

FINANCIAL AND LEGAL CONSTRAINTS TO FIRM GROWTH: DOES SIZE MATTER?

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Abstract: Using a unique firm-level survey data base covering 54 countries, we investigate whether different financial, legal and corruption issues firms report as obstacles actually affect their growth rates. Our results show that the extent to which these factors constrain a firm's growth depends very much on its size and that it is consistently the smallest firms that are most adversely affected by all three obstacles. Firm growth is more affected by obstacles in countries with underdeveloped financial and legal systems and higher corruption. Thus, policy measures to improve financial and legal development and reduce corruption are well justified in promoting firm growth and particularly the development of the small and medium enterprise (SME) sector. However, our evidence also shows that the intuitive descriptors of an "efficient" legal system are not correlated with the components of the legal obstacle that predicts firm growth. This finding suggests that the mechanism by which the legal systems affects firm performance is not well understood. Our findings also provide evidence that the corruption of bank officials constrains firm growth in some countries. This "institutional failure" should be taken into account when modeling the monitoring role of financial institutions in overcoming market failures due to informational asymmetries.

Keywords: Financial Development; Financing Constraints, Small and Medium Enterprises, Law and Finance

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ABSTRACT

Using a unique firm-level survey data base covering 54 countries, we investigate whether different financial, legal and corruption issues firms report as obstacles actually affect their growth rates. Our results show that the extent to which these factors constrain a firm's growth depends very much on its size and that it is consistently the smallest firms that are most adversely affected by all three obstacles. Firm growth is more affected by obstacles in countries with underdeveloped financial and legal systems and higher corruption. Thus, policy measures to improve financial and legal development and reduce corruption are well justified in promoting firm growth and particularly the development of the small and medium enterprise (SME) sector. However, our evidence also shows that the intuitive descriptors of an "efficient" legal system are not correlated with the components of the legal obstacle that predicts firm growth. This finding suggests that the mechanism by which the legal systems affects firm performance is not well understood. Our findings also provide evidence that the corruption of bank officials constrains firm growth in some countries. This "institutional failure" should be taken into account when modeling the monitoring role of financial institutions in overcoming market failures due to informational asymmetries.

1. Introduction

Corporate finance theory suggests that market imperfections, such as those caused by underdeveloped financial and legal systems, may constrain firms' ability to fund investment projects. Research using firm-level data by Demirguc-Kunt and Maksimovic (1998) bears out the importance of the financial system and the rule of law for relaxing firms' external financing constraints and facilitating their growth.¹ While their results show a strong effect, their conclusions are based on a sample of the largest firms in each of the economies they study, and relies on inferring firms' demand for external financing from a financial model of the firm. In this paper, we use a size-stratified survey of over 4,000 firms in 54 countries to identify the financial and institutional obstacles that firms believe affect their growth. Our econometric model permits us to determine whether or not firm growth is in fact affected by these perceived institutional obstacles, and to test how specific obstacles affect firms of different size.

There is considerable evidence that firm size is related to a firm's productivity, access to capital, survival, and profitability. As a result, determining how institutional differences across countries affect firms of different sizes is important both for understanding the institutions' role in the economy and for the design of public policy. The policy issues are substantial, as greater resources are channeled into the promotion of small and medium sized enterprises (SMEs). The World Bank alone has approved more than \$10 billion in SME support programs in the past five years, of which \$2.9 billion in

¹ Work by Rajan and Zingales (1998) and Wurgler (2000) on industry growth, and on law and external financing by LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1997) is discussed below.

the last year.² However, the rationale for supporting SMEs' access to capital remains vague.

A priori it is not clear which aspects of financial and legal development facilitate firms' access to capital most and how they affect firms of different size.³ Large firms internalize many of the capital allocation functions carried out by the financial markets and financial intermediaries. To this extent, development of financial markets and institutions should disproportionately benefit small firms. On the other hand, large firms are most likely to tax the resources of an underdeveloped financial or legal system, since they are more likely to depend on long-term financing and on larger loans than small firms. Thus, it is possible that financial development would disproportionately reduce the effect of perceived obstacles on the largest firms.

Our paper also provides evidence relevant to the reform of legal systems in developing countries in order to promote access to external finance. Recent literature in international corporate finance predicts a positive relation between the quality of the "legal system," and access to external financing. However, little is known about how firms' perceptions conform to the conventional notions of what makes a legal system efficient (such as the impartiality of courts and the speed with which cases are adjudicated). Moreover, it is not known whether these conventional notions help predict the effect of the legal system on firm growth. We address both these issues.

Our paper also provides evidence about the potential costs of monitoring by financial intermediaries. Several influential theoretical models and public policy

² World Bank Group Review of Small Business Activities, 2001.

³ There is vigorous debate on the precise role of the legal system on firm financing. See, for example, Rajan and Zingales (1999), Pistor (1999), Modigliani and Perotti (1998), Beck, Demirguc-Kunt and Levine (2001, 2002) and Stulz and Williamson (2001).

prescriptions rely on monitoring by financial intermediaries to reduce misallocation of investment in economies with underdeveloped financial markets. Although the reduction of agency costs caused by firms' insiders is a major motivation for this monitoring, the models on which the policies are based typically do not consider the possibility of agency costs within banks. We examine the evidence that officials in financial intermediaries are holding up the efficient allocation of capital to smaller firms by relating firm's reports of bank corruption to their growth rates.

Our methodology differs from the previous literature in international corporate finance in several ways. First, we use a unique survey data base, the World Business Environment Survey (WBES), to analyze the impact of financial, legal and corruption obstacles on firm growth for small, medium and large firms.⁴ The WBES is a major cross-sectional firm level survey conducted in developed and developing countries in 1999 led by the World Bank.⁵ The richness of the data base allows us to go beyond earlier papers that infer the presence of institutional failures from past growth performance.⁶ The firms that were surveyed reported how they perceived their growth to be constrained by specific features of their financial and legal systems in their countries and the corruption they faced. Thus, we are able to analyze (a) how firms in different financial and legal systems perceive obstacles to growth, and (b) whether in fact there exist relations between these perceptions and firm growth. Second, unlike previous studies which have mainly looked at large, listed firms, in this paper we can actually investigate size

⁴ Surveys of corporate executives have recently been used in another context by Graham and Harvey (2001).

⁵ World Bank created the steering committee of the WBES and many other developed and developing country agencies were involved under the supervision of EBRD and Harvard Center for International Development.

⁶ Exceptions are Shiffer and Weder (2001) who investigate different constraints using WBES data and Clarke et al (2001) who assess the impact of foreign bank entry on these constraints.

differences since around eighty percent of the surveyed firms are small and medium enterprises (SMEs).

The remainder of the paper is organized as follows. In Section 2 we discuss the hypotheses that we test. Section 3 discusses the data and summary statistics. Section 4 discusses the empirical methodology. Section 5 presents our main results. Section 6 has conclusions and policy implications.

2. Conceptual Framework and Methodology

A developed financial system can relax firm financing constraints because well-functioning markets and intermediaries serve as sources of capital and as mechanisms for ensuring that investors have access to information about firms' activities. An effective legal system also plays an important role in relaxing financing constraints because a firm that wishes to obtain financing, particularly long term financing, must be able to commit credibly to controlling opportunistic behavior by corporate insiders. Measures such as debt covenants or explicit fiduciary constraints only work if there is an effective legal system that deters violations and demands compensation from violators.

An extensive literature, starting with LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998), argues that differences in legal and financial systems can explain much of the variation across countries in firms' financial policies and performance. Recent empirical evidence supports the view that the development of a country's financial system affects firm growth and financing. In addition to Demirguc-Kunt and Maksimovic's (1998) firm-level results, Rajan and Zingales (1998) show that industries that are dependent on external finance grow faster in countries with

better developed financial systems.⁷ Wurgler (2000) shows that the rate at which resources are allocated to productive industries depends on the development of the financial system. Love (2000) shows that the sensitivity of investment to cash flow depends negatively on financial development. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997) identify important differences between legal systems and show their importance for external finance. Demirguc-Kunt and Maksimovic (1999) show that the origin and efficiency of a legal system facilitates firms' access to external finance, particularly long term finance. At the country level, King and Levine (1993), Levine and Zervos (1998) and Beck, Levine and Loayza (2000) show that financial development promotes growth and that differences in legal origins explain differences in financial development.

The literature has less to say about how the state of a country's financial and legal institutions affects firms of different sizes.⁸ We know that in developing economies there are advantages in belonging to a business group (see Khanna and Krishna's (2000) study of India). This finding contrasts with the prevailing view in the US that the ability to escape market monitoring by recourse to internal capital markets makes large diversified firms inefficient (Scharfstein and Stein (2000), Rajan and Zingales (2000)).⁹ However, studies of business groups in the emerging economies study firms that select to belong to such groups and it is unclear the extent to which these results generalize to other firms and to other institutional settings. Cross-country studies of financing choices have found different financing patterns for small and large firms, in the use of long-term financing and trade credit (Demirguc-Kunt and Maksimovic, 1999

⁷ Carlin and Mayer (1999) also argue that there exists a relation between a country's financial system and the characteristics of industries that prosper in the country.

⁸ Except to study determinants of firm size by looking at the largest firms around the world. See Beck, Demirguc-Kunt and Maksimovic (2001b)

⁹ For evidence suggesting that large diversified firms in the US economy allocate resources efficiently see Maksimovic and Phillips (2001).

and 2001). However these studies rely on commercial data bases that contain listed firms so that even the ‘small’ firms are relatively large.

While the cross-country studies suggest that less developed financial and legal systems can constrain firms, the constraints to firm growth are not generally observed. Therefore, in the corporate finance literature several different approaches have been used to identify firms that are constrained. The influential study of US firms by Fazzari, Hubbard, and Petersen (1988) uses a priori reasoning to argue that low-dividend firms are constrained. Rajan and Zingales (1998) use the external financing by US firms as a benchmark, under the assumption that firms in the same industries in other countries require similar amounts of external financing. Demircuc-Kunt and Maksimovic (1998) use a different approach. They rely on a financial planning model to obtain the maximum growth rate that individual firms can attain without access to external finance.¹⁰ Firms growing faster than these predicted rates are externally-financed and potentially constrained. The next step in these studies is to relate the performance and incidence of constrained firms to specific country characteristics, such as the level of financial and legal development to verify that the underdevelopment constrains those firms.

While these approaches can identify the extent to which a population of firms is financially constrained, they do not allow the investigator to observe whether a specific market imperfection or institutional failure is affecting a specific firm. The WBES data base we use in this paper permits this because firms report the extent to which specific features of their business environment are obstacles to their growth. We use these reports as evidence of the incidence and severity of institutional obstacles. We then test whether the obstacles reported by firms are related to firms’ growth, and how this relation is

affected by firm size and the financial and legal development. Evidence that an obstacle constrains firm growth exists when firms report that it does so, and when there is also a significant negative relation between firm growth and the reported obstacle, controlling for relevant firm and country factors.

