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Bank Credit to Small and Medium-Sized Enterprises: The Role of Creditor Protection

by

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Abstract[1]

This paper develops a model showing that inefficient legal protections disproportionately increase financial restrictions for creditors that have less wealth. Due to fixed monitoring costs in equilibrium, banks will not monitor small firms, and therefore these firms will adopt risky technologies that imply a higher probability of bankruptcy. This implies that inefficiencies in the bankruptcy procedure will have a greater effect on small firms vis-à-vis large ones. Using a survey of firms in 62 countries around the world (WBES) and econometric techniques that allow us to deal with observed and unobserved country-specific components, as well as with partial endogeneity, the paper explore the role of creditor protection on small and medium-size enterprises' access to bank credit. It is found that better protection of creditors reduces the financing gap between small and large firms.

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1. Introduction

Recent corporate finance literature has emphasized the role played by financial development and legal protections to outside creditors in the performance of firms. One of the crucial implications of this literature is that underdeveloped financial and legal systems may constrain firms in their ability to finance investment.[2] Bank credit in particular plays a very important role for firms, especially in developing countries where equity markets are considerably underdeveloped. When access to bank loans is restricted, potentially profitable projects cannot be undertaken and economic activity can stagnate. If credit is constrained, so is investment, and since technology is often embedded in new capital goods, the capacity of economies to absorb new methods of production and to grow is adversely affected.

This paper explores how different legal and institutional setups can have an asymmetric impact on the access to credit of firms of different sizes. The main idea of this study is that weak enforcement of credit contracts or inefficient bankruptcy procedures take a higher toll on small firms than large ones due to monitoring costs faced by lenders. We formalized this, using a model based on the standard idea that it is not easy for lenders to enforce both a particular use of the credit granted and the level of entrepreneurial effort. The model introduces these two types of moral hazard, combining the formulation in Hölmstrom and Tirole (1997, 1998) and Bester and Hellwig (1987), standard references in the corporate finance literature.

Three important conclusions emerge from our model. First, large firms tend to be more leveraged than small firms; second, large firms tend to be less volatile than small firms due to their technology adoption; and third, improvements in contract enforcement or the efficiency of bankruptcy procedures increase access to credit of small firms relative to large ones.

The first two implications of our model have been verified elsewhere. Rajan and Zingales (1995) show that, in all G7 countries but Germany, small firms have lower leverage levels than large ones. Using broader data, similar to those used in the empirical section of this study, several authors have shown that around the world the first of the implications above holds, that is, small firms are less leveraged than large ones.[3] Table 1 summarizes data, whose source is discussed below, which show that in the World as a whole, as well as for developing countries exclusively, the share of investment financed with bank credit is larger in large firms. In our

[2]See La Porta et al (1997, 1998) for detailed discussions.
[3]See for example Clarke et al. (2001), Beck et al. (2002), Beck et al. (2003) and Love and Mylenko (2003).

sample an average small firm finances around 11 percent of its investment with credit, while medium and large firms finance 17 percent and 26 percent, respectively.[4]

The second implication, that large firms are less volatile, has also been amply documented. Table 2 presents summary data from a set of papers that have explored this issue in detail for the case of employment volatility. The table shows that job turnover, a measure of employment volatility, is significantly higher in small firms as opposed to large firms both in Latin American developing countries and the United States.[5]

The purpose of the empirical part of this paper is to explore in detail the third implication of our model, namely that improvements in the quality of bankruptcy procedures as well as in the enforcement of credit contracts reduces the gap in credit access between small and large firms. For this purpose we use the World Bank's World Business Environment Survey, a firm-level survey carried out in 1999 and 2000 among firms across the world to assess competitiveness, and we perform a series of econometric exercises to validate the theoretical model. Figure 1 compares the share of investment financed with credit in firms of different sizes in Common Law countries vis-à-vis non-Common Law countries. La Porta et al. (1998) show that Common Law countries have better creditor protection and enforceability. In line with this, Figure 1 shows that, for each size category, firms in Common Law countries are more leveraged. Second, and more interesting, the gap in access to credit between large and small firms is larger in non-Common Law countries. This result is in line with the third prediction of our paper. In Section 4 we use a difference-in-difference econometric approach to analyze the impact of different degrees of creditor protection on the financing gap of small creditors relative to large ones. The methodology controls for country-specific effects and allows us to deal with a possible omitted variable problem common to many cross-country studies. By doing so, our empirical study allows us to identify causal links between the institutional data and access to credit.

Most of previous theoretical research does not focus on the distinction between SMEs and large firms. Moreover, a simple extension of these models to account for small and large firms fails to explain why large firms are more leveraged and less risky, and why the credit access gap between large and small firms is decreasing with better creditor protection. For

[4] In Section 3 we describe how the data is constructed. At this stage it is convenient to point out that small firms are defined as those more than 5 but with fewer than 50 employees. Medium-sized firms are those with more than 50 but fewer than 500, and large firms are those with more than 500 workers.

[5] Turnover is defined as the sum of the absolute value of plant's employment changes divided by the average total

example, most standard models imply that small firms should be equally or more leveraged than large ones, and in equilibrium all firms adopt the same type of technology.[6] As mentioned above, combining two standard models in corporate finance, our theoretical setup replicates, in a simple way, all the three stylized facts described above for SMEs.

Our paper is an addition to the vast literature on the role of institutions in economic development. Numerous empirical papers have shown the strength of the links between access to finance and growth. For example, Rajan and Zingales (1998) show that financial development positively affects the growth rate of industries relying heavily on external financing. At the firm level Demirgüc-Kunt and Maksimovic (1998), using a data set of large firms around the world show the importance of the financial system and the rule of law in relaxing external financing constraints and facilitating growth. Similarly, Love (2003) shows that in countries with deeper financial markets large firms are less credit constrained, and the dependency of investment on cash flow is reduced. Using sector-level data, Braun and Larraín (2004) show that better accounting standards ease financial constraints over the business cycle.

In general, the literature on credit restrictions in firm development stresses the role of asymmetric information in credit rationing.[7] The consequences of information and incentive problems for investment have been explored in many papers.[8] Regarding the size of firms, the empirical literature on financial constraints, for example has pointed out that small firms tend to

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employment in years *t*-1 and t. See Davis et al. (1996) and IPES (2004).

[6] The extension of the models by Bernanke and Gertler (1989) and Townsend (1979) on costly state verification, as well as the effort moral hazard a la Holtrom and Tirole (1997,1998) imply that the amount of credit is linear with firms' wealth. If we assume decreasing returns to scale to investment, small firms should be more leveraged than large ones. In addition, in all these models, in equilibrium all firms adopt the same type of technology (either a risky or a safe one).

[7] Most papers base their idea on Stiglitz and Weiss (1981), or on models with costly state verification, as in Williamson (1987). In general, even if informational asymmetries and contract enforcement problems do not lead to credit rationing, they make external funds imperfect substitutes for internal funds and invalidate the separation between financing and investment choices implied by the Modigliani-Miller Theorem.

