

Small and Medium Enterprise Financing in Transition Economies

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Abstract This paper studies the financing status of small and medium enterprises (SMEs) in transition economies. Factors causing financing obstacles are identified and further analyzed to determine their influence over financing patterns. Bank regulatory practices relevant to SMEs' access to bank loans and their influence over loan structures are identified. This study contributes to the existing body of knowledge by exploring the impact of specific bank regulatory practices on credit lending to SMEs in transition economies.

Keywords Cross-border banking · Bank mergers and acquisitions · Bank regulation

JEL G00 · G10

Introduction

Small and medium enterprises (SMEs) foster market diversification, promote innovation, and provide many employment opportunities. Yet SMEs are credit insufficient and vulnerable to credit crunches during financial crises. In this study, both demand and supply side factors influencing SMEs' financing conditions in the transition economies of Central and Eastern Europe are examined.

Some trends are relevant to small business lending, which include financial consolidation, financial liberalization, financial regulatory reform, and institutional development. Financial consolidation increases market concentration. Greater

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market power may cause lenders to manipulate supply and raise prices. However, lenders with greater market power also have greater incentive to acquire expensive borrower information and are more effective at screening borrowers, since they can extract a surplus in the long run. This helps mitigate information asymmetry (Beck et al. 2004; Dell'Ariccia and Marquez 2004; Jimenez et al. 2009; Presbitero and Zazzaro 2009; Okura 2007).

Financial liberalization induces foreign entry. Foreign entrants cope with cross-border barriers exacerbating information asymmetries. They tend to lend to transparent borrowers based on hard information and have less incentive to lend to opaque borrowers, because of comparative disadvantages in processing soft information (Berger and Udell 2006; Detragiache et al. 2006; Dell'Ariccia and Marquez 2004; Sengupta 2007; Maurer 2008). Encountering competition from out-of-market lenders directs local lenders toward opaque borrowers, where they can create comparative advantages against outside lenders. Foreign entrants in transition economies should therefore enhance small business lending (Dell'Ariccia and Marquez 2004; Memmel et al. 2008; Neuberger et al. 2008).

One country characteristic explaining cross-country variation in SMEs' financing conditions is institutional development. Information asymmetry is a mechanism through which institutional development affects SMEs' access to credit. An effective credit rating system improves creditors' abilities to sort borrowers; better contract enforcement, efficient collateral regime, and well functioning legal system all mitigate the negative impact of information asymmetry (Okura 2007; Sengupta 2007; Haselmann et al. 2008; Maurer 2008; Hauswald and Bruno 2009). On the contrary, ill-functioning institutional infrastructure can exacerbate information asymmetries. SMEs in transition economies are more opaque and therefore more vulnerable to institutional underdevelopment (Beck and Demircug-Kunt 2006; Claessens 2006). Effects of foreign entry and market concentration on small business lending are also influenced by the domestic country's institutional environment. Many expected benefits of financial consolidation and liberalization are not achievable before institutional development reaches a certain threshold (Beck et al. 2004; Volz 2004; Maurer 2008; Haiss and Kichler 2009).

Public interest view and private interest view are two opposing perspectives of how to regulate banks (Barth et al. 2006). Government under the public interest view is motivated by a desire to benefit the broader civil society and maximize social welfare. According to the public interest view, governments regulate banks to facilitate the efficient functioning of banks by mitigating market failures from information asymmetry (Beck and Demircug-Kunt 2006; Jimenez et al. 2009). The private interest view considers government to be motivated by a narrow concept of self-interest and a tendency to serve various interest groups. Under the private interest view, bank regulatory practices should rely more on market discipline, information disclosure, and significant oversight of the regulatory process itself (Barth et al. 2006).

Variable Selection

The source for the dependent variables and firm-specific variables is the European Bank for Reconstruction and Development-World Bank Business Environment and

Enterprise Performance Surveys (BEEPS) of 1999, 2002, and 2005 (Fries et al. 2003; Maurer 2008). Firms in the BEEPS sample were randomly selected from business directories and yellow pages. This feature ensures the inclusion of small and opaque firms in the sample (Volz 2004; Maurer 2008; Beck et al. 2009). The three surveys covered 27 transition countries in Central and Eastern Europe. To focus on SMEs, we delete all firms with more than 250 permanent employees. To account for bank regulation effects, only the 18 countries covered by three World Bank surveys on bank supervision and regulation (Barth et al. 2006) are included. These include: Armenia, Bulgaria, Croatia, the Czech Republic, Estonia, Republic of Macedonia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Turkey. Bank regulatory variables and banking sector structure variables are all obtained or computed from the three World Bank Surveys under the project Bank Regulation and Supervision (Barth et al. 2001, 2004, 2006). Variable definitions can be found in this source.

The dependent variables include indices measuring the financing obstacles of access to finance and cost of finance, variables measuring financing sources for fixed investment and working capital, variables measuring obstacles to accessing short term (stloan) versus long term (ltloan) bank loans, and different dimensions of bank loan structure (duration, interestrate, collateral, approvalday).

Firm-specific variables are included to control for three aspects, which are performance (costeffi), transparency (transparency, audit), and foreign origin (foreign). The bank regulatory variables included measure four aspects of bank regulatory practices: restrictions on bank activities and ownerships (overbank, nfob, nbffob), capital regulation (mcar, crindex), supervisory structure (mulsup, singlefsa, indpoli), and market monitoring (fstrans). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). World Bank Governance Indicators (Kaufmann et al. 2008) are included to measure different dimensions of institutional development: accountability, political, egovernment, regulatory, law, and corruption.