The WBES offers rich and specific information on what the firms consider to be obstacles to growth. For example, in addition to reporting whether the availability of financing is an obstacle in general, firms also report whether collateral requirements, bank bureaucracies, the need to have special connections with banks, high interest rates, lack of money in the banking system, and access to different types of finance are obstacles to growth.

Firms in the survey report quite a bit of detail as to what obstacles the legal system creates: Is it the availability of laws or regulations, or consistent interpretation of these laws? Is it the overall efficiency of the system that is lacking or confidence that the legal system will enforce contract and property rights? Do the firms perceive the speed, affordability, consistency, or fairness of the legal system particularly constraining?

The WBES data set also provides detailed information about corruption the firms face. The survey reports what is most troubling for firms: is it the need to make additional payments, not knowing the amount of these payments, or the uncertainty that the job will be done even after the payments are made? There is also information on the proportion of revenues paid as bribes, percentage of management's time spent with regulators, and the proportion of the value of contracts that need to be paid to gain access to government contracts.

¹⁰ See Higgins (1977) for a discussion of sustainable growth rates.

Empirical evidence based on cross-country comparisons does suggest that corruption has large, adverse effects on private investment and economic growth (Mauro, 1996). Corruption may increase the size of the unofficial economy and lower efficiency since resources that are hidden may not find their highest-value uses (Shleifer and Vishny, 1993; Johnson et al., 2000). Here, we examine whether corruption also has a significant impact in constraining firm growth.

Of particular interest is whether firms are constrained by the existence of corruption in financial intermediaries. The role of financial institutions in directing and monitoring investment in underdeveloped economies has long been recognized (Gerschenkron (1962)). More recently financial theorists have suggested that monitoring by banks, when combined with loans of different maturity, can alleviate agency problems that arise when firms' insiders have private benefits and the market for corporate control is weak (Diamond (1994)). Both the theoretical models and the policy prescriptions rely on the absence of agency problems or corruption in banks. The WBES survey data enables us to discover whether firms of different sizes perceive corruption in banks to be an obstacle to obtaining finance and to test whether their perceptions are related to firms' growth rates.

The WBES data includes firms usually excluded from commercial data bases. Eighty percent of the surveyed firms by WBES are small and medium enterprises. Thus, the richness of the data and its coverage enable us to investigate questions and a population of firms we have not been able to study before. However, the methodology has the potential disadvantage of relying on unaudited self-reporting by firms. Thus, it is possible that unsuccessful firms may blame institutional obstacles for their poor

performance. This possibility has to be balanced by the likelihood that alternative data sources used in cross-country firm-level research, such as accounting data, are also subject to distortion.¹¹ With accounting data the auditing process provides a measure of quality control. However, the quality of the audit may vary systematically across countries and firm size.¹² Moreover, the incentives to distort accounting data are likely to be much higher, since financial statements report publicly on the firms' operations and may therefore affect operational and financing decisions.

While this possibility of data bias can never be totally eliminated, we believe that it is unlikely to be a significant source of bias in this study. The stated purpose of the WBES survey is to evaluate the business environment, not firm performance. Firms were asked few specific questions about their performance and these were asked at end of the interview. This sequencing reduces the respondents need to justify their own performance when answering the prior questions about the business environment. Respondents were asked about a large range of business conditions and government policies. Thus, to the extent that firms need to shift blame for poor performance to outside forces, an unsuccessful firm that is not financially constrained is likely to find other, more immediate, excuses for its internal failures.

In evaluating the responses we do not focus on the raw responses, but on how the reported obstacles are related to growth as the financial and legal systems vary. Since our descriptors of financial systems are obtained from other sources, we would not expect to obtain a differential relation between firm growth and reported obstacles if these merely

¹¹ See for example Kaplan and Zingales (1997) who use unaudited verbal statements characterizing firms' financial positions in US annual reports to question results of earlier classifications of firms as constrained and unconstrained.

reflect the firm's internal situation. Moreover, if biases in reporting are pertinent, they are more likely to affect responses to general questions about obstacles than to responses pertaining to specific obstacles to growth.¹³ To assess this, and as a robustness check of our specification, below we also report estimates obtained using country-level instrumental variables which are by construction not subject to reverse causality between low firm performance and the respondents' propensity to blame the business environment for disappointing performance.

In summary, using firm-level data for 54 countries, the questions we seek to answer are:

- How is firm growth affected by specific financial, legal and corruption obstacles they face?
- Are small and medium size firms affected differently by different obstacles?
- Do obstacles affect firm growth differently based on the national level of financial and legal development or corruption? Are firms of a given size constrained everywhere in the same way, or are they constrained more severely in countries with underdeveloped financial and legal systems and higher levels of corruption?
- Is there evidence that corruption of bank officials is a serious obstacle to small firms in some economies?
- Are there specific features of the legal system which affect firm growth adversely?

¹² Financial data used in previous studies is also subject to potential biases because country institutional factors can affect the properties of accounting data. See Ball, Kothari, and Robin (2000) and Hung (2001).

¹³ We are grateful for the referee for pointing this out.

3. Data and Summary Statistics

The WBES firm-level data consist of firm survey responses of over 4,000 firms in 54 countries.¹⁴ The main purpose of the survey is to identify obstacles to firm performance and growth around the world. Thus, the survey has a large number of questions on the nature of financing and legal obstacles to growth, as well as corruption issues. Information on firms is more limited but the survey includes data on firm employment, sales, industry, growth and number of competitors. The survey also has information on ownership, and whether the firm is an exporter or has been receiving subsidies from national or local authorities.

In addition to the rich detail on the obstacles, one of the greatest values of this survey is its wide coverage of small and medium firms. The survey covers three groups of firms. Small firms are defined as those with 5 to 50 employees. Medium firms are those that employ 51 to 500 employees and large firms are those that employ more than 500 employees. Forty percent of our observations are from small firms, another forty percent are from medium firms and the remaining twenty percent are from large firms. Table AI in the Appendix reports the number of firms for each country in the sample. For each of the countries we also use data on GDP per capita, GDP in US dollars, growth rate of GDP and inflation. In addition, we use information on financial system development, legal development and corruption. Country level variables are 1995-1999 averages. They are compiled as discussed in Beck, Demirguc-Kunt and Levine (2000).

In Table I we summarize relevant facts about the level of economic development, firm growth and firm level obstacles in the sample countries. Details of sources are in the

¹⁴ The survey actually covers 80 economies. However the sample is reduced because most firm-level or country-level variables are missing for 26 countries.

Appendix. The countries in the sample show a great deal of variation. They range from Haiti, with an average GDP per capita of 369 dollars to U.S. and Germany, with per capita incomes of around \$30,000. We also provide the average annual growth rate of per capita GDP as a control variable. If investment opportunities in an economy are correlated, there should be a relationship between the growth rate of individual firms and the growth rate of the economy. Average inflation rate also provides an important control in that it is an indicator of whether local currency provides a stable measure of value in contracting. The countries also vary significantly in the rate of inflation, from a low of zero percent in the cases of Sweden and Argentina, up to 86 percent in the case of Bulgaria.

Insert Table I here

Firm growth rates, reported in column 4 of Table I, are sales growth rates for individual firms averaged over all sampled firms in each country. Firm growth rates also show a wide dispersion, from negative rates of 19 percent for Armenia and Azerbaijan to a positive 34 percent for Poland.

The last three columns of Table I show firm-level financing, legal and corruption obstacles reported by firms averaged over all firms in each country. In the WBES, enterprise managers were asked to rate the extent to which financing, legal and corruption problems presented obstacles to the operation and growth of their businesses. The ratings were quantified by assigning them values: 1, no obstacle; 2, minor obstacle; 3, moderate obstacle; and 4, major obstacle. As Table I illustrates, in the large majority of the countries firms report financing obstacles to be the most important obstacle to growth.

Also in general, the reported obstacles tend to be lower in developed countries such as the U.K. and the U.S. compared to those in developing countries.

Insert Table II here

Table II contains the sample statistics of the variables we consider. In addition to the financial, legal and corruption obstacles presented above, which capture summary obstacles in these areas, firms were also asked more detailed questions to understand the nature of these obstacles to growth better. We also investigate these variables.

As part of assessing the importance of financing obstacles, the firms were asked to rate, again on a scale of one to four, how problematic different financing issues are for the operation and growth of their business. These are: (a) collateral requirements of banks and financial institutions, (b) bank paperwork and bureaucracy, (c) high interest rates, (d) need for special connections with banks and financial institutions, (e) banks lack money to lend, (f) access to foreign banks, (g) access to non-bank equity, (h) access to export finance, (i) access to financing for leasing equipment, (j) inadequate credit and financial information on customers, and (k) access to long term loans.

Among the specific financial obstacles to growth, high interest rates stand out at 3.24, which should be a constraint for all firms in all countries. Access to long term loans, and bank collateral and paperwork requirements also appear to be among the larger reported obstacles to growth.

There are also detailed questions on the legal system. Businesses were asked if (a) information on laws and regulations were available, (b) the interpretation of laws and regulations were consistent, and whether they were confident that the legal system will uphold their contract and property rights in business disputes (c) now and (d) three years

ago. These are rated between (1) fully agree to (6) fully disagree. Further, businesses were asked to evaluate whether their country's courts are (a) fair and impartial, (b) honest and uncorrupt, (c) quick, (d) affordable, (e) consistent, (f) enforced decisions. These are rated from 1 (Always) to 6 (Never).¹⁵ Finally, businesses were asked to rate the overall quality and efficiency of courts between (1) very good to (6) very bad.

Looking at these legal obstacles to growth, quickness of courts seems to be one of the important obstacles with a value of 4.77. Other important obstacles include the consistency and affordability of the courts.

The final set of questions we investigate relate to the level of corruption the firms have to deal with. The questions are (a) whether corruption of bank officials creates a problem (rated from 1 to 4 as described above), if (b) firms have to make “additional payments” to get things done, (c) firms generally know what the amount of these “additional payments” are, (d) services are delivered if the “additional payments” are made as required, (e) it is possible to find honest agents to circumvent corrupt ones without recourse to unofficial payments. Others include (f) the proportion of revenues paid as bribes (increasing in payment ranked from 1 to 7)¹⁶, (g) proportion of contract value that must be paid as “unofficial payments” to secure government contracts (increasing in payment ranked from 1 to 6)¹⁷, (h) proportion of management's time in dealing with government officials about the application and interpretation of laws and regulations (increasing in time from 1 to 6). Unless specified, answers are ranked from 1 (Always) to 6 (Never).