[8] Bernanke and Gertler (1989 and 1990), Gertler and Hubbard (1988), Calomiris and Hubbard (1990), Gertler (1992), Bernanke, Gertler and Gilchrist (1996 and 1999), Kiyotaki and Moore (1997) and Greenwald and Stiglitz (1988 and 1993) are examples of this literature. Although the models differ in their details, two main results emerge from this literature. First, external finance is more costly than internal finance unless loans are fully collateralized. Second, the premium on external finance is an inverse function of a borrower's net worth (liquid assets plus the collateral value of illiquid assets). Any negative shock to net worth (due to technological reasons, shift in investors' preferences, or changes in monetary policy) leads to an increase in the premium and, therefore, to a reduction in investment and production. For this reason the initial impact of the shock may be amplified (the so-called financial accelerator effect).

be more credit constrained than large ones.[9] The apparent fact, though, is that under similar institutional setups smaller firms tend to face deeper constraints than larger ones. Beck, Demirgüc-Kunt and Maksimovic (2004), for example, find that the effect of institutions on firms' growth can be asymmetric depending on the size of firms. In fact, they find that financial and legal development significantly affect the growth of firms, especially in small and medium-sized firms. Our paper complements this work by providing a rigorous analysis of the channels through which such a relationship can work.

The rest of the paper is organized as follows. Section 2 presents the theoretical model, Section 3 describes the data used in the empirical study, Section 4 presents our econometric strategy and some basic results, Section 5 reports some robustness exercises performed, and Section 6 concludes.

2. Creditor Protection and Access to Credit: A Model

In this section we describe a model that serves the purpose of deriving testable hypotheses for the empirical part of the paper. The model is based on the standard idea that it is difficult for a lender to enforce both a particular use for the credit granted and the level of entrepreneurial effort. The model introduces these two types of moral hazard, combining the formulations in Holmstrom and Tirole (1997, 1998) and Bester and Hellwig (1987). Broadly speaking, we assume that there are two kinds of risk-neutral agents. Borrowers face profitable investment opportunities but do not have enough cash for financing their own projects. Banks, on the other hand, have plenty of cash, but no investment opportunities.

The main intuition of the model is that banks have a monitoring technology that forces entrepreneurs to adopt a safe technology that reduces the "assets substitution moral hazard" and increases leverage. The monitoring action has a fixed cost per entrepreneur and therefore is only worth using when the entrepreneur has a high level of wealth (required to reduce the effort moral hazard), which implies a high level of investment. The solution of the model shows that in equilibrium banks will not monitor small borrowers (hereafter we will refer to the entrepreneurs

[9]See Schiantarelli (1996) or Hubbard (1998) for a review of several criteria that have been used in the literature to divide firms into groups according to the likelihood of being financially constrained. The main cross-sectional criteria used to identify firms for whom information and agency problems are more or less severe are affiliation with industrial groups and banks, foreign ownership, and size.

with low initial wealth as SMEs). This increases the moral hazard problem for small firms and will induce them to adopt a risky technology with a higher probability of bankruptcy. We show that improvements in the efficiency of bankruptcy procedures have a larger positive effect on SMEs than large firms.

In the model we assume that the borrower faces an investment opportunity at date t_o that returns R^j per unit of investment at date t_1 in case of success and L in case of failure (residual value per unit of investment). However, the project is subject to two types of moral hazard. On one hand, the borrower may choose between two technologies with different level of risk but similar expected payoff (= Ω) . The risky technology has a payoff (R^r) larger than the safe technology (R^s) in case of success, but its probability of success is lower $(\pi^s > \pi^r)$. On the other hand, regardless of the technology adopted, the probability of success depends on the entrepreneur's effort. When the entrepreneur does not behave in terms of the level of effort, the probability of success is reduced by $\Delta\pi^e$. Due to this lack of effort the entrepreneur obtains a private benefit of $B > 0$ per unit of investment, regardless of the outcome of the project and the technology adopted. For both technologies, we assume that the net present value of the project is negative in case the entrepreneur shirks (low effort and therefore lower probability of success).[10] Now we turn to describing the kind of contracts that can be written and enforced. Let I denote total investment and suppose that a bank is willing to lend $C = I - W$ to the borrower, where W denotes the amount of wealth that the entrepreneur puts in the project. In case of success, the lender pays the borrower R_B per unit of investment; in case of failure, she pays him nothing. However, when the project fails, an outcome that we interpret here as bankruptcy, the residual investment $I * L$ is liquidated. Due to problems in the bankruptcy procedure the residual value of this investment is only αIL . In this setup α is a measure of creditor protection.

Banks, beside fixing the level of credit and lending interest rate (implicit in R_b), have the ability to monitor the project, in which case they may force the entrepreneur to adopt the safe technology. This monitoring action has a fixed cost of ψ per entrepreneur. Banks have a zero

[10] These are standard assumptions in this literature.

cost of funding and the banking industry is competitive (banks break even in equilibrium). To focus on the interesting case in which entrepreneurs go bankrupt in case the project fails, we impose parameter conditions in which in equilibrium banks always charge a positive lending interest rate.[11] Finally, we assume there are two types of entrepreneurs with two different levels of wealth, those whose wealth is greater than $\overline{W}$, and those with less wealth.

In the next section we solve the model. First we solve conditional that one type of technology is adopted, and then we endogenize the technology adoption as well as the bank's decision whether to monitor.

Solution Conditional to the Technology Adoption

Conditional to the adoption of a technology the entrepreneur maximizes the following problem

$$\begin{aligned} & Max \;\; \pi(R - R_B)I - W \\ & st \\ IC &: \Delta\pi^e I(R - R_B) > IB \\ BP &: \pi I R_b + (1-\pi)\alpha I L \geq I - W \end{aligned}$$

where IC is the incentive compatibility constraint and BP is the bank's participation constraint. Banks are competitive, therefore in equilibrium they break even (that is the bank's participation constraint is binding). In addition, as profits are linear in I, in equilibrium the entrepreneur IC is bidding, therefore:

$$I = W \frac{1}{1 - \pi(R - \frac{B}{\Delta\pi^e}) - (1-\pi)\alpha L} \quad (1)$$

[11] Formally, we assume that the percentage reduction in expected profits due to bankruptcy costs are smaller than the percentage increase in leverage due to the fact the banks, in good times, receive a large payment than in bad times. In terms of our model: $\frac{(1-\alpha)(1-\pi)L}{\pi R+(1-\pi)L-1} < \frac{1}{(1-\alpha L)}\pi(R - \frac{B}{\Delta\pi^e} - \alpha L)$
The numerator in the right hand side is the expected lost (per unit of investment) due to bankruptcy costs. The denominator is the net present value - NPV of the project. The first term in the left hand side is the "equity multiplier" in the case where banks lend without bankruptcy risk, and the numerator, loosely speaking, is the increase in the "equity multiplier" due to the fact that the bank will receive a higher payment in case of success than of failure (positive loan interest rate).

This condition implies that investment is proportional to the level of the entrepreneur's wealth. The second term in the expression is known in the corporate finance literature as the equity multiplier. This multiplier is increasing with our measure of creditor protection (α) and decreasing with the severity of the moral hazard problem (B). From the previous equation we can derive the equilibrium amount of credit and leverage level:

$$C = I - W = W\frac{\pi(R - \frac{B}{\Delta\pi^e}) + (1-\pi)\alpha L}{1 - \pi(R - \frac{B}{\Delta\pi^e}) - (1-\pi)\alpha L}$$

$$\frac{C}{I} = \pi(R - \frac{B}{\Delta\pi^e}) + (1-\pi)\alpha L \qquad (2)$$

Given that the project's net present value of shirking is lower than the one with effort (even considering the private benefit), the second equation implies that the leverage level will be lower under the adoption of the risky technology (lower π). Equation (2) also shows that the greater the severity of the moral hazard problem (larger B), the lower the firm leverage in equilibrium. The opposite occurs with the degree of creditor protection, higher creditor protection (α) , leads to more credit. The detrimental effect of lack of creditor protection is increasing with the probability of failure; bad institutions hurt during bankruptcy procedures.