Interpretation of Results

We first identify factors influencing firms' access to credit and cost of credit using an ordered logit model. Tables 1 and 2 report the results.

Firms that have external auditors encounters smaller financing obstacles. External auditors improve firms' financial statement verifiability and enable firms to access credit from large creditors and foreign entrants, which have comparative advantages in providing lending based on hard information. Foreign owned firms encounter fewer financial obstacles after keeping a set of firm features constant. It appears foreign firms' parent company ties induce a natural inclination towards lending to foreign firms. A more concentrated banking sector contributes to fewer financing obstacles. The result verifies the hypothesis that lenders with larger market power are more effective at screening borrowers, which leads to credit expansion and cost reduction.

Higher foreign bank ownership exacerbates SMEs' financing obstacles. The result is consistent with the hypothesis that foreign lenders will have fewer incentives to

Table 1 The model is an ordered logit, where the dependent variable measures the financing obstacles of a firm's access to financing (1 for no obstacles, 2 for minor obstacles, 3 for moderate obstacles, 4 for major obstacles). Firm specific variables are included to control for transparency (transparency, audit), performance (costeffi), age (operationyear), foreign origin (foreign), whether the firm is a manufacturing firm (manufacturing), and the proportion of a country's nonperforming loans to total banking assets (npl_ta). Bank regulatory variables measure restrictions on bank activities and ownership (nlob, nbffob, overbank). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). We also control for the ratio of country's stock market capitalization to total GDP measuring equity market development (stmktcap), the ratio of a country's liquidity liability to total GDP measuring financial development (llgdp), the ratio of country's private credit by deposit money bank to GDP measuring banking sector development (perdbgdp), the log of GDP (lgdp), and firm size measured by number of employees (not reported due to space). Finally, World Bank Governance Indicators (Kaufmann, Kraay, and Mastruzzi, 2008) are included to measure different dimensions of institutional development: law, government, corruption, regulatory, and accountability

	law	egovernment	ccorruption	regulatory	accountability
transparency	-0.080 (0.06)	-0.088 (0.06)	-0.079 (0.06)	-0.092 (0.06)	-0.079 (0.06)
audit	-0.120* (0.05)	-0.113* (0.05)	-0.117* (0.05)	-0.107* (0.05)	-0.112* (0.05)
costeffi	-0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)
operationyear	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)
foreign	-0.007*** (0.00)	-0.007*** (0.00)	-0.007*** (0.00)	-0.007*** (0.00)	-0.007*** (0.00)
manufacturing	0.286*** (0.05)	0.301*** (0.05)	0.290*** (0.05)	0.301*** (0.05)	0.292*** (0.05)
npl_ta	0.015*** (0.00)	0.011** (0.00)	0.015*** (0.00)	0.011** (0.00)	0.016*** (0.00)
nlob	-0.246*** (0.07)	-0.258*** (0.07)	-0.247*** (0.07)	-0.262*** (0.07)	-0.250*** (0.07)
nbffob	0.081 (0.09)	0.012 (0.09)	0.059 (0.09)	0.028 (0.09)	0.108 (0.09)
overbank	0.010 (0.01)	0.006 (0.01)	0.011 (0.01)	0.003 (0.01)	0.012 (0.01)
bedepo	-0.021*** (0.00)	-0.016*** (0.00)	-0.020*** (0.00)	-0.016*** (0.00)	-0.020*** (0.00)
forbank	0.009*** (0.00)	0.011*** (0.00)	0.009*** (0.00)	0.012*** (0.00)	0.007*** (0.00)
stmktcap	-0.377 (0.30)	-0.647* (0.29)	-0.469 (0.29)	-0.669* (0.29)	-0.327 (0.30)
llgdp	0.031 (0.30)	0.440 (0.31)	0.142 (0.30)	0.404 (0.30)	0.076 (0.29)
perdbgdp	-1.909*** (0.31)	-1.630*** (0.31)	-1.930*** (0.34)	-1.620*** (0.31)	-2.018*** (0.32)
lgdp	0.086*** (0.03)	0.120*** (0.03)	0.096*** (0.03)	0.121*** (0.03)	0.072*** (0.03)

Table 1 (continued)

Access to Finance		law	egovernment	ccorruption	regulatory	accountability
law		0.146 (0.07)				
egovernment			-0.168 (0.09)			
ccorruption				0.093 (0.09)		
regulatory					-0.202* (0.08)	
accountability						0.181** (0.07)

Table 2 The model is an ordered logit, where the dependent variable measures the financing obstacles of a firm's cost of credit (1 for no obstacles, 2 for minor obstacles, 3 for moderate obstacles, 4 for major obstacles). Firm specific variables are included to control for transparency (transparency, audit), performance (costeff), age (operationyear), foreign origin (foreign), whether the firm is a manufacturing firm (manufacturing), and the proportion of a country's nonperforming loans to total banking assets (npl_ta). Bank regulatory variables measure restrictions on bank activities and ownership (nlob, nbftob, overbank). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). We also control for the ratio of country's stock market capitalization to total GDP measuring equity market development (stmktcap), the ratio of a country's liquidity liability to total GDP measuring financial development (llgdp), the ratio of country's private credit by deposit money bank to GDP measuring banking sector development (perdbgdp), the log of GDP (lgdp), and firm size measured by number of employees (not reported due to space). Finally, World Bank Governance Indicators (Kaufmann, Kraay, and Mastruzzi, 2008) are included to measure different dimensions of institutional development: law, government, corruption, regulatory, and accountability