¹⁵ Exact ratings are: 1=Always, 2=Usually, 3=Frequently, 4=Sometimes, 5=Seldom, 6=Never.

¹⁶ Exact ratings are 1=0%, 2= less than 1%, 3=1% to 1.9%, 4=2% to 9.99%, 5=10% to 12%, 6=13% to 25%, and 7=greater than 25%.

¹⁷ Exact rating are 1=0%, 2=up to 5%, 3=6% to 10%, 4=11% to 15%, 5=16% to 20%, 6= greater than 20%.

Of the specific corruption obstacles reported, the need to make additional payments is the highest at 4.36. It is followed by inability to have recourse to honest officials at 3.58.

One potential problem with use of survey data is that enterprise managers may identify several obstacles, only some of which are constraining, while others can be circumvented. For this reason, we examine the extent to which reported obstacles affect the growth rates of firms. To do this, we obtain benchmark growth rates by controlling for firm and country characteristics and assess whether the level of a reported obstacle affects growth relative to this benchmark.¹⁸

As firm level controls, we use indicators of firm ownership, industry, market structure and size. Since the sample includes firms from manufacturing, services, construction, agriculture and other industries, we control for industry effects by including industry dummy variables.

We also include dummy variables that identify firms as government- owned or foreign-controlled. Government-owned firms may grow at different rates because their objectives may differ from those of other firms or because their exposure to obstacles. For example, they may they may have advantages dealing with the regulatory system, and they may be less subject to crime or corruption by financial intermediaries and more exposed to political influences. The growth rate of foreign institutions may also be different because foreign entities may find it more difficult to deal with local judiciary or corruption. However, they may be less affected by financing obstacles since they could have easier access to the international financial system.

¹⁸ We do not have firm-level measures of investment opportunities, such as Tobin's Q. Many firms in our sample are not publicly traded.

Growth rate of firms may also depend on the market structure they operate in. Therefore, we also include dummy variables to capture whether the firm is an exporting firm, whether it receives subsidies from local and national government, and the number of competitors it faces in its market.

Finally, firm size may be a very important factor in how the firm growth is constrained by different factors. Small firms are likely to face tougher obstacles in obtaining finance, accessing legal systems or dealing with corruption (See for example, Schiffer and Weder, 2001). Here, size is a dummy variable taking the value 1 for small firms, 2 for medium firms and 3 for large firms.

Panel B of Table II shows the correlation matrix for the variables in our study. Foreign firms and exporters have higher growth rates whereas government-owned firms have significantly lower rates of growth. Also, firms in richer, larger, and faster growing countries have significantly higher growth rates. As expected, higher financing, legal, and corruption obstacles are correlated with lower firm growth rates.

Correlations also show that government-owned firms are subject to higher financing obstacles, but lower corruption. Foreign-controlled firms and exporters, face lower financing obstacles, as well as corruption. Financing obstacles seem to be the highest for manufacturing firms, whereas firms in services industry are the least affected by all obstacles. To the extent firms have greater number of competitors, they seem to face greater financing obstacles and corruption.

All obstacles are significantly lower in richer, larger and faster growing countries, but significantly higher in countries with higher inflation. Firms are also significantly larger in richer, larger and faster growing countries. Firm size itself is not correlated with

firm growth. However, size is likely to have an indirect effect on firm growth since larger firms face significantly lower financing, legal and corruption obstacles. Finally, all three obstacles are highly correlated with each other so that firms that suffer from one are also likely to suffer from others.

We have computed, but do not report, the correlations of specific obstacles with summary financing, legal and corruption obstacles, respectively. Overall, specific obstacles are highly correlated with the summary ones and with each other. The correlation between the summary corruption obstacle and the corruption of bank officials is significant and particularly high at 43 percent.

We next explore the relation between the financing, legal, and corruption obstacles reported by firms in the WBES survey and firm size, controlling for country-level institutional development. To capture institutional development, we use independently computed country-level measures of the size of the financial sector, development of the legal sector and the level of corruption. As a measure of financial development, we use *Priv*, given by the ratio of domestic banking credit to the private sector divided by GDP. Legal development is proxied by *Laworder*, which is an index of the efficiency of the legal system. It is rated between 1 and 6, with higher values indicating better legal development. Corruption is captured by *Corrupt*, which is an indicator of the existence of corruption, rated between 1 to 6, with higher values indicating less corruption

In Table III, the firm-level survey responses are regressed on size dummies and the country-level variables. The three size dummy variables, *small*, *medium*, *large*, take the value 1 if the firm is small or medium or large respectively and zero otherwise. We

also report specifications where country-level variables are interacted with firm size. Inspection of Table III reveals that on average the firms' perception of the financing and corruption obstacles they face is related to firm size, with smaller firms reporting significantly higher obstacles. In contrast, smaller firms report lower legal obstacles than larger firms, but these differences are not significant.

Table III also shows that in countries with more developed financial systems and with less country-level corruption firms report lower financing obstacles. These effects are more significant and the coefficients are greater in absolute value for the largest firms, particularly in the case of financial development. The indicator of the quality of the legal system does not appear to explain the magnitude of the firm-level financing obstacles.

The firm-level legal obstacles are significantly negatively related to the quality of the country's legal system. The corruption obstacles reported by firms in our sample are higher in countries with less developed legal systems and in countries that have a higher score on our index of corruption. These relations appear to be unrelated to firm size.

Insert Table III here

Table III shows that firm size is an important determinant of the level of financial and corruption obstacles reported by firms even after controlling for the quality of a country's institutions. However, to determine if firm size really has an impact we need to investigate *both* the level of the reported obstacles *and* how firm growth is affected by these obstacles.

4. The Empirical Model

The regressions reported above indicate that there exist statistically significant relations between different obstacles, firm size and a country's institutional development. However, Table II also indicates that there is a high degree of correlation between variables of interest and other firm and country level controls. Next, we conduct regression analysis to clarify the relationships between firm level characteristics and firm growth.

The regression equations we estimate are of the form:

$$\text{Firm Growth} = \alpha + \beta_1 \text{ Government} + \beta_2 \text{ Foreign} + \beta_3 \text{ Exporter} + \beta_4 \text{ Subsidized} + \beta_5 \text{ No. of Competitors} + \beta_6 \text{ Manufacturing} + \beta_7 \text{ Services} + \beta_8 \text{ Inflation} + \beta_9 \text{ GDP per capita} + \beta_{10} \text{ GDP} + \beta_{11} \text{ Growth} + \beta_{12} \text{ Financing} + \beta_{13} \text{ Legal} + \beta_{14} \text{ Corruption} + \varepsilon. \quad (1)$$

All regressions are estimated using firm level data across 54 countries and country random effects. We introduce Financial, Legal and Corruption obstacles one at a time, and finally all together. In different regressions we substitute these summary obstacles by specific ones.

To investigate the relation between growth and reported obstacles for different sized firms, we estimate different specifications where we interact the size dummies with individual obstacles. For example for the financing obstacle, we estimate:

$$\text{Firm Growth} = \alpha + \beta_1 \text{ Government} + \beta_2 \text{ Foreign} + \beta_3 \text{ Exporter} + \beta_4 \text{ Subsidized} + \beta_5 \text{ No. of Competitors} + \beta_6 \text{ Manufacturing} + \beta_7 \text{ Services} + \beta_8 \text{ Inflation} + \beta_9 \text{ GDP per capita} + \beta_{10} \text{ GDP} + \beta_{11} \text{ Growth} + \beta_{12} \text{ Size} + \beta_{13} \text{ Financing Obstacle} * \text{Small} + \beta_{14} \text{ Financing Obstacle} * \text{Medium} + \beta_{15} \text{ Financing Obstacle} * \text{Large} + \varepsilon. \quad (2)$$

By comparing β_{13} , β_{14} , and β_{15} and evaluating them at the mean level of reported obstacle for each group of firms, it is possible to see if financing obstacles affect firm

growth differently for small, medium and large firms. Notice here we also introduce size directly in the equation. Similarly, interacting size variables with the legal and corruption obstacles allows us to see if these different obstacles constrain firm growth differently based on size.

Next, it is of interest to find out if firms are equally constrained everywhere around the world, or if they are constrained more in developing countries where firms have to deal with underdeveloped financial and legal systems and face higher corruption. In other words, while it is interesting to see that smaller firms are more constrained everywhere around the world, for policy advice it would be more important to know if these constraints can be relaxed through development.

To get at this issue, we include an interaction term of financing obstacles with our measure of financial development, Priv. The use of this indicator to capture financial development is common in the literature.¹⁹ We also introduce Priv directly in the equation since our earlier work has shown that level of financial development affects firm growth (see Demirguc-Kunt and Maksimovic, 1998). Thus, to investigate the impact of financing obstacles, we estimate:

$$\begin{aligned} \text{Firm Growth} = & \alpha + \beta_1 \text{ Government} + \beta_2 \text{ Foreign} + \beta_3 \text{ Exporter} + \beta_4 \text{ Subsidized} + \\ & \beta_5 \text{ No. of Competitors} + \beta_6 \text{ Manufacturing} + \beta_7 \text{ Services} + \beta_8 \text{ Inflation} + \beta_9 \text{ GDP per} \\ & \text{capita} + \beta_{10} \text{ GDP} + \beta_{11} \text{ Growth} + \beta_{12} \text{ Priv} + \beta_{13} \text{ Financing Obstacle} + \beta_{14} \text{ Financing Obstacle} \\ & * \text{Priv} + \varepsilon. \end{aligned} \tag{3}$$

The coefficient of the interaction term, β_{14} , indicates whether an increase in financial development has any impact on the way financial obstacles constrain firm

¹⁹ See the discussion in Beck, Demirguc-Kunt and Levine (2000).

growth. It is also possible to investigate if financial development relaxes these constraints for all firms regardless of size. Then, the estimated equation becomes:

$$\begin{aligned} \text{Firm Growth} = & \alpha + \beta_1 \text{ Government} + \beta_2 \text{ Foreign} + \beta_3 \text{ Exporter} + \beta_4 \text{ Subsidized} + \\ & \beta_5 \text{ No. of Comp.} + \beta_6 \text{ Manuf.} + \beta_7 \text{ Services} + \beta_8 \text{ Inflation} + \beta_9 \text{ Gdp/cap} + \beta_{10} \text{ GDP} + \beta_{11} \\ & \text{Growth} + \beta_{12} \text{ Priv*Small} + \beta_{13} \text{ Priv*Medium} + \beta_{14} \text{ Priv*Large} + \beta_{15} \text{ Size} + \beta_{16} \text{ Financing} \\ & \text{*Small} + \beta_{17} \text{ Financing*Medium} + \beta_{18} \text{ Financing*Large} + \beta_{19} \text{ Financing*Small*Priv} + \\ & \beta_{20} \text{ Financing*Medium*Priv} + \beta_{21} \text{ Financing*Large*Priv} + \varepsilon. \quad (4) \end{aligned}$$

Then coefficients β_{19} , β_{20} and β_{21} would indicate if a marginal improvement in financial development relaxes the financing constraints of small, medium and large firms to the same extent.