Replacing the solution in the entrepreneur's profit function we have:

$$\Pi(W) = (\pi R + (1-\pi)\alpha L - 1)\frac{1}{1 - \pi(R - \frac{B}{\Delta\pi^e}) - (1-\pi)\alpha L}W = \Phi(\pi)W \qquad (3)$$

The profit function is an increasing linear function of wealth. The first term in equation (3) is the profit per unit of investment (unit-profit), and the second term is the already defined equity multiplier. It is interesting to note that both the unit-profit and the "equity multiplier" are lower under the risky project (lower π), therefore the profit per unit of entrepreneur's wealth ($\Phi(\pi)$) is larger in the safe project (higher π) .

Technology Adoption

Once C and R_B are fixed (for a given W and therefore for I), the limited liability characteristic of the debt contract and the same expected return of both technologies imply that

an entrepreneur would always choose the risky technology. This is the standard "asset substitution moral hazard" first pointed out by Jensen and Meckling (1976). Choosing only technology, the entrepreneur maximizes:

$$\underset{\text{Technology}}{Max} \quad (W + C)\pi(R - R_B) - W$$

where $\pi(R - R_B) = \Omega - \pi(R_B - L) - L$

For both cases, that is, if the bank believes that the entrepreneur will choose either the high or low risk technology, the term in parenthesis ($R_B - L = (R - \frac{B}{\Delta\pi^e}) - L$) is positive, therefore the entrepreneur's expected profit is higher with the risky technology.[12]

Bank Project Evaluation

Given that banks are competitive and therefore always break even, a bank decides to evaluate the project before lending if and only if the entrepreneur's profits are higher with monitoring ($\Pi(W,\psi)$) than without it ($\Pi(W,0)$). We already know that once I and R_B are fixed, the entrepreneur would always adopt the risky technology unless he or she is forced by the bank to use the safe one. Therefore, using equation 3, the bank would monitor the entrepreneur if and only if:

$$\Pi(W,\psi) > \Pi(W,0) \Leftrightarrow W\Phi(\pi^s) - \psi > W\Phi(\pi^r)$$

From the previous section, we know that the profit per unit of entrepreneur's wealth is larger for the safe technology ($\Phi(\pi^s) > \Phi(\pi^r)$) , therefore the bank would monitor the entrepreneur if and only if:

$$W > \frac{\psi}{\Phi(\pi^s) - \Phi(\pi^r)} = \overline{W} \qquad (4)$$

[12] This is true by the assumption that the net present value of shirking is lower than the value with effort. See footnote 11.

The previous inequality and equation (4) lead to our main results:

$$\frac{C}{I}|_{W\leq\overline{W}} = \pi^r(R - \frac{B}{\Delta\pi^e}) + (1-\pi^r)\alpha L$$

$$\frac{C}{I}|_{W>\overline{W}} = \pi^s(R - \frac{B}{\Delta\pi^e}) + (1-\pi^s)\alpha L$$

Due to low levels of wealth, projects undertaken by small firms ($W \leq \overline{W}$) are riskier than the ones undertaken by large firms. This occurs because in equilibrium the former choose the risky technology (low π). Such risky choice implies that their equilibrium leverage will be lower than that of large firms ($R - \frac{B}{\Delta\pi^e} > \alpha L$). In addition, for both types of firms an improvement in creditor rights (α) will increase the firm's leverage ($\frac{C}{I}$). However, the increase will be larger for small firms ($W \leq \overline{W}$). The empirical section of this paper tests these results assuming that entrepreneurs in small and medium sized enterprises (SME) have a low initial level of wealth.

3. Data

This section describes the data sources and the variables used in the empirical analysis. Our main sources of data are the World Business Environment Survey (WBES)[13] and several research pieces that have gathered valuable information on the state of creditor protection around the world.[14] For the purposes of this paper the dependent variable is the leverage of firms of different sizes. The theoretical section above suggests that access to credit, defined as the share of investment financed with banking credit, depends on creditor rights, the size of firms, and the interaction of these two.

The WBES is a firm-level data set that consists of responses by more than 10,000 firms across the world to different questions related to a country's business environment. The survey,

[13] This new dataset has been recently used in various cross-country studies. See Beck, Demirgüç-Kunt and Maksimovic (2004) or Beck, Demirgüç-Kunt, Laeven and Maksimovic (2004) for an example.
[14] See for example La Porta et al. (1997, 1998) and Djankov et al. (2003).

carried out in 1999 and 2000, includes questions that describe the financing structure of firms. Enterprise managers were asked to report how much of their investment was financed over the last year from the following sources: i) retained earnings, ii) funds from family and friends, iii) equity, iv) supplier credit, v) leasing arrangements, vi) money lenders, vii) other public sector support, viii) local commercial banks, ix) foreign banks, x) development banks, xi) and others. For our purposes we define the dependent variable as the sum of the fraction of investment financed using credit provided by local commercial banks and foreign banks and label it as "access to bank credit."[15]

When constructing the access to bank credit variable we are very careful in dropping erroneous data. We drop all firms that report that the sum of their funding sources is less than 90 percent and also drop those that report that their funding sources exceed 110 percent. We thus allow the possibility of small mistakes in respondents' addition but eliminate excessively erroneous data.

Another crucial firm level variable in our analysis is the size of firms. Once again this is obtained from the WBES. The WBES classifies firms into three different size groups: small firms are defined as those with more than 5 and less than 50 workers, medium are those with more than 50 but less than 500, and large as those with more than 500. Other firm level variables included in our empirical analysis that can affect access to finance such as the ownership structure, the export orientation, the economic sector in which the firm operates, are detailed in the Appendix.

To measure creditor protection we use a set of variables frequently cited in related literature.[16] The variables are measures of certain institutions and rules and regulation that directly affect the extent to which creditors can seize collateral effectively and efficiently. We use a measure of rule of law that captures the degree of law enforcement in a country. Presumably in countries with poor rule of law, credit contracts tend to be less enforced than

[15] It is important to note that there may be problems with the measurements of these variables individually, given the ambiguous way in which the question was asked. It is unclear if the interpretation of the foreign bank question was the same across countries and entrepreneurs. Some respondents could have interpreted foreign banks as offshore lenders, in which case the local bank would capture lending from local banks that are foreign owned, while others could have interpreted them as local (onshore) lenders owned by foreign parties in which case the local banks variable would capture only lending by local banks that are owned by a party of the same country. However when taking both items together this problem is not present. Moreover, the model does not refer to bank lenders of specific nationalities. In theory both national and foreign parties will be affected in the same way by creditor protections.

[16] See La Porta el al. (1997 and 1998), and Galindo and Micco (2004).

where rule of law is high. We use a direct measure of creditor rights based on La Porta et al. (1997) that measures the degree of creditors' control over the assets of debtors in case of bankruptcy. Following Galindo and Micco (2004), we modify this variable slightly by interacting it with the rule of law in order to capture the extent of law enforcement on what is effectively written in bankruptcy laws. This variable is denoted as effective creditor rights.

Other variables included in the empirical analysis are the extent to which property rights are protected, the duration of a bankruptcy procedure, and legal origin.[17] While more institutional variables have been used in other empirical studies, we focus on these five, which are strictly related to the issue of creditor rights protections that this paper wants to address. Details on the variables, their source and construction are found in Appendix 1.

