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Access to Finance: The Role of Inside versus Outside Collateral in Transition Economies

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August 2006

Keywords: Bank lending, Access to Finance, Collateral, Emerging economies

JEL Classification: G21, O16

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1. Introduction

Many transition countries grow at a rapid pace. However, in order to catch up with advanced market economies in the foreseeable future, they should record even higher growth rates. One crucial obstacle for firms in transition economies is access to finance (EBRD, 2005). For small- and medium-sized enterprises (SMEs) this problem is even more severe. However, SMEs are expected to be drivers of economic growth particularly in Eastern Europe. This is partly because large firms are often direct offsprings of the state-owned firms inherited from the planned economy period. A vast majority among these are not flexible enough to survive the market competition brought about by the transition process. Recent evidence confirms that firms in transition countries, especially the SMEs, face dire obstacles in the form of both access to finance and cost of finance. Moreover, in this framework, loans usually have a relatively short maturity. Relatively young and small firms face additional constraints in access to finance due to (the?) lack of collateralizable wealth (EBRD, 2005). It is not unheard of that some firms complain that the value of the assets they have to pledge as collateral exceeds the actual face value of the loan substantially. Besides the amount of collateral, firms also complain about the lending rates.

So far, there is relatively little empirical evidence that sheds light on the link between collateralization and access to finance in the context of advanced market economies, and there is hardly any information about this issue in the developing and transition countries context. A careful study of this issue from the perspective of the businesses in transition countries will yield relevant policy implications. There are three broad groups of variables that explain the use of collateral: firm characteristics, characteristics of the banking sector and country characteristics. This broad classification also maps different areas which can be targeted by reforms. The present study treats the following questions from firm-level perspective using recent data: Which factors determine the use of collateral and how important are the individual factors? What determines the type and the size of collateral? What is the relationship between the use of collateral and the cost of finance?

There is already a huge body of theoretical literature on the effects of collateralization. Collateralization has basically two tasks, namely, to solve problems of asymmetric information between the bank and the borrower, and to generate a payoff for the bank. By collateralizing a loan, the borrower shares the financial risk with the bank. Through this mechanism, the asymmetric information problem can also be solved. In the case of adverse

selection, for example, less risky borrowers – in order to signal their type - are willing to accept higher collateral and lower interest rates than borrowers that have a higher risk of default (Bester, 1985; Besanko und Thakor, 1987). Moreover, if the borrower faces the risk of losing his/her assets in the case of project failure, his/her incentive to exert higher effort increases, and thereby the moral hazard problem is mitigated (Bester, 1987; Holmström, 1996). By the same intuition, the state-verification problem can also be solved (Bester, 1994). Obviously, the risk for the bank decreases if the loan is collateralized. However, the structure of the banking system also influences collateralization. Banks with market power may demand high levels of collateral and thereby extract rents (Hainz, 2003). Thus, the equilibrium amount of collateral is a function of the degree of bank competition (Hainz, 2004).

Empirical studies about collateralization are more often than not based on data from advanced market economies. Interestingly, the results of these studies often do not confirm the predictions from the theory. For instance, there is evidence that loans to (ex post) riskier firms are more likely to be collateralized (see a recent paper on Spain, Jiménez and Saurina, 2004). Concerning the relationship between collateralization and financing costs, a recent study concludes that secured loans have substantially lower predicted spreads than if they had been made on an unsecured basis (see Booth and Booth, 2006). However, none of these studies employ a cross-country perspective. The law and finance literature emphasizes the importance of institutions such as the quality of the legal system. Institutions play a crucial role in the decision about collateralization and thereby about access to finance in general.

The contribution of the present paper to the literature is multi-fold: We combine insights from especially contract theory with empirical evidence using data from the Business Environment and Enterprise Performance Survey (BEEPS). The survey has been implemented tri-annually since 1999 with a coverage of 26 transition countries and Turkey. We treat the question of determinants of the use of collateral with a probit model and determine the relative importance of these determinants by calculating marginal effects. The remaining questions on the type and size of the collateral as well as on the relationship between the use of collateral and the cost of finance are treated using pooled regressions from the last two waves of the BEEPS.

2. Literature Review

Banks demand collateral for two major reasons. First, they want to limit their losses in the case of default. Second, by demanding collateral they solve problems of asymmetric information between them and the debtor. Three problems of asymmetric information exist: adverse selection, ex ante moral hazard and strategic default (or ex post moral hazard). Adverse selection is caused by superior information which the debtor has about its own creditworthiness, or more technically its risk type, as compared to the bank. The bank can offer a separating contract in order to solve the adverse selection problem: one contract stipulates a high interest rate but a low degree of collateralization, the other contract a low interest rate but a high degree of collateralization. Low risk firms opt for a high degree of collateralization because the probability that they cannot repay and lose their collateral is low. In contrast, the high risk type prefers to pay higher interest rates. Thereby, the firms reveal their type (Bester, 1985; Chan and Kanatas, 1987; Boot and Thakor, 1987a, b).

Ex ante moral hazard arises because the bank cannot observe the effort level exerted by the debtor after the loan is repaid or the way he spends the loan. By demanding collateral, the debtor has a lower payoff if he cannot repay. Thus, the difference between the payoffs in the case of success and failure (also called the difference in state-contingent payoffs) increases and provides a better incentive to exert effort or to invest the loan as proposed by the credit contract (Bester, 1987; Chan and Thakor, 1987; Boot and Thakor, 1994; Holmström, 1996).