We replicate the above analysis for legal obstacles to growth, by replacing Priv in equation (3) by Laworder. In the case of corruption obstacles, we replace Priv in equation (3) by Corrupt. As in the case of the financing obstacles, we also investigate whether the impact of legal and corruption obstacles are relaxed to a similar extent for different size firms for higher values of Laworder and Corrupt by estimating versions of equation (4).

5. Results

Table IV shows how firm growth is constrained by financing, legal and corruption obstacles, after controlling for country and firm-specific variables. When entered individually, all reported obstacles have a negative and significant effect on firm growth

as expected. The last column in the table enters all three reported obstacles together. The results show that financing and legal coefficients are both significant and negative, while corruption loses its significance. This indicates that both financing and legal obstacles independently reduce firm growth, and that the impact of corruption is captured by the financial and legal obstacles which also incorporate corruption in the legal and financial sector.

Insert Table IV here

Looking at other control variables, we see that the growth rates of government-owned firms are slower, and that of exporters, faster. Foreign firms also appear to grow faster, although this result is only significant at 10 percent in two specifications. We do not observe significant differences in the growth rates of firms in different industries. Inflation develops a significant and positive coefficient in two of the four specifications. This probably reflects the fact that firm sales growth is given in nominal terms. Finally, GDP growth rate and firm growth are significantly and positively correlated, indicating that firms grow faster in an economy with greater growth opportunities. Most of the explanatory power of the model comes from between country differences as indicated by R^2 s of 25 to 28 percent.

Insert Tables V

In Table V we look at specific indicators for financial, legal and corruption obstacles, and investigate if their impact on growth varies by firm size. Although the regressions also include the control variables, these coefficients are not reported for brevity. Panel A shows that collateral requirements, bank paperwork and bureaucracy, high interest rates, the need to have special connections with banks, lack of money in the

banking system, and access to financing for leasing equipment, all have significantly constraining effects on firm growth, particularly for small and medium firms. It is interesting to note that while access to long term loans was rated as an important constraint by the firms, it is not significantly correlated with firm growth. This may be because it is possible to substitute short term financing that is rolled over at regular intervals for long term loans. Also, it is reassuring to see that those firms which claim to be constrained by high interest rates actually grow slower, as we expect interest rates to constrain all firms. It is also important to note that some of these factors are likely to be correlated with lack of development of the financial system. Other potential constraints, such as access to foreign banks, access to non-bank equity, access to export finance, or inadequate information on customers are not significantly correlated with firm growth.

Panel A also shows that financial obstacles affect firms differently based on their size. First column shows that the financing obstacle constrains the smallest firms the most and the largest ones the least. Multiplying the coefficients with the mean level of constraints for each group reveals that the magnitude of the effect for small firms is more significant and almost double that of large ones.²⁰ These differences become even clearer when we look at individual financing obstacles: The largest firms are barely affected, with only high interest rates developing a negative and significant coefficient at 5 percent. It is not surprising that large firms are also affected by high interest rates since we expect interest rates to affect all firms. Largest firms are completely unaffected by collateral requirements, bank bureaucracies, the need to have special connections (probably because they already have them), banks' lack of money or any of the access issues. In contrast, medium size firms and particularly small firms are significantly and

negatively affected by collateral requirements, bank paperwork and bureaucracy, high interest rates, the need to have special connections with banks, banks lack of money to lend, and access to financing for leasing equipment. In addition, smallest firms are negatively affected by obstacles on access to export finance. These results provide evidence that financial obstacles have a much greater impact on the operation and growth of small and medium firms.²¹

Panel B shows that while the summary legal obstacle has a highly significant and negative impact on firm growth, none of the other more specific legal obstacles develop significant coefficients. It appears that firms are able to work around these particular obstacles although they find them annoying. Nevertheless, regressing the reported legal obstacle on the quality of the courts, their fairness, honesty, quickness, affordability, consistency, enforcement capacity, and the confidence in the legal system shows that these factors are able explain about 50 percent of the cross-country variation in the legal obstacle. Specifically, the affordability and consistency of the court system, enforcement capacity and the confidence in the legal system develop significant coefficients. However, using the predicted obstacle from this regression in the growth equation leads to positive yet insignificant results. Thus, while specific obstacles are related to the summary obstacle, they play a minor role in affecting growth. This suggests that the usual intuitive descriptors of how a good legal system operates do a good job of predicting survey responses but do not capture the effect of the legal system on firm growth.

²⁰ The values are 10.7, .8.7 and 6.0 percent per year for small, medium and large firms, respectively.

²¹ Firm size itself, never develops a significant coefficient in the regressions, consistent with simple correlations reported in Table II.

Regarding size differences, the results are similar to financing obstacles. The legal obstacle leaves large bank growth unaffected, while it has a negative and significant impact on the growth rates of medium and especially small firms. This is true regardless of the fact that the level of the obstacles are higher for larger firms. To evaluate the economic effect of the obstacle, we multiply the estimated coefficient by the mean reported level of the obstacle for each sub-sample of firms by size. The predicted effect of the obstacle on annual firm growth is 2.8 percent for large firms, whereas it is 5.7 percent for medium firms, and 8.5 percent for small firms. These results indicate that large firms are better able to adjust to the inefficiencies of the legal system. This does not seem to be the case for small and medium enterprises which end up paying for the legal shortcomings in terms of slower growth. Even looking at specific obstacles –which do not capture relevant differences as well as the summary one- there is an indication that large firms may be using legal inefficiencies to their advantage, as poor enforcement of court decisions appear to contribute to large firm growth rates. However, there is insufficient evidence to make such a case. As for small firms, affordability of the court system emerges as a significant constraint, although the coefficient is significant only at 10 percent.

In Panel C we see that in addition to the corruption obstacle, the proportion of revenues paid as bribes is also a good indicator of corruption, developing a negative and highly significant coefficient. Again, it is the small and medium firms that are negatively affected by corruption.²² None of the corruption obstacles develop significant signs for large firms. The corruption obstacle is negative but significant at 10 percent for medium

²² The mean effects on firm growth are 1.6, .41 and 7.5 percent per year for large, medium and small firms, respectively.

sized firms and negative and highly significant for small firms. When we look at individual obstacles, we again see that it is the small and medium enterprises that are affected by bribes, and this time both coefficients are highly significant, although the impact on small firm growth is larger in magnitude. The percentage of senior manager's time spent with officials to understand regulations reduces the growth rates of both small and medium enterprises, but only at 10 percent significance. In addition, small firms are significantly and negatively affected by variables that capture the corruption of bank officials and uncertainty that services will be delivered even after bribes are paid. The need to make payments or absence of recourse to honest officials do not develop significant signs in regressions despite their high reported ratings as obstacles.

Insert Table VI

Next, we address the issue whether obstacles affect firms similarly in all countries or whether the impact depends on the country's level of financial and legal development and corruption. Estimates of equation (3) for the financing, legal and corruption obstacles are presented in Table VI. The results indicate that firms in financially and legally developed countries with lower levels of corruption are less affected by firm-level obstacles in these areas. This is true because (i) in all three cases the coefficient of the obstacle remains negative and significant and its interaction with the relevant development variable develops a positive and significant coefficient;²³ and (ii) as we reported in Table III, the levels of obstacles are also higher in countries with underdeveloped financial and legal systems and higher levels of corruption.

²³ Priv and Laworder do not develop significant coefficients when entered together with financing and legal obstacles. Corruption, on the other hand does develop a positive and significant coefficient in some

In unreported regressions we also estimated equation (3) with each specific obstacle. The interaction term develops a positive and significant coefficient for lack of money in the banking system, consistent interpretation of laws, amount of bribes to be paid, and contract value that has to be paid to government. These results are also consistent with the hypothesis that in countries where there is less corruption, better developed financial and legal systems, firm growth is less constrained by the factors we examine.

Insert Table VII

Taking into account firm size makes these results even stronger. For the financing, legal and corruption obstacles, Table VII reports results taking into account differences in firm size when looking at the impact of national differences in how firm level obstacles affect growth (as illustrated in equation (4) for the financing obstacle). Column 1 of Table VIII shows that small firms are the most severely affected by financing obstacles also in this specification. However, the interaction term of the financing obstacle for small firms with Priv develops a positive and significant sign which indicates that a marginal development in a country's financial system relaxes the financial constraints on small firms. In column 2 of the table, we see a similar result that marginal improvements in legal efficiency are translated into relaxing of legal constraints for small and medium firms (albeit significant at ten percent). Similarly, corruption results reported in column 3 indicate that as countries manage to reduce corruption, the constraining effect of corruption on the growth of small and medium firms diminishes.

specifications even when entered together with firm-level corruption obstacles, indicating that lack of corruption is associated with higher firm growth.

We perform robustness checks of our specifications to address two possible sources of bias. Our estimates would be biased if firms that are not growing because of internal problems systematically shift blame to the legal and financial institutions and report high obstacles. As we note in Section 2, this type of reverse causality problem, if it exists, is likely to be most severe in the case of the summary obstacles. To examine this possibility we re-estimated the specifications in Table IV using Priv, Laworder and Corrupt as instrumental variables. The coefficients of interest are reported in Panel A of Table VIII and show that the same variables remain significant at roughly comparable levels of significance.

Insert Table VIII

Panel B shows the relation between the obstacles and firms' real growth. In this specification the rate of inflation variable is dropped from the right hand side. Inspection of Panel B reveals that adjusting the dependent variable for inflation does not alter the results.

6. Conclusions

In this paper we investigate whether different financial, legal and corruption obstacles firms report actually affect their growth rates. The paper makes a number of contributions to the literature. First, by making use of a unique survey data base we are able to investigate a rich set of obstacles reported by firms and directly test if any of these reported obstacles are significantly correlated with firm growth rates. Second, the data base also allows us to focus on differences in firm size since it has good coverage of small and medium enterprises in 54 countries. Third, we investigate if the extent to which the firms are constrained by different obstacles depends on the level of

development of the financial and legal system and the national level of corruption.

Finally, one of the categories of constraints we investigate is corruption, and its impact on firm growth has not been investigated before.