Table 3 reports descriptive statistics of the data set used in our study. The table shows that developed countries on average have higher values for the creditor protection measures than developing ones. Also of interest is that large firms in developed countries appear to have a lower share of bank credit than firms in developing ones. This could be explained by the fact that in developed countries firms have access to other external sources of finance such as equity markets. This should be particularly true, however, for large firms; small firms tend to rely more on bank credit. When we focus on small firms exclusively we find that bank financing is significantly larger in developed countries relative to developing ones. In developed countries small firms finance about 19.6 percent of their investment with bank credit. In developing countries this share is only 10.7 percent. It is worth noting that, on a country-wide level, the pairwise correlation between firm access to bank credit and a traditional measure of financial development (ratio of credit to the private sector to GDP) is 54 percent and significant at the 1 percent significance level. Excluding developed countries, the correlation rises to 64 percent. These data are hence validated by commonly used macro data.

The following section proposes an empirical strategy to explore the main issues of our model using the data set described above and then reports the results.

[17] Several authors have linked a Common Law legal origin with better protection of creditors. See, for example, La Porta et al. (1997 and 1998).

4. Econometric Methods

The theoretical model above suggests that, relative to large firms, small firms should have less access to credit in countries where creditor rights are unprotected. In order to test this formally we estimate two types of empirical models designed to determine whether the financing gap between small and large firms and medium-sized and large firms is larger in countries where creditors are unprotected. As proxies of creditor protection we use the whole range of variables described in the previous section. Both sets of estimates use as dependent variable the share of financing coming from banks described in the previous section, but they differ in the way it is used.

The first set of estimates uses country averages by groups of firms. Firms are grouped according to their size. Using this methodology we have three observations per country: the average of the share of bank financing for small, medium and large firms in each country of our sample.[18] We regress this variable against dummy variables indicating the size of the firms in the group (small and medium), against interactions of these dummies and the variables proxying for creditor protections, and against country-specific dummies. This approach allows us to use country fixed effects to control for all observable and unobservable country characteristics. In particular, it allows us to control for differences in country business opportunities, volatility, level of investment risk and any institutional difference across countries. This approach also alleviates the potential problem of endogeneity of regulations present in cross-country analysis. Thus, by using data by size groups and controlling for country-wide differences across nations with country fixed effects we account for the feedback from financial development in terms of firms' access to credit to regulations.[19] Note that including fixed effects does not allow us to estimate the direct impact of creditor protection on access to credit, but rather allows us to estimate if the financing gap between large and small firms and large and medium sized firms depends on creditor protections, as suggested by the model above. Given that the dependent variable is naturally truncated between 0 and 1, we estimate a two-limit Tobit model.

Results using the country-group averages are reported in Table 4 and are in the direction suggested by theory. The coefficients on the size variables reflect what is fairly obvious, namely

[18] We drop groups in which we have fewer than 15 firms to compute the averages. That is, if a country does not have at least 15 observations in a size group, that size group for that specific country is dropped out of the sample.

[19] For example, it can be argued that more stringent regulations protecting creditors may arise as financial markets develop.

that access to banking credit is lower for small and medium-sized firms. According to these estimates, on average small firms finance nearly 10 percentage points less of investment with bank credit than large firms, and medium-sized firms nearly 5 percentage points less than large firms. The coefficients on the interactions show that as creditor protection increases the gap is reduced. Note that the coefficients on the interaction of the small size and creditor protection are significant in all specifications, and in most of them at the 1 percent significance level. Except for column 4 (which uses the duration of bankruptcy procedures as the proxy variable) the interaction between creditor protection and the medium size dummy is also significant with the expected sign, indicating that medium-sized firms also have better chances to access credit markets when creditors are protected. In all regressions, as we should expect, the positive effect of creditor protection is larger for small firms than for medium ones.

These results should be interpreted with caution since they mix different types of firms in each group. For example, groups include firms that because of their line of activity have more collateral than others (manufacturing firms) with those that because of their activities tend to have less collateral, and hence are less likely to access banking credit. In addition, groups include firms that are subject to different types of shocks, such as exporting and non-exporting firms, or firms that have access to different types of guarantees, such as publicly owned and foreign owned ones. Controlling for such factors is crucial in order to pinpoint whether the differences in bank financing come from differences in creditor protection or for other reasons that affect firm finance.

In order to fully exploit the data set and control for relevant firm-level characteristics that may affect access to bank finance we also estimate empirical models at the firm level. In such cases the dependent variable is not aggregated by country-group, but rather the firm observation of the share of bank credit itself. In these estimations we control for variables commonly used in this literature, such as whether the firm has an export orientation, the firm's ownership structure (whether it is government owned or foreign owned), and sectoral dummies indicating the area in which the firm operates. As above, we include size dummies (Small and Medium) and interactions between these and the measures of creditor protection. Also as above we control for country fixed effects to capture any institutional or macroeconomic variable that can also affect

access to banking credit. Given that the size dummies are interacted with variables that do not vary at the country level, we use clustered standard errors to adjust them.[20]

The results are reported in Table 5. With respect to firm level controls we find that exporters finance around 9 percent more of their investment with bank loans than firms oriented to the domestic market. Foreign and state-owned firms have less access to credit than local private firms, though the coefficient on foreign ownership is not different from zero. Finally, although not reported in the tables, firms in the manufacturing sector, perhaps due to the tangibility of their assets, have greater access to bank loans.

Focusing on the variables of interest to this study, we find that in fact the size of the financing gap between large and small firms depends on creditor protections. All of the interactions with the small dummy are significant, and the signs are as suggested by theory. An increase in creditor protection reduces the size of the financing gap. Results for reductions in the financing gap between large and medium-sized firms are weaker but also show up in these estimations. Once again, to obtain a view of the economic magnitude consider column 2 where the results using the effective creditor rights index are depicted. According to these results an increase in effective creditor rights from the 20th to the 80th percentile of the distribution reduces the financing gap of small and large firms in nearly 10 percentage points. These are large numbers if we consider that for a country in the 20th percentile of creditor rights the estimated size of the gap between access to bank finance of small and large firms is close to 25 percentage points.

The last column of the table uses legal origin as a proxy for creditor rights. The interpretation of the results is straightforward. In common law countries, the difference in the share of investment financed with bank credit between large and small firms is approximately 9 percentage points. In non-common law countries this difference is 25 percentage points.

5. Robustness

This section present some robustness exercises in order to confirm that the results presented in the previous section are not driven by sample selection or by the way the dependent variable is defined. In order to test if the level of development rather than creditor protection is guiding the results reported in the previous section, we reestimate the equations above including an

[20] See Judson and Owen (1996).

interaction between the small and medium dummies and a dummy indicating the income level of the country where the firm is located. We define three income levels following World Bank classifications.[21] The results are reported in Table 6. After controlling for income level, the interaction of the size dummies with rule of law, effective creditor rights and the legal code dummy remain significant. Some significance is lost in the regressions including property rights and the duration of bankruptcy procedures, though the sign remains unaltered. It is interesting to note the magnitude of the interactions of the income level dummy with the size dummy. The absolute magnitude of the coefficient of such interaction increases as the level of development decreases. The difference between bank financing between large and small firms is larger in low-income countries. It should be noted however, that in high-income countries the interaction is not significant. This again is consistent with the notion that in these countries bank finance can be less relevant for large firms, given that they have developed capital markets.