Strategic default happens after the payoff of the investment realizes if the debtor decides not to repay although the project generated a sufficiently high return. When the debtor gets only a much lower payoff in the case of default, its incentive to strategically default is reduced (Bester, 1994).

But collateralization is not the only means to solve problems of asymmetric information. Screening and monitoring are alternative means to solve problems of adverse selection and moral hazard, respectively. Collateralization of loans is more likely than screening if banking is competitive, either because firms chose collateralization to minimize their costs of funding (Manove, Pagano, and Padilla, 2001) or banks demand collateral more often in order to make profits (Hainz, 2006), cure existing inefficiencies (Inderst and Müller, 2006), or overcome barriers to entry that are caused by asymmetric information between banks (Sengupta, 2006).

Competition also influences the amount of collateral demanded. In the case of moral hazard, banks use collateralization to extract rents from the firms if banking is not perfectly

competitive (Hainz, 2003). Thus, the lack of competition would increase the incentive to collateralize.

In the case of collateralization, what counts is that the debtor is punished by losing its assets if he does not repay. This means that he should get a payoff as low as possible if he defaults. The lower his payoff in the case of default, the better is his incentive to exert effort in the case of ex ante moral hazard and the lower his incentive for strategic default.

Suppose first that the debtor is a limited-liability firm and the bank has recourse only to the asset of the firm. The firm will lose all its assets if it does not repay. Therefore the firm's assets are also called inside collateral. If the difference between the payoffs in the case of success and failure is not high enough, it is not possible to solve the incentive problem. Suppose second that the firm is owned by the manager. Then the bank does not only get the liquidation value of the firm's (inside) assets. The manager privately owns assets as well. These assets could also be pledged as collateral when collateral is determined. The manager's assets pledged as collateral are called outside collateral because they do not belong to the firm. In the case of default, the bank has recourse to the outside assets as well. When outside collateral is pledged the owner-manager loses more, i.e. gets an even lower payoff, if he cannot repay, (for more on the difference between inside and outside collateral, see Klapper 2001).

When considering the economic effects of collateralization, it is important to clarify the role of default and its consequences. If a debtor does not repay, the bank as creditor has access to the firm's assets (by getting a title – in German vollstreckbarer Titel) or filing a petition to have a defaulting firm declared bankruptcy. This right extends to all assets of the firm. What matters for the bank when it wants to limit its losses is the liquidation value of the assets and the share it gets from the liquidation value.

What role do inside and outside collateral play for solving agency problems and limiting the bank's losses? For generating a return for the bank it does not matter whether an assets belongs to the firm or is owned privately by the manager. The bank is interested in getting a liquidation value which is as high a possible. The liquidation value depends on the type of assets and the seniority of the bank's claim. The more senior the claim, the higher is the priority of the bank when the firm's assets are sold and the higher is the expected liquidation

value. If other creditors have more senior claims, banks might be reluctant to lend (Pistor, 2006). Often tax authorities or social security are given a high priority by law. A similar reasoning applies to the type of assets: if the asset is not firm specific then it is easy to sell and its expected liquidation payoff is high.

For solving the moral hazard problem, outside collateral is more important. All assets owned by a firm are lost anyhow if the firm defaults. Default implies that the creditor takes over the firm's assets. Therefore, collateralizing inside assets only increases the priority of the bank's claim but does not alter the payoff which the firm gets if it fails. Thus, collateralizing inside assets does not influence the incentive problems. In contrast, through using outside collateral implies that the debtor gets a lower payoff in the case of failure because he loses some of its privately owned assets. As a result, outside collateral can solve the incentive problems.

Inside collateral is supposed to solve the asset substitution problem. If assets are collateralized, it is more difficult for managers to consume them (John, Lynch and Puri, 2003). How good inside collateral is in playing this role certainly depends on the type of assets used as collateral. Some assets, such as real estate, are more difficult to strip than, for instance, accounts receivable or inventories.

The results of the empirical literature are often not in line with the predictions of the theory. Most studies indeed show that the riskier firms pledge more collateral (Leeth and Scott, 1989; Berger and Udell, 1995; Dennis, Nandy, and Sharpe, 2000; Booth and Booth, 2006). Collateralized loans also have a higher probability of default (Jiménez and Saurina, 2004; Berger and Udell, 1990). The explanation for these finding is that collateral is used when borrowers are less creditworthy and would not get an uncollateralized loan. Through collateralization there borrowers try to reduce their funding costs or secure access to credit altogether. But it is not clear whether funding costs fall because incentives improve or the bank faces a lower risk of realizing a loss. Using cross-country data from emerging markets, Liberti and Mian (2005) show that collateralization is used to solve agency problems. In contrast, evidence from Thailand suggests that banks exploit locked-in borrowers by demanding more collateral (Menkhoff, Neuberger, and Suwanaporn, 2006).

