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The Impact of the Business Environment on Young Firm Financing

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Abstract

This paper uses a dataset of more than 70,000 firms in over 100 countries to systematically study the use of different financing sources for new and young firms, in comparison to mature firms. The authors find that in all countries younger firms rely less on bank financing and more on informal financing. However, they also find that younger firms use more bank finance in countries

with stronger rule of law and better credit information, and that the reliance of young firms on informal finance decreases with the availability of credit information. Overall, the results suggest that improvements to the legal environment and availability of credit information are disproportionately beneficial for promoting access to formal finance by young firms.

This paper—a product of the Finance and Private Sector Development Team, Development Research Group—is part of a larger effort in the department to study entrepreneurial and SME finance. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at lklapper@worldbank.org.

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The Impact of the Business Environment on Young Firm Financing

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1. Introduction

Access to external finance and the ability to undertake profitable investment opportunities is an important ingredient for success of any new business and ultimately for economic development and growth (see Levine, 2005). However, liquidity constraints hinder potential entrepreneurs from starting businesses (see, for example, Evans and Jovanovic, 1989) and reduce growth rates, especially in small businesses (Beck, Demirguc-Kunt, and Maksimovic, 2004). Relaxing these constraints can promote new firm entry and success. For example, a cross-country study of 35 European countries finds that entry is higher in more financially dependent industries in countries that have greater financial development (Klapper, Laeven, and Rajan, 2006).

Financing options of mature firms could be explained by the pecking order theory of financing (Myers and Majluf, 1984). These firms generally have more internal funds (retained earnings) due to higher profitability and lower growth opportunities and, therefore, might prefer to use internal funds first (Bulan and Yan, 2007, Brealey and Myers, 2002). Furthermore, a good reputation, such as a long credit history, mitigates the adverse selection problem between borrowers and lenders. Mature firms, therefore, are able to obtain loans on better financial terms compared to their younger firm counterparts (Bulan and Yan, 2007; Carpenter and Rondi, 2000) and generally use debt before equity for their financing needs (Bulan and Yan, 2007).

As a result, around the world, new firms without a proven track record experience more severe financing constraints. For instance, studies conducted in China, Italy and the U.S. found that information asymmetry significantly limits the debt capacity of young firms (Carpenter and Rondi, 2000; Shirai; Bulan and Yan, 2007). In addition, higher

financing constraints reduce the likelihood of starting a business in Thailand, especially in poorer regions (Paulson and Townsend, 2004). In comparison, having an existing bank relationship increases the chances of starting a business with hired employees in Bosnia and improves the odds of survival for the new entrepreneur (Demirguc-Kunt, Klapper, and Panos, 2008). Furthermore, according to studies of German and Canadian firms, a higher equity ratio in new firms has a particularly positive effect on investment in R&D, while such an effect has not been found in old firms (Müller and Zimmermann, 2006; Baldwin et al., 2002).

Without access to formal financing, start-up firms might resort to informal sources. For example, a previous study finds that family and friends provide affordable and accessible funding to Indian SME's in start-up and growth phases (Allen, et al., 2006). Yet financing from friends and family might be “unreliable, untimely” and bearing “significant non-financial costs” (Djankov et al 2002, p. 9). For instance, a study across 29 countries finds that firms choose informal financing over more formal routes when government officials are corrupt as a way to avoid paying bribes (Mehnaz and Wimpey, 2007); thus firms might be willing to bear the costs of informal financing if there is the added benefit of evading corruption. A study of Chinese firms finds that while more firms use informal financing than bank financing, only bank financing is associated with higher growth rates (Ayyagari et al., 2007).

To the best of our knowledge there is no systematic cross-country study of the usage of financing by new and young firms. Our study attempts to fill this gap by examining a vast firm-level database constructed from 170 World Bank Enterprise Surveys (WBES). This database includes about 70,000 firms, most of which are small

and medium sized (SMEs), in 104 developing and developed countries, including many low-income countries.¹ We use this database to study what types of financing are important for new firms, relative to older firms. Furthermore, we exploit the large cross-country variation in our sample to test the effect of differences in institutions on new and young firms. Specifically, our paper addresses two questions: (1) What is the relationship between firm age and the usage of external financing?; and (2) What is the differential impact of the business environment on the usage of financing by younger versus older firms?

To address the first question we investigate the relationship between firm age and usage of different sources of financing, including local and foreign bank financing, leasing, trade credit, credit cards, family and friends, and informal lenders. We specifically focus on the use of formal versus informal finance over the lifecycle of the firms, controlling for other firm characteristics.

To address the second question we look at the interactions of the country-level institutional characteristics and firm age. These interactions show whether the institutional environment has differential impact on new and young firms. We specifically focus on two factors that are important for formal financial contracts - the quality of the legal system (i.e. the rule of law) and availability of credit information. Previous literature shows that the level of development and institutional environment in a country can significantly impact the type of financing that firms are able to access (Beck, Demirguc-Kunt, and Maksimovic, 2007, Brown, Chavis, Klapper 2008). We extend this research and investigate whether particular features of the institutional environment are more or less important to young firms, relative to older firms.

¹ The complete questionnaire and database is available at <http://www.enterprisesurveys.org>.

A priori it is not clear whether a better business environment should be more or less important to younger firms, relative to older ones. For example, the availability and quality of credit information might be more important to young firms because such information helps to reduce adverse selection and moral hazard problems, which are more present in younger firms. Alternatively, new firm owners may not have a successful history or track record of borrowing and repayment, and hence availability of credit information might be less relevant for them. Ultimately, this is the empirical question our data allows us to answer – whether or not a specific feature of the business environment is more or less important for young firms versus older firms.

Our paper has two main contributions. First, we find that around the world younger firms use less formal (bank) finance and use more informal finance relative to older firms. Second, and more importantly, we find that the institutional environment is disproportionately more important for younger firms. Thus, the quality of the legal system and availability of credit information reduce the disadvantage placed by firm age and “even out” the playing field. These results suggest that asymmetric information problems, which present more of a constraint in access to finance for younger firms, can be alleviated by a better institutional environment. While we cannot rule out the selection bias in our level results (i.e. firms with access to formal finance might survive longer), our interaction results are not driven by the selection bias, since the interaction shows less difference in bank finance usage between younger and older firms in countries with better rule of law and credit information.

In this paper we consider firm age as a useful proxy for entrepreneurial firms. For example, Schumpeter wrote that a person is an entrepreneur “only when he actually

carries out new combinations and loses that character as soon as he has built up his business and settled into running it.” (Schumpeter, 1942). Thus, new and young firms are more likely to retain the “entrepreneurial spirit” alluded to by Schumpeter. Other useful proxies for entrepreneur might be firms where an individual or family is the largest shareholder; whether the firm is managed by the owner; and if the firm is registered as a sole-proprietor (relative to a limited-liability partnership or corporation.) In the later case, the person who starts the business, the entrepreneur, is actually running the business. In the paper we focus on young firms as a proxy for ‘entrepreneurial’ firms, while also exploring other samples of firm ownership and legal types.

The rest of the paper is organized as follows: Section 2 presents our data and descriptive statistics, Section 3 presents our regression results on the relationship between firm age and usage of financing, Section 4 presents our results on the differential impact of business environment on usage of financing by young versus older firms, Section 5 presents robustness checks, and Section 6 concludes.

2. Data and Summary Statistics

The WBES dataset includes firms across multiple sectors (manufacturing, services, agriculture, and construction). The database includes both quantitative and qualitative information on firm characteristics, including sources of finance, barriers to growth, access to infrastructure services, legal difficulties, and corruption. The dataset also includes some measures of firm performance, such as multiple years of historical data on employment and sales.

The database includes over 70,000 randomly sampled firm-level observations collected in 170 cross-sectional surveys in 104 countries, i.e. many countries include multiple years of data.² The database is globally represented, which we summarize by region: Sub-Saharan Africa (AFR); East Asia (EA); South Asia (SA); Eastern Europe and Central Asia (ECA); Latin America and Caribbean (LAC); and the Middle-East and Northern Africa (MENA). The database also includes a few industrialized countries (IND). Figure 1 shows the distribution of countries and observations, by region. A notable difference between the two panels is that surveys in Africa include a relatively small number of firm observations and fewer countries have multiple survey years, while surveys in EA include a relatively large number of firms and include multiple years. A complete list of countries and firm observations is shown in Appendix 1.

Figure 2, Panel A, shows the distribution of firms across income groups, which highlights the uniqueness of our dataset. Unlike similar studies of entrepreneurial finance which focus on firms in the U.S. or other developed countries, firms in our database are distributed across income groups, with a focus on developing countries – which are most likely to face barriers in the business environment. Our database includes 38 low-income and 37 lower-middle income countries, which account for over 73% of observations. The surveys were conducted over the span for 7 years, 1999-2008. Figure 2, Panel B, shows the distribution across firm years. The majority of observations were collected in the past 5 years.