In addition to the exercise above, we reestimate the empirical model for a smaller sample of countries that includes only developing countries (middle and low-income countries as defined above). These results are reported in table 7, and they are basically identical to those reported previously. Nonetheless, the results are weaker when analyzing interactions between the medium-sized dummy and the creditor protection measures. Possibly what is driving these results is the very definition of medium-sized firms. While firms with more than 50 but fewer than 500 employees may be thought of as medium sized in developed countries, it is possible that these are large firms in developing countries. Given this situation, it is not surprising that we do not find consistent significant differences between medium and large firms. In any case it is worth stressing that even for a sample with similar levels of development there is still evidence that creditor protection reduces the financing gap between large and small firms.

An alternative robustness test in order to guarantee that results are not driven by outliers is to reestimate the regressions repeatedly, dropping a single country in each estimation and analyzing the size and significance of the coefficients. In other words, we replicate the estimation

[21] The high income group consists of OECD high-income countries. In terms of our sample these include Canada, France, Germany, Italy, Portugal, Spain, Sweden, United Kingdom and United States. In the middle income group we include Albania, Argentina, Armenia, Belarus, Belize, Bolivia, Bosnia, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, Czech Rep, Dominican Republic, Ecuador, El Salvador, Estonia, Guatemala, Honduras, Hungary, Kazakhstan, Lithuania, Malaysia, Mexico, Panama, Peru, Philippines, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, Thailand, Trinidad and Tobago, Turkey, Ukraine, Uruguay and Venezuela. Finally in the low-income group we include Azerbaijan, Bangladesh, Cambodia, Georgia, Haiti, India, Indonesia, Kyrgizstan, Moldova, Nicaragua, Pakistan and Uzbekistan.

several times, each time dropping the set of firms correpsonding with a specific country. Summary results of this exercise are reported in Table 8. We show the extreme values (maximum and minimum) of the coeffcients on the small and medium dummy as well as their interaction with the legal origin dummy, and their standard errors are reported. Regarding the small size dummy and its interaction with the protection proxy, there are no significant changes when eliminating any specific country; this indicates that the results are not driven by any outlier country.

Finally, we perform robustness tests that consider changes to the dependent variable. As discussed in Section 3 the WBES survey explores different sources of funding for firms. Regarding bank credit, the survey asks for the share of the firm's investment financed by domestic commercial banks, foreign banks and development banks. Throughout the paper we chose to focus on the information provided for financing from private banks (domestic and foreign) exclusively.

We did not include development bank credit, given that credit from these institutions may respond to different incentives than those from private banks. In addition, development banks and commercial banks have different utility functions. Development banks usually have some type of social mandate that guides their credit decisions. These are not necessarily related with making sound financial decisions and tend to be more oriented toward political rather than economic incentives. Better creditor protection improves the management of financial risks, which is more likely to be part of the utility function of commercial banks rather than part of the utility function of development banks. If development banks are doing their job, they should be providing funds to firms that for some reason do not have access to credit markets. One of those reasons can be poor creditor protection. Including development bank credit could potentially reduce the impact of creditor protection on access to credit.

In columns 1 and 2 of Table 9 we report estimations using a redefined measure of access to bank credit that includes credit from development banks. To reduce the amount of output we report results using only two of the five proxies used throughout the study, effective creditor rights and legal origin. Even when including this new source of credit in the specification, results remain strong for the interactions with the small size dummy but the significance of the interactions with the medium-sized dummy falls.

Finally, in columns 3 and 4 we report the same type of estimations for another definition of the dependent variable. In this case we exclude foreign bank credit and concentrate only on credit provided by local domestic privately owned banks. The results are basically identical supporting the view that greater creditor protection reduces the financing gap between large and small firms.

Additional robustness exercises in which we control for the differential impact on small and medium firms of different banking structure characteristics, such as the share of banking assets owned by the government, the degree of concentration of the banking industry and if countries have or not an explicit deposit insurance mechanism, are reported in appendix 2. The basic results of the paper hold when including such controls.

6. Conclusions

Information asymmetries tend to increase financial restrictions for smaller creditors that usually have fewer assets to pledge as collateral. The main intuition behind this result is that lenders face monitoring costs in order to reduce moral hazard. Unfortunately, this monitoring action has a fixed cost per loan, and therefore is only worthwhile when the borrower has a high level of wealth, which implies a high level of investment. In equilibrium banks will not monitor small firms (entrepreneurs with low initial wealth), and therefore these firms will use the risky technology that implies a higher probability of bankruptcy. This fact implies that any policy that reduces inefficiencies in the bankruptcy procedure will have a greater positive effect on small than on large firms. Using a model based on Hölmstrom and Tirole (1997, 1998) and Bester and Hellwig (1987) we formalized this idea. Our model has three testable implications. First, large firms tend to be more leveraged than small firms; second, large firms tend to be less volatile than small firms due to their technology adoption; and third, improvements in contract enforcement or on the efficiency of bankruptcy procedures increases access to credit for small firms relative to large ones.

This paper reviews evidence on the degree of creditor rights protection and access to credit for small and medium-size enterprises. Results are drawn from a survey of firms around the world to explore the role of creditor protection on small and medium-sized enterprises' access to credit. In particular, we test whether the share of firm investment financed with bank credit depends on legal protections and firm size. Concurring with the predictions of our model,

we present evidence that small firms are less leveraged and more volatile than large ones. In addition, using econometric techniques that allow us to deal with observed and unobserved country specific components as well as with partial endogeneity, we find that better protection of creditors reduces the financing gap between small and large firms. The degree to which smaller firms are constrained depends on the quality of the regulatory framework, suggesting that in countries where creditor rights are protected (and enforced), smaller firms have greater access to bank credit to finance investment. In our sample this effect is large. In common law countries (where creditor protection is high), the difference in the share of investment financed with bank credit between large and small firms is approximately 9 percentage points. In non-common law countries this difference is 25 percentage points.

Appendix 1. Data Sources

Variable	Definition	Source
Firm Level Data		
Share of Bank Finance	Enterprise managers responses when asked how much of their investment was financed over the last year with credit from local commercial banks. For robustness exercises we use definitions that include credit from foreign banks and credit from development banks.	World Business Environment Survey (WBES). Available at: http://info.worldbank.org/governance/wbes/
Government Ownership	Dummy variable equal to one if any government agency or state body has a financial stake in the ownership of the firm, zero otherwise.	WBES
Foreign Ownership	Dummy variable equal to one if any foreign company or individual has a financial stake in the ownership of the firm, zero otherwise.	WBES
Institutional Data		
Rule of Law	Composite Rule of Law Indicator	World bank governance indicators dataset. Available at: http://www.worldbank.org/wbi/governance/govdata2002/index.html
Effective Creditor Rights Index	Interaction between a creditor rights index and the rule of law indicator. The creditor rights index is an indicator of creditor rights in insolvency, based on the methodology of La Porta et al (1997 and 1998). The indicator measures four powers of secured lenders in liquidation and reorganization: (i) whether there are restrictions on entering reorganization, (ii) whether secured creditors are able to seize their collateral after the decision for reorganization is approved, in other words whether there is no "automatic stay" or "asset freeze" imposed by the court. (iii) whether secured creditors are paid first out of the proceeds from liquidating a bankrupt firm and (iv) whether an administrator is responsible for management of the business during the resolution of reorganization, instead of having the management of the bankrupt debtor continue to run the business. A value of 1 is assigned for each variable when a country's laws and regulations provide these powers for secured creditors. The aggregate creditor rights index sums the total score across all four variables.	The data is available at the doing business project's website of the Wolrd Bank: http://rru.worldbank.org/DoingBusiness/
Property Rights	Assesment on whether financial assets and wealth are clearly delineated and protected by law	Global Competitiveness Report
Duration of Bankruptcy Procedures	Calendar years that a bankruptcy usually procedure takes. The variable captures the average duration that insolvency lawyers estimate is necessary to complete a procedure. The measure represents the actual time of the insolvency proceedings, not the time that the law may mandate.	The data is available at the doing business project's website of the Wolrd Bank: http://rru.worldbank.org/DoingBusiness/
Common Law Origin	Dummy variable equal to one if a country has a common law legal origin and zero otherwise.	Djankov et al (2003)