3. Data Description

The main source of data for this paper is the Business Environment and Enterprise Performance Survey (BEEPS) –a joint undertaking between the European Bank for Reconstruction and Development and the World Bank. So far, the survey has been implemented in three rounds: 1999, 2002 and 2005.[3] For the purposes of the present research agenda, however, we are only able to make use of the last two rounds of the survey, since the questions related to the use of secured financing in general, and collateral in particular, were included in the survey from the second round onwards. The second and the third round of BEEPS covered 26 transition countries and Turkey.[4] The sample size grew from 6,667 enterprises to 9,655 enterprises between these last two rounds of the survey.

Concerning the sampling procedure, the BEEPS is not designed to provide a representative sample of the population of all firms in transition countries, but rather relies on quota sampling. Accordingly, size-wise companies with 10,000 or more employees were excluded from the sample, as were those which started their operations during the last three years prior to the fieldwork. As such, the sampling procedure is skewed towards small and medium enterprises, since these comprised 90% of the sample. Foreign-owned companies, namely those with foreign stakes of at least 50%, and state-owned companies each accounted for no more than approximately 10% of the sample. The distribution of the sample between manufacturing and service sectors in the sample captures these sectors' relative contribution to the GDP in each country. However, sectors subject to government price regulation or prudential supervision, such as banking and finance and infrastructure were excluded from the sample.

Another peculiarity of the sampling procedure was that in 2005, there was a manufacturing overlay of around 1,700 enterprises in Armenia, Azerbaijan, Hungary, Moldova, Kazakhstan, Poland and Romania. Given that this overlay is outside the normal sample stratification, we have dropped these observations from our dataset for the sake of comparability of samples across countries.

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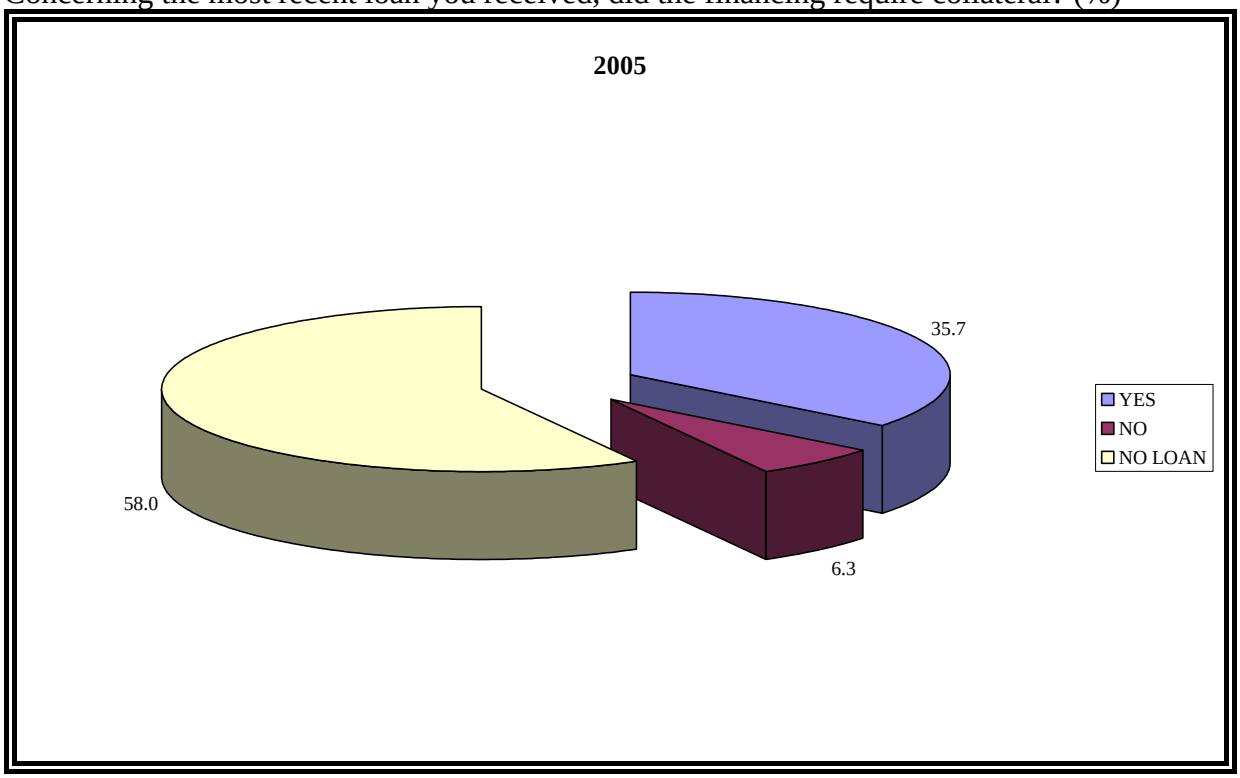
[3] See http://www.ebrd.com/pubs/econo/beeps.htm for more detailed information on the sampling methodology and access to the data.

