply for a loan, or, they can widen loan granting as part of policies for support of enterprises. On the other hand, in countries where state-owned banks face no competition, they might be more rigid and less efficient in resource allocation and less willing to offer a more diversified range of financial products. Thus, no sign prediction is made for variable of implication state-owned banks. The data on the share of state-owned banks in total banking assets was extracted from The Global Financial Development Database.

- **Share of foreign-owned banks in total banking assets**

The same conclusion as for state-owned banks can be stated also for foreign-owned banks: the influence of foreign-owned banks on access to finance in not unambiguous. They can contribute to better access to finance through fostering competition, through offering financial market instrument and innovative approaches that are not available for local banks, through more efficient approach to financial intermediation, and others. At the same time, foreign-owned banks might be more restrictive in client screening and focus only on large or very profitable landing, which would lower the access to finance and small and medium enterprises, and favor only large companies. Based on the arguments stated above, the predicted sign for the coefficient estimates is negative. The values of the mentioned indicator for TCs were taken from The Global Financial Development Database.

- **Financial depth**

Generally, a higher degree of financial depth is associated with better access to finance. Financial depth is generally calculated as share of private credit in the GDP (Honohan, 2008). Although banking sector is not the only source of financing for firms, in TCs it heavily dominates over the capital marking, thus the mentioned ratio is a good measurefor financial depth of the market. Higher values of financial depth indicator reflect that a bigger amount of financing is attracted through financials sector, thus, a negative sign is expected for financial depth variable. Source of data: The Global Financial Development Database.

- **Assessment of reforms in banking sector**

The scope of reforms in banking sector is to create a framework for prudential and efficient framework for banking sector regulation and supervision, to achieve liberalization of interest rates and credit allocation, and to assure a high financial deepening. Thus, stronger progress in the field of liberalization of banking sector should be associated with a better access to finance. The index that reflects the progress in banking reforms for TCs is calculated by EBRD and is reflected in the EBRD macroeconomic database.

- **Assessment of reforms in securities markets and non-bank financial institutions**

Reforms in field of securities market follow the goal to bring securities market regulation as closest as possible to IOSCO standards (IOSCO - International Organization of Securities Commissions), to guarantee the protection of property rights for companies and investors, to assure substantial market liquidity and capitalization and to guarantee a fully developed non-bank intermediation segment. Liberalized and efficiently regulated security markets should contribute to a better access to finance, allowing attracting larger amounts of capitals, both in forms of equity and doubt issue, at more competitive rates compared to banking sector. Hence, negative coefficients estimates for the mentioned reforms are anticipated in the analysis. The respective indexes are also calculated by EBRD and reflected in the EBRD macroeconomic database.

- **Corruption Perception Index**

In order to assess the impact of corruption level on access to finance, a variable for Corruption Perception Index was introduced in the regression. The data on the mentioned index was extracted from Transparency International database, as annual values for all three years of the analysis (which allows for evolutions in perception of corruption). The interpretation of the index should be the following: The higher the value of the Index, the higher the perception of corruption, and the lower the corruption level in the country. Thus, the coefficient estimates for the corruption variable should be negative.

- **Crisis impact**

A dummy variable for crisis period was included in the regression. It takes values equal to 1 for observations for year 2009, and equal to 0 otherwise. Naturally, the expected sign for coefficient estimates is positive.

b. Internal determinants of access to finance

- **Firm size**

As it was mentioned in the literature review, small firms face higher obstacles in access to finance. Since small enterprises are associated with higher riskiness and lack of credit history, thus such firms usually are forced to pay higher interest rates and provide a bigger collateral margin. Size variables is an ordinal variable that takes value equal to 1 for small firms (between 5 and 19 employees), equal to 2 for medium firms (from 20 to 99 employees), and equal to 3 for large firms (equal or more than 100 employees). Thus, the negative sing is expected for the respective variable.

- **Service sector**

A dummy variable was created for firms that operate in the service segment of economy. Due to the fact that these companies typically have more liquid assets and higher profitability ratios, it is expected that they would face less obstacle in obtaining external financing. The variable takes value equal to 1 if enterprise describes its main activity as wholesale, retail, IT, hotel and restaurants industry, or other services, or value equal to 0 otherwise.

- **Audit**

A dummy variable was introduces in the model to assess if enterprises, whose financial statement are audited by an external auditor, face less obstacles in access to finance compared to whose are not. The variable takes value equal to 1 if external audit was performed during last complete fiscal year, and equal to 0 if otherwise. Enterprises that apply for an external audit should gain better access to finance, thus the sign for coefficient estimates is anticipated to be negative.

- **Legal status**

In order to test whether firm ownership has any impact on access to finance, dummy variables, with value 1 were introduces for firms with sole ownership and privately held or limited liability companies, and 0 if firms state any other form of ownership.

In Table 3.1 are summarized the descriptive statistics for variables considered as internal determinants for access to finance, outline above, and reflects the sign prediction for coefficient estimates.

Table 3.1: Descriptive statistics for variables for internal determinants

Variable	Obs	Mean	Std. Dev.	Min	Max	Sign prediction
cpidelta	23613	6.070	6.131	-0.74	42.54	+
concentr	24091	72.751	18.432	33.80	100.00	+
state	22533	16.284	19.838	0.00	77.90	+/–
foreign	23640	52.063	32.122	1.78	99.40	–
fdepth	24507	34.380	22.311	0.00	103.30	–
banklib	24366	2.921	0.676	1.00	4	–
secmarlib	24366	2.463	0.726	1.00	4	–
corrup	23783	3.370	1.169	1.70	6.60	+
crisis	24959	0.389	0.488	0	1	+
size	24927	1.757	0.796	1	3	–
serv	24959	0.458	0.498	0	1	–
audit	24959	0.455	0.498	0	1	–
sole	24959	0.269	0.443	0	1	+/–
private	24959	0.364	0.481	0	1	+/–

Source: author's computations.

Appendix A contains values of mentioned determinants for years 2002, 2005 and 2009, respectively. It is worth mentioning that while for some particular variable outliers are present (as extremely high change in CPI for Belarus in 2002), omitting the outliers does not changes the estimation results. The reason is that for these countries data for some other variables is missing, and the model doe not include the observation with missing data into estimation.

4:Results and Interpretation

4.1 Chapter overview

This chapter presents the empirical results, obtained by applying the methodology described in Chapter 3 of the present thesis. The chapter includes the results originated from the initial specification of the regression model, the discussion on possible issues and solutions, and the outcome from the updated methodology. The last section contains the interpretation of obtained signs for coefficient estimates of explanatory variables of access to finance.

4.2 Initial specification

As mentioned in the methodology section, Generalized Ordered Logit is applied on pseudo panel data for 27 TCs. The advantage on the specified model is that it provides more extended and interpretable results, compared to such models as Ordered Logit or Multinomial Logit, more exactly, how the coefficient varies with change of dependent variables. This stratification is obtained by running the *n-1* logistic regressions (where *n* in the number of possible values of dependent variable) by the following procedure: 1^{st} value versus all others (1^{st}=0, and 2^{nd}, 3^{rd}, 4^{th}, 5^{th}=1); 1^{st} and 2^{nd} values versus 3^{rd}, 4^{th} and 5^{th}; 1^{st}, 2^{nd} and 3^{rd} values versus 4^{th} and 5^{th}; and 5^{th} value versus all others (1^{st}, 2^{nd}, 3^{rd}, 4^{th}=0 and 5^{th}=1).