Cost of Credit	law	egovernment	ccorruption	regulatory	accountability
transparency	-0.063 (0.06)	-0.077 (0.06)	-0.061 (0.06)	-0.075 (0.06)	-0.061 (0.06)
audit	-0.149** (0.05)	-0.138** (0.05)	-0.146** (0.05)	-0.134** (0.05)	-0.138** (0.05)
costeffi	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)
operationyear	-0.002 (0.00)	-0.001 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)
foreign	-0.004*** (0.00)	-0.004*** (0.00)	-0.004*** (0.00)	-0.004*** (0.00)	-0.004*** (0.00)
manufacturing	0.382*** (0.05)	0.405*** (0.05)	0.385*** (0.05)	0.400*** (0.05)	0.391*** (0.05)
npl_ta	0.030*** (0.00)	0.025*** (0.00)	0.031*** (0.00)	0.025*** (0.00)	0.031*** (0.00)
nlob	-0.063 (0.06)	-0.072 (0.06)	-0.063 (0.06)	-0.072 (0.06)	-0.069 (0.06)
nbftob	-0.337*** (0.09)	-0.452*** (0.09)	-0.355*** (0.09)	-0.414*** (0.09)	-0.305** (0.10)
overbank	0.022 (0.01)	0.019 (0.01)	0.027 (0.01)	0.018 (0.01)	0.026 (0.01)
bedepo	-0.031*** (0.00)	-0.024*** (0.00)	-0.030*** (0.00)	-0.026*** (0.00)	-0.030*** (0.00)
forbank	0.009*** (0.00)	0.012*** (0.00)	0.009*** (0.00)	0.012*** (0.00)	0.007*** (0.00)
stmktcap	0.321 (0.29)	-0.077 (0.29)	0.260 (0.29)	-0.028 (0.29)	0.381 (0.29)
llgdp	-0.108 (0.30)	0.487 (0.30)	-0.036 (0.29)	0.313 (0.29)	-0.033 (0.29)
perdbgdp	-1.995*** (0.30)	-1.588*** (0.31)	-2.168*** (0.33)	-1.674*** (0.30)	-2.119*** (0.31)
lgdp	0.019 (0.03)	0.070** (0.03)	0.026 (0.03)	0.059* (0.03)	0.003 (0.03)

Table 2 (continued)

Cost of Credit	law	egovernment	ccorruption	regulatory	accountability
law	0.204** (0.07)				
egovernment		-0.254** (0.09)			
ccorruption			0.215* (0.08)		
regulatory				-0.174* (0.08)	
accountability					0.235*** (0.07)

engage in small business lending based on soft information. SMEs from countries with higher levels of non-performing loans encounter greater financing obstacles. Banking sectors with higher ratios of nonperforming loans indicate higher default risks. Banks tend to charge higher rates and undertake more prudent lending, especially to SMEs. SMEs from more developed banking sectors encounter fewer financing obstacles. Equity markets are not a significant mechanism through which SMEs access credits in transition economies. SMEs from countries with larger market potential are easier to access credits. Though not reported in the tables, medium firms have easier access to credit compared to small firms.

Regulatory practices restricting nonbank financial firms from owning banks mitigate domestic SMEs' financing costs. Restrictions on nonfinancial firms owning banks facilitate SMEs' access to credits. Rule of law, government effectiveness, and control of corruption have no effect on SMEs' access to credit. A well functioning regulatory system facilitates SMEs' access to credit, but better accountability prevents SMEs from accessing credit. Better law enforcement, control of corruption, and accountability all resulted in increased cost of credit. An effective government sector and regulatory system help reduce SME's cost of credit.

Tables 3 and 4 examine financing patterns for fixed investment and working capital, respectively. The financing pattern variables are fractions bounded by 0 and 1. An extension of Papke and Wooldridge (1996) to handle multivariate proportions is proposed by Buis (2008), called the fractional multinomial logit model (FML). The financing pattern regressions are estimated using FML. Different dimensions of institutional development are included one at a time due to high correlation of these variables. Including different institution variables does not affect significance of other variables. Only regression results including regulatory effect are reported in Tables 3 and 4.

SMEs using international accounting standards have a higher percentage of credit for fixed investments and working capital from foreign banks. The results show that using transparent accounting standards allow SMEs to benefit more from foreign entry compared with SMEs that fail to disclose transparent accounting information. A firm that uses external auditors finances more of its fixed investment and working capital through domestic bank loans. This verifies our financing obstacle analysis in that having external auditors mitigates SMEs' financing obstacles due to easier access to domestic bank loans. Though not reported in the table, medium firms have higher percentage of financing from equity markets, banks, and government loans compared to small firms. This helps explain why medium firms have easier access to credits compared to small firms.

Foreign owned SMEs have larger percentages of their fixed investment and working capital financing through foreign banks. Foreign banks' tendencies to serve foreign firms may be due to fewer information asymmetries. SMEs located in countries with more foreign bank ownership finance more working capital from equity markets, domestic banks, and foreign banks. This shows that foreign entry helps ease SMEs' financing obstacles in the short run. Perhaps a better interpretation is that longer duration exacerbates foreign entrants' information disadvantages. Foreign entry is also found to divert domestic banks to SMEs, due to foreign banks' bias towards large and transparent firms. The only financing source that is inhibited by foreign bank entry is government lending. This may indicate that the negative

impact of foreign bank entry on SMEs' financing status found from financing obstacle analysis may be attributable only to the reduction in government policy lending due to the intensification of banking sector privatization.