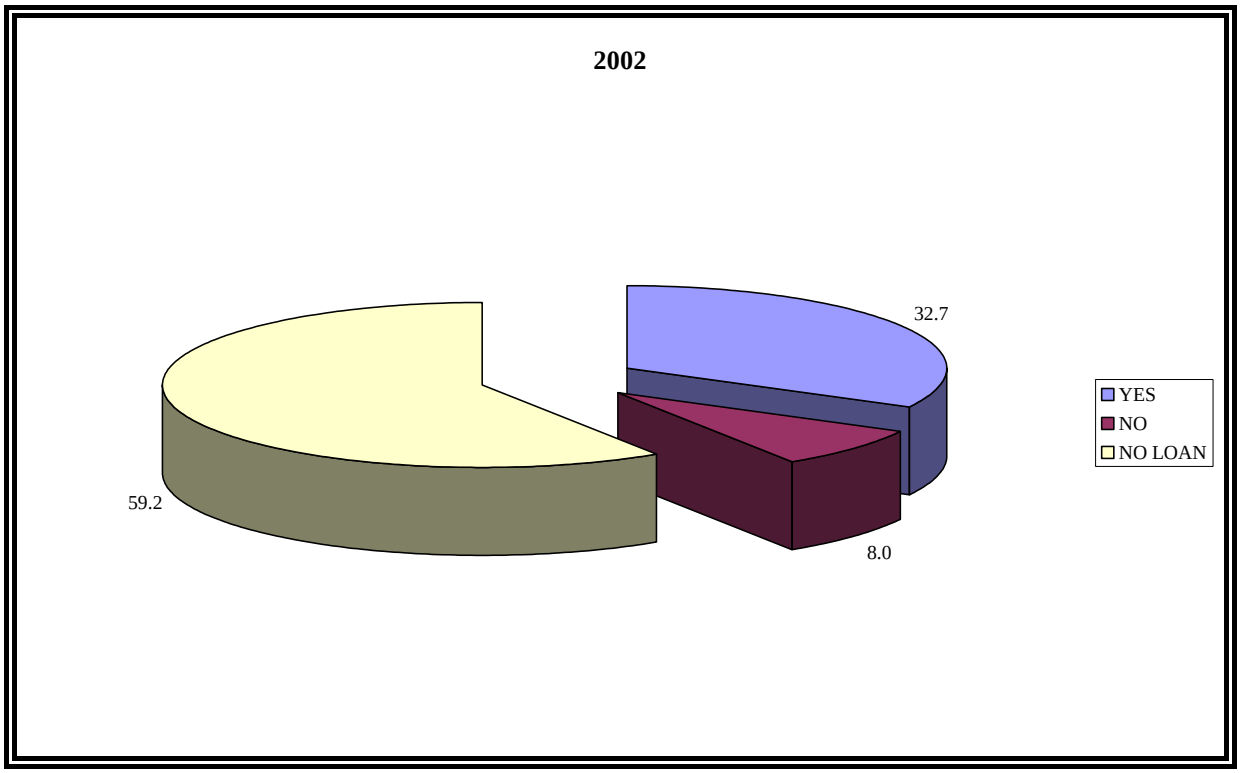
[4] The countries covered besides Turkey are: Central Europe and the Baltic states (CEB): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia,; south-eastern Europe (SEE): Albania, Bosnia Herzegovina, Bulgaria, Croatia, FYR Macedonia, Romania and Serbia and Montenegro; and the Commonwealth of Independent States (CIS): Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Ukraine and Uzbekistan. The BEEPS could not be undertaken in Turkmenistan in either of the two rounds.

One of the main variables of interest in this study is related to the use of collateral. Although in regression stage, we will be restricting the sample to only those enterprises which in fact declared having received a loan[5], for the sake of presenting the complete picture here, we introduce in Figure 1 the breakdown of enterprises according to the collateral requirements that they faced.

Figure 1:
Concerning the most recent loan you received, did the financing require collateral? (%)



[5] The question concerning collateral did not necessarily specify a reference period for having received a loan, but rather referred to the most recent loan. Its phrasing was flexible, however, allowing the enterprise to choose between the yes, no, and no loan options.



Source: EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) III and II.

The breakdown presented in Figure 1 is interesting in that it not only presents that around 80 to 85 percent of all loans in the period of interest required collateral, but also makes it clear that access to finance is still a problem in these countries as in both years close to 60% of the sample did not have a loan.

