THE JOURNAL OF FINANCE • VOL. LX, NO. 1 • FEBRUARY 2005

Financial and Legal Constraints to Growth: Does Firm Size Matter?

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ABSTRACT

Using a unique firm-level survey database covering 54 countries, we investigate the effect of financial, legal, and corruption problems on firms' growth rates. Whether these factors constrain growth depends on firm size. It is consistently the smallest firms that are most constrained. Financial and institutional development weakens the constraining effects of financial, legal, and corruption obstacles and it is again the small firms that benefit the most. There is only a weak relation between firms' perception of the quality of the courts in their country and firm growth. We also provide evidence that the corruption of bank officials constrains firm growth.

CORPORATE FINANCE THEORY SUGGESTS that market imperfections, such as those caused by underdeveloped financial and legal systems, constrain firms' ability to fund investment projects. Using firm-level data, Demirgüç-Kunt and Maksimovic (1998) show that firms in countries with developed financial institutions and efficient legal systems obtain more external financing than firms in countries with less-developed institutions. Although these findings show a strong effect of financial institutions and the legal system on firm growth, their conclusions are based on a sample of the largest firms in each of the economies they study. Their study 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 assess (1) whether financial, legal, and corruption obstacles affect firms' growth; (2) whether this effect varies across firms of different sizes; (3) whether small, medium-sized, and large firms are constrained differently in countries with different levels of financial and institutional development; (4) the specific characteristics of the legal system that facilitate firm growth; and (5) the importance of corruption in financial intermediaries to firm growth.

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There is considerable evidence that firm size is related to a firm's productivity, survival, and profitability. As a result, understanding how financial, legal, and corruption obstacles affect firms of different sizes has policy implications. Significant 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 5 years, $1.5 billion of it in the last year alone (World Bank Group Review of Small Business Activities (2002)).

A priori, it is not clear whether weak financial and legal institutions create greater obstacles to the growth of large or small firms. Large firms internalize many of the capital allocation functions carried out by financial markets and financial intermediaries. Thus, the 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 than small firms to depend on long-term financing and on larger loans. It is possible that financial development can disproportionately reduce the effect of institutional obstacles on the largest firms.

Our paper provides evidence relevant to reforming legal systems in developing countries. Although recent studies in international corporate finance predict a positive relation between the quality of the legal system and access to external financing, we actually know very little about how firms' perceptions conform to the conventional notions of what makes a legal system efficient (such as the impartiality of courts and whether court decisions are enforced). Moreover, we do not know whether these conventional notions help predict the effect of the legal system on firm growth. In this paper, we address both of these issues.

Our paper also provides evidence about the potential costs of monitoring by financial intermediaries. Several influential theoretical models and public policy 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 evidence indicating that corrupt officials in financial intermediaries retard the efficient allocation of capital to smaller firms by relating firms' reports of bank corruption to the firms' growth rates.

Our paper builds on earlier studies, starting with La Porta et al. (1998), who argue 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 Demirgüç-Kunt and Maksimovic's (1998) firm-level results, Rajan and Zingales (1998a) show that industries that are dependent on external finance grow faster in countries with better developed financial systems.[1] Wurgler (2000) shows that

[1] In addition, Carlin and Mayer (2003) also argue that there exists a relation between a country's financial system and the characteristics of industries that prosper in the country. Demirgüç-Kunt

the rate at which resources are allocated to productive industries depends on the development of the financial system. Love (2003) shows that the sensitivity of investment to cash flow depends negatively on financial development. [2]

The richness of the survey's database allows us to go beyond earlier papers that infer the presence of institutional failures from past growth performance.[3] The firms that were surveyed reported whether specific features of the financial and legal systems in their countries and the corruption they faced were obstacles to their growth. Thus, we are able to analyze how firms in different financial and legal systems perceive obstacles to growth, and whether in fact there is a relation between these perceptions and firm growth. Our paper differs from earlier work in that we also examine the effect of corruption on firm growth.[4]

Second, the literature has less to say about how the state of a country's financial and legal institutions affects firms of different sizes.[5] We know that in developing economies, there are advantages in belonging to a business group (see Khanna and Palepu's (2000) study of India and Rajan and Zingales' (1998b) review of evidence on Asian capitalism). This finding contrasts with the prevailing view in the United States that the ability to escape market monitoring by recourse to internal capital markets makes large diversified firms inefficient (Scharfstein and Stein (2000), Rajan, Servaes, and Zingales (2000)).[6] However, studies of business groups in the emerging economies are limited to firms that choose to belong to such groups, and the extent to which these results generalize to other firms and to other institutional settings is unclear. 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 (Demirgüç-Kunt and Maksimovic (1999, 2001)). However, these studies rely on commercial databases of listed firms, so that even the "small" firms are relatively large.

The paper is organized as follows. Section I presents the data and summary statistics. Section II presents our main results. Section III presents conclusions and policy implications.

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.

[2] Rajan and Zingales (1998a) use the external financing by U.S. firms as a benchmark, under the assumption that firms in the same industries in other countries depend on similar amounts of external financing. Demirgüç-Kunt and Maksimovic (1998) rely on a financial planning model to identify firms that have access to long-term external financing.

[3] Exceptions are Schiffer and Weder (2001) who investigate different obstacles using WBES data and Clarke, Cull, and Peria (2003) who assess the impact of foreign bank entry on these obstacles.

[4] Empirical evidence based on cross-country comparisons does suggest that corruption has a major adverse effect on private investment and economic growth (Mauro (1996)). We look at whether corruption also has a significant impact in constraining firm growth.

[5] Except to study determinants of firm size by looking at the largest firms around the world (see Beck, Demirgüç-Kunt, and Maksimovic (2001b)).

[6] For evidence that large diversified firms in the U.S. economy do allocate resources efficiently, see Maksimovic and Phillips (2002).

I. Data and Summary Statistics

Our data set consists of firm survey responses from over 4,000 firms in 54 countries.[7] The main purpose of the survey is to identify obstacles to firm performance and growth around the world. Thus, the survey includes many questions on the nature of financing and legal obstacles to growth, as well as questions on corruption issues. General information on firms is more limited, but the survey includes data on numbers of employees, sales, industry, growth, and number of competitors. The survey also gives information on ownership, whether the firm is an exporter, and if it has been receiving subsidies from national or local authorities.

In addition to the detail on the obstacles, one of the greatest values of this survey is its wide coverage of SMEs. The survey covers three groups of firms. It defines small firms as those with 5–50 employees. Medium-sized firms are those that employ 51–500 employees, and large firms are those that employ more than 500 employees. Forty percent of our observations are from small firms, another 40% are from medium firms, and the remaining 20% 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 U.S. dollars, growth rate of GDP, and inflation. We also use information on financial system development, legal development, and corruption. Country-level variables are 1995–1999 averages. To compile these averages, we follow Beck, Demirgüç-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. We provide details on our sources in Table AII in the Appendix. The countries in the sample show considerable variation in per-capita income. They range from Haiti, with an average GDP per capita of $369, to the United States 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 relation between the growth rate of individual firms and the growth rate of the economy. The average inflation rate also provides an important control, since it is an indicator of whether local currency provides a stable measure of value in contracts between firms. The countries also vary significantly in their rates of inflation, from a low of 0% in Sweden and Argentina to 86% in Bulgaria.

In Table I, the column titled Firm Growth reports firm growth rates, which 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% for Armenia and Azerbaijan to a positive 34% for Poland.

Table I also shows firm-level financing, legal, and corruption obstacles reported by firms averaged over all firms in each country. The World Business Environment Survey (WBES) asked enterprise managers to rate the extent to

[7] The WBES covers 80 economies. However, the sample is reduced because most firm-level or country-level variables are missing for 26 countries.

Table I

Economic Indicators and Obstacles to Firm Growth

GDP per capita is real GDP per capita in U.S. dollars. Inflation is the log difference of the consumer price index. Growth is the growth rate of GDP in current U.S. dollars. All country variables are 1995–1999 averages. Firm Growth is the percentage change in firm sales over the past 3 years (1996–1999). Financing, Legal, and Corruption are summary obstacles as indicated in the firm questionnaire. They take values between 1 and 4, with higher values indicating greater obstacles. We average firm variables over all firms in each country. Detailed variable definitions and sources are given in Table AII in the Appendix.