SMEs located in countries with more concentrated banking sectors are less financed by foreign bank loans and government lending. They also have a relatively higher percentage of working capital financed by money lenders. Nonperforming loans only affect SMEs' financing through the equity market. Firms from countries with a higher percentage of nonperforming loans in the banking sector have a smaller percentage of external financing from equity markets.

More restrictions on bank activities and the formation of financial conglomerates raise the percentage of firms' financing for working capital from domestic banks. More restrictions also lead to a higher percentage of credit from equity markets. According to Claessens (2003), the dis-intermediation problem that firms may bypass banks to raise money directly from public markets will affect an integrated financial institution less. The findings from this study may verify this in that an increased percentage of equity financing for long term fixed investments is found when encountering more restrictions on overall financial conglomerates, which shows that the dis-intermediation problem exists in countries imposing more restrictions on financial service integration. The results from this study also show that the dis-intermediation problem is less acute in the short run.

More capitalized stock markets restrain SMEs located in domestic countries from financing by equity markets, foreign banks, and government lending both in the short term and long term. More capitalized stock markets also adversely affect firms' financing for working capital from domestic banks. On the contrary, more advanced banking systems foster SMEs' financing for both fixed investments and working capital from formal financing sources such as equity markets and domestic banks. The robust results from this study showing that a developed banking system improves SMEs' financing status indicate that a bank-based financial system facilitates small and medium enterprises' external financing in transition economies at the current stage. At the same time, more capitalization of the stock market may weaken the desirable impact that a bank-based financial system may bring to small business lending.

Not reported in Tables 3 and 4, better institutional development by any measure contributes to higher percentages of financing for fixed investment and working capital through government lending. Better law enforcement, accountability, and control of corruption all reduce percentages of financing from money lenders and domestic banks. Surprisingly, better institutional development in transition economies fosters small business lending through expansion of government lending. The desirable mechanism through which better institutional development mitigates information asymmetry and fosters small business financing from the private sector fails to play the proper role.

Finally, we examine the extent to which bank loan structure is affected by different factors. The results are reported in Table 5. Firms with a larger foreign ownership share have easier access to short-term bank loans. One explanation is that domestic SMEs are more risky and are crowded out of domestic credit markets (Harrison and McMillan 2001). Another is that informational disadvantages of foreign banks may cause them to favor more transparent foreign firms (Dell'Ariccia

Table 3 The model is an fractional multinomial logit, where the dependent variable measures the sources of financing for fixed investment. Firm specific variables are included to control for transparency (transparency, audit), performance (costeff), age (operationyear), firm size measured by number of employees (size), foreign origin (foreign), whether the firm is a manufacturing firm (manufacturing), the proportion of a country's nonperforming loans to total banking assets (npl_ta), and a control for a country's regulatory quality (regulatory). Bank regulatory variables measure restrictions on bank activities and ownership (ntob, nbffob, overbank). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). We also control for the ratio of country's stock market capitalization to total GDP measuring equity market development (stmktcap), the ratio of a country's liquidity liability to total GDP measuring financial development (lfgdp), the ratio of country's private credit by deposit money bank to GDP measuring banking sector development (perdbgdp), and the log of GDP (lgdp)

	Equity	Domestic Bank	Foreign Bank	Money Lender	Government
Fixed Investment					
transparency	-0.081 (0.22)	-0.015 (0.11)	0.710** (0.27)	-0.163 (0.28)	0.246 (0.16)
audit	0.207 (0.17)	0.196* (0.09)	0.165 (0.25)	-0.140 (0.25)	0.089 (0.15)
costeff	0.005 (0.00)	0.001 (0.00)	-0.015 (0.01)	0.004 (0.01)	-0.001 (0.00)
operationyear	-0.008 (0.01)	-0.004 (0.00)	-0.004 (0.01)	-0.017 (0.01)	0.011*** (0.00)
size	0.260 v	0.413*** (0.10)	0.502 (0.28)	-0.411 (0.25)	0.476** (0.16)
foreign	-0.001 (0.00)	-0.005** (0.00)	0.009** (0.00)	0.005 (0.00)	-0.009** (0.00)
manufacturing	0.184 (0.16)	0.436*** (0.09)	0.612* (0.26)	0.143 (0.21)	0.101 (0.14)
npl_ta	-0.054** (0.02)	0.000 (0.01)	0.003 (0.02)	-0.015 (0.02)	-0.014 (0.01)
regulatory	0.467 (0.33)	-0.041 (0.16)	-0.153 (0.42)	-0.711 (0.37)	0.700* (0.31)
nbob	-1.132 (0.60)	-0.130 (0.12)	-0.243 (0.35)	0.245 (0.29)	0.243 (0.17)
nbffob	0.516 (0.65)	-0.431** (0.17)	0.302 (0.43)	0.322 (0.39)	-0.212 (0.27)
overbank	0.198* (0.08)	0.049 (0.03)	-0.095 (0.08)	-0.042 (0.06)	0.104 (0.05)
bcdepo	0.032* (0.01)	-0.008 (0.01)	-0.034** (0.01)	0.004 (0.01)	-0.026*** (0.01)
forbank	0.022*** (0.01)	0.004 (0.00)	0.003 (0.01)	0.007 (0.01)	-0.012** (0.00)
stmktcap	-11.772*** (2.61)	-0.405 (0.58)	-6.726*** (1.49)	0.697 (1.36)	-3.305*** (0.90)
lfgdp	-3.450** (1.24)	-2.257*** (0.58)	-0.028 (1.49)	6.156*** (1.43)	-0.502 (0.94)
perdbgdp	10.232*** (1.85)	3.696*** (0.58)	6.281*** (1.29)	-6.508*** (1.61)	2.071* (0.92)