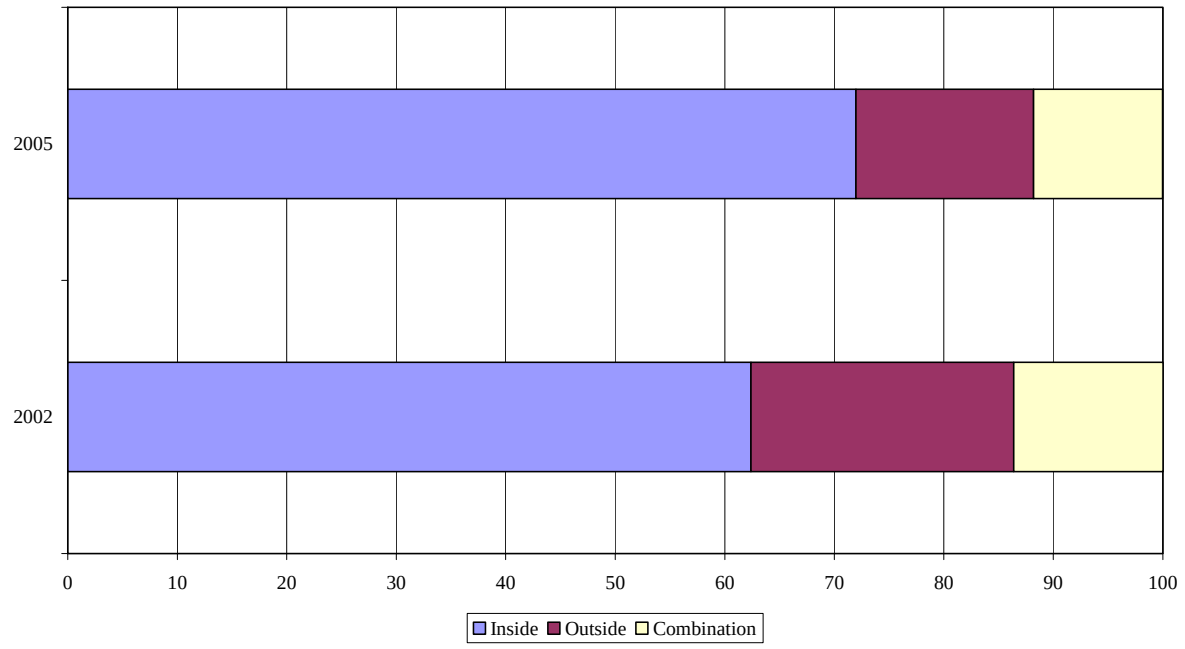
To understand this phenomenon better, we take a detailed look at the final round of the survey.[6] When asked why they had no loan, around 94% of the enterprises in the transition sample responded that they had not applied for one. Around 17% of the respondents chose collateral requirements being too strict either as a sole reason, or in combination with other things as the explanation of why they had not applied for a loan. This number may seem small at first glance, but in order to put it into perspective, one should take into account that among those who did not apply for a loan, 60% stated that they simply did not need a loan. Practically, this means that among the remaining 40% of enterprises, which indeed needed a loan, almost half did not apply for one since they found collateral requirements too strict. Finally, there was a relatively smaller group of enterprises, which applied for a loan and saw their loan application rejected. The survey also inquires into the reasons for this decision. Accordingly, among the enterprises whose loan applications were rejected, the prevailing reason cited was the lack of acceptable collateral in 36.26% of the cases as the sole reason for

[6] Unfortunately, the questions analysed in this section were only asked in the final round of the survey, therefore we are unable to compare answers across time.

the rejection. Similarly, approximately 49% of the firms chose lack of acceptable collateral either as the sole reason or as one of the reasons for rejection.[7]

Figure 2 presents the composition of inside vs. outside collateral in 2002 and 2005 in percentages.

Figure 2: Composition of Collateral 2002-2005 (%)



Source: EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) III and II.

The figure shows that the percentage of loans where only inside collateral, that is the enterprise's assets, was pledged markedly increased from around 62% in 2002 to around 72% in 2005. A corresponding decline was also observed in the use of outside collateral only in securing loans from around 24% in 2002 to around 16% in 2005. The use of a combination of the two types of loans remained decreased only slightly over the same period.[8]

Table 1: Value of Collateral, Duration and Annual Cost of the Loan 2002-2005

Country	Year	Size of Collateral (% of loan cost)	Duration of the Loan (months)	Annual Cost of the Loan (interest rate)
Albania	2002	129.9	48.5	12.0
	2005	166.2	42.6	9.8
Armenia	2002	180.6	12.7	19.7
	2005	172.2	20.6	17.5

[7] This question allowed multiple answers, therefore the respondents were able to indicate, say lack of collateral, as the sole explanation of their failure to receive a loan, or else they could pick more items from the list alongside lack of collateral. Their ordering did not imply any priorities. The same explanation is also valid for the question concerning the type of collateral.

[8] Note that it would be misleading to present the number of actual responses in this section since the sample size grew considerably between the two rounds of the survey. Therefore, we have chosen to report percentages.

Azerbaijan	2002	122.5	9.7	20.5
	2005	149.2	40.3	14.8
Belarus	2002	130.9	11.2	56.1
	2005	135.5	23.5	17.3
Bosnia and Herzegovina	2002	80.6	25.5	11.6
	2005	202.0	38.1	10.0
Bulgaria	2002	173.8	24.9	13.9
	2005	158.8	37.6	11.1
Croatia	2002	147.3	38.2	10.2
	2005	151.7	51.1	7.6
Czech Republic	2002	125.5	24.5	10.3
	2005	130.6	36.4	9.8
Estonia	2002	147.8	37.6	9.4
	2005	147.3	51.7	6.7
Georgia	2002	249.7	18.6	21.7
	2005	194.3	28.9	18.5
Hungary	2002	174.3	29.4	12.5
	2005	160.8	34.8	13.2
Kazakhstan	2002	127.3	13.3	19.7
	2005	150.0	29.6	15.4
Kyrgyzstan	2002	112.1	14.4	31.1
	2005	194.5	28.3	18.8
Latvia	2002	117.2	39.0	10.2
	2005	141.8	43.2	7.0
Lithuania	2002	136.8	25.5	9.5
	2005	136.3	36.1	5.9
Macedonia, FYR	2002	73.4	32.1	11.3
	2005	191.4	29.1	11.2
Moldova	2002	140.3	16.4	23.8
	2005	146.0	19.6	20.4
Poland	2002	145.4	24.2	14.9
	2005	146.3	29.4	12.6
Romania	2002	157.2	20.1	36.8
	2005	148.4	25.1	17.7
Russia	2002	142.6	10.2	23.2
	2005	150.8	24.1	17.5
Serbia and Montenegro	2002	85.0	11.0	20.4
	2005	194.7	21.6	13.3
Slovak Republic	2002	143.1	29.5	11.8
	2005	140.0	41.8	7.8
Slovenia	2002	129.8	39.1	9.2
	2005	151.0	45.4	6.3
Tajikistan	2002	137.0	10.6	25.9
	2005	180.9	20.7	24.4
Ukraine	2002	174.6	10.4	25.5
	2005	194.1	19.2	20.5
Uzbekistan	2002	113.7	12.0	29.4
	2005	123.6	21.3	22.9

Source: EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) III and II.