	GDP per Capita	Inflation	Growth	Firm Growth	Financing Obstacle	Legal Obstacle	Corruption Obstacle
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
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
Bulgaria	1414.61	0.86	−0.02	0.15	3.18	2.27	2.64
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
Croatia	3845.27	0.05	0.05	0.09	3.32	2.69	2.56
Czech Republic	5158.04	0.07	0.00	0.10	3.17	2.18	2.07
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
El Salvador	1705.79	0.04	0.01	−0.01	2.98	2.37	2.80
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
Germany	30794.03	0.01	0.01	0.10	2.60	2.14	1.86
Guatemala	1503.25	0.08	0.01	0.14	3.06	2.58	2.68
Haiti	368.73	0.14	0.00	−0.05	3.39	2.27	3.02
Honduras	707.52	0.16	0.00	0.13	2.93	2.40	2.93
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
Kyrgizstan	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
Malaysia	4536.23	0.03	0.01	0.01	2.67	1.66	2.09
Mexico	3394.75	0.20	0.04	0.26	3.51	2.94	3.57
Moldova	667.74	0.18	−0.03	−0.14	3.39	2.47	2.90
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

(*continued*)

Table I—*Continued*

	GDP per Capita	Inflation	Growth	Firm Growth	Financing Obstacle	Legal Obstacle	Corruption Obstacle
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
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
Spain	15858.03	0.02	0.03	0.26	2.22	1.97	2.08
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
United Kingdom	20186.56	0.03	0.02	0.31	2.21	1.51	1.24
United States	29250.32	0.02	0.03	0.14	2.39	1.79	1.86
Uruguay	6113.60	0.15	0.02	0.03	2.70	1.87	1.84
Venezuela	3482.51	0.40	−0.02	−0.02	2.57	2.65	2.98

which financing, legal, and corruption problems presented obstacles to the operation and growth of their businesses. A rating of 1 denotes no obstacle; 2, a minor obstacle; 3, a moderate obstacle; and 4, a major obstacle. These ratings provide a summary measure of the extent to which financing, legal systems, and corruption create obstacles to growth, and we refer to them below as "summary" obstacles.

Table I shows that in the large majority of countries, firms report that the financing obstacle is the most important summary obstacle to growth.[8] Also, in general, the reported obstacles tend to be lower in developed countries such as the United Kingdom and the United States compared to those in developing countries.

Table II contains the sample statistics of our variables. In addition to the financial, legal, and corruption summary obstacles described above, and in order to understand the nature of these obstacles to growth better, the survey asked firms more specific questions. We also investigate responses to these questions.

Table II reports unaudited self-reports by firms. In self-reporting it is possible that unsuccessful firms may blame institutional obstacles for their poor performance. This possibility must 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. 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.[9] Moreover, the incentives

[8] This is consistent with other studies that use the WBES (see Schiffer and Weder (2001)).

[9] Financial data used in previous studies are 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)).

Table II

Summary Statistics and Correlations

Panel A presents summary statistics and Panel B presents correlations. *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 of 1 if the firm has government or foreign ownership and 0 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. Manufacturing and Services are industry dummies. No. of Competitors is the logarithm of the number of competitors the firm has. Size is a variable that takes the value of 1 if firm is small, 2 if it is medium-sized, and 3 if it is large. Small firms employ 5–50 employees, medium-size firms employ 51–500 employees, and large firms employ more than 500 employees. Inflation is the log difference of the consumer price index. GDP per capita is real GDP per capita in U.S. dollars, 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 must 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 Table AII in the Appendix.

Panel A: Summary Statistics

	N	Mean	*SD*	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

(*continued*)

Table II—*Continued*

Panel A: Summary Statistics

	N	Mean	*SD*	Min	Max
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 nonbank 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. Obst.	−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 Obst.	−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%, respectively.

to distort data are likely to be much higher in financial statements than in survey responses, since financial statements affect operational and financing decisions.

Although the possibility of data bias due to unaudited self-reporting 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 such questions were asked only at the end of the interview. This sequencing reduces the respondents' need to justify their own performance when answering the earlier 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.

To assess the importance of financing obstacles, the firms were asked to rate, again on a scale of 1–4, how problematic specific financing issues are for the operation and growth of their business. These are (1) collateral requirements of banks and financial institutions; (2) bank paperwork and bureaucracy; (3) high interest rates; (4) need for special connections with banks and financial institutions; (5) banks lacking money to lend; (6) access to foreign banks; (7) access to nonbank equity; (8) access to export finance; (9) access to financing for leasing equipment; (10) inadequate credit and financial information on customers; and (11) access to long-term loans.

Among the specific financial obstacles to growth, high interest rates stand out with a value of 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 greater of the reported obstacles to growth.

The survey also included specific questions on the legal system. Businesses were asked if (1) information on laws and regulations was available; (2) if the interpretation of laws and regulations was consistent; and (3) if they were confident that the legal system upheld their contract and property rights in business disputes 3 years ago, and continues to do so now. These answers were rated between 1, fully agree, to 6, fully disagree.

The survey also asked businesses to evaluate whether their country's courts are (1) fair and impartial, (2) quick, (3) affordable, (4) consistent, and (5) enforced decisions. These are rated thus: 1 equals always, 2 equals usually, 3 equals frequently, 4 equals sometimes, 5 equals seldom, and 6 equals never. 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, speed of courts, which has a value of 4.77, seems to be one of the important perceived obstacles. Other important obstacles include the consistency and affordability of the courts. Below we examine whether in fact growth is related to the firms' perceptions of these obstacles.

The final set of questions we investigate relate to the level of corruption that firms must deal with. The questions are (1) whether corruption of bank

officials creates a problem (rated from 1 to 4 as described above); (2) if firms have to make "additional payments" to get things done; (3) if firms generally know what the amount of these "additional payments" are; (4) if services are delivered when the "additional payments" are made as required; and (5) if it is possible to find honest agents to circumvent corrupt ones without recourse to unofficial payments. Other questions include (6) the proportion of revenues paid as bribes (increasing in payment ranked from 1 to 7);[10] (7) the proportion of contract value that must be paid as "unofficial payments" to secure government contracts (increasing in payment ranked from 1 to 6);[11] and (8) the 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).

Of the specific corruption obstacles reported, the need to make additional payments is the highest at 4.36. The second highest rated obstacle is firms' inability to have recourse to honest officials at 3.58.

One potential problem with using survey data is that enterprise managers may identify several operational problems, only some of which are constraining, while others can be circumvented. For this reason, we examine the extent to which the reported obstacles affect the growth rates of firms. To do this, we obtain benchmark growth rates by controlling for firm and country characteristics. We then assess whether the level of a reported obstacle affects growth relative to this benchmark. However, note that since many firms in our sample are not publicly traded, we do not have firm-level measures of investment opportunities, such as Tobin's Q. We use indicators of firm ownership, industry, market structure, and size as firm-level controls. 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 might grow at different rates because their objectives or their exposure to obstacles might differ from those of other firms. For example, they can have advantages in dealing with the regulatory system, and they could be less subject to crime or corruption by financial intermediaries and more exposed to political influences. The growth rate of foreign institutions can also be different because foreign entities might find it more difficult to deal with local judiciary or corruption. However, foreign institutions might be less affected by financing obstacles, since they could have easier access to the international financial system.

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

[10] On the scale 1 equals 0%, 2 equals less than 1%, 3 equals 1–1.9%, 4 equals 2–9.99%, 5 equals 10–12%, 6 equals 13–25%, and 7 equals more than 25%.

[11] On the scale, 1 equals 0%, 2 equals less than 5%, 3 equals 6–10%, 4 equals 11–15%, 5 equals 16–20%, 6 equals more than 20%.

Firm size can be a very important factor in how 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, e.g., Schiffer and Weder (2001)). Here, size is a dummy variable that takes the value of 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. 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 correlate with lower firm growth rates.

Correlations also show that government-owned firms are subject to higher financing obstacles, but are subject to lower corruption. On the other hand, foreign-controlled firms and exporters face lower financing and corruption obstacles. Financing obstacles seem to be higher for manufacturing firms. Firms in service industries are less affected by all obstacles. To the extent that firms have a 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 are 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 because larger firms face significantly lower financing, legal, and corruption obstacles. All three obstacles are highly correlated with each other. Thus, firms that suffer from one are also likely to suffer from others.