Table 3 (continued)

Fixed Investment					
	Equity	Domestic Bank	Foreign Bank	Money Lender	Government
lgdp	0.389 (0.23)	-0.132* (0.05)	0.076 (0.13)	-0.009 (0.12)	0.208** (0.08)
constant	-17.143** (5.99)	1.109 (1.49)	-4.811 (3.67)	-5.548 (3.55)	-7.671** (2.35)
N	4865				
chi2	655.666				
p	0.000				

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4 The model is a fractional multinomial logit, where the dependent variable measures the sources of financing for working capital. Firm specific variables are included to control for transparency (transparency), audit, performance (costeff), age (operationyear), firm size measured by number of employees (size), foreign origin (foreign), whether the firm is a manufacturing firm (manufacturing), the proportion of a country's nonperforming loans to total banking assets (npl_ta), and a control for a country's regulatory quality (regulatory). Bank regulatory variables measure restrictions on bank activities and ownership (ntob, nbffob, overbank). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). We also control for the ratio of country's stock market capitalization to total GDP measuring equity market development (stmktcap), the ratio of a country's liquidity liability to total GDP measuring financial development (lfgdp), the ratio of country's private credit by deposit money bank to GDP measuring banking sector development (perdbgd), and the log of GDP (lgdp)

	Equity	Domestic Bank	Foreign Bank	Money Lender	Government
Working Capital					
transparency	-0.220 (0.17)	-0.079 (0.10)	0.556* (0.24)	-0.290 (0.21)	-0.024 (0.13)
audit	-0.016 (0.14)	0.299*** (0.08)	0.304 (0.23)	0.116 (0.19)	0.035 (0.12)
costeff	0.000 (0.00)	0.005* (0.00)	-0.016 (0.01)	0.004 (0.00)	-0.000 (0.00)
operationyear	-0.016** (0.01)	-0.004 (0.00)	-0.007 (0.01)	-0.010 (0.01)	0.009*** (0.00)
size	0.317* (0.16)	0.468*** (0.09)	0.540* (0.26)	-0.035 (0.18)	0.642*** (0.14)
foreign	-0.002 (0.00)	-0.002 (0.00)	0.010*** (0.00)	0.002 (0.00)	-0.006* (0.00)
manufacturing	0.175 (0.13)	0.540*** (0.08)	0.112 (0.23)	0.076 (0.17)	0.088 (0.12)
npl_ta	-0.038* (0.02)	-0.016* (0.01)	0.021 (0.02)	-0.005 (0.01)	-0.023* (0.01)
regulatory	0.382 (0.26)	-0.196 (0.14)	-0.869* (0.41)	-0.565* (0.24)	0.423 (0.22)
ntob	-2.161*** (0.50)	-0.140 (0.10)	-1.013* (0.42)	0.147 (0.23)	0.182 (0.13)
nbffob	0.930 (0.51)	-0.444** (0.14)	-0.207 (0.45)	0.323 (0.32)	-0.175 (0.21)
overbank	0.075 (0.07)	0.112*** (0.02)	0.120 (0.07)	-0.033 (0.05)	0.018 (0.04)
bcdepo	0.042*** (0.01)	-0.008* (0.00)	-0.037*** (0.01)	0.012 (0.01)	-0.020** (0.01)
forbank	0.028*** (0.01)	0.006** (0.00)	0.025*** (0.01)	0.005 (0.00)	-0.010** (0.00)
stmktcap	-15.864*** (2.19)	-0.485 (0.46)	-2.856 (1.64)	0.174 (0.91)	-3.615*** (0.83)
lfgdp	-5.102*** (1.05)	-1.819*** (0.52)	-0.497 (1.50)	3.252** (1.07)	0.758 (0.75)
perdbgd	12.558*** (1.43)	2.561*** (0.55)	2.004 (1.59)	-2.944* (1.18)	0.679 (0.77)

Table 4 (continued)

Working Capital					
	Equity	Domestic Bank	Foreign Bank	Money Lender	Government
lgdp	0.671*** (0.19)	-0.118** (0.04)	0.028 (0.12)	-0.036 (0.08)	0.055 (0.06)
constant	-21.708*** (4.50)	-0.132 (1.12)	-3.526 (2.98)	-5.481* (2.26)	-3.766* (1.84)
N	6727				
chi2	811.381				
p	0.000				

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

and Marquez 2004). SMEs from countries with more nonperforming loans are in an unfavorable position regarding access to both short-term and long-term bank loans. A higher percentage of nonperforming loans indicates that a country's default risk is higher. Banks will be more prudent when making their lending decisions, especially when lending to small and medium-sized firms (De la Torre et al. 2008). This is further verified by the fact that durations of loans for SMEs from countries with higher percentages of nonperforming loans are, on average, shorter.

The more independent the domestic banking supervisory agencies are from political influences, the more difficult for domestic SMEs to access long-term bank loans. Moreover, interest rate and collateral value are on average higher for countries with more independent supervisory agencies. The result shows that political intervention in bank supervision has an undesirable positive effect. However, it may also indicate that loans to SMEs in transition economies are policy oriented. The result shows that a multiple bank regulator regime helps reduce interest rates and extend loan duration. In turn, a single bank regulator regime raises the average financing cost.