To present a complete overview of the data, Table 1 presents the country means for the size of collateral (as a percentage of the total loan cost), the duration of the loan (in months), and

finally the cost of the loan, i.e. the interest on the loan. Even a precursory glance at a table is sufficient to conclude that firms in transition countries face strict collateral requirements such that the value of the collateral more often than not exceeds the cost of the loan. Furthermore, collateral requirements seem to have been tightened on the average between 2002 and 2005. Among the 26 countries reported in Table 1, only eight, namely Armenia, Bulgaria, Estonia, Georgia, Hungary, Lithuania, Romania, and Slovak Republic, reported decline in average collateral pledged in accessing loans. This trend corresponds by and large to the improvements in perceptions of the finance component of the business environment in these countries, as documented by Transition Report 2005.[9]

4. Preliminary Results

Table 2 presents the preliminary empirical findings of the study. There are a number of questions treated empirically in this section. First of all, we take a look at what the decision to secure a loan via pledging collateral. In order to do this, we restrict our sample to all enterprises that reported having received a loan. Hence, the question that is treated in the first column of the table is: Given the presence of a loan, what makes collateralisation more likely? In order to investigate this, we use a dummy variable that takes on a value of 1 if the most recent loan that the enterprise obtained required collateral, and 0 otherwise. The empirical methodology employed in this column is probit analysis.

To put it formally, we are estimating the following equation:

$$P(Y_{ij} = 1) = F(X_{ij}{}'\beta) \qquad (1)$$

where the left-hand side of the equation is the probability for the loan to be secured via collateral, X' is a vector of explanatory variables, and F is the cumulative density function for the normal distribution.

Based on column 1, the factors that impact on the likelihood of collateralisation are size, ownership structure of the loan-granting bank, location, sales volume, cost and maturity of the loan, size of tax arrears and the perceptions of the enterprise manager about finance as a business obstacle. Medium sized companies, i.e. those employing between 50 and 249 people, are likelier to pledge collateral than the small firms. Similarly, if the loan granting institution is a domestic bank, the firm is likelier to be asked to pledge collateral. Enterprises located in

[9] For more details, see Transition Report 2005, chapter 1, annex 1, which reports the change in perceptions in various aspects of business environment across time. The finance component consisted of questions on to what extent access to finance and cost of finance constituted problems for the operation and growth of respondents' businesses.

the capital are less likely to have to pledge collateral, which might be related to the fact that their monitoring is more feasible and less costly. Sales volume appears to have a positive impact on the likelihood of pledging collateral, which is potentially related to the fact that firms with higher turnover would be crowded out to a lesser extent than those with smaller sales volume. As the cost and the maturity of the loan increases, so does the likelihood of pledging collateral.

Table 2: Probit and Pooled OLS Regressions-Transition Sample

Independent Variables	Col 1: Use of Collateral		Col 2: Inside		Col 3: Outside		Col 4: Size (collateral)	
Time dummy (2005)	0.110		0.086		-0.217		17.514	***
	0.094		*0.091*		*0.081*		*5.150*	
Size-medium	0.206	*	0.426	***	-0.268	***	-3.324	
	0.116		*0.109*		*0.094*		*5.335*	
Size-large	0.181		0.367	***	-0.314	***	-11.799	*
	0.135		*0.140*		*0.121*		*6.449*	
Majority owner-ind. or fam.	0.094		0.094		-0.032		0.470	
	0.095		*0.089*		*0.080*		*4.509*	
Loans from domestic banks	0.195	*	0.094		0.044		-0.101	
	0.101		*0.091*		*0.079*		*4.482*	
Location-capital	-0.350	***	-0.090		0.077		-16.041	***
	0.102		*0.101*		*0.089*		*5.118*	
Volume of sales	0.000	***	0.000		0.000		0.000	
	0.000		*0.000*		*0.000*		*0.000*	
Loan cost (int. rate)	0.011	*	-0.003		0.002		0.648	***
	0.006		*0.004*		*0.004*		*0.242*	
Loan duration (months)	0.009	***	0.006	***	-0.002	*	-0.145	**
	0.002		*0.002*		*0.001*		*0.071*	
Corporate governance (IAS)	-0.013		-0.159	*	0.078		2.081	
	0.102		*0.097*		*0.088*		*5.485*	
Size of tax arrears	0.031	*	0.030	**	-0.021	**	1.080	
	0.016		*0.014*		*0.010*		*1.701*	
Access to finance-bus. obs	0.042		-0.093	**	0.133	***	0.958	
	0.046		*0.043*		*0.038*		*2.133*	
Cost of finance-bus. obs.	0.110	**	0.145	***	-0.072	*	3.062	
	0.050		*0.048*		*0.042*		*2.473*	
Type of collateral-Inside	-		-		-		13.602	**
	-		-		-		5.408	
No obs	1684		1469		1469		1403	
R2	0.17		0.12		0.06		0.13	

Notes: Robust standard errors reported in italics. The sample consists of transition economies only. Columns 1-3 report probit regressions with dependent variables (i) the loan required collateral, (ii) the loan required inside collateral, (iii) the loan required outside collateral, respectively. Column 4 reports the results of a pooled OLS regression with the dependent variable as the size of collateral pledged. All regressions control for ownership (private vs. state), main industry of activity, country and time fixed effects.
Source: EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) III and II.