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

We next explore the relation between the financing, legal, and corruption obstacles 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. Earlier work has shown that the level of financial development affects firm growth (see Demirgüç-Kunt and Maksimovic (1998)). As a measure of financial development, we use *Priv*, which is given by the ratio of domestic banking credit to the private sector divided by GDP. The index *Laworder* serves as our proxy for legal development and 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*. This measure is an indicator of the existence of corruption, rated between 1 and 6, with higher values indicating less corruption.

In Table III, we regress the firm-level survey responses on size dummies and the country-level variables. The three size dummy variables are small, medium,

Table III

Firm-Level Obstacles and Institutional Development

The regression estimated is

$$\begin{aligned} \textit{Firm Level Obstacle} = {} & \alpha + \beta_1 \textit{Priv} * \textit{Small} + \beta_2 \textit{Priv} * \textit{Medium} + \beta_3 \textit{Priv} * \textit{Large} \\ & + \beta_4 \textit{Laworder} * \textit{Small} + \beta_5 \textit{Laworder} * \textit{Medium} + \beta_6 \textit{Laworder} * \textit{Large} \\ & + \beta_7 \textit{Corrupt} * \textit{Small} + \beta_8 \textit{Corrupt} * \textit{Medium} + \beta_9 \textit{Corrupt} * \textit{Large} \\ & + \beta_{10} \textit{Small} + \beta_{11} \textit{Medium} + \varepsilon. \end{aligned}$$

Firm-Level Obstacles—Financing, Legal, or Corruption—are summary obstacles as indicated in the firm questionnaire. They take values of 1–4, where 1 indicates no obstacle and 4 indicates a major obstacle. *Priv* is domestic bank credit to the private sector divided by GDP. *Laworder* is a national indicator (values between 1 and 6) that takes higher values for legal systems that are more developed. *Corrupt* is a corruption indicator (values between 1 and 6) at the national level that takes higher values in countries where corruption is lower. *Small*, *Medium*, and *Large* are dummy variables that take the value 1 if a firm is small (or medium or large) and 0 otherwise. Small firms employ 5–50 employees, medium-size firms employ 51–500 employees, and large firms employ more than 500 employees. These size dummies are interacted with *Priv*, *Laworder,* and *Corrupt*. We estimate all regressions using country random effects. At the foot of the table we report whether the coefficients are significantly different for large and small firms. We obtain firm-level variables from the WBES. Detailed variable definitions and sources are given in Table AII in the Appendix.

	Financing Obstacle		Legal Obstacle		Corruption Obstacle	
Priv	−0.531***		−0.316*		−0.461**	
	(0.190)		(0.194)		(0.235)	
Priv * Small		−0.167		−0.262		−0.624**
		(0.208)		(0.206)		(0.249)
Priv * Medium		−0.746***		−0.369*		−0.451*
		(0.205)		(0.203)		(0.247)
Priv * Large		−0.864***		−0.340		−0.191
		(0.242)		(0.233)		(0.276)
Laworder	−0.032		−0.137***		−0.245***	
	(0.053)		(0.054)		(0.065)	
Laworder * Small		−0.048		−0.146***		−0.225***
		(0.059)		(0.059)		(0.071)
Laworder * Medium		−0.036		−0.127**		−0.257***
		(0.056)		(0.056)		(0.068)
Laworder * Large		0.008		−0.135**		−0.250***
		(0.063)		(0.062)		(0.074)
Corrupt	−0.160***		−0.059		−0.129**	
	(0.052)		(0.053)		(0.065)	
Corrupt * Small		−0.135***		−0.053		−0.082
		(0.057)		(0.057)		(0.069)
Corrupt * Medium		−0.153***		−0.045		−0.143**
		(0.056)		(0.055)		(0.067)
Corrupt * Large		−0.221***		−0.097*		−0.172**
		(0.063)		(0.061)		(0.074)
Small	0.294***	−0.004	−0.036	−0.163	0.240***	−0.034
	(0.052)	(0.202)	(0.048)	(0.187)	(0.051)	(0.198)
Medium	0.229***	0.134	0.015	−0.184	0.147***	0.172
	(0.050)	(0.187)	(0.046)	(0.171)	(0.049)	(0.183)

(*continued*)

Table III—*Continued*

	Financing Obstacle		Legal Obstacle		Corruption Obstacle	
R^2-within	0.01	0.02	0.00	0.00	0.01	0.01
R^2-between	0.44	0.45	0.37	0.37	0.55	0.54
R^2-overall	0.08	0.08	0.06	0.06	0.13	0.13
Priv(large − small)		−0.700***		−0.080		0.438**
Laworder(large − small)		0.055		0.014		−0.024
Corrupt(large − small)		−0.085*		−0.046		−0.091*
No of firms	3,549	3,549	3,400	3,400	3,406	3,406
No of countries	49	49	49	49	49	49

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

and large. These variables take the value of 1 if the firm is small or medium or large, respectively, and 0 otherwise. We also report specifications in which we interact country-level variables with firm size.

Table III indicates that on average, the firms' perception of the financing and corruption obstacles they face relates to firm size, with smaller firms reporting significantly higher obstacles than large firms. In contrast, smaller firms report lower legal obstacles than do 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 for 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 significant and 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 financial and legal systems and in countries that are rated as more corrupt. Lack of corruption at the country level is associated with a significant reduction in the level of corruption obstacles reported by larger firms. In contrast, financial development is significantly correlated with lower corruption obstacles reported by the smaller firms.

Table III shows that even after we control for the quality of a country's institutions, firm size is an important determinant of the level of financial and corruption obstacles. 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.

II. Firm Growth and Reported Obstacles

The regressions reported in Table III indicate that firm size and a country's institutional development predict the obstacles that firms report. However, it

does not follow that they also predict the effect of these obstacles on firm growth. A firm's report that an existing economy-wide institutional obstacle constrains its growth might be accurate, but may not take into account the possibility that the obstacle may also benefit it by affecting its rivals. Obstacles might affect large and small firms differently. Table II also indicates that there is a high degree of correlation between variables of interest and other firm- and country-level controls that affect growth. Thus, we clarify the relation between firm-level characteristics and firm growth using multivariate regression.

We regress firms' growth rates on the obstacles they report. We initially introduce financial, legal, and corruption summary obstacles one at a time, and finally all together. In subsequent regressions, we substitute specific obstacles for these summary obstacles and introduce interaction terms. All regressions are estimated using firm-level data across 54 countries and country random effects. The regressions are estimated with controls for country and firm-specific variables discussed in Section II. The country controls are GDP per capita, GDP, country growth, and the inflation rate. Firm-specific controls are the logarithm of the number of competitors the firm has, and indicator variables for ownership of the firm (separate indicators for government- and foreign-owned firms), industry classification (separate indicators for manufacturing and service industries), and indicators for whether the firm is an exporter and whether it receives government subsidies. Specifically, the regression equations we estimate take the form

$$\begin{aligned} \textit{Firm Growth} = {} & \alpha + \beta_1 \textit{Government} + \beta_2 \textit{Foreign} + \beta_3 \textit{Exporter} \\ & + \beta_4 \textit{Subsidized} + \beta_5 \textit{No. of Competitors} \\ & + \beta_6 \textit{Manufacturing} + \beta_7 \textit{Services} + \beta_8 \textit{Inflation} \\ & + \beta_9 \textit{GDP per capita} + \beta_{10} \textit{GDP} \\ & + \beta_{11} \textit{Growth} + \beta_{12} \textit{Obstacle} + \varepsilon. \end{aligned} \tag{1}$$

To test the hypothesis that an obstacle is related to firm growth, we test whether its coefficient β_{12} is significantly different from zero. We also obtain an estimate of the economic impact of the obstacle at the sample mean by multiplying its coefficient β_{12} by the sample mean of the obstacle. This impact variable measures the total effect of the obstacle on growth, taking into account both the level of the mean reported obstacle and the estimated relation between the reported obstacle and observed growth.

Table IV shows how firm growth is related to the financing, legal, and corruption obstacles reported by firms. When entered individually, all reported obstacles have a negative and significant effect on firm growth, as expected. The impact of the obstacles on firm growth evaluated at the sample mean is negative, and in all cases, substantial.

