Firm growth and public corruption: An empirical investigation

Ilias Aretos [1] Evangelos Dioikitopoulos [1, 2]

[1]Athens University of Economics & Business

[2]King's College London

Conference on Research on Economic Theory and Econometrics

July 11, 2025

Motivation

- Corruption has historically had various impacts on different parts of the economy, such as:
  - Economic growth (Mo, 2001; Gründler and Potrafke, 2019; Uberti, 2022)
  - Economic development (Mauro, 1995; Svensson, 2003; Treisman, 2007; Aidt, 2009)
  - Productivity (De Rosa et al., 2015)
  - Elections outcome (Potrafke, 2019)
- All the previous cases are based on the level of corruption at the country level.
- Fisman et al. (2024) $\rightarrow$ *Benchmark paper*: They document the effect of corruption on the performance of firms using micro-level analysis.

What is the effect of country-level public corruption on firm performance?

Contribution

- Introduce a newly constructed country-level index for corruption, rather than the typical indices in the existing literature, namely:
  1. Control of Corruption, from the World Bank.
  2. Corruption Perception Index, from the Transparency International.
- Extend the work of Fisman et al. (2024), by adding an additional layer of controls, that is, the country-level characteristics.
- Incorporate the parameters of contemporary preferences and deep cultural characteristics into our analysis.

Literature review

- "Sand the wheels" vs. "Grease the wheels".
  - "Sand": Bribing behaves as unofficial taxation, $\rightarrow$ Productivity $\downarrow$ and affects more negative than official taxation (Fisman and Svensson, 2007; Alm et al., 2016).
  - "Grease": Firms operating in countries characterized by overregulation and weak institutions $\rightarrow$ Pay bribes to improve their network and gain information about opportunities (Acemoglu and Verdier, 2000; Meon and Weill, 2010; Hanousek and Kochanovac, 2016).
- Corruption has a negative impact on management and decision practices (Athanasouli and Goujard, 2015).
- The impact of corruption on firms varies according to location, sector, and time (Svensson, 2003; Bai et al., 2017; Amodio et al., 2022; Ciccone and Papaioannou, 2022; Fisman et al., 2024).

Data

- Firm performance, bribery behavior, and firm characteristics from the World Bank Enterprises Survey (WBES).
- Country-level corruption from the V-Dem.
- Country characteristics from the WDI.
- **Sample:** Approximately 106,000 firm-level observations with more than three years of operation from 135 countries for the period from 2006 to 2023.

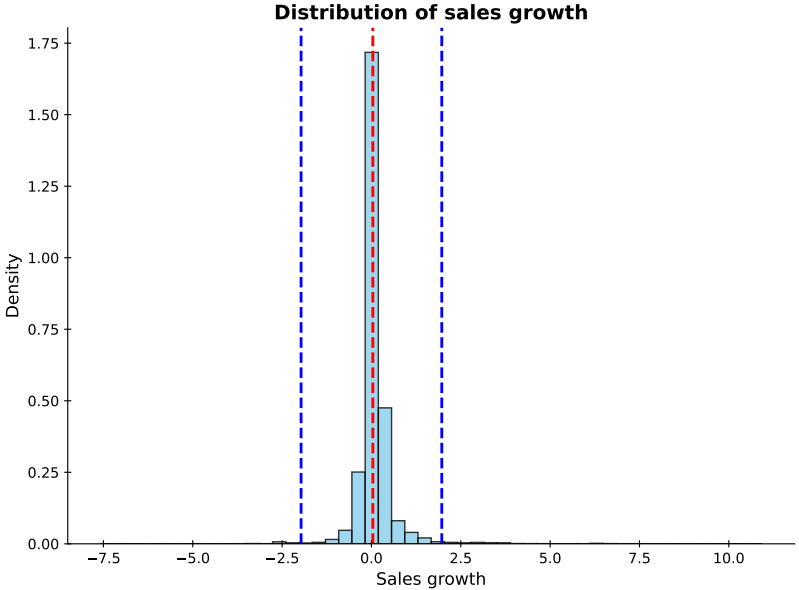
Firm performance (WBES)