Concerning the impact of size of tax arrears on the probability of pledging collateral, our results are in line with those reported in Pistor (2006), namely that there is a positive association between the two aforementioned variables. Finally, among the two perceptions-based control variables related to the business environment, the one that measures the cost of finance as a business obstacle increases the likelihood of using collateral to secure a loan.

The next question that is treated in Table 2 is given that collateral is required to secure finance, what determines the type of collateral, i.e. the choice between inside versus outside collateral. The results are reported in columns 2 and 3, where essentially the same probit specification is run with inside and outside collateral dummies respectively.[10]

Concerning the choice between inside and outside collateral, firm size, maturity of the loan, corporate governance proxy, size of tax arrears, and perceptions of finance as a business obstacle matter. Medium and large enterprises are likelier than smaller enterprises to pledge inside collateral rather than outside collateral. This result is in line with our priors, since the modus operandi and financial means of a typical small sized firm would make it more likely to tap into the personal assets of the owner to secure loans. We treat the use of international accounting standards as a proxy for having achieved desirable levels of corporate governance and transparency. Although the variable attains a negative sign in column 2, hence making inside collateral less likely than outside collateral, the level of significance is relatively weak and we fail to generate the exact opposite result in column 3. Therefore, this particular result is to be treated with caution.

Inside collateral becomes more likely as the loan maturity increases. If the loan providing institution treats collateral as a means of solving the adverse selection problem, i.e. that is if it treats the inside collateral as a signalling device for the type of the firm, then it is plausible that in a longer lasting relationship, it would require the securitisation of the loan through the firm's own assets. As in the choice between collateralisation and unsecured lending, the size of tax arrears seems to matter for the choice of the type of collateral. Firms with larger tax arrears are likelier to pledge their own assets as opposed to the owner's personal assets.[11]

[10] In fact, column 3 is intended merely as a robustness check for the results since the dependent variables in both cases are binomial choice variables between inside and outside collateral. Reassuringly, the results obtained from a regression of outside collateral on the same control variables yields exactly the opposite results qualitatively. Hence, we discuss only the results from column 2 in this section.

[11] This last point requires further research. Unfortunately, since the BEEPS dataset does not have transaction specific data, we have no measure of the relative size of the assets pledged. Therefore, we are unfortunately unable to offer a satisfactory interpretation to this empirical phenomenon at this stage.

The twin variables related to the perceptions of finance as an obstacle to business environment point to opposite directions concerning the choice of the type of collateral. According to the regressions reported in Table 2, an enterprise is likelier to pledge inside rather outside collateral if the manager's perception is that access to finance is an obstacle for his/her firm's business. Conversely, if the manager perceives cost of finance as an obstacle, then his/her firm is likelier to pledge outside rather than inside collateral. The tentative explanation for this is that if the owner/manager is able to secure a loan using personal assets, then it is not necessarily surprising that s/he would not have a negative perception concerning access to finance. Alternatively, the requirement to pledge the firms' own assets to secure a loan might be biasing perceptions about the cost of the loan.[12]

Before moving on to the discussion of the final column, it should be stated that one of the hypotheses this paper aims to test is whether outside collateral is used primarily to solve the moral hazard problem, discussed above. As this draft version presents only the results from pooled regressions of BEEPS 2002 and 2005, this issue has not been treated here since our initial tests related to the moral hazard problem was based on the use of a variable concerning the presence of an owner-manager in the enterprise. Unfortunately, this question is only available in the final round of the survey. Our results from only the final wave of the survey[13] suggest that if the enterprise is managed by the owner, then the firm is much likelier to pledge outside collateral. Pledging the owner-manager's personal assets might in fact be the effective solution to the moral hazard problem due to endowment effects.

The final question that we treat in this section is related to the size of the collateral. Once again the sample is restricted only collateralised loans. Yet, this time the dependent variable is a continuous variable measuring the approximate value of the collateral in relation to the cost of the loan. This question is treated using a pooled OLS regression and the results are reported in column 4.

First point to observe in this regression is the significant and positive effect of the time dummy. This captures the overall trend of increase in the size of collateral between 2002 and 2005, pointed out earlier in the discussion of Table 1. The size of collateral is further

[12] Once again, we are not able to relate these explanations to precise transactions, as we are lacking data on the size of the loan and the size of the collateral involved in the transaction.
[13] Not reported here, but available upon request.

explained by a negative significant impact of size (large firms pledge smaller volume of collateral), location (firms in the capital pledge smaller volumes as opposed to those elsewhere), maturity of the loan (if the loan duration is higher, firms pledge on the average smaller volumes of collateral). The regression also generates a significant positive relationship between the cost of the loan and the size of the collateral.