Figure 3 shows the distribution of firms in our sample across sectors, ownership, and output markets. We expect these firm characteristics to affect the usage of external

² We are unable to control for whether an individual firm is included in multiple survey years, although the likelihood of a firm being included more than once is insignificant.

financing, relative to other young firms. First, some surveys focused exclusively on manufacturing companies, so in part by design, the majority of firms in our sample are manufacturing firms (60%), followed by services (30%) and construction (6%). Since manufacturing companies are likely to be more capital intensive, sources of entrepreneurial finance should be particularly illustrative of country-level barriers to access to credit. Next, we find 4% of firms with state-ownership (particularly in lower income countries) and 5% with foreign ownership. Both types of firms might receive preferential access to financing. Finally, about 23% of firms in our sample are identified as exporters, which might have greater access to overseas customer and bank financing.

Importantly for our analysis, the WBES data is a random sampling of firms. An important caveat, however, is that many country surveys do not include new firms: 79% of surveys have a minimum firm age of one; 8% a minimum firm age two; 4% a minimum firm age three, and 9% a minimum firm age four.³ Therefore, summary tables include an increasing number of country and firm observations along the age dimension. Figure 4 shows the distribution of total firms, by age. We find that over 8% of the total sample is three years old or younger, while 58% of all firms are twelve years or younger. The largest number of observations is for age four, which includes observations from all country/year surveys, regardless of survey-specific minimum firm age.

2.1 Variation in usage of financial products

We begin by examining whether age is related to usage of a bank line of credit or overdraft facility (L/C). Figure 5 shows that usage of L/Cs increases with firm age, from

³ In robustness regressions, reported in section 5, we discuss our results using only surveys that include one year old firms, i.e. eliminating the sampling bias in some countries.

about 20% of new firms to over 40% of firms age 6 (and older). This supports the hypothesis that access to bank and other sources of formal financing is related to firm age.

Next, we observe the complete distribution of sources for working capital and new investment financing, by age. Table 1 shows the percentage of firms that use select types of financing for either working capital or new investment – disaggregated by financing source and aggregated by financing categories – by firm age. Throughout the paper we focus on four distinct categories of external financing sources: informal sources and family and friends (“Informal Finance”); foreign and domestic bank financing (“Bank Finance”); “Leasing”, “Trade Credit”; and “New Equity”, which includes equity, grants, and other sources.⁴ The columns do not sum to 100% since most firms use more than one source of financing.

The percentage of firms using retained earnings is fairly consistent across the age categories. Similarly there is no clear relationship between firm age and the use of new equity or trade credit. However, like the availability of a line of credit, both the use of bank financing and leasing are more likely as firms mature. The relationship between age and informal financing runs in the opposite direction. Not only does the likelihood of using informal financing decrease over time, there is also a sharp decrease in these sources during the first few years after a firm begins operations. This is true for both financing from friends and family and informal sources.

Table 2 shows the percentage of total working capital (Panel A) and New Investment (Panel B) financing provided by each of the sources of financing (i.e. the

⁴ We have also experimented with aggregating leasing and trade credit into one category that could be thought of as “operational finance,” following Allen et al. (2005) and Beck, et al. (2006). Our results were not materially affected and available on request. We choose to report leasing and trade credit separately because leasing is asset-backed finance, while trade credit is largely “relationship based.”

columns do not sum to 100% because credit cards are excluded). The primary source of working capital financing for all firm ages is retained earnings. In other words, on average, firm in all size buckets rely primarily on their own funds for over half of their financing needs, which is in line with the pecking order theory of capital structure. However, the reliance on different types of external financing shows a monotonic relationship with age: for instance, older firms use a larger percentage of bank finance and leasing and rely less on informal sources. As firms mature, they might shift their dependence from informal sources of finance to more formal sources.⁵ Trade credit is also an important source of working capital financing for all firms, and becomes slightly more important as firms get older. Young firms are more likely to receive infusions of new equity capital, relative to older firms (however, these are likely to be owner's own funds).

Table 3 shows the percentage of firms using the four aggregated financing categories, by age and country-level income groupings. Across income groups, new firms seem to have relatively equal usage of bank financing, with the exception of low-income countries (that are generally associated with less developed financial systems and hence lower availability of financing for all age groups). Leasing is used significantly more in countries with middle-high and high income. Trade credit use does not seem to be systematically related to income and age. However, the use of informal finance tends to be higher in lower-income countries, across all age groups.

Furthermore, the use of bank financing is increasing with age in all 4 income groups, and almost doubles by the time firms reach 13 years, relative to new firms. In parallel, the use of informal finance gradually decreases with age in all income groups.

⁵ In addition, firms with access to formal financing may be more likely to survive (to an older age).

Panel B suggests that the use of asset-based operations finance is relatively consistent across income groups, with the exception that very young firms in high-income countries seem to use significantly more leasing and trade credit. This might be explained by the importance of leasing for new firms in countries with developed financial markets.

2.2 Other loan and firm characteristics

Table 4 shows summary statistics of loan characteristics. We do not find a notable difference between the use of collateral, the percentage of loan size collateralized, interest rates, or maturity across firm age. However, new firms are less likely to have audited accounts.

Table 5 shows summary statistics of the variables used in our econometric specifications. Panel A shows summary statistics of all firms. (Complete variable definitions are shown in Appendix 2). The average firm age in our sample is 15 years, with a maximum age capped at 80 years. 27% of firms are identified as “Micro”, with less than 10 employees; 39% are identified as “Small”, with less than 50 employees; and the remaining firms as “Medium/Large”. In our sample 23% of firms are exporters, 48% are corporations, and 52% have audited statements. Finally, 4% of firms are identified as state-owned and 5% as foreign-owned.

Table 5, Panel B, shows summary statistics disaggregated by firms (i) less than or equal to five years old and (ii) firms older than five years. These preliminary statistics show large and significant differences between younger and older firms. For instance, young firms are significantly almost twice as likely to be micro (defined as less than 10 employees) and significantly less likely to be exporters.

3. The Relationship between Age and Usage of External Financing

In this section we investigate the relationship between our four main categories of external finance and age. We exclude firms that use zero external financing, since we are unable to disentangle whether these firms rely on internal financing by choice or because they have been rejected by external creditors. Table 6 reports regressions for each of the sources of finance defined above: bank finance, leasing, trade credit, and informal finance. In this table, the dependent variables is equal to one if the firm uses a type of financing for either working capital or new investment, and zero otherwise. In addition, we include a dummy which is equal to one if a firm uses a line of credit or overdraft facility. In our data, 44% of firms have a line of credit, compared to 32% of firms that use bank financing; the correlation between line of credit and bank financing is about 0.50, and significant at 1%. We estimate the model by probit with standard errors clustered by country and year (because several countries have more than one survey).

The regressions control for a number of firm characteristics, such as dummies indicating micro and small sized firms (medium/large firms are the omitted category), exporters, firms with audited statements, legal status (corporation vs. unlimited liability and other types), and state and foreign ownership. We also include dummies for sector fixed effects (manufacturing, services, and construction), country-level fixed-effects, and survey year. The key variable of interest is log of firm age.

The results are similar to the univariate results discussed before: bank finance is gradually increasing with age, while informal finance is gradually decreasing with age. The usage of line of credit behaves similarly to the usage of bank finance. We do not find a significant pattern for leasing finance, while trade credit use is slightly increasing with

age (and the probable length of supplier relationships). The multivariate regressions show that these patterns are not driven by different composition of firms across countries, or different country-level characteristics (which are captured by firm-level control variables and country dummies).

To illustrate these results further, we repeat similar regressions but include dummies for firm age for each age level, between 1 and 15 years. In other words, we replace log age with 15 age dummies, while controlling for the same set of firm-level controls and sector/country/year dummies. The results are presented graphically in Figure 6. These graphs show that coefficients are gradually increasing with age for bank finance and gradually decreasing for informal finance. The results for leasing (not shown) and trade credit do now show any strong pattern, in line with earlier results.

We also include an indicator variable for a firm's legal status. Firms that are classified as sole-proprietors are more likely to be run by the founder – the entrepreneur. Thus, we use sole-proprietor indicator as another proxy for entrepreneurial firms. We find similar results to those found for firm age: sole-proprietor firms are less likely to use formal financing and more likely rely on informal sources. Interestingly, sole proprietors are also less likely to use leasing and trade credit finance (significant at 10% level). These results corroborate our main finding that younger and more entrepreneurial firms face more severe financing constraints and hence have to rely more on informal finance. The results on age are robust to excluding the sole proprietor and partnership dummies from the regression.

4. The Role of the Business Environment

In this section we look at the relationship between country-level institutional characteristics, focusing on institutional factors such as rule of law and availability of credit information, and firm age.