Appendix 2. Additional Controls

Regression Results Using Firm Level Data, Controling for banking structure characteristics

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Government Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ + β_5*Medium$_{ij}$ + β_6*Small$_{ij}$ * Protection Proxy$_j$ + β_7*Medium$_{ij}$ * Protection Proxy$_j$ + β_8*Small$_{ij}$ * GOB$_j$ + β_9*Medium$_{ij}$ * GOB$_j$ + + β_{10}*Small$_{ij}$ * CONCENT$_j$ + β_{11}*Medium$_{ij}$ * CONCENT$_j$ + β_{12}*Small$_{ij}$ * D_Ins$_j$ + β_{13}*Medium$_{ij}$ * D_Ins$_j$ + D$_{ij}$ + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise.

Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. GOB is the share of assets of the banking system owned by government owned banks, CONCENT is a measure of concentration of the banking industry that represents the share of banking system's assets owned by the 5 largest banks, and D_Ins is a dummy variable taking value 1 when there is an explicit deposit insurance system in the country. Dij are a set of dummies indicating the sector of operations of firm i in country j. hj is a country fixed effect. The dependent variable is truncated at 0 and 1.

Dependent Variable: Share of Bank Finance (Firm Level)					
	1	2	3	4	5
Exporting Firm	7.926	8.241	8.352	8.656	8.169
	[2.028]***	[2.023]***	[2.070]***	[2.089]***	[2.028]***
Government Ownership	-11.799	-11.706	-11.167	-12.877	-12.328
	[3.126]***	[3.303]***	[3.181]***	[3.415]***	[3.207]***
Foreign Ownership	0.155	-0.736	-0.797	-0.879	-0.328
	[2.798]	[2.846]	[2.859]	[2.919]	[2.777]
Small	-56.043	-25.076	-29.78	-1.755	-15.499
	[17.377]***	[15.246]	[16.113]*	[14.234]	[13.766]
Medium	-43.953	-25.893	-29.296	-20.328	-23.655
	[15.188]***	[12.804]**	[14.814]**	[12.471]	[11.933]**
Small*GOV	7.406	-6.359	-7.912	6.775	-6.919
	[14.887]	[15.329]	[14.948]	[16.487]	[15.818]
Medium*GOV	22.535	18.356	8.73	28.247	19.281
	[10.776]**	[12.098]	[10.979]	[13.131]**	[12.549]
Small*CONCENT	-8.819	-3.364	-11.522	2.637	-2.971
	[8.581]	[7.946]	[8.159]	[7.551]	[8.015]
Medium*CONCENT	0.192	2.133	-0.055	3.919	2.437
	[7.132]	[6.719]	[6.667]	[6.463]	[6.683]
Small*D_Ins	5.981	4.355	-3.255	-16.432	-5.845
	[15.018]	[18.539]	[15.231]	[18.875]	[16.546]
Medium*D_Ins	23.942	18.717	20.972	14.815	18.913
	[13.875]*	[16.308]	[13.610]	[16.979]	[15.052]
Small*rule of law	70.777				
	[17.776]***				
Medium*rule of law	35.55				
	[15.419]**				
Small*Ef. Creditor Rights		24.319			
		[13.985]*			
Medium*Ef. Creditor Rights		12.146			
		[12.712]			
Small*Property Rights			5.897		
			[2.089]***		
Medium*Property Rights			2.338		
			[2.066]		
Small*Duration of Bankruptcy				-4.241	
				[1.251]***	
Medium*Duration of Bankruptcy				-1.012	
				[0.963]	
Small*Common Law Origin					12.086
					[6.552]*
Medium*Common Law Origin					1.939
					[6.199]
Observations	5230	5101	4404	5031	5230
Number of Countries	50	49	42	48	50
Sector of Operation Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes

Clustered standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

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Table 1: Share of Bank Credit - Average Values

The source of the data is the WBES and is computed based on firm level surveys. Small firms are defined as those with thes than 50 workers but more than 5. Medium sized firms are those with more than 50 but less than 500. Large firms are those with more than 500 workers. The countries included in the sample are: Albania, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Bolivia, Bosnia, Brazil, Bulgaria, Cambodia,Canada, Chile, China, Colombia, Costa Rica, Croatia, Czech Rep, Dominican Republic, Ecuador, El Salvador, France, Georgia, Germany, Guatemala, Haiti, Honduras, Hungary, India, Indonesia, Italy, Kazakhstan, Kyrgizstan, Lithuania, Malaysia, Mexico, Moldova, Nicaragua, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Romania, Russia, Singapore, Slovakia, Slovenia, Spain, Sweden, Thailand, Trinidad&Tobago, Turkey, United Kingdom, Ukraine, Uruguay, United States, Uzbekistan,and Venezuela

Size	All Sample	Developing Countries
Small	11.40	10.73
Medium	17.12	16.99
Large	25.68	26.33

Table 2: Job Reallocation by Firm Size

Job Turnover is defined as the sum of the absolute value of plant's employment changes divided by the average total employment in years t-1 and t.Sources: Davis,Haltiwanger and Schuh (1996) and IDB (2004)

Plant Size	Brazil	Chile	Colombia	Mexico	U.S.A
less than 50 workers	0.40	0.40	0.29	0.18	0.34
50-100	0.33	0.30	0.21	0.17	0.26
100-250	0.30	0.27	0.10	0.15	0.20
more than 250	0.21	0.18	0.08	0.12	0.14
Period	1991-2000	1986-1999	1977-1999	1993-2000	1973-1988
Sector	All Enterprises	Manuf.	Manuf.	Manuf	Manuf.

Table 3: Summary Statistics

The first three columns in the table report the average share of investment financed with credit from private banks in small firms, medium sized firm and large firms respectively. The data ranges between 0 and 100%, and the source is the WBES. The column 4 reports a Rule of Law index normalized between 0 and 1. Larger values mean higher rule of law. Column 5 reports a measure of effective creditor rights that interacts La Porta et al (1997) measure of creditor rights with the rule of law index. Effective creditor rights is also bounded between 0 and 1; higher values means higher creditor rights protection. Column 6 reports a measure of property rights protection. The minimum value of the index is 1 and the maximum is 7. Higher values reflect greater protection of property rights. Column 7 reports the duration of bankruptcy procedures in years. Higher values imply a longer procedure. The source of the data is reported in the appendix.

The sample of developing countries incluyes Albania, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Belice, Bolivia, Bosnia, Brazil, Bulgaria, Cambodia, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Dominican Republic, Ecuador, El Salvador, Estonia, Georgia, Guatemala, Haiti, Honduras, Hungary, India, Indonesia, Kazakhstan, Kyrgizstan, Lithuania, Malaysia, Mexico, Moldova, Nicaragua, Pakistan, Panama, Peru, Philippines, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, Thailand, Trinidad&Tobago, Turkey, Ukraine, Uruguay, Uzbekistán, and Venezuela. The sample of developed countries incluyes Canada, France, Germany, Italy, Portugal, Spain, Sweden, United Kingdom, and United States.