Column 4 shows that financing and legal obstacles are both significant and negative, but corruption loses its significance in the presence of these two variables. This suggests that the impact of corruption on firm growth is captured

Table IV
Firm Growth: The Impact of Obstacles

The regression estimated is

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

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value of 1 if the firm has government or foreign ownership and 0 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 firm's number of competitors. *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 U.S. dollars. *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 between 1 and 4, where 1 indicates no obstacle and 4 indicates major obstacle. We estimate all regressions using country random effects. We obtain firm-level variables from the WBES. Detailed variable definitions and sources are given in Table AII in the Appendix.

	(1)	(2)	(3)	(4)
Government	−0.070***	−0.083***	−0.074***	−0.070**
	(0.028)	(0.029)	(0.029)	(0.030)
Foreign	0.034	0.045*	0.045*	0.037
	(0.025)	(0.025)	(0.026)	(0.026)
Exporter	0.103***	0.104***	0.107***	0.105***
	(0.021)	(0.022)	(0.022)	(0.022)
Subsidized	0.001	0.002	0.007	0.007
	(0.026)	(0.027)	(0.027)	(0.027)
No. of competitors	−0.011	−0.016	−0.001	−0.005
	(0.031)	(0.032)	(0.032)	(0.033)
Manufacturing	−0.032	−0.023	−0.032	−0.035
	(0.028)	(0.029)	(0.030)	(0.030)
Services	0.027	0.052*	0.037	0.036
	(0.027)	(0.028)	(0.028)	(0.028)
Inflation	0.002**	0.002*	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
GDP per capita	0.002	0.001	0.001	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
GDP ($)	0.007	0.012	0.010	0.013
	(0.011)	(0.011)	(0.011)	(0.012)
Growth	0.021***	0.021***	0.020***	0.019***
	(0.007)	(0.007)	(0.008)	(0.008)
Obstacles				
Financing	−0.031***			−0.023***
	(0.009)			(0.009)
Legal		−0.029***		−0.023**
		(0.009)		(0.011)

(*continued*)

Table IV—*Continued*

	(1)	(2)	(3)	(4)
Corruption			−0.021***	−0.007
			(0.009)	(0.011)
Impact on growth evaluated at sample mean	−0.087***	−0.063***	−0.052***	−0.134***
R^2-with.	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	4,204	3,968	3,991	3,800
No. of countries	54	54	54	54

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

by the financial and legal obstacles. This is reasonable because corruption in the legal and financial systems can be expected to degrade firms' performance.

When we look at the control variables, we see that the growth rates of government-owned firms are lower, and the growth rates of exporters are higher. Foreign firms also appear to grow faster, although this result is only significant at 10% in two specifications. We do not observe significant differences in the growth rates of firms in different industries. The coefficient of inflation is significant and positive in two of the four specifications. A significant inflation effect most likely reflects the fact that firm sales growth is given in nominal terms. The GDP growth rate and firm growth are significant 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 the between-R^2 values of 25–28%.

In Table V, we look at how specific financial, legal, and corruption obstacles affect firm growth. We enter each of the specific obstacles in turn into equation (1). Although our regressions include the control variables, for the sake of brevity we do not report these coefficients.

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 significant constraining effects on firm growth.

We note that although firms in the WBES survey rate the lack of access to long-term loans as an important obstacle, it is not significantly correlated with firm growth, suggesting that firms might be able to substitute short-term financing that is rolled over at regular intervals for long-term loans. Also, because we expect interest rates to constrain all firms, it is reassuring to see that those firms that perceive high interest rates as an important obstacle actually grow more slowly. We also 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 nonbank equity, access

Table V
Firm Growth: The Impact of Obstacles

The regression estimated is

$$Firm\ Growth = \alpha + \beta_1\, Government + \beta_2\, Foreign + \beta_3\, Exporter + \beta_4\, Subsidized + \beta_5\, No.\ of\ Competitors + \beta_6\, Manufacturing + \beta_7\, Services + \beta_8\, Inflation + \beta_9\, GDP\ per\ capita + \beta_{10}\, GDP + \beta_{11}\, Growth + \beta_{12}\, Obstacle + \varepsilon.$$

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value of 1 if the firm has government or foreign ownership and 0 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 firm's number of competitors. *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 U.S. dollars. *GDP* is the logarithm of GDP in millions of U.S. dollars. *Growth* is 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 and 4. Legal obstacles range between 1 and 6 (1 and 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. Unless otherwise noted, obstacles take higher values for higher obstacles and they are entered one at a time. We estimate all regressions using country random effects. We obtain firm-level variables from the WBES. Detailed variable definitions and sources are given in Table AII in the Appendix.

Panel A: Financing 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 Nonbank Equity	Access to Export Finance	Access to Financing for Leasing Equipment	Inadequate Credit/ Financial Information on Customers	Access to Long-Term Loans
	−0.031***	−0.027***	−0.028***	−0.032***	−0.023***	−0.029***	−0.009	0.007	−0.009	−0.022**	0.001	−0.010
	(0.009)	(0.008)	(0.008)	(0.010)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
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- between	0.28	0.25	0.26	0.26	0.26	0.26	0.24	0.25	0.29	0.26	0.27	0.25
R^2-all	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Impact	−0.087***	−0.070***	−0.070***	−0.104***	−0.051***	−0.062***	−0.002	0.001	−0.018	−0.045***	0.001	−0.027
N (firms)	4,204	3,945	4,069	4,103	3,949	3,853	3,482	3,464	3,007	3,524	3,703	3,928
N(country)	54	54	54	54	54	54	54	54	54	54	54	54

Panel B: Legal Obstacles											
	Legal Constraint	Availability of Info. on Laws and Regulations	Interpretation of Laws and Regulations Is 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
	−0.029***	0.002	−0.003	−0.003	−0.004	0.005	−0.009	0.002	0.011	−0.005	0.004
	(0.009)	(0.006)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
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
R^2-between	0.27	0.27	0.26	0.27	0.27	0.28	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	0.02
Impact	−0.063***	0.006	−0.011	−0.014	−0.013	0.026	−0.035	0.007	0.039	−0.015	0.014
N (firms)	3,968	4,202	4,216	3,513	3,924	3,982	3,901	3,909	3,896	4,197	3,926
N(country)	54	54	54	54	54	54	54	54	54	54	54

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)
	−0.021***	−0.017*	−0.003	−0.002	−0.012	−0.002	−0.037***	0.004	−0.012*
	(0.009)	(0.010)	(0.006)	(0.008)	(0.009)	(0.006)	(0.008)	(0.007)	(0.007)
R^2-with.	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02	0.01
R^2-between	0.25	0.26	0.28	0.19	0.20	0.28	0.16	0.21	0.24
R^2-all	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.02
Impact	−0.052***	−0.030*	−0.014	−0.007	0.035	−0.006	0.087***	0.011	−0.027*
N (firms)	3,991	3,566	3,916	2,306	2,266	3,595	2,824	1,734	3,981
N(country)	54	54	54	53	53	53	53	52	54

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

to export finance, or inadequate information on customers are not significantly correlated with firm growth. Tests of the economic impact of the obstacles at the sample means indicate that the estimated coefficients, when significant, are sufficiently large to impact growth rates materially.

Panel B shows a significant and negative relation between the summary legal obstacle and firm growth. None of the specific legal obstacles has a significant coefficient. It appears that firms are able to work around these specific legal obstacles, although they find them annoying. Nevertheless, regressing the summary legal obstacle on the quality of the courts (i.e., their fairness, honesty, quickness, affordability, consistency, enforcement capacity, and confidence in the legal system), we find that these factors can explain 46% of the cross-country variation in the legal obstacle.[12] To further examine the importance of the specific legal obstacles taken together, we compute the predicted summary legal obstacle from this regression and introduce it as an independent variable in the firm growth equation in place of the actual summary legal obstacle. The coefficient of the predicted summary legal obstacle is positive yet insignificant, suggesting that the specific obstacles are at most weakly related to firm growth. This is also true if we run the regressions only for the sample of small firms. If we split the sample based on legal origin, the explanatory power of the specific descriptors is not significantly different in the common law countries compared to the civil law countries.[13]

Thus, although specific obstacles relate to the summary obstacle, they play a minor role in affecting growth. This finding suggests that the usual intuitive descriptors of how a good legal system operates predict survey responses well, but do not capture the effect of the legal system on firm growth.