A priori it is not clear whether better business environment should be more or less important to younger firms, relative to older ones. For example, the availability and quality of credit information might be more important to young firms because such information helps to reduce adverse selection and moral hazard problems, which are more present in younger firms. This would be particularly true in countries with more developed credit information infrastructures, where banks might use more sophisticated credit scoring technology that also include the personal credit history of the entrepreneur. This would be particularly beneficial for new firm owners who may not have a successful history or track record of commercial borrowing and repayment. Alternatively, loans to new entrepreneurs might depend more on “soft” information and relationships, while older firms might benefit relatively more from an established credit history.

Similarly, rule of law may be more important for older firms, which are more likely to rely on the formal legal system for conflict resolution. Or, it might be more important for younger firms that don’t have a proven track record, visibility, large reputation capital, and other means of enforcing contracts. Ultimately, this is the empirical question we are looking to answer – whether or not a specific feature of the business environment is more or less important for young versus older firms.

Table 7 presents our regression results. The model is the same as in Table 6 and all control variables are included, except for country dummies. Instead, we include firm

age, a country-level indicator of the business environment, and the interaction of age and the business environment measure. In addition, we include six regional dummies (Africa, South Asia, etc.) and log GDP per capita for those regressions that do not include country fixed effects. Panels A and B present our results with rule of Law and Credit Information, respectively (additional coefficients, not shown, are similar to those reported in Table 6).

First, we observe that Rule of Law and Credit Information have a positive impact on bank finance and a negative impact on informal finance. This suggests that firms in countries with better rule of law are more likely to enter into formal credit contract, and hence less likely have to rely on informal contracts. Credit information supports the use of formal credit contracts as it allows banks to evaluate the creditworthiness of the borrower.

The interaction of Rule of Law and Firm Age is negative for Bank Finance, and Leasing, but not significant for other types of finance. Thus, relative to older firms, younger firms are more likely to use bank credit and leasing in countries with better rule of law, than they are in countries with worse rule of law. In other words, while younger firms are less likely to use bank financing and leasing than older firms in all countries, they are even less likely to use bank financing in countries with weak rule of law. As we saw before, leasing is almost non-existent in countries with poor rule of law.

Alternatively, since the interaction term is symmetric, the results might be interpreted to suggest that rule of law is more important for younger firms. It might be the case that older firms can rely on alternative mechanisms, such as higher visibility, track record, reputation, etc., and rely less on rule of law to obtain credit.

We find no significant interactive effect of rule of law for either informal finance or trade credit. Instead, our regressions suggest that young firms use more informal sources of financing and less trade credit finance, regardless of the legal environment.

Next, we repeat the process with credit information as our country-level institutional measure in Panel B. The results show that credit information has a positive effect for the use of bank finance (although not significant at conventional levels) and positive and significant for leasing. It is negative (not significant) for trade credit and negative for informal finance. Thus, credit information supports the use of bank finance and leasing, and reduces reliance of firms on informal finance.

Most importantly, the interaction of credit information and firm age is significant for bank finance. These interaction terms suggest that credit information is more important for the availability of bank financing for younger firms. These results are again in line with the argument that older firms have other means of demonstrating creditworthiness, while younger firms are more reliant on the availability and quality of credit information through a public or private credit bureau.

Interestingly, the credit information interaction term is also significant for informal finance, suggesting that in countries with better credit information the difference between younger and older firms in the usage of informal finance is smaller than it is in countries with worse credit information. This is a mirror result that suggests that informal finance is a second-best substitute to formal finance – when firms have more access to formal finance, they cut their usage of informal finance. There is no differential impact of better credit information on the use of leasing and trade credit by younger firms. This could be because these types of finance do not rely as much on credit information as

bank finance: leasing uses the quality of the asset and trade credit is usually based on the relationship between suppliers and customers.

All results are robust to the inclusion of country dummies (and the exclusion of rule of law or credit information variables). We have also investigated other factors affecting the business environment, such as creditor rights, cost of contract enforcement, and rate of debt recovery. The results on these indicators have consistent signs, but are not significant at conventional levels, and therefore are not reported.

Overall, our results suggest that better rule of law and credit information infrastructures are relatively more important for younger firms in increasing their use of formal bank finance and decreasing their use of informal finance.

5. Robustness Checks

Until now, we have used binary dependent variables, i.e. equal to one if the firm uses the type of financing and zero otherwise. However, the WBES also collects information on the proportion that each source of finance contributes to working capital and new investment. We use this information for further tests. In other words, we create dependent variables equal to the sum of the total proportion for each financing source for new investment: Bank financing (the sum of the percentage of total new investment financing from local or foreign banks); Trade Credit; and Informal Finance (the sum of new investment financing from informal sources and friends or family). We are unable to test the total percentage of leasing financing because of the high proportion of censored observations (equal to zero). We estimate regressions by Tobit model since our dependent variables are limited to between 0% and 100%.

Our results for new investment are shown in Table 8. We find that age is positively and significantly related to the percentage of Bank Finance while significantly and negatively related to the percentage of Operations and Informal finance. Furthermore, the economic significance of age on the amount of bank financing is large, relative to its impact on operations and informal financing, which though statistically significant are small economically. Second, we confirm that rule of law is significantly and positively related to greater usage of formal financing – from bank and operational lenders – and significantly and negatively related to the size of informal finance. As before, we find that the interaction of rule of law and bank finance is negative and significant. In other words, we find that weak legal environments significantly magnify the disparities between usage of bank financing between young and old firms. However, the relationship with informal and operations finance is insignificant. We find similar results for the percentage of working capital financing and the interaction with credit information (not shown).

Second, our results are very robust to various sub-samples of countries and firms. As discussed earlier, an important caveat of enterprise surveys that is relevant for our analysis is the sampling design, which in some countries excluded firms under 2, 3 or 4 years old. Thus, the very youngest and hence most entrepreneurial firms are simply not sampled in some countries. To eliminate the possibility that this sampling feature will bias our results, we reproduced all our results using only surveys (i.e. countries) with firm minimum age of one year. Our baseline results reported in Table 6 are even stronger in this sample, even though the sample size is significantly reduced (not reported). Again,

we find that younger firms are less likely to use a line of credit or bank finance and more likely to use informal sources of financing.

Next, we find that our results are robust to excluding all transition countries (i.e. all Business Environment and Enterprise Performance (BEEP) surveys), in which privatization history might contaminate the firm age. In other words, firms that have been privatized may appear as being new/young, i.e. they might have been recently re-registered, while in fact they are “revamped” old firms. Our results are also robust to excluding high-income countries and only considering low and lower middle income countries.

In separate regressions we reproduced our results on firms that report having a single establishment, which eliminates from the sample firms with a domestic or foreign parent that might provide financing. Again, we obtain robust results for age and single proprietor dummy.

Finally, in Table 9 we examine the smaller subsample of firms where an individual or family is the largest shareholder. Our main results are robust. Furthermore, for this sample of firms we can test the impact of (i) the owner also being the manager and (ii) having a female principal owner. We find that after controlling for other firm characteristics, owner/manager is only significant in predicting less usage of a line of credit. However, we find that firms with female principle owners are significantly less likely to use bank financing and significantly more likely to use informal finance. Furthermore, as shown in column 5, the interaction of firm age and female ownership is significantly negative, suggesting that female owners of young firms are significantly more likely (relative to male owners) to use informal financing. Although we leave a

more rigorous analysis to future research, this result is consistent with the results of Sabarwal and Terrell (2008) that finds that the return to scale of female owned firms is significantly larger than men's and that the main reason for the sub-optimal size of women owned firms is likely to be barriers to formal financing.

6. Conclusions

In this paper we systematically study the use of different financing sources for new and young firms. We use a unique dataset from over 170 surveys, which contain about 70,000 firms, most of which are small and medium sized (SMEs) in 104 developing and developed countries, including many low-income countries. We use this dataset to examine corporate financing decisions: First, the relationship between firm age and sources of external financing, and second, the differential impact of business environment on access to financing by young versus older firms.

As expected, we confirm that in all countries younger firms have less reliance on bank financing and more reliance on informal financing. The relationship with leasing and trade credit is less associated with firm age.

Most interestingly, we explore the interaction of firm age and the business environment and the relative impact of the business environment on a young firm's mix of financing sources. We find that younger firms are more likely to use bank finance in countries with better rule of law. While younger firms are less likely to use bank financing in all countries, they have worse access in countries with poor rule of law. Similarly, we find that credit information has a differentially positive effect on the use of bank finance by young firms; this might highlight the importance of personal credit

histories for entrepreneurs without business track records. In parallel, we find that the use of informal finance by young firms' decreases in countries with better credit information, reaffirming that informal finance is a second-best substitute to formal finance. Overall, our results suggest that improvements to the legal environment and credit information infrastructure are disproportionately beneficial for promoting access to formal finance by young firms.