	Share of Bank Credit in Small Firms (%)	Share of Bank Credit in Medium Sized Firms (%)	Share of Bank Credit in Large Firms (%)	Rule of Law	Effective Creditor Rights	Property Rights	Duration of Bankruptcy Procedures
Complete Sample							
Mean	11.4	17.1	25.7	0.5	0.3	4.3	2.9
Standard Deviation	10.1	11.7	14.6	0.2	0.2	1.2	2.3
Developing Country Sample							
Mean	10.7	17.0	26.3	0.5	0.2	3.9	3.1
Standard Deviation	9.3	11.9	14.5	0.1	0.2	1.1	2.4
Developed Country Sample							
Mean	19.6	18.3	19.9	0.8	0.4	5.7	1.8
Standard Deviation	11.8	11.4	16.1	0.1	0.3	0.6	0.8

Table 4: Regression Results Using Country-Size Level Data

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Small$_{ij}$ + β_2*Medium$_{ij}$ + β_3*Small$_{ij}$ * Protection Proxy$_j$ + β_4*Medium$_{ij}$ * Protection Proxy$_j$ + η_j + ε_{ij}. i denotes the sector size (small, medium, or large) and j denotes the country. Share of bank lending is the average share of investment financed with bank credit in firms of size i in country j. Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. η_j is a country fixed effect. The dependent variable is truncated at 0 and 1.

Dependent Variable: Share of Bank Finance (Averqage Value per Country-Group)					
	1	2	3	4	5
Small	-26.575	-13.077	-24.905	-6.245	-10.394
	[3.037]***	[1.735]***	[3.852]***	[1.858]***	[1.205]***
Medium	-16.162	-6.182	-16.244	-2.175	-4.359
	[3.004]***	[1.709]***	[3.764]***	[1.830]	[1.164]***
Small*rule of law	34.111				
	[5.516]***				
Medium*rule of law	24.76				
	[5.45]***				
Small*Ef. Creditor Rights		18.359			
		[5.784]***			
Medium*Ef. Creditor Rights		12.70			
		[5.747]**			
Small*Property Rights			3.953		
			[0.883]***		
Medium*Property Rights			3.116		
			[0.859]***		
Small*Duration of Bankruptcy				-0.979	
				[0.502]*	
Medium*Duration of Bankruptcy				-0.468	
				[0.489]	
Small*Common Law Origin					9.856
					[3.069]***
Medium*Common Law Origin					7.584
					[3.053]**
Observations	156	152	128	149	156
Number of Countries	61	59	48	58	61
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Regression Results Using Firm Level Data

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Government Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ + β_5*Medium$_{ij}$ + β_6*Small$_{ij}$ * Protection Proxy$_j$ + β_7*Medium$_{ij}$ * Protection Proxy$_j$ + D_{ij} + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise. Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. D_{ij} are a set of dummies indicating the sector of operations of firm i in country j. η_j is a country fixed effect. The dependent variable is truncated at 0 and 1.

Dependent Variable: Share of Bank Finance (Firm Level)					
	1	2	3	4	5
Exporting Firm	8.837	9.252	8.779	9.694	9.119
	[1.947]***	[1.953]***	[2.011]***	[2.030]***	[1.968]***
Government Ownership	-9.398	-9.895	-9.045	-10.634	-9.802
	[2.999]***	[3.102]***	[3.188]***	[3.206]***	[3.036]***
Foreign Ownership	-0.696	-1.43	-3.251	-1.603	-1.087
	[2.696]	[2.793]	[2.700]	[2.864]	[2.691]
Small	-55.162	-29.613	-39.6	-13.742	-24.741
	[9.156]***	[4.253]***	[8.962]***	[4.735]***	[3.437]***
Medium	-23.976	-10.428	-21.467	-5.287	-8.047
	[8.057]***	[3.510]***	[8.879]**	[4.050]	[2.810]***
Small*rule of law	64.147				
	[14.850]***				
Medium*rule of law	33.948				
	[13.432]**				
Small*Ef. Creditor Rights		30.031			
		[9.574]***			
Medium*Ef. Creditor Rights		15.147			
		[8.872]*			
Small*Property Rights			5.019		
			[1.979]**		
Medium*Property Rights			3.575		
			[1.931]*		
Small*Duration of Bankruptcy				-2.934	
				[1.109]***	
Medium*Duration of Bankruptcy				-0.379	
				[0.843]	
Small*Common Law Origin					15.781
					[5.538]***
Medium*Common Law Origin					9.39
					[4.813]*
Observations	6153	5998	4865	5928	6153
Number of Countries	62	60	49	59	62
Sector of Operation Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes

Clustered standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Regression Results Using Firm Level Data (Controlling by level of income)

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Government Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ * Low Income$_j$+ β_5*Medium$_{ij}$ * Low Income$_j$ + β_6*Small$_{ij}$ * Medium Income$_j$ + β_7*Medium$_{ij}$ * Medium Income$_j$ + β_8*Small$_{ij}$ * High Income$_j$ + β_9*Medium$_{ij}$ * High Income$_j$ + β_{10}*Small$_{ij}$ * Protection Proxy$_j$ + β_{11}*Medium$_{ij}$ * Protection Proxy$_j$ + D_{ij} + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise. Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise.

D_{ij} are a set of dummies indicating the sector of operations of firm i in country j. η_j is a country fixed effect. The dependent variable is truncated at 0 and 1. Low Income, Medium Income and High Income countries are dummies indicating the income level of a country following World Bank classification.

Dependent Variable: Share of Bank Finance (Firm Level)					
Exporting Firm	8.859	9.245	8.746	9.719	9.079
	[1.976]***	[1.970]***	[2.053]***	[2.037]***	[1.966]***
Government Ownership	-9.815	-10.626	-9.618	-11.406	-10.395
	[2.994]***	[3.110]***	[3.196]***	[3.183]***	[3.015]***
Foreign Ownership	-0.836	-1.198	-3.248	-1.192	-0.758
	[2.667]	[2.773]	[2.687]	[2.848]	[2.674]
Small*Low Income	-48.537	-41.455	-26.886	-29.925	-39.336
	[10.325]***	[8.311]***	[8.811]***	[9.368]***	[7.842]***
Medium* Low Income	-29.426	-16.353	-27.009	-10.308	-14.659
	[9.540]***	[7.218]**	[10.191]***	[8.578]	[6.846]**
Small*Middle Income	-40.812	-28.707	-28.606	-18.846	-25.838
	[10.792]***	[4.203]***	[9.842]***	[4.925]***	[3.437]***
Medium* Middle Income	-30.27	-10.931	-22.134	-6.157	-7.573
	[9.842]***	[3.448]***	[9.495]**	[4.226]	[2.764]***
Small*High Income	-18.968	1.673	-0.654	12.33	4.258
	[16.375]	[7.467]	[14.614]	[7.371]*	[7.326]
Medium* High Income	-39.224	-6.206	-22.503	0.382	-3.316
	[15.198]***	[7.211]	[13.935]	[6.818]	[6.677]
Small*rule of law	34.147				
	[17.084]**				
Medium*rule of law	47.893				
	[16.899]***				
Small*Ef. Creditor Rights		20.594			
		[9.441]**			
Medium*Ef. Creditor Rights		18.124			
		[8.983]**			
Small*Property Rights			1.531		
			[2.211]		
Medium*Property Rights			3.852		
			[2.121]*		
Small*Duration of Bankruptcy				-1.895	
				[1.183]	
Medium*Duration of Bankruptcy				-0.141	
				[0.951]	
Small*Common Law Origin					13.767
					[5.231]***
Medium*Common Law Origin					10.061
					[5.140]*
Observations	6153	5998	4865	5928	6153
Number of Countries	62	60	49	59	62

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Regression Results Using Firm Level Data (Sample of Developing Countries)

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Governmen Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ + β_5*Medium$_{ij}$ + β_6*Small$_{ij}$ * Protection Proxy$_j$ + β_7*Medium$_{ij}$ * Protection Proxy$_j$ + D$_{ij}$ + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise. Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. D$_{ij}$ are a set of dummies indicating the sector of operations of firm i in country j. η_j is a country fixed effect. The dependent variable is truncated at 0 and 1.