Our results indicate that the extent to which financial, legal and corruption factors constrain a firm's growth depends very much on its size. We show that it is consistently the smallest firms that are most adversely affected by all obstacles. Taking into account national differences between financial and legal development and corruption, we see that those firms that operate in underdeveloped systems with higher levels of corruption are affected by all obstacles to a greater extent. We also see that a marginal development in the financial and legal system and a reduction in corruption helps relax the constraints for the small and medium firms, which are the most constrained.

All three obstacles – financial, legal, and corruption – do affect firm growth rates adversely. But not all specific obstacles are equally important, and the ones that affect firm growth are not necessarily the highest rated by firms. Looking at individual financing obstacles, we see that difficulties in dealing with banks, such as bank paperwork and bureaucracies, and the need to have special connections with them do constrain firm growth. Collateral requirements and certain access issues –such as financing for leasing equipment- also turn out to be significantly constraining. In addition, macroeconomic issues captured by high interest rates and lack of money in the banking system significantly reduce firm growth rates. These effects remain significant even after we control for the level of financial development. Interestingly, another obstacle that is rated very highly by firms- access to long term loans- does not affect their

growth rates significantly, perhaps because it is possible to substitute short term funding for long term loans.

Legal and corruption obstacles, particularly the amount of bribes paid, the percentage of senior management's time spent with regulators, and corruption of bank officials also constrain firm growth significantly. However, other obstacles such as the quickness of courts, or the need to make additional payments, which are both rated very highly by firms as important obstacles, do not affect firm growth significantly. These results suggest that the surveys elicit all kinds of complaints which may appear equally important. However, our methodology allows us to distinguish between those obstacles that are merely annoying from those that truly constrain firm performance. Two findings are of particular interest. First, the corruption of bank officials does affect firm growth. This provides evidence for the existence of "institutional failure" which has to be taken into account when modeling the monitoring role of financial institutions in overcoming market failures due to informational asymmetries. Second, the finding that the intuitive descriptors of an "efficient" legal system are not correlated with the components of the summary legal obstacle that predicts firm growth suggests that the mechanism by which the legal systems affects firm performance is not well understood yet.

Our results have important policy implications. Development institutions devote large amount of resources to small and medium enterprises (SMEs) because the development of the SME sector is believed to be crucial for economic growth and poverty alleviation. This paper provides evidence that indeed small and medium sized firms face greater financial, legal and corruption obstacles compared to large firms, and that the constraining impact of obstacles on firm growth is inversely related to firm size.

The paper also shows that it is the small firms that stand to benefit the most from improvements in financial development and reduction in corruption. Thus, efforts in this area are well justified in promoting the development of the SME sector.

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Table I
Economic Indicators and Obstacles to Firm Growth

GDP per capita is real GDP per capita in US\$. Inflation is the log difference of the consumer price index. Growth is the growth rate of GDP in current US\$. All country variables are 1995-1999 averages. Firm Growth is the percentage change in firm sales over the past three years (1996-99). Financing, Legal, and Corruption are summary obstacles as indicated in the firm questionnaire. They take values 1 to 4, with higher values indicating greater obstacles. Firm variables are averaged over all firms in each country. Detailed variable definitions and sources are given in the appendix.

	GDP per capita	Inflation	Growth	Firm Growth	Financing Cons.	Legal Cons.	Corruption	
Albania	806.78		0.15	0.03	0.25	3.04	2.76	3.40
Argentina	8000.15		0.00	0.02	0.10	3.03	2.27	2.59
Armenia	844.11		0.10	0.04	-0.19	2.48	1.51	1.99
Azerbaijan	407.75		0.03	0.05	-0.19	3.17	2.60	3.02
Bulgaria	1414.61		0.86	-0.02	0.15	3.18	2.27	2.64
Belarus	2234.91		0.71	0.07	0.09	3.31	1.55	1.88
Belize	2737.70		0.01	0.00	0.13	3.14	1.54	2.00
Bolivia	938.55		0.06	0.01	0.07	3.00	2.81	3.53
Brazil	4491.67		0.07	0.00	0.04	2.67	2.58	2.49
Canada	20548.97		0.01	0.02	0.17	2.11	1.46	1.40
Chile	5002.70		0.05	0.03	0.08	2.39	1.97	1.85
China	676.76		0.02	0.07	0.05	3.35	1.51	1.96
Colombia	2381.19		0.16	-0.01	0.04	2.71	2.41	2.87
Costa Rica	3692.47		0.12	0.04	0.25	2.63	2.24	2.59
Czech Republic	5158.04		0.07	0.00	0.10	3.17	2.18	2.07
Germany	30794.03		0.01	0.01	0.10	2.60	2.14	1.86
Dominican Republic	1712.31		0.06	0.06	0.24	2.59	2.41	2.90
Ecuador	1538.48		0.30	-0.02	-0.03	3.34	3.09	3.52
Spain	15858.03		0.02	0.03	0.26	2.22	1.97	2.08
Estonia	3663.49		0.10	0.05	0.61	2.44	1.70	1.92
France	27719.92		0.01	0.02	0.21	2.75	1.81	1.63
United Kingdom	20186.56		0.03	0.02	0.31	2.21	1.51	1.24
Guatemala	1503.25		0.08	0.01	0.14	3.06	2.58	2.68
Honduras	707.52		0.16	0.00	0.13	2.93	2.40	2.93
Croatia	3845.27		0.05	0.05	0.09	3.32	2.69	2.56
Haiti	368.73		0.14	0.00	-0.05	3.39	2.27	3.02
Hungary	4705.65		0.15	0.04	0.29	2.61	1.30	1.94
Indonesia	1045.04		0.20	-0.02	-0.06	2.82	2.26	2.67
Italy	19645.96		0.02	0.01	0.16	1.98	2.27	1.90
Kazakhstan	1315.10		0.16	0.02	0.08	3.28	2.13	2.74
Kyrgyzstan	800.34		0.22	0.04	-0.02	3.48	2.20	3.23
Lithuania	1907.93		0.09	0.03	0.08	3.00	2.24	2.44
Moldova	667.74		0.18	-0.03	-0.14	3.39	2.47	2.90
Mexico	3394.75		0.20	0.04	0.26	3.51	2.94	3.57
Malaysia	4536.23		0.03	0.01	0.01	2.67	1.66	2.09
Nicaragua	434.69		0.11	0.03	0.19	3.22	2.46	2.88
Pakistan	505.59		0.08	0.00	0.08	3.31	2.55	3.53
Panama	3123.95		0.01	0.02	0.07	2.13	2.36	2.74
Peru	2334.94		0.07	0.01	-0.01	3.10	2.55	2.85
Philippines	1125.81		0.08	0.01	0.07	2.69	2.24	3.13
Poland	3216.04		0.13	0.05	0.34	2.48	2.32	2.28
Portugal	11582.33		0.03	0.03	0.12	1.82	1.86	1.77
Romania	1372.02		0.53	-0.02	0.07	3.28	2.60	2.88
Russia	2223.57		0.35	0.00	0.28	3.21	2.18	2.62
Singapore	24948.09		0.01	0.02	0.11	1.96	1.33	1.29
El Salvador	1705.79		0.04	0.01	-0.01	2.98	2.37	2.80
Slovakia	3805.41		0.07	0.04	0.11	3.38	2.08	2.44
Slovenia	10232.73		0.08	0.04	0.29	2.30	2.29	1.64
Sweden	28258.28		0.00	0.02	0.23	1.85	1.49	1.19
Trinidad & Tobago	4526.28		0.04	0.04	0.20	2.93	1.44	1.66
Turkey	2993.89		0.58	0.01	0.10	3.11	2.28	2.86
Ukraine	866.52		0.26	-0.03	0.03	3.46	2.18	2.54
Uruguay	6113.60		0.15	0.02	0.03	2.70	1.87	1.84
United States	29250.32		0.02	0.03	0.14	2.39	1.79	1.86
Venezuela	3482.51		0.40	-0.02	-0.02	2.57	2.65	2.98

Table II
Summary Statistics and Correlations

Summary statistics are presented in Panel A and correlations are presented in Panel B. N refers to firm level observations for 54 countries. Firm Growth is given by the percentage change in firm sales. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GDP/capita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is the growth rate of GDP. All country variables are 1995-1999 averages. The different financing, legal, and corruption issues are survey responses as specified in the firm questionnaire. Higher numbers indicate greater obstacles, with the exception of “Firms have to make ‘additional payments’ to get things done” and “Firms know the amount of ‘additional payments’ in advance”. Detailed variable definitions and sources are given in the appendix.

Panel A: Summary Statistics:

	N	Mean	Std. Dev.	Min	Max
Firm Growth	4,255	0.13	0.59	-1	2
Government	4,255	0.13	0.34	0	1
Foreign	4,255	0.17	0.37	0	1
Exporter	4,255	0.35	0.48	0	1
Subsidized	4,255	0.10	0.35	0	1
Manufacturing	4,255	0.37	0.48	0	1
Services	4,255	0.47	0.50	0	1
No. of Competitors	4,255	0.80	0.33	0	1.39
Size	4,254	1.78	0.72	1	3
Inflation	54	17.41	19.30	0.11	86.05
GDP per capita	54	560	772	369	30,794
GDP (million \$)	54	24.72	1.96	20.30	29.74
Growth	54	0.02	0.03	-0.03	0.07
Financing	4,213	2.87	1.13	1	4
Legal	3,976	2.17	1.05	1	4
Corruption	4,000	2.43	1.17	1	4
Collateral requirements	3,954	2.54	1.17	1	4
Bank paperwork/bureaucracy	4,078	2.54	1.10	1	4
High interest rates	4,112	3.24	1.03	1	4
Need special connections with banks	3,958	2.19	1.09	1	4
Banks lack money to lend	3,861	2.10	1.22	1	4
Access to foreign banks	3,489	1.99	1.17	1	4
Access to non-bank equity	3,470	2.06	1.16	1	4
Access to export finance	3,017	1.99	1.19	1	4
Access to financing for leasing equipment	3,532	2.02	1.14	1	4
Inadequate credit/financial information on customers	3,712	2.21	1.13	1	4
Access to long term loans	3,937	2.63	1.27	1	4
Availability of information on laws and regulations	4,211	2.92	1.42	1	6
Interpretation of laws and regulations are consistent	4,225	3.42	1.37	1	6
Overall quality and efficiency of courts	3,521	3.73	1.31	1	6
Courts are fair and impartial	3,933	3.75	1.39	1	6
Courts are quick	3,991	4.77	1.22	1	6
Courts are affordable	3,910	3.92	1.45	1	6
Courts are consistent	3,918	4.04	1.36	1	6
Court decisions are enforced	3,905	3.67	1.48	1	6
Confidence in legal system to enforce contract & prop. rights	4,206	3.35	1.38	1	6
Confidence in legal system – 3 years ago	3,935	3.46	1.40	1	6
Corruption of bank officials	3,574	1.72	1.05	1	4
Firms have to make “additional payments” to get things done	3,924	4.36	1.62	1	6
Firms know the amount of “additional payments” in advance	2,310	3.38	1.59	1	6
If “additional payments” are made, services are delivered	2,269	3.01	1.53	1	6
It is possible to find honest agents to replace corrupt ones	3,602	3.58	1.75	1	6
Proportion of revenues paid as bribes	2,831	2.35	1.47	1	7
Prop. of contract value that must be paid for govt. contracts	1,733	2.51	1.73	1	6
Mgmt’s time (%) spent with officials to understand laws & regs	3,990	2.24	1.39	1	6