References

Allen, Franklin, Rajesh Chakrabarti, Sankar De, Jun Qian, and Meijun Qian, 2006, Financing Firms in India, World Bank Policy Research Working Paper No. 3975.

Ayyagari, Meghana, Asli Demirgüç-Kunt, and Vojislav Maksimovic, 2010. Formal versus Informal Finance: Evidence from China, Review of Financial Studies, forthcoming.

Baldwin, John R., Guy Gellatly and Valérie Gaudreault, 2002. "Financing innovation in new small firms: new evidence from Canada", Working paper.

Beck, Thorsten, Asli Demirguc-Kunt, and Vojislav Maksimovic, 2008. Financing Patterns around the World: Are Small Firms Different? Journal of Financial Economics 89:3.

Brealey, Richard A. and Stewart C. Myers, 2002. "Financing and Risk Management." Business and Economics.

Brown, Gregory, Larry Chavis, and Leora Klapper, 2008. A New Lease on Life: Institutions, External Financing, and Business Growth. World Bank mimeo.

Bulan, Laarni and Zhipeng Yan, 2007. "The Pecking Order of Financing in the Firm's Life Cycle." Working paper.

Carpenter, Robert E. and Laura Rondi, 2000. "Italian Corporate Governance, Investment, and Finance". CERIS-CNR Working Paper No. 14/2000.

Demirguc-Kunt, Asli, T. Beck and V. Maksimovic, 2004, Financial and Legal Constraints to Firm Growth: Does Firm Size Matter? Journal of Finance , 60, February 2004, pp. 137-177.

Djankov, Simeon, Ira Lieberman, Joyita Mukherjee, and Tatiana Nenova, 2002. Going Informal: Benefits and Costs, Mimeo, World Bank.

Evans, David S & Jovanovic, Boyan, 1989, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," Journal of Political Economy, University of Chicago Press, vol. 97(4), pages 808-27, August.

Klapper, Leora, Luc Laeven, and Raghuraj Rajan, 2006. Barriers to Entrepreneurship, *Journal of Financial Economics* 82:3.

Levine, R., 2005, ["Finance and Growth: Theory and Evidence."](#) in Handbook of Economic Growth, Eds:Philippe Aghion and Steven Durlauf, The Netherlands: Elsevier Science, 2005.

Mehnaz, Safavia and Joshua Wimpey, 2007. When Do Enterprises Prefer Informal Credit? World Bank Policy Research Working Paper No. 4435

Müller, Elisabeth and Volker Zimmermann, 2006. "The Importance of Equity Finance for R&D Activity - Are there Differences between Young and Old Companies?" ZEW Discussion Paper No. 06-014

Paulson, Anna L. & Townsend, Robert, 2004, "Entrepreneurship and financial constraints in Thailand," Journal of Corporate Finance, Elsevier, vol. 10(2), pages 229-262.

Shirai, Sayuri. "Banks' Lending Behavior and Firms' Corporate Financing Patterns in People's Republic of China." Keio University, Faculty of Policy Management Working paper.

Schumpeter, Josef, 1942, Capitalism, Socialism and Democracy, New York: Harpers and Brothers, 1942.

Teixeira, Gabriela and Coutinho Dos Santos, Mário João, 2005. "Do Firms Have Financing Preferences along their Life Cycle?" Working paper.

Figure 1: Distributions of Surveyed Countries and Firm Observations, by Region

Figure 1a: Distribution of countries

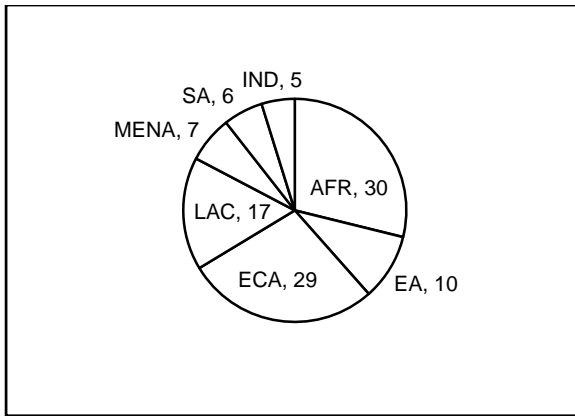


Figure 1b: Distribution of observations

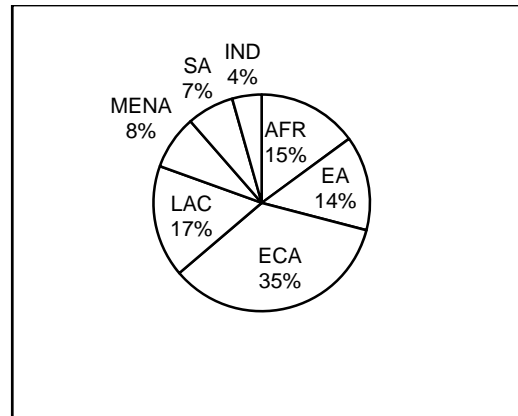


Figure 2: Distribution of Total Firms, by Country-Level Income and Year

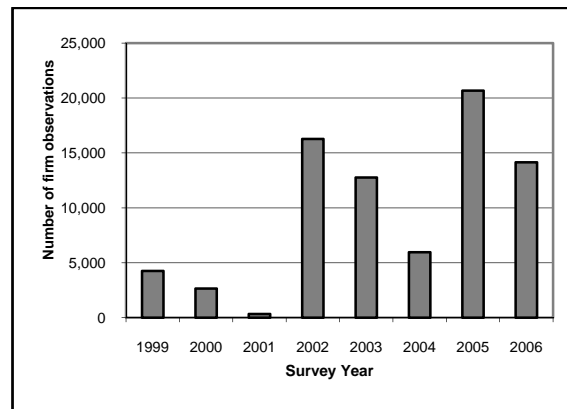
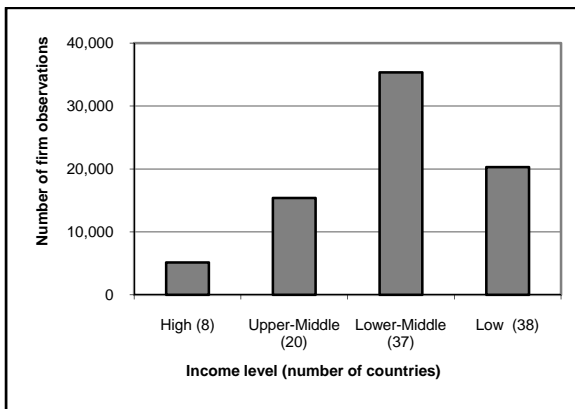