Dependent Variable: Share of Bank Finance (Firm Level)					
	1	2	3	4	5
Exporting Firm	9.109	9.615	9.002	10.137	9.517
	[2.153]***	[2.145]***	[2.244]***	[2.249]***	[2.144]***
Government Ownership	-9.19	-10.085	-8.599	-10.922	-10.146
	[3.153]***	[3.267]***	[3.383]**	[3.375]***	[3.175]***
Foreign Ownership	0.598	0.228	-2.058	0.223	0.686
	[2.825]	[2.942]	[2.825]	[3.038]	[2.821]
Small	-43.617	-32.761	-26.378	-19.157	-27.81
	[9.945]***	[4.364]***	[9.264]***	[5.097]***	[3.516]***
Medium	-26.899	-12.141	-19.92	-5.81	-7.856
	[9.411]***	[3.592]***	[9.591]**	[4.397]	[2.883]***
Small*rule of law	38.596				
	[17.053]**				
Medium*rule of law	41.819				
	[16.659]**				
Small*Ef. Creditor Rights		30.426			
		[8.896]***			
Medium*Ef. Creditor Rights		20.791			
		[8.788]**			
Small*Property Rights			1.16		
			[2.157]		
Medium*Property Rights			3.283		
			[2.171]		
Small*Duration of Bankruptcy				-2.201	
				[1.135]*	
Medium*Duration of Bankruptcy				-0.34	
				[0.880]	
Small*Common Law Origin					15.432
					[5.191]***
Medium*Common Law Origin					6.934
					[4.622]
Observations	5600	5445	4312	5375	5600
Number of Countries	53	51	40	50	53
Sector of Operation Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes

Clustered standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 8: Robustness Exercise. Regressions Dropping One Country at a Time

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Government Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ + β_5*Medium$_{ij}$ + β_6*Small$_{ij}$ * Protection Proxy$_j$ + β_7*Medium$_{ij}$ *Protection Proxy$_j$ + D$_{ij}$ + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise.

Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. The protection proxies are defined as in the previous tables. The dependent variable is truncated at 0 and 1. Succesive regressions are dropped, and in each one country at a time is dropped. The table reports the maximum and minimum variables of a set of relevant coefficients obtained in this exercise.

Protection Variable Proxy:		Rule of Law	Effective Creditor Rights	Property Rights	Duration of Bankruptcy Procedure	Legal Origin
Coefficient						
Small	Minimum Value	-63.236	-32.147	-49.73	-15.866	-26.618
		[8.605]**	[4.228]**	[7.893]**	[4.797]**	[3.429]**
	Maximum Value	-51.095	-28.17	-37.042	-10.925	-23.346
		[8.739]**	[4.107]**	[8.918]**	[4.347]*	[3.321]**
Small*Protection Proxy	Minimum Value	55.836	25.882	4.191	-4.107	13.246
		[14.808]**	[9.432]**	[1.962]*	[1.319]**	[5.419]*
	Maximum Value	75.736	34.336	6.976	-2.4	19.21
		[14.063]**	[9.352]**	[1.771]**	[1.167]*	[5.772]**
Medium	Minimum Value	-26.14	-11.52	-25.762	-6.786	-8.787
		[8.036]**	[3.487]**	[9.704]**	[4.163]	[2.809]**
	Maximum Value	-21.893	-9.305	-18.117	-3.36	-7.126
		[7.975]**	[3.539]**	[8.592]*	[4.417]	[2.786]*
Medium*Protection Proxy	Minimum Value	30.47	9.411	2.925	-1.286	7.316
		[13.845]*	[10.893]	[1.885]	[1.070]	[4.979]
	Maximum Value	38.646	19.074	4.462	0.162	13.663
		[13.085]**	[8.598]*	[2.082]*	[0.825]	[4.570]**

Robust standard errors in brackets. * significant at 5%; ** significant at 1%

Table 9: Robustness: Alternative Dependent Variables

The estimated model is a two limit Tobit of the form: Share of Bank Lending$_{ij}$ = β_1*Exporting Firm$_{ij}$ +β_2*Government Ownership$_{ij}$ +β_3*Foreign Ownership$_{ij}$ +β_4*Small$_{ij}$ + β_5*Medium$_{ij}$ + β_6*Small$_{ij}$ * Protection Proxy$_j$ + β_7*Medium$_{ij}$ * Protection Proxy$_j$ + D$_{ij}$ + η_j + ε_{ij}. i denotes the firm and j denotes the country. Share of bank lending is the share of investment financed with bank credit in i in country j. Exporting firm is a dummy that takes values 1 if the firm exports and 0 otherwise. Government ownership is a dummy that takes value 1 if the firm has any government ownership and 0 otherwise. Foreign ownership is a dummy taking value 1 if the firm has any foreign ownership and 0 otherwise. Small and Medium are dummies taking value of 1 if firms have more than 5 but less than 50 workers or more than 50 and less than 500 workers respectively and 0 otherwise. D_{ij} are a set of dummies indicating the sector of operations of firm i in country j.hj is a country fixed effect. The dependent variable is truncated at 0 and 1. In Columns 1 and 2 the dependent variable is the sum of credit provided by private commercial banks and development banks.

In columns 3 and 4 the dependent variable is credit provided by domestically owned commercial banks.

Dependent Variable: Share of Bank Finance (Firm Level)				
	Including Development Bank Finance		Excluding Foreign Bank Finance	
	1	2	3	4
Exporting Firm	8.778	8.823	4.01	4.183
	[1.871]***	[1.881]***	[2.223]*	[2.175]*
Government Ownership	-5.604	-5.674	14.567	12.122
	[3.084]*	[3.018]*	[5.114]***	[4.942]**
Foreign Ownership	-0.507	-0.098	-15.819	-14.901
	[2.784]	[2.702]	[3.297]***	[3.165]***
Small	-32.129	-24.092	-23.335	-20.753
	[4.115]***	[3.337]***	[4.665]***	[3.768]***
Medium	-9.212	-6.03	-0.143	0.146
	[3.275]***	[2.670]**	[3.808]	[3.100]
Small*Ef. Creditor Rights	37.706		24.158	
	[9.583]***		[10.744]**	
Medium*Ef. Creditor Rights	14.812		4.426	
	[8.701]*		[9.949]	
Small*Common Law Origin		11.681		19.153
		[5.218]**		[5.005]***
Medium*Common Law Origin		4.473		3.737
		[4.539]		[4.375]
Observations	5998	6153	5998	6153
Number of Countries	60	62	60	62
Sector of Operation Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes

Clustered standard errors in parenthesis. * significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Access to Credit and Legal Origin