Panel B:
Correlation Matrix of Variables

	Firm Growth	Govt	Foreign	Exporter	Subsidized	Manuf.	Services	No. of comp.	Size	Inflation	GDP/capita	GDP(\$)	Growth	Financing	Legal
Govt.	-0.0245*														
Foreign	0.0390**	-0.0258*													
Exporter	0.0844***	0.1001***	0.2368***												
Subsidized	-0.0049	0.1472***	0.0006	0.081***											
Manuf.	-0.0180	0.0855***	0.1165***	0.3448***	0.0219										
Services	0.0210	-0.0846***	-0.0312**	-0.2465***	-0.0759***	-0.7302***									
No. of co.	0.0148	-0.0057	-0.1788***	-0.1211***	-0.0285*	-0.117***	0.0334**								
Size	0.0224	-0.0245*	0.0390***	0.0844***	0.0049	-0.0180	0.0210	0.0148							
Inflation	0.0010	0.1335***	-0.1231***	-0.1024***	0.0049	0.0280*	-0.1262***	0.2640***	0.0010						
GDP/cap	0.0489***	-0.0808***	0.1262***	0.1223***	0.0675***	-0.0460***	0.0739***	-0.2228***	0.0489***	-0.3655***					
GDP(\$)	0.0551***	-0.0960***	0.0799***	0.0058	0.0625***	-0.0391***	0.0559***	-0.1178***	0.0551***	-0.0789***	0.5666***				
Growth	0.0751***	0.0673***	0.0237	0.1275***	0.0404***	0.0000	0.021	0.0281*	0.0751***	-0.3608***	0.1308***	-0.1007***			
Fin. const.	-0.0821***	0.0723***	-0.1732***	-0.052***	0.0231	0.0426***	-0.1317***	0.1039***	-0.0821***	0.1784***	-0.2518***	-0.1114***	-0.1226***		
Leg. const.	-0.0676***	-0.0084	-0.0158	-0.0095	-0.0303**	0.0198	-0.0378**	0.0167	-0.0676***	0.0531***	-0.1737***	-0.0682***	-0.1411***	0.1901***	
Corruption	-0.0695***	-0.0713***	-0.0733***	-0.1025***	-0.0759***	-0.001	-0.0338**	0.0479***	-0.0695***	0.1314***	-0.3322***	-0.1635***	-0.1815***	0.2809***	0.5754***

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table III
Firm Level Obstacles and Institutional Development

The regression estimated is: Firm Level Obstacle = $\alpha + \beta_1 \text{Priv*Small} + \beta_2 \text{Priv*Medium} + \beta_3 \text{Priv*Large} + \beta_4 \text{Laworder*Small} + \beta_5 \text{Laworder*Medium} + \beta_6 \text{Laworder*Large} + \beta_7 \text{Corrupt*Small} + \beta_8 \text{Corrupt*Medium} + \beta_9 \text{Corrupt*Large} + \beta_{10} \text{Small} + \beta_{11} \text{Medium} + \varepsilon$
Firm Level Obstacles --Financing, Legal, or Corruption --are summary obstacles as indicated in the firm questionnaire. They take values of 1 to 4, where 1 indicates no obstacle and 4 indicates major obstacle. Priv is domestic bank credit to the private sector divided by GDP. Laworder is a national indicator (1-6) that takes higher values for legal systems that are more developed. Corrupt is a corruption indicator (1-6) at the national level which takes higher values in countries where corruption is lower. Size is a vector of size dummy variables, small, medium and large. They take the value 1 if a firm is small (or medium or large) and 0 otherwise. Small firms employ 5 to 50 employees (average sales=127 million US\$), medium size firms employ 51 to 500 employees (average sales=136 million US\$) and large firms employ more than 500 employees (average sales 237 million US\$). These size dummies are interacted with Priv, Laworder and Corrupt. All regressions are estimated using country random effects. Firm level variables are obtained from the WBES. Detailed variable definitions and sources are given in the appendix.

	Financing Obstacle		Legal Obstacle		Corruption Obstacle	
Priv	-0.510*** (0.156)		-0.259 (0.184)		-0.232 (0.225)	
Priv*Small		-0.267* (0.163)		-0.199 (0.186)		-0.324 (0.210)
Priv*Medium		-0.683*** (0.164)		-0.357* (0.186)		-0.200 (0.210)
Priv*Large		-0.712*** (0.184)		-0.216 (0.206)		-0.126 (0.225)
Laworder	-0.007 (0.156)		-0.138*** (0.052)		-0.252*** (0.062)	
Laworder*Small		-0.029 (0.047)		-0.136*** (0.054)		-0.239*** (0.059)
Laworder*Medium		-0.008 (0.045)		-0.138*** (0.052)		-0.270*** (0.058)
Laworder*Large		0.026 (0.050)		-0.137*** (0.029)		-0.233*** (0.060)
Corrupt	-0.171*** (0.042)		-0.069 (0.051)		-0.186*** (0.060)	
Corrupt*Small		-0.139*** (0.044)		-0.073 (0.052)		-0.150*** (0.056)
Corrupt*Medium		-0.167*** (0.044)		-0.051 (0.051)		-0.199*** (0.056)
Corrupt*Large		-0.226*** (0.048)		-0.090* (0.056)		-0.224*** (0.059)
Small	0.305*** (0.037)	0.084 (0.147)	-0.027 (0.037)	-0.093 (0.148)	0.223*** (0.036)	0.064 (0.141)
Medium	0.218*** (0.035)	0.145 (0.137)	-0.014 (0.036)	-0.095 (0.137)	0.126*** (0.034)	0.216* (0.131)
R ² - within	0.01	0.01	0.00	0.00	0.01	0.01
R ² - between	0.46	0.47	0.36	0.36	0.52	0.51
R ² - overall	0.08	0.08	0.06	0.06	0.14	0.14
No of firms	6680	6680	5487	5487	6335	6335
No of countries	59	59	51	51	59	59

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table IV
Firm Growth: the Impact of Obstacles

The regression estimated is: Firm Growth = $\alpha + \beta_1$ Government + β_2 Foreign + β_3 Exporter + β_4 Subsidized + β_5 No. of Competitors + β_6 Manufacturing + β_7 Services + β_8 Inflation + β_9 GDP per capita + β_{10} GDP + β_{11} Growth + β_{12} Financing + β_{13} Legal + β_{14} Corruption + ε . Firm Growth is the percentage change in firm sales over the past three years. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GDP per capita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is the growth rate of GDP. Financing, Legal, and Corruption are summary obstacles as indicated in the firm questionnaire. They take values of 1 to 4, where 1 indicates no obstacle and 4 indicates major obstacle. All regressions are estimated using country random effects. Firm level variables are obtained from the WBES. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)	(4)
Government	-0.070*** (0.028)	-0.083*** (0.029)	-0.074*** (0.029)	-0.070** (0.030)
Foreign	0.034 (0.025)	0.045* (0.025)	0.045* (0.026)	0.037 (0.026)
Exporter	0.103*** (0.021)	0.104*** (0.022)	0.107*** (0.022)	0.105*** (0.022)
Subsidized	0.001 (0.026)	0.002 (0.027)	0.007 (0.027)	0.007 (0.027)
No. of Competitors	-0.011 (0.031)	-0.016 (0.032)	-0.001 (0.032)	-0.005 (0.033)
Manufacturing	-0.032 (0.028)	-0.023 (0.029)	-0.032 (0.030)	-0.035 (0.030)
Services	0.027 (0.027)	0.052* (0.028)	0.037 (0.028)	0.036 (0.028)
Inflation	0.002** (0.001)	0.002* (0.001)	0.002 (0.001)	0.002 (0.001)
GDP per capita	0.002 (0.003)	0.001 (0.003)	0.001 (0.003)	0.000 (0.003)
GDP (\$)	0.007 (0.011)	0.012 (0.011)	0.010 (0.011)	0.013 (0.012)
Growth	0.021*** (0.007)	0.021*** (0.007)	0.020*** (0.008)	0.019*** (0.008)
Obstacles:				
Financing	-0.031*** (0.009)			-0.023*** (0.009)
Legal		-0.029*** (0.009)		-0.023** (0.011)
Corruption			-0.021*** (0.009)	-0.007 (0.011)
R ² - within	0.01	0.01	0.01	0.02
R ² - between	0.28	0.27	0.25	0.26
R ² - overall	0.02	0.03	0.02	0.03
No of firms	4204	3968	3991	3800
No of countries	54	54	54	54

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table V
Firm Growth and Individual Obstacles: Large vs. Small Firms

The regression estimated is: Firm Growth = $\alpha + \beta_1$ Government + β_2 Foreign + β_3 Exporter + β_4 Subsidized + β_5 No. of Competitors + β_6 Manufacturing + β_7 Services + β_8 Inflation + β_9 GDP per capita + β_{10} GDP + β_{11} Growth + β_{12} LSize + β_{13} Obstacle*Small + β_{14} Obstacle*Medium + β_{15} Obstacle*Large + ϵ . Firm Growth is the percentage change in firm sales over the past three years. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GDP per capita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is given by the growth rate of GDP. Obstacles are Financing obstacles in Panel A, Legal obstacles in Panel B and Corruption obstacles in Panel C. Financing obstacles range between 1-4. Legal obstacles range between 1-6 (1-4 in the case of the summary obstacle). The range of the corruption indicators is indicated in parentheses after the variable name, with the first number indicating the least constraint. Obstacles take higher values for higher obstacles and are entered one at a time. LSize is given by logarithm of firm sales. Obstacles are multiplied by a vector of size dummy variables, small, medium and large. They take the value 1 if a firm is small (or medium or large) and 0 otherwise. Small firms employ 5 to 50 employees (average sales=127 million US\$), medium size firms employ 51 to 500 employees (average sales=136 million US\$) and large firms employ more than 500 employees (average sales 237 million US\$). These size dummies are interacted with the obstacles. For brevity only these coefficients (β_{13} - β_{15}) are reported below. For brevity only these coefficients are reported below. All regressions are estimated using country random effects. Detailed variable definitions and sources are given in the appendix.