In the case of the analyzed dataset, the dependent variable can take 5 values (ranging from 0 to 4), which implies that the output generated by Generalized Ordered Logit should contain estimates for 4 regressions. Table 4.1 presents the estimation outcomes of the model described in the methodology section.

Table 4.1:Results for determinants of access to finance. Initial model

VARIABLES	(1)	(2)	(3)	(4)
cpidelta	**-0.00107**	**0.00493***	**0.00470**	**-0.0529*****
	(0.00305)	(0.00281)	(0.00321)	(0.00860)
concentr	-0.0122***	-0.0122***	-0.0149***	-0.0309***
	(0.00128)	(0.00120)	(0.00140)	(0.00297)
state	**0.00490*****	**0.00251****	**0.00473*****	**-0.000333**
	(0.00121)	(0.00111)	(0.00130)	(0.00263)
foreign	0.00776***	0.0104***	0.0124***	0.0195***
	(0.000790)	(0.000772)	(0.000959)	(0.00227)
fdepth	**0.00136**	**0.00304*****	**0.00230****	**0.0324*****
	(0.000949)	(0.000900)	(0.00105)	(0.00217)
banklib	-0.657***	-0.736***	-0.768***	-2.170***
	(0.0729)	(0.0706)	(0.0848)	(0.218)
secmarlib	0.405***	0.472***	0.506***	0.954***
	(0.0425)	(0.0404)	(0.0473)	(0.110)
corrup	-0.123***	-0.156***	-0.162***	-0.391***
	(0.0213)	(0.0209)	(0.0258)	(0.0569)
size	**-0.125*****	**-0.117*****	**-0.151*****	**0.0541**
	(0.0218)	(0.0209)	(0.0242)	(0.0446)
serv	-0.298***	-0.221***	-0.234***	-0.184***
	(0.0324)	(0.0307)	(0.0358)	(0.0701)
audit	-0.200***	-0.200***	-0.200***	-0.200***
	(0.0282)	(0.0282)	(0.0282)	(0.0282)
sole	0.0601	-0.0765*	-0.156***	-0.276**
	(0.0436)	(0.0408)	(0.0477)	(0.116)
private	**-0.101*****	**-0.0972*****	**-0.0186**	**0.289*****
	(0.0373)	(0.0355)	(0.0412)	(0.0822)

Constant	2.946***	2.110***	1.176***	2.463***
	(0.188)	(0.179)	(0.210)	(0.452)
Observations	19,206	19,206	19,206	19,206

Standard errors in parentheses

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

Source: author's computations

The examination of obtained results indicates some possible problems with the model specification. Most unexpected outcomes are marked with bold in Table 4.1. First, the sing for coefficient estimates for change in CPI (*cpidelta*) alters along the increase in value of dependent variable: the sing is negative for extreme values of dependent variable, and positive for middle categories. Secondly, the sing for variable for implication of state-owned banks (*state*) changes from positive to negative in the 4th equation. A straightforward explanation for this shift would be that the implication of state-owned banks is less likely to determine the enterprises to report extremely high obstacles in accessing the external finance. But such an interpretation would be a more mechanical one, and it is more likely that there is some problem with variable or model specification.

Another noticeable deviation in results is that the coefficient estimates for the variable for financial depth (*fdepth*) are positive, which would imply that higher deepening of financial systems lead to worse access to finance – the results which would contravene the findings of previous studies on access to finance (Claessens & Tzioumis (2006), Volz (2008) and others).

As regarding internal determinants of access to finance, the unexpected results are also obtained for the size variable and the dummy for companies that are organized as private ownership. A positive sing for size variable for the 4th equation would lead to conclusion that big companies are more likely to report very severe obstacles in accessing the external finance. Such a result would contradict many anterior studies and would be hardly explainable. The same reasoning doubts the negative sign of coefficient estimates for the dummy for privately held, limited liability companies (*private*).

The robustness check for the model also showed that the results of the model are not stable and that further work on the model has to be done[5]. Also, one of the purposes of the present thesis is to check whether crisis period had any impact in the access to finance. But introducing a dummy variable for crisis period yields even more unstable results, and causes the regressions model to violate the parallel lines assumption (the assumption that the impact of independent variables is the same for all response categories).

Also, the check for correlations between external determinants to access to finance shows that the variables *banklib* and *secmarlib*are highly correlated, which might cause the problem of multicollinearity. Table 4.2 reflects the correlation between external determinants of access to finance.

Table 4.2:Correlation between external determinants of access to finance

	cpidelta	**concentr**	**state**	**foreign**	**fdepth**	**banklib**	**secmarlib**	**corrup**
cpidelta	1.000							
concentr	-0.272	1.000						
state	0.464	-0.232	1.000					
foreign	-0.404	0.416	-0.500	1.000				
fdepth	-0.081	-0.163	-0.245	0.297	1.000			
banklib	-0.404	0.108	-0.474	0.669	0.562	1.000		
secmarlib	-0.292	0.147	-0.138	0.434	0.420	0.789	1.000	
corrup	-0.240	0.428	-0.289	0.498	0.414	0.645	0.601	1.000

Source: author's computations

The robustness check points that the variable *banklib* changes sign to positive and becomes insignificant when the variable *secmarlib* is omitted from the regression, which denotes that some modification in specification of the variables is necessary. Although one of the solutions to the problem of multicollinearity created by the respective variables could be dropping one of them (in case of current study – the dropped variable would be *secmarlib*, since financing through securities market in TCs is substantially lower than compared to financing by banking sector), the matter can also be addressed by principal component analysis. The respective procedure

[5]The robustness check was performed by running several equations in which the explanatory variables were omitted one by one. This permits to verify if sign of coefficients are the same for all specifications.

allows converting sets of correlated data into values of linearly uncorrelated variables,defined as principal components.

Taking in consideration all model flows mentioned in the current section, a modified regression methodology is applied on the data, in order to assure a more efficient and objective outcome.

4.3 Modified methodology

As mentioned in the methodology section of Chapter 3, the dependent variable of the performed analysis is the enterprise response on the question of their perception of access to finance. The variables can take several values: from 0 for "No obstacle", to 4 for "Very severe obstacle". As also remarked in the same section, the option "Very severe obstacle" was introduced only in surveys for year 2009, while in 2005 and 2005 the highest obstacle response would be "Major obstacle". Thus, if a dummy variable for year 2009 is included in the regression, it causes violation of parallel lines assumption and produces highly unstable results. In order to account for crisis effect, all observation, for which the dependent variable obtained value equal to 4, were omitted. Therefore, the regression output should contain coefficients for only 3 equations.

Also, the variables *banksec* was created using principal component analysis, to deal with the correlation between bank sector liberalization index and securities market liberalization index. The comparison of the likehood ratio and pseudo R^2 shows that the model including *banksec* variable fits the data better than the one that assumes dropping the variable for securities market liberalization, and keeping only bank sector liberalization index variable. The results obtained by applying the outlined modified methodology are reflected in Table 4.3.