Panel C of Table V shows that in addition to the summary corruption obstacle, the proportion of revenues paid as bribes has a negative and highly significant coefficient, indicating that it is a good indicator of corruption. Corruption of bank officials and the percentage of senior management's time spent with government officials also reduce firm growth significantly, but only at the 10% level. Again, the need to make payments or the absence of recourse to honest officials are not significant in regressions, despite their high levels as obstacles.

To investigate the relation between growth and reported obstacles for different-size firms, we next introduce firm size as an explanatory variable and interact the size dummies with individual obstacles. This specification posits that a firm might be affected by an obstacle, such as corruption, at three different levels: (1) at the country level, in that the general level of corruption may affect all the firms in the country; (2) at the "firm category" level, in that some firms (in our case different sized firms) might be affected differently; and (3) at the firm-specific level, in that firms have idiosyncratic exposures to corruption, depending on their business or financing needs. The equations are also estimated using random effects. Thus, the influence of the general

[12] If we use firm-level data and include random country effects, the between-R^2 is 41%.

[13] We are only able to do this using firm-level observations, since there are not enough degrees of freedom at the country level.

level of corruption in each country on firm growth is captured by the country random effects. The size variable picks up any systematic effects of exposure to corruption by firms of different sizes. The effect of firm-specific exposure to corruption is picked up by interacting the obstacles reported by each firm with a size dummy.

More generally, for each reported obstacle of interest, we regress firm growth on the control variables, firm size, the reported obstacle, and the interaction of the reported obstacle with three size dummies. These three variables, *Small*, *Medium*, and *Large*, take on the value 1 when the firm is small, medium-sized, and large, respectively, and 0 otherwise. The coefficients of interactions of the size dummies with an obstacle may differ because the impact of an obstacle can depend on firm size.

We also compute an economic impact variable for each firm size by multiplying the coefficients of the interacted variables by the mean level of reported obstacle for the subsample of firms of the corresponding firm size. To determine whether an obstacle affects the growth of large and small firms differently, we report and test the significance of the difference in the economic impacts of the obstacle for large and small firms. Thus, our reported impact variable, $Impact(L - S)$, measures the difference between the total effect of the obstacle on large and small firms at their respective population means.

Our impact measure, $Impact(L - S)$, also controls to a certain extent for a potential bias that could arise if some firms misestimate the effect of the obstacles on their growth, and if this misestimate is related to firm size. For example, if small firms systematically do not appreciate the real cost of the reported obstacles, they may, on average, underreport (relative to large firms) the magnitude of the obstacle. In that case, small firms might report, on average, λ times the true obstacle, where $\lambda < 1$. This in turn would bias upward the estimate of the interaction between *Small* and *Obstacle*. However, since the impact measure is defined as the difference of the products of the estimated coefficients and sample means of reported obstacles for large and small firms, it would therefore also not be affected by such scaling.[14]

In Table VI, we investigate whether financial, legal, and corruption obstacles affect firms differently based on their size. Panel A shows that financial obstacles affect firms differently, based on their size. The column titled 'Financial Obstacle' 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 the summary financial obstacle for each respective subsample shows that the hypothesis that the economic impact of financing obstacles is the same for large and small firms can be rejected at the 10% level.

These differences become even clearer when we look at specific financing obstacles: The largest firms are barely affected. The only obstacle that affects these firms is that caused by high interest rates, which is different from 0 at

[14] As shown in the tables below, for almost all the regressions reported below, the conclusions we draw by testing for the differences of the economic impact variables match those drawn by simply testing for the differences in the coefficients.

Table VI
Firm Growth and Individual Obstacles: Large Compared to Small Firms

The regression estimated is

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

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value of 1 if the firm has government or foreign ownership and 0 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 the firm's competitors. *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 U.S. dollars. *GDP* is the logarithm of GDP in millions of U.S. dollars. *Growth* is given by the growth rate of GDP. *LSize* is given by logarithm of firm sales. Obstacles are financing obstacles in Panel A, legal obstacles in Panel B, and corruption obstacles in Panel C. Financing obstacles range between 1 and 4. Legal obstacles range between 1 and 6 (1 and 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. Unless otherwise noted, obstacles take higher values for higher obstacles and they are entered one at a time. Obstacles are multiplied by a vector of size dummy variables, Small, Medium, and Large. They take the value of 1 if a firm is small (or medium or large) and zero otherwise. Small firms employ 5–50 employees, medium-size firms employ 51–500 employees, and large firms employ more than 500 employees. For brevity only these coefficients ($\beta_{13} - \beta_{15}$) are reported below. *Impact (L − S)* gives the coefficient for large firms multiplied by the mean value of the obstacle for large firms minus the coefficient for small firms multiplied by the mean value of the obstacle for small firms. Its significance is based on a Chi-square test of these differences. We estimate all regressions using country random effects. Detailed variable definitions and sources are given in Table AII in the Appendix.

Panel A: Financing 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 Nonbank 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**	−0.019	−0.012	−0.024**	−0.007	−0.020	−0.002	−0.004	0.005	−0.006	0.012	0.000
	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.011)
Medium	−0.031***	−0.025***	−0.027***	−0.031***	−0.021**	−0.029***	0.000	0.002	−0.006	−0.023**	−0.001	−0.012
	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Small	−0.034***	−0.031***	−0.031***	−0.037***	−0.028***	−0.034***	−0.002	0.000	−0.019*	−0.027***	−0.001	−0.012
	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.010)	(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-between	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
Impact (L − S)	0.040*	0.038	0.050**	0.043*	0.051**	0.032	0.002	−0.007	0.047*	0.050***	0.028	0.033
N (firms)	4,182	3,926	4,048	4,083	3,928	3,832	3,463	3,444	2,990	3,504	3,682	3,907
N (country)	54	54	54	54	54	54	54	54	54	54	54	54

Panel B: Legal Obstacles											
	Legal Obstacle	Availability of Info. on Laws and Regulations	Interpretation of Laws and Regulations Is 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	0.016	0.006	0.012	0.011	0.013	−0.003	0.014	0.024***	0.010	0.017*
	(0.013)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Medium	−0.026***	0.002	−0.005	−0.002	−0.001	0.006	−0.007	0.003	0.010	−0.003	0.006
	(0.010)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Small	−0.040***	−0.002	−0.005	−0.091	−0.010	0.002	−0.013*	−0.004	0.007	−0.010	−0.003
	(0.011)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(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-between	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
Impact (L − S)	0.057**	0.049**	0.038	0.095***	0.078***	0.059**	0.041	0.073***	0.061**	0.063**	0.065**
N (firms)	3,946	4,180	4,295	3,496	3,902	3,960	3,880	3,888	3,874	4,175	3,905
N (country)	54	54	54	54	54	54	54	54	54	54	54

(*continued*)

Table VI—*Continued*

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	−0.007	0.017	0.018	0.004	0.011	−0.013	0.020	−0.003
	(0.012)	(0.016)	(0.011)	(0.014)	(0.014)	(0.009)	(0.015)	(0.014)	(0.011)
Medium	−0.017*	−0.012	−0.001	−0.002	−0.005	−0.001	−0.033***	0.006	−0.014*
	(0.010)	(0.012)	(0.007)	(0.009)	(0.011)	(0.007)	(0.010)	(0.009)	(0.008)
Small	−0.030***	−0.024**	−0.011	−0.009	−0.018*	−0.009	−0.053***	−0.001	−0.017*
	(0.010)	(0.011)	(0.007)	(0.009)	(0.011)	(0.007)	(0.009)	(0.009)	(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-between	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
Impact (L − S)	0.060**	0.034	0.128***	0.084**	0.067*	0.052**	0.117***	0.047	0.029
N (firms)	3,969	3,545	3,896	2,293	2,255	3,581	2,805	1,712	3,963
N (country)	54	54	53	53	53	53	53	52	54

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

the 5% significance level. Largest firms are completely unaffected by collateral requirements, bank bureaucracies, the need for special connections (probably because they already have them), banks' lack of money, or any of the access issues. In contrast, medium-sized firms, and particularly small firms, are significantly and negatively affected by collateral requirements, bank paperwork and bureaucracy, high interest rates, the need for special connections with banks, banks' lack of money to lend, and access to financing for leasing equipment. The smallest firms are also negatively affected by obstacles to gaining access to export finance. The tests for the difference in the economic impact of specific financing obstacles on the largest and smallest firms confirm significant differences for most of the obstacles that significantly affect the growth of small firms. These results provide evidence that financial obstacles have a much greater impact on the operation and growth of small firms than on that of large firms.[15]

Panel B of Table VI shows that the summary legal obstacle leaves large firm growth unaffected, but has a significant, negative impact on the growth rates of medium-sized and especially small firms. The effect on the growth rate of large firms is insignificant, despite the fact that large firms report a higher level of the legal obstacle (Table III).