Panel A: Financial Obstacles

	Financing obstacle	Collateral requirements	Bank paperwork/bureaucracy	High interest Rates	Need special connections with banks	Banks lack money to lend	Access to foreign banks	Access to non-bank equity	Access to export finance	Access to financing for leasing equipment	Inadequate credit/financial information on customers	Access to long term loans
Large	-0.023** (0.012)	-0.019 (0.012)	-0.012 (0.012)	-0.024** (0.012)	-0.007 (0.013)	-0.020 (0.013)	-0.002 (0.013)	-0.004 (0.014)	0.005 (0.014)	-0.006 (0.014)	0.012 (0.013)	0.000 (0.011)
Medium	-0.031*** (0.009)	-0.025*** (0.009)	-0.027*** (0.009)	-0.031*** (0.010)	-0.021** (0.010)	-0.029*** (0.009)	0.000 (0.010)	0.002 (0.010)	-0.006 (0.010)	-0.023** (0.010)	-0.001 (0.010)	-0.012 (0.009)
Small	-0.034*** (0.009)	-0.031*** (0.009)	-0.031*** (0.009)	-0.037*** (0.010)	-0.028*** (0.010)	-0.034*** (0.010)	-0.002 (0.010)	0.000 (0.011)	-0.019* (0.011)	-0.027*** (0.011)	-0.001 (0.010)	-0.012 (0.009)
R ² - with.	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
R ² - bet.	0.29	0.25	0.26	0.27	0.27	0.28	0.26	0.28	0.30	0.30	0.28	0.27
R ² - all	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.02
No of firms	4182	3926	4048	4083	3928	3832	3463	3444	2990	3504	3682	3907
No of countries	54	54	54	54	54	54	54	54	54	54	54	54

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel B: Legal Obstacles

	Legal obstacle.	Availability of info. on laws and regulations	Interpretation of laws and regulations are consistent	Overall quality and efficiency of courts	Courts are fair and impartial	Courts are quick	Courts are affordable	Courts are consistent	Court decisions are enforced	Confidence in legal system to enforce contract and property rights	Confidence in legal system – 3 years ago
Large	-0.013 (0.013)	0.016 (0.010)	0.006 (0.009)	0.012 (0.010)	0.011 (0.010)	0.013 (0.009)	-0.003 (0.009)	0.014 (0.009)	0.024*** (0.009)	0.010 (0.010)	0.017* (0.009)
Medium	-0.026*** (0.010)	0.002 (0.007)	-0.005 (0.007)	-0.002 (0.008)	-0.001 (0.008)	0.006 (0.008)	-0.007 (0.007)	0.003 (0.007)	0.010 (0.007)	-0.003 (0.008)	0.006 (0.008)
Small	-0.040*** (0.011)	-0.002 (0.007)	-0.005 (0.008)	-0.091 (0.008)	-0.010 (0.008)	0.002 (0.008)	-0.013* (0.007)	-0.004 (0.008)	0.007 (0.007)	-0.010 (0.008)	-0.003 (0.008)
R ² - with.	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
R ² - bet.	0.26	0.28	0.27	0.26	0.27	0.29	0.30	0.27	0.31	0.28	0.32
R ² - all	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03
No of firms	3946	4180	4295	3496	3902	3960	3880	3888	3874	4175	3905
No of countries	54	54	54	54	54	54	54	54	54	54	54

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel C: Corruption Obstacles

	Corruption Obstacle (1-4)	Corruption of bank Officials (1-4)	Firms have to make “additional payments” to get things done (6-1)	Firms know in advance the amount of “additional payments” (6-1)	If “additional payments” are made, services are delivered as agreed (1-6)	If one agent asks for payments it is possible to find others to get the correct treatment without payment (1-6)	Proportion of revenues paid as bribes – annual figure for each firm (1-7)	Proportion of contract value that must be paid as “payment” to do business with the government (1-6)	Percentage of senior management’s time spent with government officials to understand laws and regulations (1-6)
Large	-0.007 (0.012)	-0.007 (0.016)	0.017 (0.011)	0.018 (0.014)	0.004 (0.014)	0.011 (0.009)	-0.013 (0.015)	0.020 (0.014)	-0.003 (0.011)
Medium	-0.017* (0.010)	-0.012 (0.012)	-0.001 (0.007)	-0.002 (0.009)	-0.005 (0.011)	-0.001 (0.007)	-0.033*** (0.010)	0.006 (0.009)	-0.014* (0.008)
Small	-0.030*** (0.010)	-0.024** (0.011)	-0.011 (0.007)	-0.009 (0.009)	-0.018* (0.011)	-0.009 (0.007)	-0.053*** (0.009)	-0.001 (0.009)	-0.017* (0.009)
R ² - with.	0.01	0.01	0.01	0.02	0.02	0.01	0.03	0.02	0.01
R ² - bet.	0.25	0.28	0.28	0.20	0.21	0.29	0.23	0.21	0.26
R ² - all	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.02
No of firms	3969	3545	3896	2293	2255	3581	2805	1712	3963
No of countries	54	54	53	53	53	53	53	52	54

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table VI
Firm Growth and Obstacles: Impact of Institutional Development

The regression estimated is: Firm Growth = $\alpha + \beta_1$ Government + β_2 Foreign + β_3 Exporter + β_4 Subsidized + β_5 No. of Competitors + β_6 Manufacturing + β_7 Services + β_8 Inflation + β_9 GDP per capita + β_{10} GDP + β_{11} Growth + β_{12} Institution + β_{13} Obstacle + β_{14} Obstacle*Institution + ε . Firm Growth is the percentage change in firm sales over the past three years. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GDP per capita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is given by the growth rate of GDP. Obstacle is either Financing Legal or Corruption obstacle. The institutional variable is Priv when Financial constraint is entered, Laworder when Legal obstacle is entered and Corrupt when corruption obstacle is entered. Priv is domestic bank credit to the private sector divided by GDP. Laworder is a national indicator (1-6) that takes higher values for legal systems that are more developed. Corrupt is a corruption indicator at the national level which takes higher values in countries where corruption is lower. Obstacles range between 1-4 and take higher values for greater obstacles. They are also interacted with the respective institutional variables. For brevity only these coefficients are reported below. All regressions are estimated using country random effects. Detailed variable definitions and sources are given in the appendix.

	Financing obstacle	Legal obstacle	Corruption obstacle
Fin	-0.043***		
Obstacle	(0.013)		
Fin. Obs. x	0.045*		
Priv	(0.029)		
Legal Obstacle		-0.085**	
Legal Obs. x		(0.027)	
Laworder		0.014*	
		(0.009)	
Corruption Obstacle			-0.084***
Corruption Obs. x			(0.026)
Corrupt			0.020***
			(0.008)
R ² - with.	0.01	0.01	0.01
R ² - bet.	0.17	0.26	0.36
R ² - all	0.02	0.02	0.03
No of firms	3596	3923	3939
No of countries	50	53	53

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table VII
Firm Growth and the Impact of Obstacles: Firm Size and National Differences

The regression estimated is: Firm Growth = $\alpha + \beta_1$ Government + β_2 Foreign + β_3 Exporter + β_4 Subsidized + β_5 No. of Competitors + β_6 Manufacturing + β_7 Services + β_8 Inflation + β_9 GDP per capita + β_{10} GDP + β_{11} Growth + β_{12} Priv*Size + β_{13} Laworder*Size+ β_{14} Corrupt*Size+ β_{15} LSize+ β_{16} Financing*Size + β_{17} Financing*Size*Priv + β_{18} Legal*Size+ β_{19} Legal*Size*Laworder + β_{20} Corruption*Size + β_{21} Corruption*Size*Corrupt+ ϵ . Firm Growth is the percentage change in firm sales over the past three years. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GDP percapita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is the growth rate of GDP. Priv is domestic bank credit to the private sector divided by GDP. Laworder is a national indicator (1-6) that takes higher values for legal systems that are more developed. Corrupt is a corruption indicator (1-6) at the national level which takes higher values in countries where corruption is lower. Financing, Legal, and Corruption are summary firm-level obstacles as indicated in the firm questionnaire. They take values of 1 to 4, where 1 indicates no obstacle and 4 indicates major obstacle. LSize is given by logarithm of firm sales. Priv, Laworder, Corrupt and obstacles are multiplied by a vector of size dummy variables, small, medium and large. They take the value 1 if a firm is small (or medium or large) and 0 otherwise. Small firms employ 5 to 50 employees (average sales=127 million US\$), medium size firms employ 51 to 500 employees (average sales=136 million US\$) and large firms employ more than 500 employees (average sales 237 million US\$). Further, financing obstacles are interacted with Priv, legal obstacles are interacted with Laworder, and corruption obstacles are interacted with corrupt. Only these interaction terms are reported for brevity. All regressions are estimated using country random effects. Firm level variables are obtained from the WBES. Detailed variable definitions and sources are given in the appendix.

	(1)	(2)	(3)
Financing obstacle:			
Large	-0.023 (0.016)		
Medium	-0.031** (0.014)		
Small	-0.058*** (0.014)		
Large x Priv	-0.039 (0.051)		
Medium x Priv	0.021 (0.038)		
Small x Priv	0.097*** (0.039)		
Legal obstacle:			
Large		-0.060 (0.046)	
Medium		-0.092** (0.040)	
Small		-0.104*** (0.044)	
Large x Laworder		0.009 (0.013)	
Medium x Laworder		0.018* (0.010)	
Small x Laworder		0.015* (0.010)	
Corruption obstacle :			
Large			-0.020 (0.037)
Medium			-0.067** (0.028)
Small			-0.117*** (0.029)
Large x Corrupt			0.002 (0.013)
Medium x Corrupt			0.018** (0.009)
Small x Corrupt			0.026*** (0.009)
R ² - within	0.02	0.02	0.02
R ² - between	0.34	0.26	0.43
R ² - overall	0.04	0.03	0.04
No of firms	3579	3906	3922
No of countries	50	53	53

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table VIII
Sensitivity Test : IV Estimation and Using Real Firm Growth

The regression estimated is: Firm Growth = $\alpha + \beta_1$ Government + β_2 Foreign + β_3 Exporter + β_4 Subsidized + β_5 No. of Competitors + β_6 Manufacturing + β_7 Services + β_8 Inflation + β_9 GDP per capita + β_{10} GDP + β_{11} Growth + β_{12} Financing + β_{13} Legal + β_{14} Corruption. Firm Growth is the percentage change in firm sales over the past three years. Government and Foreign are dummy variables that take the value 1 if the firm has government or foreign ownership and zero if not. Exporter is a dummy variable that indicates if the firm is an exporting firm. Subsidized is also a dummy variable that indicates if the firm receives subsidies from the national or local authorities. No. of Competitors is the logarithm of the number of competitors the firm has. Manufacturing and Services are industry dummies. Inflation is the log difference of the consumer price index. GPP per capita is real GDP per capita in US\$. GDP is the logarithm of GDP in millions of U.S. dollars. Growth is the growth rate of GDP. Financing, Legal, and Corruption are summary obstacles as indicated in the firm questionnaire. They take values of 1 to 4, where 1 indicates no obstacle and 4 indicates major obstacle. In panel A, all regressions are estimated using instrumental variables, where the firm level obstacles are instrumented by country level institutional variables (Priv, Laworder and Corrupt). Robust standard errors are reported in parentheses. In Panel B, the dependent variable, Firm Growth is replaced by real firm growth constructed using GDP deflator. Inflation is dropped from the specification. For brevity only the coefficients of the obstacles are reported. Firm level variables are obtained from the WBES. Detailed variable definitions and sources are given in the appendix.