Figure 3: Distribution of Total Firms, by Sector, Ownership, and Output Markets

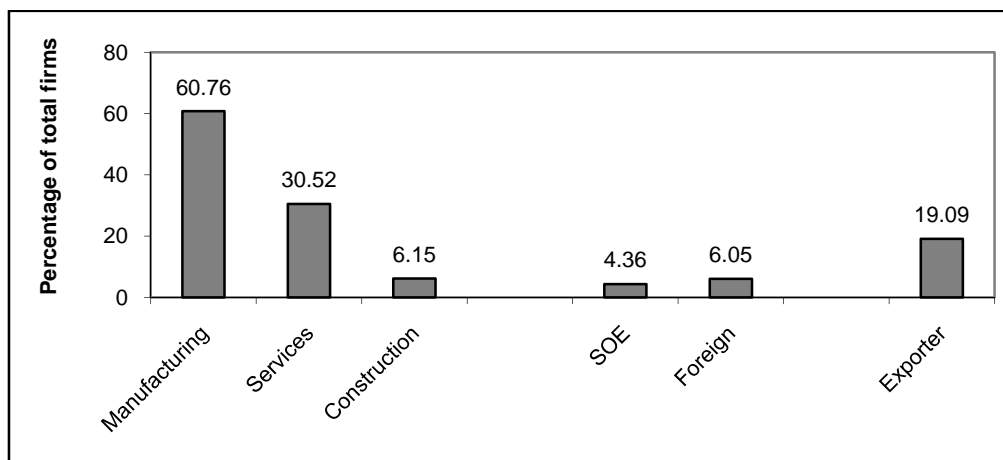


Figure 4: Distribution of Total Firm Observations, by Age

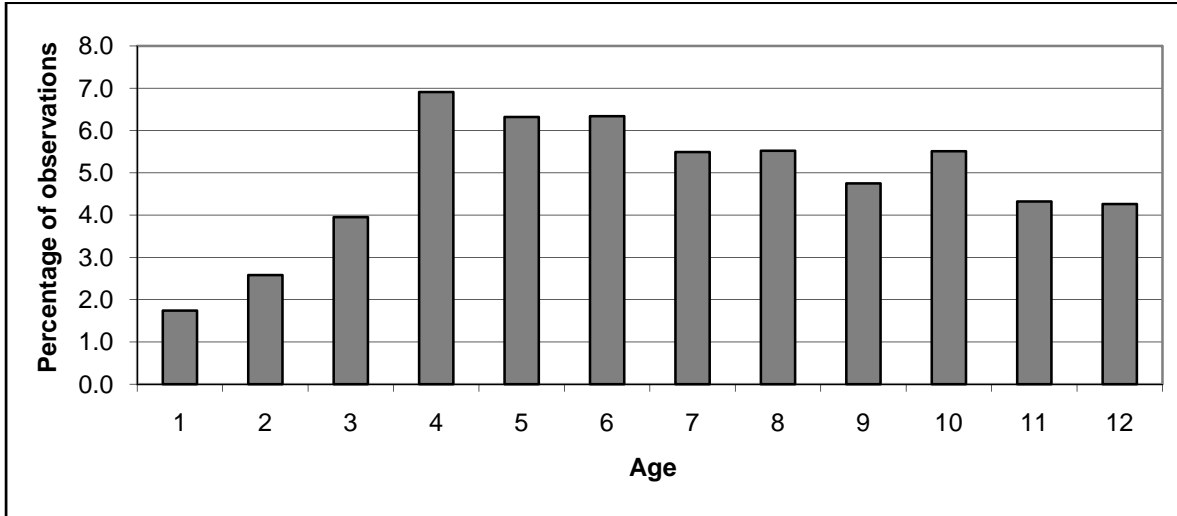


Figure 5: Access to L/C, by Age

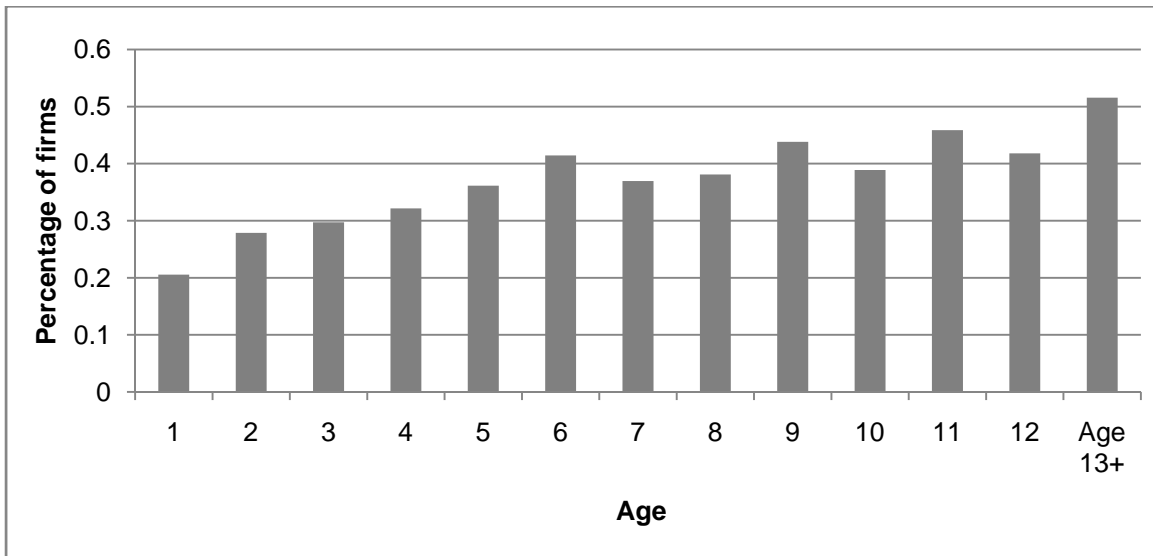


Table 1: Financing Patterns (Working Capital or New Investment), by Age

Panel A shows the percentage of firms that use the financing source for either Working Capital or New Investment (i.e. the reported percentage of total financing is greater than zero). Panel B shows the percentage of firms that use the financing source, by aggregated categories: “Bank Finance” includes local and foreign banks; “Leasing”; “Trade Credit”; “Informal Finance”, which includes family and friends and informal sources; and “New Equity” includes equity, grants, and other sources.

	1-2	3-4	5-6	7-8	9-10	11-12	13+	Total
<i>Panel A: By Financing Type</i>								
Retained Earnings	84.6%	85.0%	83.4%	85.0%	85.1%	85.8%	82.5%	83.8%
Local Banks	17.2%	19.8%	24.9%	28.0%	27.3%	30.8%	36.9%	30.1%
Foreign Banks	1.8%	2.0%	2.1%	4.8%	5.0%	2.2%	3.5%	3.3%
Leasing	2.6%	4.7%	7.1%	6.4%	6.9%	7.5%	7.2%	6.6%
Trade Credit	29.7%	22.1%	26.8%	21.4%	29.0%	26.3%	28.8%	26.8%
Credit Cards	1.2%	1.5%	1.8%	2.0%	2.2%	2.5%	2.4%	2.1%
Family & Friends	22.1%	15.1%	14.0%	13.0%	13.6%	10.4%	8.7%	11.8%
Informal Sources	10.3%	6.8%	4.4%	4.2%	3.4%	3.0%	2.5%	3.9%
Grants	2.7%	2.4%	2.7%	2.7%	2.7%	2.7%	4.1%	3.2%
Equity	9.5%	10.1%	9.5%	10.0%	10.3%	10.0%	9.5%	9.7%
Other	4.2%	5.7%	8.1%	6.5%	6.5%	5.2%	8.9%	7.4%
<i>Panel B: By Financing Category</i>								
Bank Financing	18.3%	20.9%	26.2%	29.4%	31.3%	32.0%	38.7%	31.8%
Leasing	2.6%	4.7%	7.1%	6.4%	6.9%	7.5%	7.2%	6.6%
Trade Credit	29.7%	22.1%	26.8%	21.4%	29.0%	26.3%	28.8%	26.8%
Informal Finance	30.9%	19.8%	16.4%	15.3%	15.6%	12.2%	10.4%	14.3%
New Equity	15.3%	17.1%	19.1%	18.0%	18.3%	16.8%	20.9%	19.0%

Table 2: Distribution of Firm Financing (Percentages), by Age

This table shows the percentage of total Working Capital (Panel A) or New Investment (Panel B) financing provided by each of these sources. “Bank Finance” includes local and foreign banks; “Leasing”; “Trade Credit”; “Informal Finance”, which includes family and friends and informal sources; and “New Equity” includes equity, grants, and other sources. Columns do not sum to 100% as credit cards are excluded.

	1-2	3-4	5-6	7-8	9-10	11-12	13+	Total
<i>Panel A: Working Capital</i>								
Retained Earnings	61.4%	68.0%	63.9%	66.9%	65.2%	66.2%	59.6%	63.0%
Bank Financing	8.7%	8.4%	9.7%	11.0%	11.1%	11.4%	15.7%	12.6%
Leasing	0.3%	0.6%	0.5%	0.7%	0.8%	0.9%	0.7%	0.7%
Trade Credit	12.3%	7.1%	11.1%	7.6%	8.8%	9.0%	11.0%	9.8%
Informal Finance	8.2%	6.6%	5.8%	4.7%	4.8%	3.9%	3.2%	4.5%
New Equity	8.6%	9.0%	9.4%	8.7%	8.8%	8.0%	9.0%	8.9%
<i>Panel B: New Investment</i>								
Retained Earnings	65.8%	65.6%	65.0%	66.2%	61.7%	64.0%	59.2%	62.4%
Bank Financing	9.3%	9.5%	11.9%	13.4%	16.4%	17.4%	19.9%	15.9%
Leasing	1.3%	2.1%	2.6%	2.4%	2.9%	3.0%	3.1%	2.7%
Trade Credit	2.8%	2.8%	4.5%	2.7%	3.6%	2.9%	3.4%	3.3%
Informal Finance	10.1%	8.7%	5.3%	4.4%	4.4%	3.4%	2.8%	4.5%
New Equity	10.2%	10.4%	10.0%	10.3%	10.3%	8.3%	10.8%	10.3%

Table 3: Aggregated Financing Patterns, by Country Income-Level and Age

This table shows the percentage of firms that use the financing source for either Working Capital or New Investment (i.e. the reported percentage of total financing is greater than zero), aggregated by income-level. Panel A shows the percentage of firms that use “Bank Finance”, defined as local and foreign banks; Panel B shows the percentage of firms that use Leasing, Panel C shows Trade Credit and Panel D shows the percentage of firms that use “Informal Finance”, defined as family and friends and informal sources.