However, the most interesting result from this column is related to the type and the size of the collateral. We find evidence that the dummy for inside collateral has a significant positive impact on the size of the collateral. Regardless of the direction of causality, the fact that inside collateral goes hand in hand with larger collateral sizes also partially sheds light on the earlier discussion about the perceptions of cost of loans being an impediment to business in the cases of pledging inside collateral.

5. Conclusions

So far, this paper has investigated in a two-wave micro (enterprise level) survey data potential determinants of the use of collateral in securing loans, the choice between inside versus outside collateral and finally the size of collateral.

The result presented here comprise the first stage of our research agenda. The next steps will be to complement these regressions by including sector level data measuring the competitiveness of the banking sector. The aim in doing so is to test the hypothesis that more competition in the banking sector drives collateralisation down.

Furthermore, the robustness of the results presented above will be tested using the panel component of the BEEPS dataset. The next and the final step will be to take a comparative approach both within the transition sample, that is to compare regional differences among the CEB, SEE and CIS countries, and to systematically evaluate differences in the role of collateral in securing lending between the transition samples and subsamples and the advanced market economies, making use of the comparator survey to BEEPS, carried out in seven non-transition economies, and to draw lessons from this exercise.

References:

Berger, and Udell, (1990), Collateral, Loan Quality, and Bank Risk, Journal of Monetary Economics 25, 21-42.

Berger, and Udell, (1995), Relationship Lending and Lines of Credit in Small Firms Finance, Journal of Business 68, 351-381.

Besanko, David, und Thakor, Anjan V. (1987): “Collateral and Rationing: Sorting Equilibria in Monopolistic and Competitive Credit Markets." International Economic Review 28, 3:671-689, October 1987.

Bester, Helmut (1985): “Screening and Rationing in Credit Markets with Imperfect Information." American Economic Review 75, 4:850-855, September 1985.

Bester, Helmut (1987), “The Role of Collateral in Credit Markets with Imperfect Information." European Economic Review 31, 4:887-899, Juni 1987.

Bester, Helmut (1994), “The Role of Collateral in a Moral Hazard Model of Debt Renegotiation." Journal of Money, Credit, and Banking 26, 1:72-86, February 1994.

Boot, James R. and Thakor, Anjan (1994), Moral Hazard and Secured Lending in an Infinitely Repeated Credit Market Game, International Economic Review 35, 899-920.

Booth, James R. and Booth, Lena Chua (2006), “Loan Collateral Decisions and Corporate Borrowing Costs.” Journal of Money, Credit, and Banking, forthcoming.

Chan, and Kanatas (1985), Asymmetric Valuations and the Role of Collateral in Loan Agreements, Journal of Money, Credit and Banking 17, 84-95.

Chan, and Thakor, Anjan (1987), Collateral and Competitive Equilibria with Moral Hazard and Private Information, Journal of Finance 42, 345-363.

Dennis, Nandy, and Sharpe, (2000), The Determinants of Contract Terms in Bank Revolving Credit Agreements, Journal of Financial and Quantitative Analysis35, 87-110.

European Bank for Reconstruction and Development (2006): Transition Report 2005. London: EBRD.

Hainz, Christa (2003): “Bank Competition and Credit Markets in Transition Economies.” Journal of Comparative Economics 31, 223-45.

Hainz, Christa (2004): “Are Transition Countries Overbanked? The Effect of Institutions on Bank Market Entry.” German Economic Review 5, 2:233–252.

Hainz, Christa, Collateral versus Screening: The Impact of Bank Competition in Emerging Markets, mimeo, University of Munich, March 2006.

Holmström, Bengt (1996) “Financing of Investment in Eastern Europe A Theoretical Perspective”, Industrial and Corporate Change 5(2), 205-237.

Inderst, Roman and Müller, Holger M. (2006), A Lender-Based Theory of Collateral, Journal of Finance (?) forthcoming.

Jiménez, Gabriel and Saurina, Jesús (2004): “Collateral, Type of Lender and Relationship Banking as Determinants of Credit Risk.” Journal of Banking and Finance 28, 2191-2212.

John, Kose, Lynch, Anthony W., and Puri, Manju (2003), Credit Ratings, Collateral, and Loans Characteristics: Implications for Yields, Journal of Business 76, 371-409.

Klapper, Leora, (2001), The Uniqueness of Short-Term Collateralization, mimeo. Worldbank.

Leeth, x and Scott, x (1989), The Incidence of Secured Debt: Evidence from Small Business Community, Journal of Financial and Quantitative Analysis 24, 379-394.

Liberti, Jose, and Atif Mian, 2005, Uncovering collateral, mimeo, University of Chicago.

Manove, Michael, A. Jorge Padilla, und Marco Pagano (2001) “Collateral versus Project Screening: A Model of Lazy Banks”, RAND Journal of Economics 32(4), 726-44.

Menkhoff, Lukas, Neuberger, Doris, and Suwanaporn, Chodechai (2006) “Collateral-based lending in emerging markets: Evidence from Thailand”, Journal of Banking and Finance 30, 1-21.

Pistor, Katharina (2006) “Who tolls the bell?”, mimeo, Columbia University.

Sengupta, Rajdeep, 2005, Foreign Entry and Bank Competition, mimeo, Vanderbilt University, June 2005.