Panel A	(1)	(2)	(3)
Financing	-0.575*** (0.125)		
Legal		-0.029*** (0.009)	
Corruption			-0.021*** (0.009)
No of firms	3539	3390	3396
<hr/>			
Panel B			
Financing	-0.030*** (0.009)		
Legal		-0.030*** (0.009)	
Corruption			-0.021*** (0.009)
R ² - within	0.01	0.01	0.01
R ² - between	0.28	0.28	0.27
R ² – overall	0.15	0.16	0.14
No of firms	4204	3968	3991
No of countries	54	54	54

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Appendix Table AI

Number of Firms in Each Country

The data source is WBES.

	Number of Firms
Albania	85
Argentina	76
Armenia	90
Azerbaijan	66
Bulgaria	100
Belarus	95
Belize	14
Bolivia	61
Brazil	132
Canada	73
Chile	67
China	69
Colombia	77
Costa Rica	49
Czech Republic	78
Germany	59
Dominican Republic	73
Ecuador	46
Spain	64
Estonia	103
France	55
United Kingdom	53
Guatemala	52
Honduras	46
Croatia	91
Haiti	42
Hungary	91
Indonesia	67
Italy	54
Kazakhstan	85
Kyrgyzstan	62
Lithuania	66
Moldova	78
Mexico	35
Malaysia	33
Nicaragua	51
Pakistan	55
Panama	47
Peru	65
Philippines	84
Poland	169
Portugal	49
Romania	95
Russia	372
Singapore	72
El Salvador	48
Slovakia	86
Slovenia	101
Sweden	68
Trinidad & Tobago	59
Turkey	112
Ukraine	165
Uruguay	55
United States	61
Venezuela	54

Appendix : Variables and Sources

Variable	Definition	Original source
GDP	GDP in current U.S. dollars, average 1995-99	World Development Indicators
GDP per capita	Real per capita GDP, average 1995-99	World Development Indicators
Growth	Growth rate of GDP, average 1995-99	World Development Indicators
Inflation rate	Log difference of Consumer Price Index	International Financial Statistics (IFS), line 64
Priv	$\{(0.5)*[F(t)/P_e(t) + F(t-1)/P_e(t-1)]\}/[GDP(t)/P_a(t)]$, where F is credit by deposit money banks to the private sector (lines 22d), GDP is line 99b, P_e is end-of period CPI (line 64) and P_a is the average CPI for the year.	IFS
Laworder	Measure of the law and order tradition of a country. It is an average over 1995-97. It ranges from 6, strong law and order tradition, to 1, weak law and order tradition.	International Country Risk Guide (ICRG).
Corrupt	Measure of corruption in government. It ranges from 1 to 6 and is an average over 1995-97. Lower scores indicate that "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans."	International Country Risk Guide (ICRG).
Firm Growth	Estimate of the firm's sales growth over the past three years.	World Business Environment Survey (WBES)
Government	Dummy variable that takes on the value one if any government agency or state body has a financial stake in the ownership of the firm, zero otherwise.	World Business Environment Survey (WBES)
Foreign	Dummy variable that takes on the value one if any foreign company or individual has a financial stake in the ownership of the firm, zero otherwise.	World Business Environment Survey (WBES)
Exporter	Dummy variable that takes on the value one if firm exports, zero otherwise.	World Business Environment Survey (WBES)
Subsidized	Dummy variable that takes on value one if firm receives subsidies (including tolerance of tax arrears) from local or national government.	World Business Environment Survey (WBES)
Manufacturing	Dummy variable that takes on the value one if firm is in the manufacturing industry, zero otherwise.	World Business Environment Survey (WBES)
Services	Dummy variable that takes on the value one if firm is in the service industry, zero otherwise.	World Business Environment Survey (WBES)
No. of Competitors	Regarding your firm's major product line, how many competitors do you face in your market?	World Business Environment Survey (WBES)
Firm size dummies	A firm is defined as small if it has between 5 and 50 employees, medium size if it has between 51 and 500 employees and large if it has more than 500 employees.	World Business Environment Survey (WBES)

Size	Logarithm of firm sales	World Business Environment Survey (WBES)
Financing Obstacle	How problematic is financing for the operation and growth of your business: no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Legal Obstacle	How problematic is functioning of the judiciary for the operation and growth of your business: no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Corruption Obstacle	How problematic is corruption for the operation and growth of your business: no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Collateral requirements	Are collateral requirements of banks/financial institutions no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Bank paperwork/bureaucracy	Is bank paperwork/bureaucracy no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
High interest rates	Are high interest rates no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Need special connections with banks	Is the need of of special connections with banks/financial institutions no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Banks lack money to lend	Is banks' lack of money to lend no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Access to foreign banks	Is the access to foreign banks no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Access to non-bank equity	Is the access to non-bank equity/investors/partners no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Access to export finance	Is the access to specialized export finance no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Access to financing for leasing equipment	Is the access to lease finance for equipment no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Inadequate credit/financial information on costumers	Is inadequate credit/financial information on costumers no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Access to long-term loans	Is the access to long-term finance no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)

Availability of information on laws and regulations	In general, information on the laws and regulations affecting my firm is easy to obtain: (1) fully agree, (2) agree in most cases, (3) tend to agree, (4) tend to disagree, (5) disagree in most cases, (6) fully disagree.	World Business Environment Survey (WBES)
Interpretation of laws and regulations are consistent	In general, interpretation of regulations affecting my firm are consistent and predictable: (1) fully agree, (2) agree in most cases, (3) tend to agree, (4) tend to disagree, (5) disagree in most cases, (6) fully disagree.	World Business Environment Survey (WBES)
Overall quality and efficiency of courts	Overall quality and efficiency of the judiciary/courts: (1) very good, (2) good, (3) slightly good, (4) slightly bad, (5) bad, (6) very bad.	World Business Environment Survey (WBES)
Courts are fair and impartial	In resolving business disputes, do you believe your country's courts to be fair and impartial: (1) always, (2) usually, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Courts are quick	In resolving business disputes, do you believe your country's courts to be quick: (1) always, (2) usually, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Courts are affordable	In resolving business disputes, do you believe your country's courts to be affordable: (1) always, (2) usually, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Courts are consistent	In resolving business disputes, do you believe your country's courts to be consistent: (1) always, (2) usually, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Court decisions are enforced	In resolving business disputes, do you believe your country's courts to enforce decisions: (1) always, (2) usually, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Confidence in legal system to enforce contract and property rights	I am confident that the legal system will uphold my contract and property rights in business disputes: (1) fully agree, (2) agree in most cases, (3) tend to agree, (4) tend to disagree, (5) disagree in most cases, (6) fully disagree.	World Business Environment Survey (WBES)
Confidence in legal system - 3 years ago	I am confident that the legal system will uphold my contract and property rights in business disputes: three years ago - (1) fully agree, (2) agree in most cases, (3) tend to agree, (4) tend to disagree, (5) disagree in most cases, (6) fully disagree.	World Business Environment Survey (WBES)
Corruption of bank officials	Is the corruption of bank officials no obstacle (1), a minor obstacle (2), a moderate obstacle (3) or a major obstacle (4)?	World Business Environment Survey (WBES)
Firms have to make "additional payments" in advance	It is common for firms in my line of business to have to pay some irregular "additional payments" to get things done: (1) always, (2) mostly, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Firms know the amount of "additional payments" in advance	Firms in my line of business usually know in advance about how much this "additional payment" is: (1) always, (2) mostly, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)

If "additional payments" are made, services are delivered	If a firm pay the required "additional payments", the service is usually also delivered as agreed: (1) always, (2) mostly, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
It is possible to find honest agents to replace corrupt ones	If a government agent acts against the rules, I can usually go to another official or to his superior and get the correct treatment without recourse to unofficial payments: (1) always, (2) mostly, (3) frequently, (4) sometimes, (5) seldom, (6) never.	World Business Environment Survey (WBES)
Proportion of revenues paid as bribes	On average, what percentage of revenues do firms like your typically pay per year in unofficial payments to public officials: (1) 0%, (1) less than 1%, (3) 1% to 1.99%, (4) 2% to 9.99%, (5) 10% to 12%, (6) 13% to 25%, (7) over 25%.	World Business Environment Survey (WBES)
Proportion of contract value that must be paid for government contracts	When firms in your industry do business with the government, how much of the contract value must they offer in additional or unofficial payments to secure the contract: (1) 0 %, (1) up to 5%, (3) 6% to 10%, (4) 11% to 15%, (5) 16% to 20%, (6) over 20 %.	World Business Environment Survey (WBES)
Management's time (%) spent with officials to understand laws and regulations	What percentage of senior management's time per year is spent in dealing with government officials about the application and interpretation of laws and regulations?	World Business Environment Survey (WBES)
Sources of investment - retained earnings	Share (percentage) of firm's financing over the last year coming from internal funds or retained earnings.	World Business Environment Survey (WBES)
Sources of investment - equity	Share (percentage) of firm's financing over the last year coming from equity, sale of stocks	World Business Environment Survey (WBES)
Sources of investment - domestic banks	Share (percentage) of firm's financing over the last year coming from local commercial banks.	World Business Environment Survey (WBES)
Sources of investment - foreign banks	Share (percentage) of firm's financing over the last year coming from foreign banks	World Business Environment Survey (WBES)
Sources of investment - family/friends	Share (percentage) of firm's financing over the last year coming from family and friends	World Business Environment Survey (WBES)
Sources of investment - other sources	Share (percentage) of firm's financing over the last year coming from other sources than banks, equity, retained earnings and family and friends.	World Business Environment Survey (WBES)