To evaluate the economic impact of each obstacle for each subsample of firms by size, we multiply the estimated coefficient by the mean reported level of the obstacle. At the subsample means, the predicted effect of the summary legal obstacle on annual firm growth is 2.8% for large firms, whereas it is 5.7% for medium firms and 8.5% for small firms. The difference between the predicted effects on large and small firms is statistically significant.[16] These results indicate that large firms are able to adjust to the inefficiencies of the legal system. However, the same does not seem to be the case for small and medium enterprises, which end up paying for the legal systems' shortcomings in terms of slower growth. Even looking at specific obstacles, which do not capture relevant differences as well as the summary obstacles, there is an indication that large firms may be using legal inefficiencies to their advantage because poor enforcement of court decisions appears to contribute to large firm growth rates. However, looking at the other specific obstacles, we do not see such an effect. For small firms, the affordability of the court system emerges as an obstacle, although the coefficient is significant only at 10%. The coefficients of the other more specific legal obstacles are not significantly different from 0. When we investigate whether this finding might be explained by the nonlinear coding of the responses to the questions on specific features of the legal system by rescaling the responses, the results are unchanged.

[15] Firm size itself never has a significant coefficient in the regressions, consistent with simple correlations reported in Table II.

[16] It is interesting to note that the estimates of the difference in the economic impact of specific legal obstacles on large and small firms are generally statistically significant, even in cases where the coefficients of the specific obstacle are not statistically different from zero. That can occur if the coefficients for large and small firms are of different sign or if the subsample means of the obstacle for large and small firms differs sufficiently.

Panel C shows that again, it is the small and medium-sized firms that are negatively affected by corruption. The mean effects on firm growth are 1.6%, 4.1%, and 7.5% for large, medium-sized, and small firms, respectively. The difference between the economic impact of corruption for large and small firms at the subsample mean is statistically significant at the 5% level. None of the corruption obstacles is significant for large firms. The corruption obstacle is negative but significant at 10% for medium-sized firms and negative and highly significant for small firms.

When we look at specific obstacles, we again see that it is the small and medium enterprises that are affected by bribes. Both coefficients are highly significant, although the impact on small firm growth is larger in magnitude. The percentage of a senior manager's time spent with officials to understand regulations reduces the growth rates of both small and medium-sized enterprises, but only at a 10% level of 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. We do not find a significant relation between firms' growth rates and the need to make bribe payments or the absence of recourse to honest officials, despite these variables' high reported ratings as obstacles. The tests of economic impact at the subsample means support the hypothesis that there is a more adverse effect of corruption on small firms than on large firms.

Next, we address the issue of whether obstacles affect firms similarly in all countries, or if their impact depends on the country's level of financial and legal development and corruption. To examine this issue, we focus on our three summary obstacles and introduce into our regressions a term for the interaction of the summary obstacle with a variable proxying for institutional development. The institutional variable is *Priv* when financial obstacles are being analyzed, *Laworder* when the legal obstacle is entered, and *Corrupt* when the corruption obstacle is entered. The coefficient of the interaction term measures whether the financial development of the economy has an effect on the relation between reported financial obstacles and firm growth. Thus, our specification is

$$\begin{aligned} \textit{Firm Growth} = {} & \alpha + \beta_1 \textit{Government} + \beta_2 \textit{Foreign} + \beta_3 \textit{Exporter} \\ & + \beta_4 \textit{Subsidized} + \beta_5 \textit{No. of Competitors} \\ & + \beta_6 \textit{Manufacturing} + \beta_7 \textit{Services} + \beta_8 \textit{Inflation} \\ & + \beta_9 \textit{GDP per capita} + \beta_{10} \textit{GDP} + \beta_{11} \textit{Growth} \\ & + \beta_{12} \textit{Institution} + \beta_{13} \textit{Obstacle} \\ & + \beta_{14} \textit{Obstacle} * \textit{Institution} + \varepsilon. \end{aligned} \tag{2}$$

Table VII presents estimates of equation (2) for the summary financing, legal, and corruption obstacles. The results indicate that firms in financially and legally developed countries with lower levels of corruption are less affected by firm-level obstacles. In all three cases, the coefficient of the obstacle remains negative and significant, and the coefficient of the obstacle interacted

Table VII

Firm Growth and Obstacles: Impact of Institutional Development

The regression estimated is

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

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value of 1 if the firm has government or foreign ownership and 0 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 the firm's competitors. *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 U.S. dollars. *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 (values 1–6) that takes higher values for legal systems that are more developed. *Corrupt* (values 1–4) is a corruption indicator at the national level that takes higher values in countries where corruption is lower. Obstacles range between 1 and 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. Impact on growth is evaluated at the mean and is given by the product of the interaction term, the sample mean of the respective obstacle and the mean level of the institutional variable. We estimate all regressions using country random effects. Detailed variable definitions and sources are given in Table AII in the Appendix.

	Financing Obstacle	Legal Obstacle	Corruption Obstacle
Fin obstacle	−0.043***		
	(0.013)		
Fin. Obs. × Priv	0.045*		
	(0.029)		
Legal obstacle		−0.085**	
		(0.027)	
Legal Obs. × Laworder		0.014*	
		(0.009)	
Corruption obstacle			−0.084***
			(0.026)
Corruption Obs. × Corrupt			0.020***
			(0.008)
R^2-with.	0.01	0.01	0.01
R^2-between	0.17	0.26	0.36
R^2-all	0.02	0.02	0.03
Impact	0.039*	0.123*	0.155***
No. of firms	3,596	3,923	3,939
No. of countries	50	53	53

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

with the relevant development variable is positive and significantly different from zero.[17] Evaluating the coefficients at different levels of institutional development shows that in developed countries with *Priv* levels of 95% or higher, *Laworder* values of 6 and *Corrupt* values of 4 or higher, the impact of financial, legal, or corruption obstacles on firm growth is not significantly different from 0. In unreported regressions, we estimate equation (2) with each specific obstacle in turn. In separate regressions, we find positive and significant coefficients for the interaction between the level of development and the lack of money in the banking system, a consistent interpretation of laws, the amount of bribes to be paid, and the fraction of the contract value that must be paid to a government to secure the contract. These results also support the hypothesis that in countries where there is less corruption and better-developed financial and legal systems, firm growth is less constrained by the factors we examine.

We next investigate whether the effect of financial and institutional development on growth varies with firm size. For each summary obstacle, we augment our regression equations by interacting the summary obstacle with a measure of institutional development and with the firm-size dummies, *Small*, *Medium,* and *Large*. This gives us three triple interaction coefficients corresponding to the three triple interactions, $Obstacle * Small * Institution$, $Obstacle * Medium * Institution$, and $Obstacle * Large * Institution$.

Significance tests of the coefficient of the triple interactions show whether a marginal change in institutional development affects the relation between the summary obstacles and growth for small, medium, and large firms, respectively. We also test whether the marginal effect of a change in the country's financial system affects the sensitivity of the firm's growth to the financing obstacle equally for large and small firms. This difference in impact, $Impact(L - S)$, is computed as the coefficient of the triple interaction term for large firms evaluated at the mean level of *Obstacle* for the subsample of large firms minus the coefficient of the triple interaction term for small firms evaluated at the mean level of *Obstacle* for small firms.

Taking into account firm sizes reinforces the results reported in Table VII. Table VIII shows that the relation between financing, legal, and corruption obstacles and the growth of firms of different sizes depends on the institutional setting.

The first column of Table VIII shows that small firms are again the most severely affected by financing obstacles. However, the interaction term of the financing obstacle with *Priv* and the small firm dummy variable has a positive sign and is significant, suggesting 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 that marginal improvements in legal efficiency translate into a relaxing of legal constraints for small and medium-sized

[17] The variables *Priv* and *Laworder* are not significant when entered together with financing and legal obstacles. On the other hand, corruption enters positively and significantly in some specifications, even when entered together with firm-level corruption obstacles. This result indicates that lack of corruption is associated with higher firm growth.