	1-2	3-4	5-6	7-8	9-10	11-12	13+
<i>Panel A: Bank Finance</i>							
High	20.0%	31.7%	32.7%	40.6%	38.3%	44.7%	45.3%
Upper-Middle	24.5%	22.7%	27.7%	30.9%	31.7%	33.1%	38.9%
Lower-Middle	21.3%	20.0%	25.2%	28.8%	33.0%	33.0%	40.1%
Low	14.7%	20.1%	25.2%	26.3%	25.4%	24.8%	32.1%
<i>Panel B: Leasing</i>							
High	10.0%	12.0%	12.9%	16.0%	18.8%	22.4%	21.3%
Upper-Middle	7.1%	14.4%	14.0%	14.3%	16.0%	15.0%	10.4%
Lower-Middle	3.3%	3.0%	3.2%	3.8%	3.3%	4.2%	5.0%
Low	0.9%	1.9%	7.5%	1.9%	1.8%	1.4%	1.5%
<i>Panel C: Trade Credit</i>							
High	40.0%	13.6%	18.0%	23.3%	23.7%	21.1%	25.6%
Upper-Middle	27.0%	26.1%	24.0%	22.7%	25.0%	23.6%	26.6%
Lower-Middle	28.9%	17.0%	28.1%	17.6%	29.1%	24.0%	28.0%
Low	30.7%	28.6%	28.4%	27.4%	34.1%	36.4%	34.8%
<i>Panel D: Informal Finance</i>							
High	6.7%	9.7%	10.0%	9.4%	8.1%	9.8%	5.9%
Upper-Middle	23.4%	20.7%	16.8%	14.8%	13.1%	12.2%	10.5%
Lower-Middle	23.3%	20.7%	16.6%	14.0%	17.6%	11.0%	11.4%
Low	38.5%	19.3%	17.3%	20.0%	16.1%	15.6%	10.0%

Table 4: Summary Statistics of Loan Characteristics, by Firm Age

	1-2	3-4	5-6	7-8	9-10	11-12	13+	Total
Loan requires collateral (1= Yes; 0 = No)	76.2%	76.7%	78.3%	73.4%	80.6%	80.0%	75.0%	76.4%
% Value of collateral , relative to loan value	129.0%	131.7%	192.9%	130.3%	130.5%	137.8%	137.5%	141.4%
Interest rate	13.4%	13.9%	14.5%	13.2%	14.4%	14.1%	12.7%	13.4%
Loan duration (months)	34.7	33.2	32.2	35.2	31.5	32.3	36.2	34.5
Audited financial statements	42.2%	37.1%	43.4%	51.7%	53.5%	50.1%	61.1%	52.6%

Table 5: Summary Statistics and Percent of Firms, by Category

Complete variable descriptions are shown in Appendix 2. Panel A shows summary statistics for all firms that report financing sources. Panel B shows summary statistics for firms that are (i) less than or equal to five years and (ii) greater than five years old. The last column shows t-statistics for mean differences. Asterisks *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

	<i>Panel A: All Firms (68,419 Obs.)</i>		<i>Panel B: Use External Finance? (Mean)</i>		
	Mean	Std. Dev.	Firm age ≤ 5	Firm age > 5	
Firm Age	15.9	15.3	3.6	19.4	
<i>Percent of Firms in each Category</i>					
Micro	27%	45%	44%	23%	***
Small	39%	49%	35%	40%	***
Medium/Large	34%	47%	21%	37%	***
Sole Proprietorship	27%	44%	38%	24%	***
Partnership	15%	36%	16%	15%	*
Owner Manager	32%	47%	32%	32%	
Exporter	23%	42%	16%	25%	***
Audit	52%	50%	39%	55%	***
Foreign Owned	5%	23%	4%	6%	***
State Owned	4%	19%	1%	4%	***
Low Income	25%	43%	36%	22%	***
Lower Middle	46%	50%	44%	46%	***
Upper Middle	22%	41%	15%	24%	***
High Income	7%	26%	5%	8%	***
Manufacturing	58%	49%	43%	62%	***
Services	32%	47%	44%	29%	***
Agro-industry	2%	13%	3%	1%	***
Construction	7%	25%	8%	6%	***
Africa	16%	37%	22%	15%	***
EA	13%	33%	13%	12%	*
ECA	38%	48%	45%	36%	***
LAC	17%	38%	11%	19%	***
MENA	7%	26%	4%	8%	***
SA	4%	19%	3%	4%	***
IND	5%	21%	3%	5%	***

Table 6: Is there a Relationship Between Sources of Finance and Firm Age?

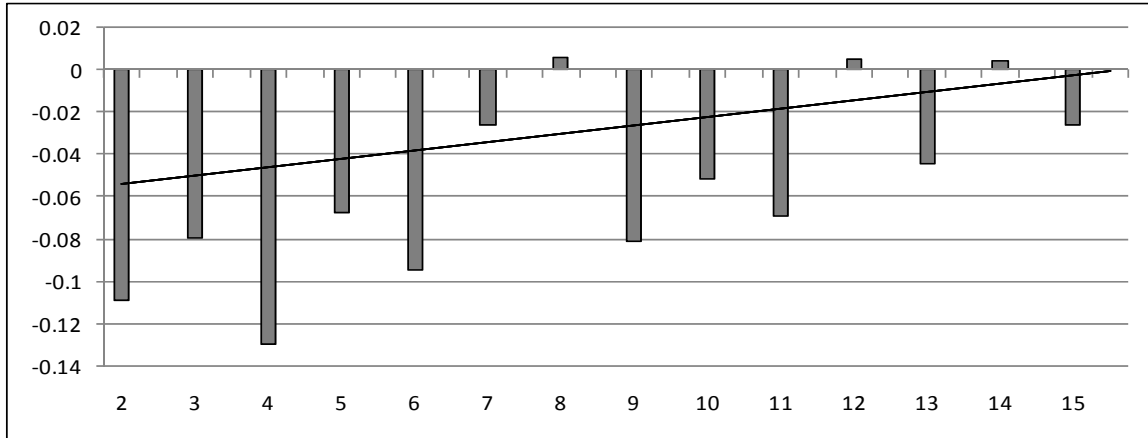
Table 6 reports probit estimates with country fixed effects. The dependent variable in the first column is a dummy equal to one if the firm reports using a line of credit or overdraft facility; the second column is a dummy equal to one if the firm uses local or foreign bank financing (“Bank Finance”), the third column is a dummy equal to one if the firm uses leasing; the fourth column is a dummy equal to one if the firm uses trade credit, and the fifth column is a dummy equal to one if the firm uses informal financing. We exclude firms that do not use any source of external finance (i.e. retained earnings equals 100%). All variables are defined in Appendix 2. All regressions include sector fixed effects (manufacturing, services, and construction), country-level fixed-effects, and survey year fixed effects. Standard errors are clustered by country and year. Asterisks *, **, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)	(3)	(4)	(5)
	Line of Credit	Bank Finance	Leasing	Trade Credit	Informal Finance
Ln Firm Age	0.039 [0.001]***	0.039 [0.011]**	-0.001 [0.671]	0.017 [0.082]*	-0.053 [0.000]***
Micro	-0.257 [0.000]***	-0.221 [0.000]***	-0.049 [0.000]***	-0.073 [0.003]***	0.149 [0.000]***
Small	-0.172 [0.000]***	-0.147 [0.000]***	-0.025 [0.000]***	-0.002 [0.945]	0.054 [0.012]**
Sole Proprietorship	-0.047 [0.252]	-0.076 [0.000]***	-0.018 [0.015]**	-0.039 [0.083]*	0.072 [0.000]***
Partnership	-0.077 [0.003]***	-0.024 [0.412]	-0.001 [0.888]	0.028 [0.498]	0.021 [0.119]
Other Legal Type	-0.034 [0.212]	-0.010 [0.686]	-0.004 [0.452]	-0.014 [0.542]	-0.030 [0.278]
Exporter	0.044 [0.001]***	0.031 [0.059]*	0.005 [0.264]	0.015 [0.634]	-0.018 [0.178]
Audit	0.088 [0.000]***	0.046 [0.040]**	0.009 [0.096]*	-0.003 [0.851]	-0.023 [0.091]*
Foreign Owned	-0.008 [0.823]	0.039 [0.553]	-0.012 [0.049]**	0.063 [0.513]	-0.140 [0.000]***
State Owned	-0.027 [0.655]	-0.179 [0.000]***	-0.037 [0.000]***	-0.007 [0.789]	-0.100 [0.000]***
Observations	37,434	37,083	27,485	37,049	37,061
Pseudo R ²	0.28	0.19	0.21	0.20	0.14