Table 4.3:Results for determinants of access to finance. Modified methodology

VARIABLES	**(1)**	**(2)**	**(3)**
cpidelta	0.00634**	0.0131***	0.0134***
	(0.00311)	(0.00292)	(0.00338)
concentr	-0.00521***	-0.00521***	-0.00521***
	(0.00105)	(0.00105)	(0.00105)

state	0.00798***	0.00596***	0.00956***
	(0.00111)	(0.00103)	(0.00124)
foreign	0.00308***	0.00554***	0.00795***
	(0.000711)	(0.000704)	(0.000853)
fdepth	-0.00741***	-0.00741***	-0.00741***
	(0.000990)	(0.000990)	(0.000990)
banksec	0.112***	0.112***	0.112***
	(0.0192)	(0.0192)	(0.0192)
corrup	-0.140***	-0.140***	-0.140***
	(0.0188)	(0.0188)	(0.0188)
size	-0.146***	-0.147***	-0.212***
	(0.0222)	(0.0216)	(0.0266)
serv	-0.301***	-0.232***	-0.258***
	(0.0327)	(0.0314)	(0.0386)
audit	-0.177***	-0.177***	-0.177***
	(0.0292)	(0.0292)	(0.0292)
sole	0.0883**	-0.0345	-0.152***
	(0.0427)	(0.0406)	(0.0479)
private	-0.137***	-0.137***	-0.137***
	(0.0331)	(0.0331)	(0.0331)
crisis	0.301***	0.339***	0.142***
	(0.0431)	(0.0420)	(0.0478)
Constant	1.808***	0.822***	-0.338***
	(0.101)	(0.0983)	(0.109)
Observations	18,293	18,293	18,293

Standard errors in parentheses

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

Source: author's computations

The specified model does not yield volatile or unexplainable results. The robustness check of the regression, as well as a more detailed regression output, are presented in Appendix B. The sign for financial depth is negative, as expected, which confirms that higher financial deepening is associated with better access to finance.

The coefficient estimates for change in CPI is stably positive. The outcomes for *size* and *private* are also show that the last specification of model is more consistent. Also, the Wald test for parallel lines assumption shows that the modified model does not violate the proportional odds/parallel lines assumption.

4.4 Results interpretation

Since access to finance is measured by ordinal variables, with increasing values for higher obstacles in accessing external financing, a negative sign of coefficient estimates should be interpreted as an increase in access to finance, and a positive one – as leading to worse conditions of access to finance, as perceived by enterprises.

- **Change in CPI** *(cpidelta)*

As expected, the results yield positive sign for coefficient estimates for change in CPI, which allows concluding that a more volatile and thus more risky macroeconomic environment, described by higher changes in annual CPI, is associated with worse access to external financing.

- **Concentration in banking sector***(concentr)*

The expectations forthe concentration in banking sector were that it has a negative impact on access to finance. But the outlined regression produced negative sign for coefficient estimates of the respective variable, which denotes that higher concentration in banking sector favors access to finance. On of the possible explanations would be that larger banks have more resources that can be converted into credits, thus can afford to be less restrictive in client selection.

- **Share of state-owned banks in total banking assets***(state)*

The estimates for variable for implication of state-owned banks are positive, suggesting that it is associated with worse access to finance. There might be several causes for the obtained result: state-owned banks might be more rigid in implementation of new financial instruments, that would foster access to finance; state-owned banks might be less efficient in resource allocation, being “directed” to some specific industry sectors; state-owned banks might be less eager to compete for

the client. Thus, the tendency of diminishing share of state-owned banks in TCs should have a positive impact on the business environment.

- **Share of foreign-owned banks in total banking assets***(foreign)*

One of the hypotheses tested during the present study was that higher implication of foreign-owned banks benefits access to finance. But the regressions output shows that the effect is of opposite sign. The reason behind such a relationship might be that foreign banks are more restrictive in selection of clients, and are focused only on high-return projects. This result is in line with several previous studies (Detragiache, Gupta, & Tressel(2006), Clarke, Cull, & Pería(2006) and others), which state that participation of foreign-owned banks leads to a better access to finance only to a narrow segment of companies, those that are more transparent and more profitable. Also, the cost of information gathering for foreign-owned banks might me higher, translating into higher risk premium demanded.

- **Financial depth***(fdepth)*

The coefficient estimates for the respective variable are negative, which confirms that higher financial deepening increases access to finance. Thus the tendency of increasing financial depth in TCs allows building an optimistic forecast for evolution of access to finance.

- **Assessment of reforms in banking sector and reforms in securities markets and non-bank financial institutions***(banksec)*

According to the second hypothesis of the present study, it was expected that reforms in banking sector and securities markets would lead to improvements in access to finance. The results prove the contrary: the coefficient estimates for a variables that combines liberalization indexes for bank sector and securities markets are positive, therefore a better progress towards full liberalization of specified segments is associated with worse access to finance. The probable explanation is that liberalization conditions imposed more severe conditions of client screening, which leads to a more reduced credit underwriting.

- **Corruption Perception Index***(corrup)*

As anticipated by the third hypothesis of current thesis, corruption level does have a statistically significant impact on access to finance, and the results confirm the clear expectations that the higher the level of corruption - the worse the access to

financing. The negative signs of coefficient estimates denote that higher perception of corruption leads to increase in access to finance.

- **Crisis impact***(crisis)*

Positive and statistically significant coefficient estimates for crisis period dummy show that the access to finance was weaker in the year 2009, compared to 2002 and 2005, the result that is not surprising. Also, controlling for crisis effect helped improve estimation of other determinants of access to finance.

- **Firm size** *(size)*

The outcome obtained for the size variable confirms previous studies, which conclude that large companies benefit from a better access to finance (Bougheas, Mizen, & Yalcin (2006), Hainz & Nabokin (2009), Volz (2008) and others). The coefficient estimates for size variable are negative and statistically significant. The reasoning behind the obtained outcome is that large firms are usually more transparent, have a longer credit history and can provide a larger collateral – these are just several factors that might determine banks to be willing more to allocate financial resources to larger companies than to medium and small ones. Also, larger firms tend to ask for larger amount of credits, which motivates banks to direction finances towards one large client, rather than spreading it between a number of small clients, which would require more resources to track. Table 4.4 depicts the distribution of average amount of credit demanded, by company size, extracted from BEEPS data.

Table 4.4:Average amount of credit demanded versus firm size

Size	**Average credit demanded, USD**
Small	3,467,757
Medium	11,369,976
Large	60,617,111

Source: author's computations

- **Service sector***(serv)*

The dummy for service sector (which includes firms that operate in wholesale, retail, IT, hotel and restaurants industry, or other services, as mentioned in Chapter 3) has negative sign of coefficient estimates and is statistically significant, which suggests that companies from service sector face less obstacles in obtaining credit financing – the results that confirms the third hypothesis of the present thesis. Possible explanation, also stated in the description of variable in methodology

section, is that firms operating in service sector have more liquid assets (more qualitative collateral - in terms of bank credit), and higher than average profitability rates, which sould lower the demanded by banks risk premiums, thus increasing access to finance for the respective firms.