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

The regression estimated is

$$\begin{aligned} \textit{Firm Growth} = {} & \alpha + \beta_1 \textit{Government} + \beta_2 \textit{Foreign} + \beta_3 \textit{Exporter} + \beta_4 \textit{Subsidized} + \beta_5 \textit{No. of Comp.} \\ & + \beta_6 \textit{Manuf.} + \beta_7 \textit{Services} + \beta_8 \textit{Inflation} + \beta_9 \textit{Gdp per capita} + \beta_{10} \textit{GDP} + \beta_{11} \textit{Growth} \\ & + \beta_{12} \textit{Institution} * \textit{Small} + \beta_{13} \textit{Institution} * \textit{Medium} + \beta_{14} \textit{Institution} * \textit{Large} \\ & + \beta_{15} \textit{LSize} + \beta_{16} \textit{Obstacle} * \textit{Small} + \beta_{17} \textit{Obstacle} * \textit{Medium} + \beta_{18} \textit{Obstacle} * \textit{Large} \\ & + \beta_{19} \textit{Obstacle} * \textit{Small} * \textit{Institution} + \beta_{20} \textit{Obstacle} * \textit{Medium} * \textit{Institution} \\ & + \beta_{21} \textit{Obstacle} * \textit{Large} * \textit{Institution} + \varepsilon. \end{aligned}$$

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value 1 if the firm has government or foreign ownership and 0 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 the firm's competitors. *Manufacturing* and *Services* are industry dummies. *LSize* is given by logarithm of firm sales. *Inflation* is the log difference of the consumer price index. *GDP per capita* is real GDP per capita in U.S. dollars. *GDP* is the logarithm of GDP in millions of U.S. dollars. *Growth* is the growth rate of GDP. Institution is either *Priv, Laworder,* or *Corrupt. Priv* is domestic bank credit to the private sector divided by GDP. *Laworder* is a national indicator (values between 1 and 6) that takes higher values for legal systems that are more developed. *Corrupt* is a corruption indicator (values between 1 and 6) at the national level that takes higher values in countries where corruption is lower. *Obstacle* is either Financing, Legal, or Corruption. These are summary firm-level obstacles as indicated in the firm questionnaire. They take values between 1 and 4, where 1 indicates no obstacle and 4 indicates a major obstacle. *Small, Medium,* and *Large* are dummy variables. They take the value 1 if a firm is small (or medium or large) and 0 otherwise. Small firms employ 5–50 employees, medium size firms employ 51–500 employees, and large firms employ more than 500 employees. Financing obstacles are interacted with *Priv*, legal obstacles are interacted with *Laworder*, and corruption obstacles are interacted with *Corrupt*. These are also interacted with size dummies. Only these interaction terms are reported for brevity. Impact (L − S) is β_{21} evaluated at mean level of the institutional variable and mean obstacle for large firms minus β_{19} evaluated at mean level of the institutional variable and mean obstacle for small firms. Its significance is based on a Chi-square test of these differences. We estimate all regressions using country random effects. We obtain firm-level variables from the WBES. Detailed variable definitions and sources are given in Table AII in the Appendix.

	(1)	(2)	(3)
Financing Obstacle			
Large	−0.023		
	(0.016)		
Medium	−0.031**		
	(0.014)		
Small	−0.058***		
	(0.014)		
Large × Priv	−0.039		
	(0.051)		
Medium × Priv	0.021		
	(0.038)		
Small × Priv	0.097***		
	(0.039)		

(*continued*)

Table VIII—*Continued*

	(1)	(2)	(3)
Legal Obstacle			
Large		−0.060	
		(0.046)	
Medium		−0.092**	
		(0.040)	
Small		−0.104***	
		(0.044)	
Large × Laworder		0.009	
		(0.013)	
Medium × Laworder		0.018*	
		(0.010)	
Small × Laworder		0.015*	
		(0.010)	
Corruption Obstacle			
Large			−0.020
			(0.037)
Medium			−0.067**
			(0.028)
Small			−0.117***
			(0.029)
Large × Corrupt			0.002
			(0.013)
Medium × Corrupt			0.018**
			(0.009)
Small × 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
Impact(L − S)	−0.126***	−0.040	−0.197***
No. of firms	3,579	3,906	3,922
No. of countries	50	53	53

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

firms (albeit significant at the 10% level). The 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-sized firms diminishes. The differential effect of the interaction of *Priv* and of the level of corruption on the growth of large and of small firms is statistically significant, indicating a material difference in the economic impact of these variables on the growth of large and small firms.

To address two possible sources of bias, we perform robustness checks of our specifications. Our estimates will 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. This type of reverse causality problem,

Table IX

Sensitivity Test: IV Estimation and Using Real Firm Growth

The IV regression estimated is

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

Firm Growth is the percentage change in firm sales over the past 3 years. *Government* and *Foreign* are dummy variables that take the value of one 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 the firm's competitors. *Manufacturing* and *Services* are industry dummies. *Inflation* is the log difference of the consumer price index. *GDP per capita* is real GDP per capita values in U.S. dollars. 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 between 1 and 4, where 1 indicates no obstacle and 4 indicates a major obstacle. In Panel A, we estimate all regressions using instrumental variables, where the firm-level obstacles are instrumented by country-level institutional variables (*Priv*, *Laworder,* and *Corrupt*). In Panel B, obstacles are interacted with size dummies—small, medium, and large—and are instrumented by the three country-level institutional variables interacted by the three size dummies. In this specification we also control for *Size* in the regression. In Panel C, instead of interacting the obstacles with the three size dummies, we interact them with firm size. In Panel D, the dependent variable, *Firm Growth*, is replaced by real firm growth constructed using GDP deflator. Inflation is dropped from the specification. In Panel E, firm growth and obstacles are averaged for different size groups in each country. The averaged firm growth is regressed on averaged obstacles and all macro variables plus an interaction term of the averaged obstacle with a dummy variable that takes the value 1 if the firm is a small or medium firm and 0 otherwise. Each panel also reports Impact—the relevant coefficient evaluated at the mean level of the obstacle, or Impact (L − S), the differential impact on large versus small firms evaluated at the mean level of the obstacle for large and small firms. For brevity we report only the coefficients of the obstacles. Robust standard errors are reported in parentheses. We obtain firm-level variables from the WBES. Detailed variable definitions and sources are given in the Table AII in the Appendix.

	(1)	(2)	(3)
	Panel A		
Financing	−0.575***		
	(0.125)		
Legal		−0.029***	
		(0.009)	
Corruption			−0.021***
			(0.009)
Impact	−1.637***	−0.063***	−0.051***
No. of firms	3539	3390	3396

(*continued*)

Table IX—*Continued*

	(1)	(2)	(3)
	Panel B		
Financing ∗ large	−0.341***		
	(0.111)		
Financing ∗ medium	−0.448***		
	(0.111)		
Financing ∗ small	−0.790***		
	(0.186)		
Legal ∗ large		0.073	
		(0.065)	
Legal ∗ medium		0.023	
		(0.081)	
Legal ∗ small		−0.104	
		(0.076)	
Corruption ∗ large			−0.156**
			(0.081)
Corruption ∗ medium			−0.207***
			(0.087)
Corruption ∗ small			−0.272***
			(0.084)
Impact (L − S)	1.431***	0.382***	0.314***
No. of firms	3538	3389	3395
	Panel C		
Financing	−0.046***		
	(0.013)		
Financing ∗ size	0.002*		
	(0.001)		
Legal		−0.049***	
		(0.013)	
Legal ∗ size		0.003**	
		(0.001)	
Corruption			−0.036***
			(0.012)
Corruption ∗ size			0.002*
			(0.001)
R^2-within	0.01	0.01	0.01
R^2-between	0.31	0.28	0.27
R^2-overall	0.03	0.03	0.03
Impact (at mean size)	−0.032***	−0.029***	−0.021***
No. of firms	4,183	3,947	3,970

(*continued*)

if it exists, is likely to be most severe in the case of the summary obstacles.[18] To examine this possibility, we reestimate the specifications in Table IV by using *Priv*, *Laworder,* and *Corrupt* as the instrumental variables. The coefficients of

[18] We are grateful to the referee for pointing this out.