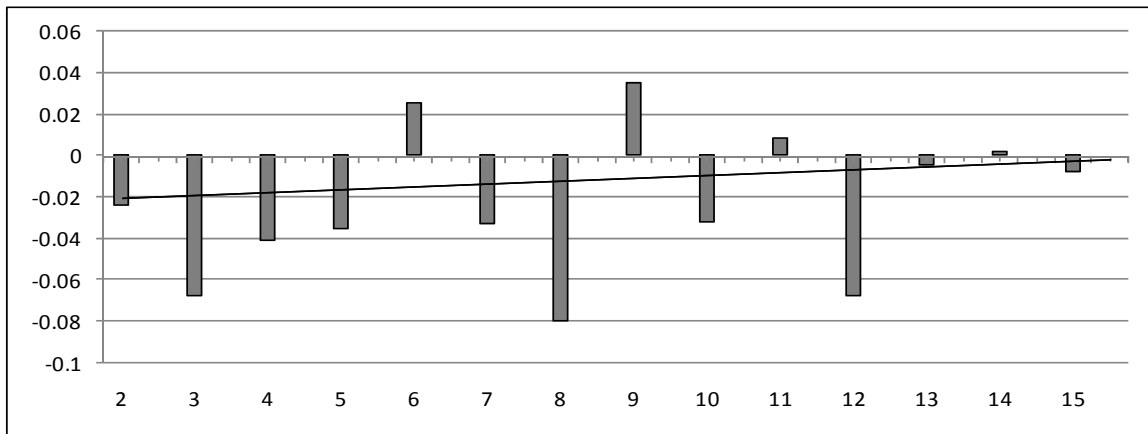
Figure 6: Coefficients on the Relationship Between Sources of Finance and Firm Age

Figure 6 reports the coefficients from Probit estimations with country fixed-effects, and firm, industry, and year dummies as shown in Table 6. Each graph reports coefficients for the age dummies 1 to 15.

Panel A: Bank Finance



Panel B: Trade Credit



Panel C: Informal Finance

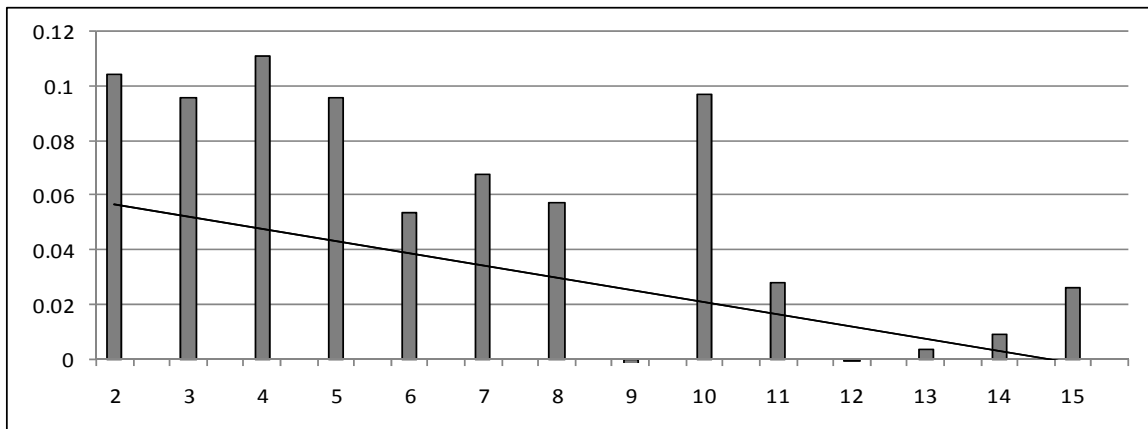


Table 7: The Effect of the Business Environment on the Relationship Between Sources of Finance and Firm Age

Table 7 reports probit estimates. In Panel A we interact sources of financing with Rule of Law and in Panel B with Credit Information index. We exclude firms that do not use any source of external finance (i.e. retained earnings equals 100%). All regressions include firm-level dummies: Micro, Small, Exporter, Corp, Audit, Foreign Own, and State Own. All variables are defined in Appendix 2. All regressions include firm-level sector fixed effects (manufacturing, services, and construction) and survey year fixed effects. Regressions without country fixed effects contain country-level regional fixed effects and Ln GDP per capita. Standard errors are clustered by country and year. Asterisks *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

Panel A. Rule of Law

	(1)	(2)	(3)	(4)	(5)	(6)
	(i) Bank Finance			(ii) Leasing		
Ln Firm Age	0.036 [0.006]***	0.028 [0.027]**	0.033 [0.025]**	-0.002 [0.502]	-0.001 [0.710]	-0.001 [0.807]
Rule of Law	0.003 [0.960]	0.076 [0.178]		0.094 [0.000]***	0.116 [0.000]***	
Rule of Law * Ln Age		-0.030 [0.054]*	-0.030 [0.076]*		-0.009 [0.184]	-0.006 [0.099]*
Country Fixed Effects	No	No	Yes	No	No	Yes
Observations	37,030	37,030	37,048	24,727	24,727	27,450
Pseudo-R2	0.12	0.12	0.19	0.14	0.14	0.22
	(iii) Trade Credit			(iv) Informal Finance		
Ln Firm Age	0.036	0.028	0.033	-0.002	-0.001	-0.001
Rule of Law	-0.052 [0.326]	-0.033 [0.564]		-0.073 [0.000]***	-0.078 [0.013]**	
Rule of Law * Ln Age		-0.007 [0.519]	-0.002 [0.906]		0.002 [0.828]	0.009 [0.404]
Country Fixed Effects	No	No	Yes	No	No	Yes
Observations	37,029	37,029	37,014	35,935	35,935	37,026
Pseudo-R2	0.12	0.12	0.20	0.11	0.11	0.14

**Table 7: The Effect of the Business Environment on the Relationship Between
Sources of Finance and Firm Age (Cont.)**

Panel B. Credit Information

	(1)	(2)	(3)	(4)	(5)	(6)
	(i) Bank Finance			(ii) Leasing		
Ln Firm Age	0.035 [0.007]***	0.090 [0.004]***	0.102 [0.018]**	-0.001 [0.703]	0.000 [0.999]	-0.004 [0.487]
Credit Information	-0.006 [0.614]	0.034 [0.132]		0.013 [0.017]**	0.014 [0.068]*	
Credit Information * Ln Age		-0.017 [0.019]**	-0.019 [0.046]**		0.000 [0.860]	0.001 [0.584]
Country Fixed Effects	No	No	Yes	No	No	Yes
Observations	37,065	37,065	37,065	24,762	24,762	27,485
Pseudo-R2	0.12	0.12	0.19	0.14	0.14	0.22
	(iii) Trade Credit			(iv) Informal Finance		
Ln Firm Age	0.004 [0.706]	0.005 [0.829]	0.022 [0.420]	-0.051 [0.000]***	-0.095 [0.006]***	-0.098 [0.003]***
Credit Information	-0.020 [0.181]	-0.019 [0.298]		-0.005 [0.394]	-0.036 [0.032]**	
Credit Information * Ln Age		-0.001 [0.922]	-0.002 [0.792]		0.014 [0.066]*	0.014 [0.047]**
Country Fixed Effects	No	No	Yes	No	No	Yes
Observations	37,064	37,064	37,031	35,970	35,970	37,043
Pseudo-R2	0.12	0.12	0.20	0.11	0.11	0.14

Table 8: The Effect of the Business Environment on the Relationship Between Penetration of Finance and Firm Age

Table 8 reports tobit estimates. Marginal effects based on the mean level of the independent variables and for the unconditional value of the dependent variable are reported. Dependent variables equal the sum of the percentage of financing used for net investment (from 0 to 100). The dependent variable in Panel A is the sum of new investment financing from local and foreign bank financing (“Bank Finance”), Panel B is new investment financing from trade credit, and Panel C is the sum of new investment financing from informal financing sources. We exclude firms that do not use any source of external finance (i.e. retained earnings equals 100%). All regressions use firm-level dummies: Micro, Small, Exporter, Corp, Audit, Foreign Own, and State Own. All variables are defined in Appendix 2. All regressions include firm-level sector fixed effects (manufacturing, services, and construction) and survey year fixed effects. Regressions without country fixed effects contain country-level regional fixed effects and Ln GDP per capita. Asterisks *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
<i>Panel A: Bank Finance</i>			
Ln Firm Age	0.030 [0.036]**	0.031 [0.046]**	0.027 [0.064]*
Rule of Law		-0.002 [0.966]	0.067 [0.237]
Rule of Law * Ln Age			-0.027 [0.059]*
Country Fixed Effects	Yes	No	No
Observations	20,182	20,160	20,160
Pseudo-R ²	0.11	0.05	0.05
<i>Panel B: Trade Credit</i>			
Ln Firm Age	-0.004 [0.069]*	-0.006 [0.022]**	-0.007 [0.003]***
Rule of Law		-0.022 [0.038]**	-0.004 [0.702]
Rule of Law * Ln Age			-0.007 [0.018]**
Country Fixed Effects	Yes	No	No
Observations	20,220	20,198	20,198
Pseudo-R ²			
<i>Panel C: Informal Finance</i>			
Ln Firm Age	-0.014 [0.000]***	-0.015 [0.000]***	-0.015 [0.000]***
Rule of Law		-0.043 [0.003]***	-0.039 [0.003]***
Rule of Law * Ln Age			-0.002 [0.732]
Country Fixed Effects	Yes	No	No
Observations	20,220	20,198	20,198
Pseudo-R ²	0.17	0.12	0.12