- **Audit***(audit)*

One of the main hypotheses of the present study was that companies that apply for external audit services have a better access to finance, compared to firms that do not. The coefficient estimates for audit dummy variable is negative and statistically significant, which confirms the hypothesis statement. The audited financial statements imply more credibility for the company, which should translate in lower risk premiums and thus in lower interest rates asked by creditors. Thus, the costs associated with applying for external audit services can be more or less offset by smaller interest rates demanded by banks.

- **Legal status** *(sole and private)*

The two dummies created for the assessment of impact of firm's legal status on access to finance show that companies that sole proprietorship and privately held or limited liabilities companies have better access to finance: the estimates coefficients for privately held/limited liabilities companies are stably negative and significant, and the coefficient estimates for sole proprietorship are negative for second and third equations. The positive sign for *sole* variable for the first equation can lead to conclusions that it is less likely that a sole proprietorship firm would report "No obstacle" at all in response to question on obstacles faced in accessing the external financing.

Based on the results mentioned above, the following chapter outlines the main conclusions about the effects of determinants of access to finance and how these effects can be interpreted in policy making.

5:Conclusions

While in existing literature there is no unique opinion on effect of different factors on the access to finance for individual firms, one of the main purposes of the current thesis was to approach the mentioned issue from the angles of both external and internal factors, that determine a better or a worse access to financing. Thus, a combination of firm-level data and country-level data is used in assessing the impact of different determinants on access to finance. The analysis is based on the BEEPS survey, conducted by World Bank in 29 countries, in year 2002, 2005 and 2009, which contains information on enterprises report on the obstacles faced in obtaining external financing, as well as other different firm-level data. The mentioned database was combined with indicators such as macroeconomic environment volatility, concentration in banking sector, foreign-owned and state-owned banks implication, depth of financial systems and others.

The regression model was constructed based on anterior studies on the question of access to finance and the assumptions about the impact of some previously not analyzed determinants. In addition to indicators analyzed in anterior studies, two country-level variables were introduced into regression model: a variable for corruption effects and a variable that combined the influence of liberalization of banking sector and securities market segment (created using principal component analysis). For firm-level indicators, dummy variables for service sector, for ownership status and for audited financial statements were included. Also, the control variable that account for crisis effect was incorporated in the model.

Although previous studies in the field of access to finance apply Ordered Logit or Ordered Probit on the data, the estimations of the current thesis were effectuated using Generalized Ordered Logit model. The main reasons for choosing the Generalized Ordered Logit over other models is that it is less restrictive that Ordered Logit (which also often violates the parallel lines assumption – base assumption for the models that specialize on the analysis of ordinal dependent variables), but more parsimonious that Multinominal Logistic models. The applied econometric model allows analysis of variables impact across the categories of dependent variable. The outcomes obtained by outlined methodology proved to be robust and consistent.

The empirical results suggest that the access to finance in TCs can be improved with an appropriate approach in policy making. The regression output leads to conclusion that a more volatile macroeconomic environment is associated with worse access to finance, thus stabilization of inflation would have a positive effect on firms' access to external financing. Since concentration in banking sector proved to foster access to finance, there should not be any specific measures against the increase in the respective ratio in banking system. Contrary, as implication of state-owned banks and foreign owned banks seems to have a negative effect on access to finance, the increase of these implications should not be encouraged artificially in TCs. Any drastic restrictions in implication of foreign-owned or state-owned banks may have adverse effects for the business environment, as mostly any rough implications in free markets mechanism, nevertheless refraining from stimulation of state-owned or foreign banks involvement may have a beneficial impact on access to finance.

The outcomes for the depth of financial markets clearly suggest that deeper financial systems provide better access to finance. Thus, banks might be stimulated to increase the amount of financial resources allocated to private credit. Such measures might include state guarantees for private credits, decrease in interest rates on long-term credits set by Central Banks, and reduction in capital requirements to adequate values (for example, minimum required reserves for year 2013 for Moldova are 14%, and for Romania are 15% for local currency and 20% for foreign currencies[6]). But it is imperative for these actions to be taken prudentially, and with regards to specifics and conjuncture of local financial markets and economic environment, since the stability of financial markets is of priority.

[6]Sorce: official websites of Central Banks of Moldova and Romania, www.bnm.md & www.bnro.ro

Another way to increase financial depth would be contribution to development of stock markets. In the present, financial depth in TCs is only associated with banking sector, and the potential of stock markets is mostly unexplored in the mentioned countries. Reformation of stock market infrastructure and mechanisms would allows companies to have an alternative to bank credit financing. The regression result for banking liberalization and securities markets liberalization index show that the reforms in these segments are associated with worse access to finance. It can be assumed regarding the impact in bank liberalization that the reforms in banking regulation led to more strict requirements in credit emission, which had a negative impact on access to finance. But the outcomes for the securities market index might indicate that the reforms of this segment are not accomplished efficiently in TCs and that there is space for potential improvements in order to assure a better access to finance.

The results of assessment of corruption impact on the access to finance are quite expectable. High level of corruption in one of the major problems in TCs, and it affects almost all fields of national economy. According to 2009 data for Corruption Perception Index, 11 out of 15 former soviet republics have the worst corruption perception level among transition economies (more detailed information is contained in Appendix A). Corruption spread during the transition phase, when the state control had been removed, but an efficient substitute for it had not yet been created. Later, corruption extend was catalyzed by very low income per capita in TCs. Corruption may affect the access to finance trough several channels: lobbying for financial resources to be directed towards a particular client; lobbying for supporting a particular bank with state subsidizing; demands of bribery of middle level officials or employees for proceeding the documents; and others. Thus, decreasing the level corruption is one of the targets in order to provide a better access to finance.

As the firm size analysis show that larger firms tend to face fewer obstacles in obtaining external financing, access to finance for small and medium companies can be improved by technical assistance of these categories of firms in applying for or attracting financing. Many TCs have specially design programs for supporting SME, but their efficiency is still subject of discussion, as they were launched relatively recently, and it is too early for the results to be assessed. The coefficient estimates for dummy for service sector of economy show that firms operating in service sector gain better access to finance, thus there is no need to undertake special measures to assist this category of companies.

The result for audit variable implies that more transparent companies benefit from better access to finance, which reflects that the information asymmetry comes with a certain price in accessing the finance. While many SME cannot afford the cost of external audit, creation of unique database on SME applying for credits would make possible tracking of credit history for such companies, and would make decisions making about loan emission faster, more efficient and less risky, which would stimulate banks to direct financial resources towards smaller firms.

The results for analysis of impact of legal status on access to finance reflect that sole proprietorship firms and privately held or limited liabilities companies face fewer obstacles in accessing external financing.