Table IX—*Continued*

	(1)	(2)	(3)
	Panel D		
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
Impact	−0.085***	−0.065***	−0.051***
No. of firms	4204	3968	3991
No. of countries	54	54	54
	Panel E		
Financing	0.015		
	(0.0364)		
Financing ∗ SME	−0.021**		
	(0.011)		
Legal		0.043	
		(0.038)	
Legal ∗ SME		−0.027**	
		(0.014)	
Corruption			−0.003
			(0.032)
Corruption ∗ SME			−0.024**
			(0.012)
R^2	0.12	0.12	0.12
Impact (L − SME)	0.060***	0.059***	0.058***
No. of observations	162	162	162
No. of countries	54	54	54

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

interest are reported in Panel A of Table IX. The coefficients show that the same variables remain significant at roughly comparable levels of significance.

In Panel B, we estimate the size splits for the three summary indicators using *Priv*, *Laworder*, and *Corrupt* interacted with the three size dummies as instrumental variables. Although the results for financing and corruption obstacles do not change significantly, those for the legal obstacle lose significance.

In Panel C, rather than looking at the differences between the three size groups, we interact the obstacles by firm size given by the logarithm of firm sales. Even when we use this continuous definition of firm size, we see that larger firms are less affected by the three obstacles.

Panel D shows the relation between the obstacles and firms' real growth. In this specification, we drop the rate of inflation variable from the right-hand

side. Inspection of Panel D shows that adjusting the dependent variable for inflation does not alter the results.

In Panel E, we examine the robustness of our findings when we average the variables by country for different firm sizes. This procedure provides an alternative and more stringent test of the relation between firm growth and obstacles because it ignores the firm-level heterogeneity across firms in the same country belonging to the same size classification. Because this aggregation procedure reduces the degrees of freedom, in Panel D, we also reduce the number of independent variables and focus on the differences between SMEs and large firms. The results reported in Panel E are consistent with the firm-level results reported in earlier tables. There exist significant differences in the impact of financial, legal, and corruption obstacles on SMEs and large firms.

III. Conclusions

In this paper, we investigate whether the financial, legal, and corruption obstacles that firms report actually affect their growth rates. By making use of a unique survey database, we investigate a rich set of obstacles reported by firms and directly test whether any of these reported obstacles are significantly correlated with firm growth rates. The database also allows us to focus on differences in firm size, since it has good coverage of small and medium-sized enterprises in 54 countries. 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 systems. We are particularly interested in investigating the previously unexamined national level of corruption and its impact on firm growth.

Our results indicate that the extent to which financial and legal underdevelopment and corruption constrain a firm's growth depends very much on a firm's size. We show that it is the smallest firms that are consistently the most adversely affected by all obstacles.

Taking into account national differences between financial and legal development and corruption, we see that firms that operate in underdeveloped systems with higher levels of corruption are affected by all obstacles to a greater extent than firms operating in countries with less corruption. 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-sized 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 ones rated highest by the firms themselves. When we look 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 banks, do constrain firm growth. Collateral requirements and certain access issues—such as financing for leasing equipment—also turn out to be significantly constraining. Macroeconomic issues captured by high interest rates and lack of money in the banking system also significantly reduce firm growth rates. Further, these effects remain

significant even after we control for the level of financial development. We are interested to find that another obstacle that is rated very highly by firms, access to long-term loans, does not affect their growth rates significantly. Perhaps, firms find it 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 represent significant constraints on firm growth. However, other obstacles, such as the speed with which the courts work, or the need to make additional payments, both of which are 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 that may appear equally important. However, our methodology allows us to distinguish between obstacles that are merely annoying from those that truly constrain firm performance.

There are two particularly interesting findings. First, corruption of bank officials does indeed affect firm growth, particularly for small firms. This finding provides evidence for the existence of institutional failure, which must be taken into account when modeling the monitoring role of financial institutions in overcoming market failures due to informational asymmetries. Second, while the intuitive descriptors of an efficient legal system are related to the summary obstacle, they are not related to firm growth. This finding suggests that the mechanism by which the legal system affects firm performance is not yet well understood.

There are several policy implications in our results. Development institutions devote a large amount of their resources to SMEs because they believe the development of the SME sector is crucial for economic growth and poverty alleviation and that small entrepreneurs face greater constraints. While this paper does not address the issue of SME impact on economic development, it does provide evidence confirming 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. Our paper also shows that it is the small firms that stand to benefit the most from improvements in financial development and a reduction in corruption.

Appendix

Table AI
Number of Firms in Each Country

	Number of Firms
Albania	85
Argentina	76
Armenia	90
Azerbaijan	66
Belarus	95

(*continued*)

Table AI—*Continued*

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

The data source is WBES.

Table AII
Variables and Sources

Variable	Definition	Original Source
GDP	GDP in current U.S. dollars, average 1995–1999	WDI
GDP per capita	Real per capita GDP, average 1995–1999	WDI
Growth	Growth rate of GDP, average 1995–1999	WDI
Inflation rate	Log difference of Consumer Price Index	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 1995–1997. It ranges from 6, strong law and order tradition, to 1, weak law and order tradition.	ICRG
Corrupt	Measure of corruption in government. It ranges from 1 to 6 and is an average over 1995–1997. 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."	ICRG
Firm growth	Estimate of the firm's sales growth over the past 3 years.	WBES
Government	Dummy variable that takes on the value 1 if any government agency or state body has a financial stake in the ownership of the firm, 0 otherwise.	WBES
Foreign	Dummy variable that takes on the value 1 if any foreign company or individual has a financial stake in the ownership of the firm, 0 otherwise.	WBES
Exporter	Dummy variable that takes on the value 1 if firm exports, 0 otherwise.	WBES
Subsidized	Dummy variable that takes on value 1 if firm receives subsidies (including tolerance of tax arrears) from local or national government.	WBES
Manufacturing	Dummy variable that takes on the value 1 if firm is in the manufacturing industry, 0 otherwise.	WBES
Services	Dummy variable that takes on the value 1 if firm is in the service industry, 0 otherwise.	WBES
No. of competitors	Regarding your firm's major product line, how many competitors do you face in your market?	WBES
Firm size dummies	A firm is defined as small if it has between 5 and 50 employees, medium-sized if it has between 51 and 500 employees, and large if it has more than 500 employees.	WBES
Size	Logarithm of firm sales	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)?	WBES

(*continued*)

Table AII—*Continued*

Variable	Definition	Original Source
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)?	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)?	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)?	WBES
Bank paperwork/ bureaucracy	Is bank paperwork/bureaucracy no obstacle (1), a minor obstacle (2), a moderate obstacle (3), or a major obstacle (4)?	WBES
High interest rates	Are high interest rates no obstacle (1), a minor obstacle (2), a moderate obstacle (3), or a major obstacle (4)?	WBES
Need special connections with banks	Is the need of special connections with banks/financial institutions no obstacle (1), a minor obstacle (2), a moderate obstacle (3), or a major obstacle (4)?	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)?	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)?	WBES
Access to nonbank equity	Is the access to nonbank equity/investors/partners no obstacle (1), a minor obstacle (2), a moderate obstacle (3), or a major obstacle (4)?	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)?	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)?	WBES
Inadequate credit/financial information on customers	Is inadequate credit/financial information on customers no obstacle (1), a minor obstacle (2), a moderate obstacle (3), or a major obstacle (4)?	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)?	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.	WBES
Interpretation of laws and regulations are consistent	In general, interpretation of regulations affecting my firm is 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.	WBES

(*continued*)

Table AII—*Continued*

Variable	Definition	Original Source
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.	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.	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.	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.	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.	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.	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.	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: 3 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.	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)?	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.	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.	WBES
If "additional payments" are made, services are delivered	If a firm pays the required "additional payments," the service is usually also delivered as agreed: (1) always, (2) mostly, (3) frequently, (4) sometimes, (5) seldom, (6) never.	WBES

(*continued*)

Table AII—*Continued*

Variable	Definition	Original Source
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.	WBES
Proportion of revenues paid as bribes	On average, what percentage of revenues do firms like yours typically pay per year in unofficial payments to public officials: (1) 0%, (1) less than 1%, (3) 1–1.99%, (4) 2–9.99%, (5) 10–12%, (6) 13–25%, (7) over 25%.	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) 6–10%, (4) 11–15%, (5) 16–20%, (6) over 20%.	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?	WBES

Sources of data: WDI = World Development Indicators; IFS = International Financial Statistics; ICRG = International Country Risk Guide; WBES = World Business Environment Survey.

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