**Table 9: The Relationship Between Sources of Finance and Firm –
When an Individual or Family is the Largest Shareholder**

Table 6 reports probit estimates with country fixed effects for the subsample of firms where an individual or family is the largest shareholder. The dependent variable in the first column is a dummy equal to one if the firm reports using a line of credit or overdraft facility; the second column is a dummy equal to one if the firm uses local or foreign bank financing (“Bank Finance”), the third column is a dummy equal to one if the firm uses leasing; the fourth column is a dummy equal to one if the firm uses trade credit, and the fifth column is a dummy equal to one if the firm uses informal financing. We exclude firms that do not use any source of external finance (i.e. retained earnings equals 100%). All variables are defined in Appendix 2. All regressions include sector fixed effects (manufacturing, services, and construction), country-level fixed-effects, and survey year fixed effects. Standard errors are clustered by country and year. Asterisks *, **, and *** indicate significance at 10%, 5%, and 1% respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Line of Credit	Bank Finance	Leasing	Trade Credit	Informal Finance	Informal Finance
Ln Firm Age	0.037 [0.004]***	0.035 [0.004]***	0.001 [0.884]	-0.008 [0.424]	-0.041 [0.000]***	-0.0306 [0.000]***
Micro	-0.280 [0.000]***	-0.210 [0.000]***	-0.074 [0.000]***	-0.030 [0.197]	0.110 [0.000]***	0.1111 [0.000]***
Small	-0.169 [0.000]***	-0.107 [0.000]***	-0.034 [0.010]**	-0.022 [0.187]	0.072 [0.000]***	0.0722 [0.000]***
Sole Proprietorship	-0.115 [0.000]***	-0.131 [0.005]***	-0.028 [0.037]**	-0.057 [0.012]**	0.123 [0.002]***	0.1199 [0.001]***
Owner Manager	-0.091 [0.008]***	-0.098 [0.004]***	-0.004 [0.839]	0.018 [0.543]	0.038 [0.123]	0.0382 [0.113]
Female Principal Owner	-0.045 [0.225]	-0.035 [0.355]	-0.002 [0.848]	-0.021 [0.384]	0.026 [0.456]	0.0249 [0.459]
Age*Female	-0.027 [0.077]*	0.005 [0.783]	0.005 [0.584]	-0.004 [0.779]	-0.002 [0.907]	-0.0014 [0.926]
Partnership	-0.027 [0.308]	-0.060 [0.081]*	-0.006 [0.410]	-0.013 [0.539]	0.040 [0.096]*	0.1622 [0.065]*
Other Legal Type						-0.0458 [0.075]*
Exporter	0.037 [0.011]**	0.052 [0.000]***	0.009 [0.257]	-0.019 [0.287]	-0.013 [0.276]	-0.0135 [0.227]
Audit	0.098 [0.000]***	0.034 [0.083]*	0.010 [0.336]	-0.033 [0.083]*	-0.036 [0.025]**	-0.0357 [0.027]**
Foreign Owned	-0.159 [0.000]***	-0.188 [0.047]**	-0.033 [0.527]	0.007 [0.927]	0.087 [0.324]	0.0884 [0.314]
State Owned	0.1438 [0.000]***	0.0117 [0.874]	0.0649 [0.122]	0.1591 [0.000]***	-0.1384 [0.000]***	-0.1377 [0.000]***
Observations	12,399	14,129	13,477	13,772	14,129	14,129
Pseudo R ²	0.30	0.16	0.19	0.09	0.14	0.14

Appendix 1: List of Countries and Number of Observations

Albania	537
Algeria	557
Angola	540
Argentina	1,063
Armenia	647
Azerbaijan	657
Bangladesh	1,001
Belarus	707
Benin	197
Bhutan	98
Bolivia	1,284
Bosnia	509
Botswana	444
Brazil	1,642
Bulgaria	1,228
Burkina Faso	51
Burundi	407
Cambodia	503
Cameroon	119
Cape Verde	47
Chile	948
China	3,948
Colombia	1,000
Costa Rica	343
Croatia	550
Czech Republic	760
Dominican Republic	250
Ecuador	453
Egypt	1,973
El Salvador	465
Eritrea	79
Estonia	521
Ethiopia	427
Gambia	301
Georgia	374
Germany	1,196
Greece	546
Guatemala	455
Guinea	327
Guinea-Bissau	296

Guyana	163
Honduras	450
Hungary	1,007
India	2,722
Indonesia	713
Ireland	501
Kazakhstan	982
Kenya	284
Korea, Rep.	598
Kosovo	329
Kyrgyz Republic	609
Lao PDR	246
Latvia	547
Lebanon	354
Lesotho	75
Lithuania	756
Macedonia	506
Madagascar	293
Malawi	160
Malaysia	902
Mali	155
Mauritania	361
Mauritius	212
Mexico	1,480
Moldova	766
Mongolia	195
Montenegro	100
Morocco	1,709
Mozambique	194
Namibia	429
Nepal	223
Nicaragua	452
Niger	125
Nigeria	232
Oman	337
Pakistan	965
Panama	604
Paraguay	613
Peru	1,208
Philippines	716

Poland	1,829
Portugal	505
Romania	980
Russia	1,659
Rwanda	340
Saudi Arabia	681
Senegal	262
Serbia	550
Slovak Republic	528
Slovenia	536
South Africa	603
Spain	606
Sri Lanka	452
Swaziland	429
Syria	560
Tajikistan	483
Tanzania	760
Thailand	1,385
Turkey	2,544
Uganda	3,099
Ukraine	5,004
Uzbekistan	660
Vietnam	1,650
Zambia	207

Appendix 2: Variable Definitions and Mean Statistics

Variable Name	Definition	Mean
<i>Measures of Access to Finance</i>		
Bank Finance	Dummy (0/1) = 1 if the firm uses local or foreign bank finance for working capital or new investment, and =0 otherwise.	32%
Operations Finance	Dummy (0/1) = 1 if the firm uses leasing, trade credit, or credit cards for working capital or new investment and =0 otherwise.	31%
Informal Finance	Dummy (0/1) = 1 if the firm uses informal finance or family and friends for working capital or new investment and =0 otherwise.	14%
Equity Finance	Dummy (0/1) = 1 if the firm uses new equity, grants, or 'other' financing for working capital or new investment and =0 otherwise.	19%
Retained Earnings	Dummy (0/1) = 1 if the firm uses retained earnings for 100% of working capital and new investment financing and =0 otherwise.	20%
Self-Fund Raising	Dummy (0/1) = 1 if the firm does not use local or foreign bank financing, but uses some other source of external financing (other than retained earnings) for working capital or new investment and =0 otherwise.	32%
<i>General Firm Characteristics</i>		
Firm Age	Continuous variable equal to firm age	16.08
Micro	Dummy (0/1) = 1 if the firm has less than 10 employees and =0 otherwise.	26%
Small	Dummy (0/1) = 1 if the firm has 10-49 employees and =0 otherwise.	39%
Med/Large	Dummy (0/1) = 1 if the firm has 50 or more employees and =0 otherwise. (Excluded category).	35%
Exporter	Dummy (0/1) = 1 if the firm exports more than 10% of its goods and =0 otherwise.	23%
Corp	Dummy (0/1) = 1 if the firm is registered as a corporation and =0 otherwise (partnerships and sole-proprietors are the excluded categories).	49%
Audit	Dummy (0/1) = 1 if the firm has audited financial statements and =0 otherwise.	53%
Foreign Own	Dummy (0/1) = 1 if the firm has foreign ownership and =0 otherwise.	5%
State Own	Dummy (0/1) = 1 if the firm has state ownership and =0 otherwise.	4%
<i>Country Characteristics</i>		
Rule of Law	Measurement of "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence" (Kaufmann, Kraay and Mastruzzi, 2007, p. 4) (WB-WDI).	-0.30
Credit Information Index	Measurement of "the efficiency of rules affecting the scope, access, and quality of credit information" (World Bank Doing Business database; http://www.doingbusiness.org/).	2.74
Low Income Group	Dummy (0/1) = 1 for countries with GNI per capita less than \$766, and zero otherwise (WB-WDI).	37%
Lower-Middle Income Group	Dummy (0/1) = 1 for countries with GNI per capita between \$766 and \$3,035, and zero otherwise (WB-WDI).	36%
Upper-Middle Income Group	Dummy (0/1) = 1 for countries with GNI per capita between \$3,036 and \$9,385, and zero otherwise (WB-WDI).	19%
High Income Group	Dummy (0/1) = 1 for countries with GNI per capita in excess of \$9,385, and zero otherwise (WB-WDI).	8%