A more general conclusion to the present study would be that policy making in the field of financial markets should be orientated towards stimulating banks not to discriminate between large enterprises and small and medium firms. Another issue that should be taken in consideration is the reorientation of stock markets scopes in TCs. In present, stock markets in these countries have merely the role of mechanism for transfer of ownership rights, while the role of attracting financial resources is almost obsolete, both in terms of equity and obligations issue. In most of TCs the amount of available financial instrument is very limited, and the legislation regarding existing instruments is confusing and incomplete. Mostly, the institutions that form the infrastructure of capital market are not politically independent, that might create obstacles for private capital holders or firms seeking private investments. The rigidity of state institution that are controlling stock markets in TCs, as well as high level of corruption in such structures, often force companies to pay higher interest rates for financing on banking sector, rather than dealing with state officials, which is also a part of inheritance obtained from planned economy regime.

Therefore, the situation in transition economies determined that for small and medium sized enterprises especially, but in most cases for large companies also, the decision of financing is reduced to choice among banks, and does not include capital market as an option.

A collaboration with business representatives in order to gain more information on the specific obstacles faced by the enterprise in the accessing the external financing might extend the understanding of problems related access to finances. In transition countries these may include feedback on the reasons of loans denial, on corruption tentatives, on the efficiency of collaboration with brokers or underwriting companies, or other capital markets participants, including regulatory

institutions, or other specific information – the data that is not availableat the moment, but might be useful in targeting better access to finance for firms.

The findings of the present thesis are important for understanding the nature of access to finance, which is highly dependable on the country specific and time specific framework. Further research on the on topic of access to finance can be extended by the inclusion of more firm-level or country-level indicators, by increasing the countries sample (but controlling for indicators as GDP *per capita*, changes in CPI, and other macroeconomic data), or by analyzing a more recent time period, since the situation of financial markets in transition economies is sensitive to changes and relatively dynamic.

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Appendixes

Appendix A. Country-level indicators

Table A.1:Values of country-level indicators in TCs for year 2002

Country	Change in CPI	Concentr %	State %	Foreign %	Fdepth %	Corrup perc index	Banks liber	Sec mar lib
Albania	5.51	85.84	51.4	45.89	5.91	2.5	2.3	1.7
Armenia	1.06	100.00	0.0	54.15	6.57		2.3	2
Azerbaijan	2.77	64.03	62.0	4.07	5.07	2	2.3	1.7
Belarus	42.54	85.04	61.9	8.08	7.25	4.8	1.7	2
Bosnia & Herzegovina		67.65	6.2	76.68			2.3	1.7
Bulgaria	5.81	77.83	14.1	75.15	16.31	4	3.3	2.3
Croatia	1.67	69.36	4.0	90.16	38.54	3.8	3.7	2.7
Czech Republic	1.79	83.55	4.6	85.83	33.51	3.7	3.7	3
Estonia	3.57	100.00	0.0	97.54	40.22	5.6	3.7	3.3
Georgia	5.59	99.15	0.0	12.23	7.40	2.4	2.3	1.7
Hungary	5.26	78.66	10.7	85.01	32.56	4.9	4	3.7
Kazakhstan	5.84	77.58	5.2	34.3	17.11	2.3	2.7	2
Kyrgyz Republic	2.13	62.40	9.7	50.45	3.92		2	2
Latvia	1.92	68.50	4.0	42.8	28.45	3.7	3.7	3
Lithuania	0.28	91.58	0.0	96.07	14.28	4.8	3	3
Macedonia	2.31	87.74	2.0	44.01	17.38		2.7	1.7
Moldova	5.30	100.00	13.4	36.67	14.67	2.1	2.3	2
Mongolia	0.92				11.83			
Montenegro		79.77	23.8	16.86			2	1.7
Poland	1.90	89.58	26.6	70.74	27.02	4	3.3	3.7
Romania	22.54	75.23	43.6	52.92	8.34	2.6	2.7	2
Russia	1.99	44.24		8.07	9.85	2.7	2	2.3
Serbia	19.49	71.16	35.6	26.99	22.18		2.3	1.7
Slovak Republic	3.32	94.96	1.9	84.14	36.92	3.7	3.3	2.3
Slovenia	7.47	91.66	13.3	16.87	36.75	6	3.3	2.7
Tajikistan	12.25	88.59	4.5	1.78	12.03		1.7	1
Turkey	44.96	99.75			12.54	3.2		
Turkmenistan		95.67	95.7	1.67			1	1
Ukraine	0.76	51.39	12.0	12.3	14.54	2.4	2.3	2
Uzbekistan		98.62	73.7	3.19		2.9	1.7	2

Source: WDI & EBRD Country Database.

Table A.2:Values of country-level indicators in TCs for year 2005

Country	Change in CPI	Concentr %	State %	Foreign %	Fdepth %	Corrup perc index	Banks liber	Sec mar lib
Albania	2.4	78.2	7.7	92.3	15.3	2.4	16	2.7	1.7
Armenia	0.6	82.7	0.0	48.7	8.0	2.9	21	2.7	2.0
Azerbaijan	9.7	53.5	55.2	6.6	9.5	2.2	44	2.3	1.7
Belarus	10.3	100.0	75.2	16.2	15.9	2.6	30	1.7	2
Bosnia & Herzegovina		71.3	3.6	90.9	36.5	2.9	33	2.7	1.7
Bulgaria	5.0	68.4	1.7	74.5	41.0	4.0	34	3.7	2.3
Croatia	3.3	77.9	3.4	91.3	56.4	3.4	34	4.0	2.7
Czech Republic	1.8	80.2			37.6	4.3			
Estonia	4.1	100.0	0.0	99.4	56.6	6.4	13	4.0	3.0
Georgia	8.2	99.7	0.0	75.9	14.8	2.3	19	2.7	1.7
Hungary	3.6	84.5	7.0	82.6	49.9	5.0	38	4.0	4.0
Kazakhstan	7.6	77.0	0.2	7.3	35.7	2.6	34	3.0	2.3
Kyrgyz Republic	4.4	100.0	4.8	73.6	8.0	2.3	19	2.3	2.0
Latvia	6.7	72.5	4.3	57.9	67.8	4.2	23	3.7	3.0
Lithuania	2.7	91.9	0.0	91.7	40.9	4.8	12	3.7	3.0
Macedonia	0.2	87.5	1.6	51.3	25.1	2.7	20	2.7	2.0
Moldova	12.0	70.3	19.3	19.6	0.0	2.9	16	2.7	2.0
Mongolia	12.7	92.8	3.8	39.1	17.6	3.0	16	2.3	2.0
Montenegro		90.0	5.1	87.7	20.7	2.8	10	2.3	1.7
Poland	2.1	70.0	21.5	74.3	33.4	3.4	61	3.7	3.7
Romania	9.0	78.1	6.5	59.2	19.9	3.0	33	3.0	2.3
Russia	9.0	33.8		8.3	25.7	2.4	1253	2.3	2.7
Serbia	16.1	61.0	23.9	66.0	30.7	2.8	40	2.7	2.0
Slovak Republic	2.7	82.6	1.1	97.3	35.1	4.3	23	3.7	2.7
Slovenia	2.5	74.2	12.0	22.6	56.3	6.1	25	3.3	2.7
Tajikistan	7.1	79.4	9.7	8.9	23.3	2.1	13	2.0	1.0
Turkey	10.1		33.1	6.3	22.2	3.5	51		
Turkmenistan			96.3	1.0	1.4	1.8	11	1.0	1.0
Ukraine	13.5	41.2	9.4	21.3	32.2	2.6	165	2.7	1.7
Uzbekistan		86.0	67.7	4.4	21.8	2.2	29	1.7	2.0

Source: WDI & EBRD Country Database.