According to Barth et al. (2003), a multiple bank regulator regime is more well-informed by utilizing different approaches to supervision. Such a regime works to: prevent excessive powers from accumulating to one regulator, reduce bureaucracy, and enhance efficiency; and encourage competition among supervisors and induce innovations in bank regulation. The results from this study add to Barth et al. (2003) in that a multiple bank regulator regime that fosters informative, efficient and innovative regulations is found to reduce financing cost. Masciandaro (2009) also believed that a single authority regime may reduce the incentive for the supervised parties to have an operating system based on prudence and would relax the caution of consumers or investors toward the financial services offered.

The results show that while a supervisory regime has single regulator for all main financial institutions impedes SMEs' access to bank loans, it helps reduce interest rate and approval time. It indicates that a single regulator supervisory regime fosters prudent lending and benefits SMEs by reducing costs. However, a single regulator supervisory regime also exacerbates obstacles to accessing bank loans. In turn, a multiple regulator supervisory regime eases SMEs' access to loans, but will raise the average financing cost. The overall impact will be deterioration in loan structure.

Higher minimum capital to asset ratios facilitate SMEs' access to bank loans. Yet banks in countries with higher minimum capital ratio requirements tend to charge higher interest rates and require larger collateral value. It can be concluded that higher minimum capital ratio stimulates banks' risky behavior and deteriorates loan structure. According to Repullo and Suarez (2004), regulations intended to discourage banks from selecting high-risk portfolios are more likely to be successful when banks' market power is greatest, so that banks have less incentive to gamble. Since banks lending to SMEs in transition economies are mostly domestic and small banks, they have greater incentive to assume risk.

In countries imposing more stringent requirements on capital, it is found that SMEs have greater difficulty in obtaining bank loans. Further, more stringent capital regulation results in higher collateral. To summarize, regulatory restrictions on minimum capital ratios induce risky behavior in banks but facilitate firms' access to bank loan at a higher cost. Regulatory restrictions on capital induce prudent behavior on the part of banks but exacerbates firms' obstacles to access bank loans.

Both use of international accounting standards and regulations on the public release of bank information are found to affect loan structure. Firms using international accounting standards access loans of longer duration and lower interest rates. More stringent requirements as to what extent banks should release information to the public also results in lower rates, smaller collateral value, and shorter approval time.

Evidence is found against overall regulatory restrictions on bank activities and ownership and against regulatory practices restricting nonfinancial firms from owning banks. More restrictions on nonfinancial firms owning banks impede SMEs' access to long term loans. Further, they also impel banks to charge higher interest rates and to require larger collateral value. Nonfinancial firms that own banks, e.g., industry loan companies in the U.S., can be supplemental sources of firms' external finance, especially during financial crises. Such nonfinancial firms are expected to suffer fewer detrimental impacts during financial crises compared to financial institutions and may mitigate a credit crunch.

More restrictions on bank activities and ownership mitigate firms' access to loans. However, more bank restrictions also result in higher interest rates. This may indicate that banks seek to compensate for missing potential gains that can be expected from engaging in mixed business scopes by expanding lending and meanwhile charging higher rates, which may be evidence of a riskier loan structure. Therefore, it can be concluded that more restrictions on banks may benefit firms by facilitating their access to loans, but may induce more risky behavior on the part of banks and increase average financing costs for SMEs.

More concentrated banking sectors make access to bank loans by SMEs easier. It is also shown that banks from more concentrated banking systems take a shorter time to approve loans, charge lower interest rates, and require lower value of collateral. The effect of creditors' market power on SMEs' access to financial credit has been a disputed topic. The information-based hypothesis presumes that a more concentrated banking sector fosters banks' long-term relationships with firms. As a result, firms are less likely to suffer credit constraints. An opposing view takes the position that more concentrated markets are filled with big banks, who are less inclined to lend to SMEs and small businesses; lending only occupies a very tiny percentage of their portfolios. The results of this study provide evidence for the information-based hypothesis.

It is again found that a more developed banking sector contributes positively to SMEs' access to both short-term and long-term loans. Banks from more developed banking systems provide loans with average longer duration and lower annual interest rate. Higher foreign bank ownership prevents SMEs' access to bank loans. Foreign banks are more inclined to lend to large enterprises that are more transparent or to foreign enterprises. Banks from countries with higher foreign bank ownership take longer time to approve SMEs' loans, charge higher interest rates, and require higher collateral value.

Conclusion

In this study, different empirical specifications are used to analyze the relevance of firm-specific informational and performance factors, banking sector specific regulatory and structural factors, and financial and legal institutional factors to small and medium enterprises' financing status in transition economies.

Table 5 The models analyze loan terms and loan structures. Firm specific variables are included to control for transparency (transparency, audit), performance (costeffi), foreign origin (foreign), and the proportion of a country's nonperforming loans to total banking assets (npl_ta). Bank regulatory variables measure: supervisory structure (indpoli, mulsup, singlefsa), capital regulation (mcar, crindex), market monitoring (fstrans), and restrictions on bank activities and ownership (overbank, nfob, nbflob). Two sets of variables are included to measure banking sector consolidation (bcdepo) and liberalization (forbank). We also control for the ratio of country's private credit by deposit money bank to GDP measuring banking sector development (perdbgdp)