Table A.3:Values of country-level indicators in TCs for year 2009

Country	Change in CPI	Concentr %	State %	Foreign %	Fdepth %	Corrup perc index	Banks liber	Sec mar lib
Albania	2.3	83.8	0.0	92.4	37.2		3.0	1.7
Armenia	3.4	62.2	0.0	63.6	23.6	2.7	2.7	2.3
Azerbaijan	1.4	55.9	43.4	9.3	16.5	2.3	2.3	1.7
Belarus	12.9	89.8	77.9	20.6	37.1	2.4	2.3	2
Bosnia & Herzegovina	-0.4	72.0	0.8	94.5	50.2	3.0	3.0	1.7
Bulgaria	2.8	78.0	2.4	84.0	75.3	3.8	3.7	3.0
Croatia	2.4	75.8	4.1	91.0	69.6	4.1	4.0	3.0
Czech Republic	1.0	76.6				4.9		
EBRD								
Estonia	-0.1		0.0	98.3	91.7	6.6	4.0	3.7
Georgia	1.7	99.9	0.0	89.1	30.2	4.1	2.7	1.7
Hungary	4.2	92.4	3.9	81.3	66.5	5.1	4.0	4.0
Kazakhstan	7.3	74.0	0.6	17.2	53.8	2.7	2.7	2.7
Kyrgyz Republic	6.9		9.9	72.0	12.1	1.9	2.3	2.0
Latvia	3.5	70.3	17.1	69.3	103.3	4.5	3.7	3.0
Lithuania	4.5	86.8	0.0	91.5	69.8	4.9	3.7	3.3
Macedonia	-0.7	85.2	1.4	93.3	42.9	3.8	3.0	2.7
Moldova	-0.1	67.2	12.8	41.0	0.0	3.3	3.0	2.0
Mongolia	6.3		3.2	41.9	28.3	2.7	2.7	2.3
Montenegro	3.5	92.6	0.0	87.1	80.4	3.9	3.0	1.7
Poland	3.8	60.3	22.1	72.3	55.2	5.0	3.7	3.7
Romania	5.6	84.0	7.9	84.3	40.7	3.8	3.3	3.0
Russia	10.4	37.7	39.2	18.3	44.4	2.2	3.0	3.0
Serbia	8.1	52.4	16.0	75.3	45.0	3.5	3.0	2.0
Slovak Republic	1.6	89.7	0.9	91.6	51.1	4.5	3.7	3.0
Slovenia	0.9	67.9	16.7	29.5	92.7	6.6	3.3	3.0
Tajikistan	6.4				22.5	2.0	2.3	1.0
Turkey	6.3	71.0	32.2	15.8	33.6	4.4	3.0	2.7
Turkmenistan			96.3	1.2	1.4	1.8	1.0	1.0
Ukraine	15.9	40.0	17.0	50.8	73.3	2.2	3.0	2.0
Uzbekistan		94.1			14.6	1.7	1.0	2.0

Source: WDI & EBRD Country Database.

Appendix B. Regression results

(short version)

```
. gologit2 access cpidelta concentr state foreign fdepth banksec corrup size serv audit sole pr
> ivate crisis if access!=4, autofit lrforce

Generalized Ordered Logit Estimates               Number of obs   =      18293
                                                  LR chi2(27)     =     826.40
                                                  Prob > chi2     =     0.0000
Log likelihood = -24432.566                       Pseudo R2       =     0.0166


          chi2( 12) =   17.30
        Prob > chi2 =    0.1388

An insignificant test statistic indicates that the final model
does not violate the proportional odds/ parallel lines assumption
```

access	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
0						
cpidelta	.0063374	.0031131	2.04	0.042	.0002358	.012439
concentr	-.0052079	.0010492	-4.96	0.000	-.0072643	-.0031515
state	.0079841	.0011085	7.20	0.000	.0058115	.0101568
foreign	.0030843	.0007105	4.34	0.000	.0016917	.0044769
fdepth	-.0074068	.0009897	-7.48	0.000	-.0093465	-.0054671
banksec	.1121035	.0192293	5.83	0.000	.0744147	.1497922
corrup	-.1400714	.018846	-7.43	0.000	-.1770089	-.1031338
size	-.1460558	.0221802	-6.58	0.000	-.1895282	-.1025833
serv	-.3008554	.0327296	-9.19	0.000	-.3650042	-.2367066
audit	-.1774511	.0292409	-6.07	0.000	-.2347621	-.12014
sole	.088349	.0426501	2.07	0.038	.0047564	.1719416
private	-.1367509	.033106	-4.13	0.000	-.2016374	-.0718644
crisis	.301166	.0431001	6.99	0.000	.2166913	.3856407
_cons	1.807502	.1007363	17.94	0.000	1.610062	2.004941
1						
cpidelta	.0130688	.0029195	4.48	0.000	.0073467	.0187909
concentr	-.0052079	.0010492	-4.96	0.000	-.0072643	-.0031515
state	.0059587	.001034	5.76	0.000	.003932	.0079853
foreign	.0055409	.0007036	7.88	0.000	.004162	.0069199
fdepth	-.0074068	.0009897	-7.48	0.000	-.0093465	-.0054671
banksec	.1121035	.0192293	5.83	0.000	.0744147	.1497922
corrup	-.1400714	.018846	-7.43	0.000	-.1770089	-.1031338
size	-.1468567	.021575	-6.81	0.000	-.189143	-.1045704
serv	-.2315947	.0313954	-7.38	0.000	-.2931286	-.1700608
audit	-.1774511	.0292409	-6.07	0.000	-.2347621	-.12014
sole	-.034508	.04057	-0.85	0.395	-.1140238	.0450077
private	-.1367509	.033106	-4.13	0.000	-.2016374	-.0718644
crisis	.3386769	.0420352	8.06	0.000	.2562894	.4210643
_cons	.8219724	.0983206	8.36	0.000	.6292675	1.014677
2						
cpidelta	.0133825	.003377	3.96	0.000	.0067637	.0200014
concentr	-.0052079	.0010492	-4.96	0.000	-.0072643	-.0031515
state	.0095628	.0012426	7.70	0.000	.0071272	.0119983
foreign	.0079451	.0008525	9.32	0.000	.0062742	.0096161
fdepth	-.0074068	.0009897	-7.48	0.000	-.0093465	-.0054671
banksec	.1121035	.0192293	5.83	0.000	.0744147	.1497922
corrup	-.1400714	.018846	-7.43	0.000	-.1770089	-.1031338
size	-.211903	.0265661	-7.98	0.000	-.2639717	-.1598343
serv	-.2583508	.0386215	-6.69	0.000	-.3340475	-.182654
audit	-.1774511	.0292409	-6.07	0.000	-.2347621	-.12014
sole	-.152443	.0479271	-3.18	0.001	-.2463785	-.0585075
private	-.1367509	.033106	-4.13	0.000	-.2016374	-.0718644
crisis	.1421108	.0478045	2.97	0.003	.0484157	.2358059
_cons	-.3377418	.1085808	-3.11	0.002	-.5505563	-.1249273

Table B.1:Robustness check of the model

	Base eq	1	2	3	4	5	6	7	8	9	10	11
0 cpidelta	0.006		0.010	0.016	0.007	0.002	0.002	0.006	0.006	0.007	0.007	0.005
	(2.04)*		(3.11)**	(5.81)**	(2.15)*	(0.76)	(0.55)	(2.09)*	(1.88)	(2.26)*	(2.35)*	(1.52)
concentr	-0.005	-0.007		-0.003	-0.002	-0.004	-0.007	-0.008	-0.005	-0.005	-0.005	-0.005
	(4.96)**	(7.04)**		(3.06)**	(2.38)*	(3.63)**	(6.88)**	(8.38)**	(4.95)**	(5.20)**	(5.04)**	(5.07)**
state	0.008	0.007	0.008		0.007	0.010	0.009	0.007	0.008	0.008	0.007	0.009
	(7.20)**	(7.93)**	(7.11)**		(6.24)**	(9.17)**	(8.02)**	(6.38)**	(7.18)**	(7.26)**	(6.77)**	(7.80)**
foreign	0.003	0.004	0.002	0.002		0.003	0.005	0.003	0.003	0.003	0.003	0.003
	(4.34)**	(5.35)**	(2.74)**	(2.54)*		(4.81)**	(7.07)**	(3.59)**	(4.59)**	(3.97)**	(3.79)**	(4.21)**
fdepth	-0.007	-0.007	-0.007	-0.010	-0.008		-0.005	-0.009	-0.007	-0.007	-0.008	-0.007
	(7.48)**	(7.80)**	(7.26)**	(10.05)**	(7.82)**		(5.82)**	(9.44)**	(7.45)**	(7.52)**	(7.92)**	(7.42)**
banksec	0.112	0.087	0.149	0.139	0.143	0.062		0.035	0.112	0.126	0.119	0.113
	(5.83)**	(4.92)**	(8.10)**	(7.42)**	(7.48)**	(3.43)**		(2.13)*	(5.85)**	(6.58)**	(6.19)**	(5.94)**
corrup	-0.140	-0.119	-0.200	-0.146	-0.141	-0.175	-0.088		-0.135	-0.152	-0.145	-0.142
	(7.43)**	(6.39)**	(12.13)**	(7.90)**	(7.54)**	(9.64)**	(5.34)**		(7.19)**	(8.09)**	(7.69)**	(7.52)**
size	-0.146	-0.129	-0.140	-0.133	-0.150	-0.145	-0.145	-0.139		-0.101	-0.181	-0.163
	(6.58)**	(5.91)**	(6.42)**	(6.19)**	(6.79)**	(6.56)**	(6.56)**	(6.42)**		(4.66)**	(8.43)**	(8.70)**
serv	-0.301	-0.306	-0.302	-0.311	-0.299	-0.302	-0.313	-0.313	-0.254		-0.298	-0.265
	(9.19)**	(9.55)**	(9.35)**	(9.78)**	(9.16)**	(9.23)**	(9.59)**	(9.81)**	(7.98)**		(9.11)**	(9.45)**
audit	-0.177	-0.177	-0.188	-0.169	-0.157	-0.193	-0.187	-0.200	-0.250	-0.173		-0.175
	(6.07)**	(6.17)**	(6.51)**	(5.97)**	(5.39)**	(6.61)**	(6.41)**	(7.00)**	(8.96)**	(5.93)**		(6.04)**
sole	0.088	0.081	0.102	0.113	0.101	0.064	0.065	0.079	0.157	0.088	0.115	
	(2.07)*	(1.96)*	(2.41)*	(2.77)**	(2.36)*	(1.52)	(1.52)	(1.93)	(3.81)**	(2.07)*	(2.72)**	
private	-0.137	-0.118	-0.139	-0.155	-0.137	-0.139	-0.147	-0.153	-0.117	-0.135	-0.125	
	(4.13)**	(3.62)**	(4.27)**	(4.81)**	(4.13)**	(4.21)**	(4.44)**	(4.72)**	(3.56)**	(4.09)**	(3.79)**	
crisis	0.301	0.269	0.322	0.423	0.356	0.134	0.235	0.317	0.271	0.296	0.329	0.242
	(6.99)**	(6.55)**	(7.75)**	(10.26)**	(8.43)**	(3.64)**	(5.65)**	(7.40)**	(6.32)**	(6.88)**	(7.68)**	(5.85)**
_cons	1.808	1.858	1.627	1.783	1.764	1.617	1.683	1.638	1.523	1.655	1.821	1.827
	(17.94)**	(19.24)**	(18.87)**	(20.05)**	(18.09)**	(16.62)**	(17.12)**	(16.86)**	(16.81)**	(16.74)**	(18.09)**	(19.38)**
1 cpidelta	0.013		0.016	0.020	0.013	0.009	0.008	0.013	0.012	0.014	0.014	0.012
	(4.48)**		(5.63)**	(7.85)**	(4.50)**	(3.09)**	(2.90)**	(4.50)**	(4.24)**	(4.65)**	(4.83)**	(4.16)**
concentr	-0.005	-0.007		-0.003	-0.002	-0.004	-0.007	-0.008	-0.005	-0.005	-0.005	-0.005
	(4.96)**	(7.04)**		(3.06)**	(2.38)*	(3.63)**	(6.88)**	(8.38)**	(4.95)**	(5.20)**	(5.04)**	(5.07)**
state	0.006	0.007	0.006		0.003	0.008	0.007	0.005	0.006	0.006	0.005	0.006
	(5.76)**	(7.74)**	(5.61)**		(3.34)**	(7.80)**	(6.75)**	(5.22)**	(5.78)**	(5.83)**	(5.32)**	(6.09)**
foreign	0.006	0.006	0.004	0.004		0.006	0.007	0.005	0.006	0.005	0.005	0.006