	Ordered Logit		Tobit				
	siloan	ltloan	duration	approvalday	interstrate	collateral	
transparency	-0.107 (0.08)	-0.052 (0.09)	4.997*** (1.36)	3.508* (1.52)	-1.308*** (0.38)	-6.702 (4.31)	
audit	-0.001 (0.08)	-0.103 (0.08)	-1.565 (1.32)	-0.713 (1.48)	0.222 (0.37)	-2.859 (4.18)	
costeffi	0.004 (0.00)	0.003 (0.00)	-0.037 (0.04)	-0.030 (0.05)	0.013 (0.01)	0.035 (0.14)	
foreign	0.003* (0.00)	0.002 (0.00)	0.012 (0.02)	-0.032 (0.03)	-0.004 (0.01)	0.037 (0.08)	
npl_ta	-0.043* (0.02)	-0.052** (0.02)	-0.796** (0.27)	0.430 (0.30)	-0.114 (0.07)	-0.982 (0.86)	
indpoliall	-0.025 (0.13)	-0.363** (0.13)	2.362 (1.30)	0.986 (1.46)	1.323*** (0.36)	18.887*** (4.22)	
mulsup	-0.221 (0.16)	-0.172 (0.16)	5.993** (2.05)	-0.688 (2.31)	-5.640*** (0.57)	-1.124 (6.53)	
singlefsa	-0.572*** (0.17)	-0.735*** (0.18)	-1.756 (1.84)	-7.747*** (2.08)	-1.544** (0.51)	8.448 (5.96)	
mcar	0.205** (0.06)	0.144* (0.07)	-0.875 (0.55)	-1.219 (0.63)	1.065*** (0.15)	3.583* (1.75)	
crindex	-0.122* (0.05)	-0.133** (0.05)	0.283 (0.58)	1.086 (0.66)	0.105 (0.16)	5.577** (1.83)	
fstrans	0.048 (0.09)	0.166 (0.09)	-0.210 (1.26)	-5.090*** (1.42)	-4.033*** (0.35)	-13.352*** (4.02)	
nfob	-0.744 (0.49)	-1.308** (0.50)	-1.873 (2.33)	3.614 (2.65)	1.792** (0.65)	21.146** (7.43)	
nbflob	0.113 (0.34)	0.567 (0.35)	-3.197 (2.47)	-2.093 (2.78)	-3.228*** (0.69)	-12.191 (8.09)	
overbank	0.088** (0.03)	0.123*** (0.03)	-0.595 (0.50)	0.058 (0.57)	0.857*** (0.14)	-6.185*** (1.57)	
bcdepo	0.045*** (0.01)	0.032*** (0.01)	0.201** (0.07)	-0.341*** (0.08)	-0.161*** (0.02)	-0.707** (0.24)	
perdbgdp	7.201*** (0.83)	6.984*** (0.85)	38.601*** (6.48)	2.995 (7.33)	-12.897*** (1.80)	-63.354** (21.33)	
forbank	-0.020*** (0.00)	-0.014*** (0.00)	0.066* (0.03)	0.262*** (0.04)	0.022* (0.01)	0.896*** (0.11)	
N	2616	2557	1808	1839	1784	1516	
pseudo R2	0.027	0.027	0.014	0.009	0.069	0.010	

Table 5 (continued)

	Ordered Logit		Tobit				
	stloan	ltloan	duration	approvalday	interstrate	collateral	
chi2	188.712	181.252	238.041	158.537	898.354	182.126	
p			0.000	0.000	0.000	0.000	
ll			-8437.651	-8807.102	-6023.885	-8699.229	
R2			0.123	0.083	0.396	0.113	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Factors that contributed to more transparent firms all positively affect SMEs' financing status. Firms using international accounting standards have easier access to cheaper credit. This reflects these firms' advantage in competing for foreign bank loans. Likewise, firms with external auditors also encounter fewer financing obstacles. Moreover, firms with more foreign ownership benefit from informational advantages and have eased financing access.

Factors neutralizing the negative impacts of information asymmetry all contribute to improving SMEs' financing status. SMEs in more concentrated markets have greater access to bank loans and are charged lower interest rates. This is due to creditors with greater market powers having more incentive to invest in obtaining private firm information. SMEs located in countries with more foreign bank ownership face more access obstacles and bear higher costs. This results from foreign banks' disadvantages in relationship lending targeted at opaque and small firms based on soft information.

A bank-based financial system is hereby proved to outweigh a market-based financial system at the current stage for transition markets. More developed banking sectors contribute to easier access to financing and reduced financing costs. SMEs' from more developed banking sectors finance a higher percentage of their credit from formal sources. Indeed, a higher stock market capitalization does not contribute to improving a firm's financing access or costs, but reduces a firm's percentage of financing from formal sources.

The results show significant impacts of bank regulatory practices on SMEs' access to bank loans and on loan structure. Specifically, overall regulatory restrictions on bank activities and formation of financial conglomerates cause firms to bypass banks and raise capital directly from equity markets. More restrictions on bank activities and on owning nonfinancial firms induce banks to loosen the credit standards and charge higher interest. Restricting nonfinancial firms from owning banks exacerbates SMEs' access to bank loans and raises interest rates and required collateral values.

A multiple bank regulator regime fosters prudent lending on the part of banks and benefits some SMEs by reducing financing costs. However, a multiple bank regulator regime harms other SMEs by exacerbating their difficulty in accessing bank loans. Bank regulatory practices that impose more stringent requirements on what extent banks should release information to the public contribute to SMEs' easy access to loans with better structure, consistent with the private interest view. It is also found that bank supervisory agencies that are more independent from political influences cause SMEs to suffer both greater obstacles to accessing bank loans and also higher costs for obtaining bank loans.