	(7.88)**	(8.36)**	(6.54)**	(6.31)**		(8.29)**	(10.95)**	(7.30)**	(8.10)**	(7.65)**	(7.36)**	(7.97)**
fdepth	-0.007	-0.007	-0.007	-0.010	-0.008		-0.005	-0.009	-0.007	-0.007	-0.008	-0.007
	(7.48)**	(7.80)**	(7.26)**	(10.05)**	(7.82)**		(5.82)**	(9.44)**	(7.45)**	(7.52)**	(7.92)**	(7.42)**
banksec	0.112	0.087	0.149	0.139	0.181	0.062		0.035	0.112	0.126	0.119	0.113
	(5.83)**	(4.92)**	(8.10)**	(7.42)**	(9.76)**	(3.43)**		(2.13)*	(5.85)**	(6.58)**	(6.19)**	(5.94)**
corrup	-0.140	-0.119	-0.200	-0.146	-0.141	-0.175	-0.088		-0.135	-0.152	-0.145	-0.142
	(7.43)**	(6.39)**	(12.13)**	(7.90)**	(7.54)**	(9.64)**	(5.34)**		(7.19)**	(8.09)**	(7.69)**	(7.52)**
size	-0.147	-0.138	-0.141	-0.140	-0.152	-0.146	-0.147	-0.139		-0.112	-0.182	-0.163
	(6.81)**	(6.52)**	(6.59)**	(6.66)**	(7.08)**	(6.77)**	(6.79)**	(6.63)**		(5.34)**	(8.73)**	(8.70)**
serv	-0.232	-0.231	-0.230	-0.239	-0.224	-0.232	-0.244	-0.238	-0.185		-0.229	-0.265
	(7.38)**	(7.50)**	(7.41)**	(7.83)**	(7.15)**	(7.39)**	(7.79)**	(7.79)**	(6.04)**		(7.30)**	(9.45)**
audit	-0.177	-0.177	-0.188	-0.169	-0.157	-0.193	-0.187	-0.200	-0.250	-0.173		-0.175
	(6.07)**	(6.17)**	(6.51)**	(5.97)**	(5.39)**	(6.61)**	(6.41)**	(7.00)**	(8.96)**	(5.93)**		(6.04)**
sole	-0.035	-0.053	-0.020	0.001	-0.017	-0.057	-0.058	-0.032	0.034	-0.034	-0.008	
	(0.85)	(1.35)	(0.50)	(0.02)	(0.42)	(1.41)	(1.44)	(0.83)	(0.86)	(0.84)	(0.20)	
private	-0.137	-0.118	-0.139	-0.155	-0.137	-0.139	-0.147	-0.153	-0.117	-0.135	-0.125	
	(4.13)**	(3.62)**	(4.27)**	(4.81)**	(4.13)**	(4.21)**	(4.44)**	(4.72)**	(3.56)**	(4.09)**	(3.79)**	
crisis	0.339	0.305	0.364	0.452	0.403	0.171	0.270	0.344	0.307	0.332	0.366	0.297
	(8.06)**	(7.63)**	(9.02)**	(11.26)**	(9.81)**	(4.81)**	(6.70)**	(8.26)**	(7.36)**	(7.90)**	(8.75)**	(7.39)**
_cons	0.822	0.933	0.638	0.804	0.922	0.637	0.700	0.646	0.540	0.719	0.837	0.827
	(8.36)**	(9.86)**	(7.63)**	(9.29)**	(9.63)**	(6.70)**	(7.30)**	(6.81)**	(6.08)**	(7.42)**	(8.52)**	(8.94)**
2 cpidelta	0.013		0.016	0.024	0.013	0.009	0.008	0.012	0.012	0.014	0.014	0.013
	(3.96)**		(4.90)**	(8.01)**	(3.89)**	(2.70)**	(2.46)*	(3.58)**	(3.65)**	(4.09)**	(4.29)**	(3.82)**
concentr	-0.005	-0.007		-0.003	-0.002	-0.004	-0.007	-0.008	-0.005	-0.005	-0.005	-0.005
	(4.96)**	(7.04)**		(3.06)**	(2.38)*	(3.63)**	(6.88)**	(8.38)**	(4.95)**	(5.20)**	(5.04)**	(5.07)**
state	0.010	0.011	0.009		0.005	0.011	0.011	0.009	0.009	0.010	0.009	0.010
	(7.70)**	(9.84)**	(7.52)**		(4.76)**	(9.33)**	(8.69)**	(7.60)**	(7.64)**	(7.77)**	(7.35)**	(7.74)**
foreign	0.008	0.008	0.007	0.006		0.008	0.010	0.008	0.008	0.008	0.008	0.008
	(9.32)**	(9.58)**	(8.13)**	(7.53)**		(9.59)**	(11.81)**	(9.06)**	(9.53)**	(9.19)**	(8.92)**	(9.48)**
fdepth	-0.007	-0.007	-0.007	-0.010	-0.008		-0.005	-0.009	-0.007	-0.007	-0.008	-0.007
	(7.48)**	(7.80)**	(7.26)**	(10.05)**	(7.82)**		(5.82)**	(9.44)**	(7.45)**	(7.52)**	(7.92)**	(7.42)**
banksec	0.112	0.087	0.149	0.139	0.208	0.062		0.035	0.112	0.126	0.119	0.113
	(5.83)**	(4.92)**	(8.10)**	(7.42)**	(10.10)**	(3.43)**		(2.13)*	(5.85)**	(6.58)**	(6.19)**	(5.94)**
corrup	-0.140	-0.119	-0.200	-0.146	-0.141	-0.175	-0.088		-0.135	-0.152	-0.145	-0.142
	(7.43)**	(6.39)**	(12.13)**	(7.90)**	(7.54)**	(9.64)**	(5.34)**		(7.19)**	(8.09)**	(7.69)**	(7.52)**
size	-0.212	-0.204	-0.203	-0.208	-0.216	-0.211	-0.212	-0.205		-0.173	-0.247	-0.163
	(7.98)**	(7.83)**	(7.73)**	(8.02)**	(8.15)**	(7.95)**	(7.99)**	(7.91)**		(6.69)**	(9.51)**	(8.70)**
serv	-0.258	-0.266	-0.258	-0.272	-0.249	-0.258	-0.272	-0.267	-0.192		-0.256	-0.265
	(6.69)**	(7.01)**	(6.73)**	(7.23)**	(6.44)**	(6.69)**	(7.06)**	(7.09)**	(5.10)**		(6.63)**	(9.45)**

audit	-0.177	-0.177	-0.188	-0.169	-0.157	-0.193	-0.187	-0.200	-0.250	-0.173		-0.175
	(6.07)**	(6.17)**	(6.51)**	(5.97)**	(5.39)**	(6.61)**	(6.41)**	(7.00)**	(8.96)**	(5.93)**		(6.04)**
sole	-0.152	-0.162	-0.141	-0.081	-0.131	-0.175	-0.176	-0.168	-0.053	-0.151	-0.125	
	(3.18)**	(3.47)**	(2.94)**	(1.77)	(2.73)**	(3.65)**	(3.70)**	(3.62)**	(1.14)	(3.15)**	(2.63)**	
private	-0.137	-0.118	-0.139	-0.155	-0.137	-0.139	-0.147	-0.153	-0.117	-0.135	-0.125	
	(4.13)**	(3.62)**	(4.27)**	(4.81)**	(4.13)**	(4.21)**	(4.44)**	(4.72)**	(3.56)**	(4.09)**	(3.79)**	
crisis	0.142	0.117	0.157	0.270	0.215	-0.025	0.071	0.152	0.099	0.134	0.168	0.107
	(2.97)**	(2.56)*	(3.41)**	(5.87)**	(4.56)**	(0.59)	(1.55)	(3.20)**	(2.09)*	(2.80)**	(3.52)**	(2.35)*
_cons	-0.338	-0.222	-0.514	-0.280	-0.090	-0.514	-0.457	-0.514	-0.738	-0.458	-0.324	-0.491
	(3.11)**	(2.12)*	(5.34)**	(2.93)**	(0.88)	(4.85)**	(4.29)**	(4.89)**	(7.65)**	(4.30)**	(2.98)**	(4.96)**
N	18,293	19,020	18,763	19,318	18,293	18,293	18,293	19,208	18,310	18,293	18,293	18,293

* $p<0.05$; ** $p<0.01$

Source: author's computations