Finally, it is also found that regulatory restrictions on minimum capital ratios may induce risky behavior on the part of banks, but ease firms' access to credit at a higher cost. However, regulatory restrictions on capital composition may induce prudent behavior on the part of banks, although it may exacerbate firms' difficulties in obtaining loans.

References

- Barth, J. R., Caprio, G., & Levine, R. (2004). Bank regulation and supervision: What works best? *Journal of Financial Intermediation*, 13(2), 205–248.

- Barth, J. R., Caprio, G. & Levine, R. (2001). *The regulation and supervision of banks around the world: A new database*. World Bank Policy Research Working Paper Series, No. 2588.
- Barth, J. R., Caprio, G., & Levine, R. (2006). *Rethinking bank regulation. Till angels govern*. Cambridge: Cambridge University Press.
- Barth, J. R., Nolle, D. E., Phumiwasana, T., & Yago, G. (2003). A cross country analysis of the bank supervisory framework and bank performance. *Financial Markets, Institutions & Instruments*, 12(2), 67–120.
- Beck, T., & Demircuc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943.
- Beck, T., Demircuc-Kunt, A., & Honohan, P. (2009). Access to financial services: Measurement, impact, and policies. *The World Bank Research Observer*, 24(1), 119–145.
- Beck, T., Demircuc-Kunt, A., & Maksimovic, V. (2004). Bank competition and access to finance: International evidence. *Journal of Money, Credit & Banking*, 36(3), 627–648.
- Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for Sme finance. *Journal of Banking & Finance*, 30(11), 2945–2966.
- Buis, M. L. (2008). *Fmlogit: Stata module fitting a fractional multinomial logit model by quasi maximum likelihood*. Statistical Software Components, Boston College Department of Economics.
- Claessens, S. (2006). Access to financial services: A review of the issues and public policy objectives. *The World Bank Research Observer*, 21(2), 207–240.
- Claessens, S. (2003). Benefits and Costs on Integrated Financial Services Provision in Developing Countries. In R. E. Litan & R. Herring (Eds.), *Brookings-Wharton papers on financial services* (pp. 85–139). Washington: The Brookings Institution.
- De la Torre, A., Peria, M. S. M., & Schmukler, S. L. (2008). *Bank involvement with Smes: Beyond relationship lending*. World Bank Policy Research Working Paper Series, (4649).
- Dell'Ariccia, G., & Marquez, R. (2004). Information and bank credit allocation. *Journal of Financial Economics*, 72(1), 185–214.
- Detragiache, E., Tressel, T., & Gupta, P. (2006). *Foreign banks in poor countries: Theory and evidence*. IMF Working Papers, No. 06/18.
- Fries, S., Lysenko, T., & Polanec, S. (2003). *The 2002 business environment and enterprise performance survey: Results from a survey of 6,100 firms*. EBRD Working Paper, No. 84.
- Haiss, P., & Kichler, E. (2009). *Leasing, credit and economic growth: Evidence for Central and South Eastern Europe*. EI Working Papers, NO. 80.
- Harrison, A. E., & McMillan, M. S. (2001). *Does direct foreign investment affect domestic firms' credit constraints?* NBER Working Paper, No. 8438.
- Haselmann, R., Pistor, K., & Vig, V. (2008). *How law affects lending*. Columbia Law and Economics Working Paper, No. 285.
- Hauswald, R. B. H. & Bruno, V. (2009). *The real effect of foreign banks*. Paolo Baffi Centre Research Paper, No. 2009–50.
- Jimenez, G., Salas, V., & Saurina, J. (2009). Organizational distance and use of collateral for business loans. *Journal of Banking & Finance*, 33(2), 234–243.
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2008). *Governance matters VII: Aggregate and individual governance indicators 1996–2007*. World Bank Policy Research Working Paper, No. 4654.
- Masciandaro, D. (2009). Politicians and financial supervision unification outside the Central Bank: Why do they do it? *Journal of Financial Stability*, 5(2), 124–146.
- Maurer, M. C. R. (2008). *Foreign bank entry, institutional development and credit access: Firm-level evidence from 22 transition countries*. Swiss National Bank Working Papers Series, No. 2008–4.
- Memmel, C., Schmieder, C., & Stein, I. (2008). *Relationship lending - Empirical evidence for Germany*. European Investment Bank Economic and Financial Studies Economic and Financial Reports, No. 2008/1.
- Neuberger, D., Pedergnana, M., & Rathke-Doppner, S. (2008). Concentration of banking relationships in Switzerland: The result of firm structure or banking market structure? *Journal of Financial Services Research*, 33(2), 101–126.
- Okura, M. (2007). *Financing structure and bank loan access of Smes in China empirical analysis*. The 4th SMEs In A Global Economy Conference.
- Papke, L. E., & Wooldridge, J. M. (1996). Econometric methods for fractional response variables with an application to 401(K) plan participation rates. *Journal of Applied Econometrics*, 11(6), 619–632.
- Presbitero, A. F., & Zazzaro, A. (2009). *Competition and relationship lending: Friends or foes?* MoFiR Working Paper, No. 13.

- Repullo, R., & Suarez, J. (2004). Loan pricing under basel capital requirements. *Journal of Financial Intermediation*, 13(4), 496–521.
- Sengupta, R. (2007). Foreign entry and bank competition. *Journal of Financial Economics*, 84(2), 502–528.
- Volz, U. (2004). *European financial integration and the financing of local businesses in the new Eu Member States*. EBRD Working Paper, No. 89.