- WBES provides data on sales in the year before the survey $(t-1)$, as well as the three years before that $(t-3)$.
- Expressed in local currency units (LCUs) $\longrightarrow$ Deflated using 2005 as the base year (100 = 2005), and converted into US dollars.
- In accordance with the existing literature (among others, Svensson, 2003; Fisman and Svensson, 2007; Pahula et al., 2024; Fisman et al., 2024), we use real sales growth as our primary proxy of firm performance:

$$\text{Sales growth}_t = \frac{\ln(\text{Sales}_{t-1}) - \ln(\text{Sales}_{t-3})}{2}$$

- Following Fisman et al. (2024) $\longrightarrow$ Omit firms that report $\pm$ 50 times the median. Descriptive statistics

Correlation matrix


Distribution of sales growth
Density
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0
Sales growth

Bribery behavior (WBES)

- Question on the WBES:

  "It is said that establishments are sometimes required to make gifts or informal payments to public officials to 'get things done' with regard to customs, taxes, licenses, regulations, services, etc. On average, what percentage of total annual sales, or estimated total annual value, do establishments like this pay in informal payments or gifts to public officials for this purpose?"

- Bribery Share $= \dfrac{\text{Total amount of bribes}}{\text{Sales}_{t-1}} \longrightarrow$ **Intensive margin**

- Non-zero bribery $= 1$, if Bribery Share $> 0 \longrightarrow$ **Extensive margin**

- Following Fisman and Svensson (2007); Fisman et al. (2024) $\longrightarrow$ Exclude firms that report bribes exceeding 50% of their sales.

Public Sector Corruption Index (PSCI)

- Question on the V-Dem:

  "To what extent do public sector employees grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use?"

- Scaling: Continuous, from 0 to 1, where:
  - 0 = Least corrupted
  - 1 = Most corrupted

- We are using the average of the PSCI between $t-1$ and $t-3$.

Firm-level controls (WBES)

- Real sales 3 years ago (USD; log)
- Employment 3 years ago (USD; log)
- Propensity to complain, or "Kvetch Index" (Kaufmann and Wei, 1999)
  - It is measured as the difference between how a firm sees transport, electricity, and access to land as constraints for its operations and the country average complaints about these aspects of the business environment.
- Exporter status
- Ownership status (Foreign and state)
- Firm age (log)
- Website

Country-level controls (WDI)

- GDP per Capita (USD; log)
  - We use GDP per Capita in current LCUs, deflate it using the same deflator as for the firm-level sales and convert it into US dollars.
- Real GDP annual growth
- Total population (log)
- **Averaged over 3-year period, lagged one period** $\longrightarrow (t-3,\, t-5)$
  - Avoiding endogeneity concerns (Chauvet and Ehrhart, 2018; Chauvet and Ferry, 2021)

Empirical Specification

$$Y_{icst} = \beta_0 + \beta_1 BS_{it} + \beta_2 NZB_{it} + \beta_3 PSCI_{ct} + \beta_4 F_{it} + \beta_5 X_{ct-1} + \gamma_{st} + \upsilon_c + \varepsilon_{icst}$$

- Y_{icst}: Sales growth for firm i, in sector s, in country c, at time t.
- BS_{it}: Bribery share.
- NZB_{it}: Non-zero bribery.
- $PSCI_{ct}$: Public Sector Corruption Index.
- F_i: Firm-level controls.
- X_c: Country-level controls.
- γ_{st}: Sector $\times$ year FE
- υ_c: Country FE.
- Standard errors: Clustered at country $\times$ survey year level.

Table 1: Baseline results: Effect of corruption on firm performance

Dep. variable:	Growth of sales, per annum											
Bribery share	0.043	-0.176*	-0.246**	-0.254**					-0.180	-0.311**	-0.390***	-0.402***
	(0.125)	(0.107)	(0.120)	(0.117)					(0.140)	(0.121)	(0.141)	(0.138)
Non-zero Bribery					0.033**	0.010	0.007	0.007	0.043**	0.028**	0.030***	0.031***
					(0.016)	(0.011)	(0.010)	(0.010)	(0.018)	(0.012)	(0.011)	(0.011)
PSCI	-0.113**	-0.452**	-0.439**	-0.425*	-0.123**	-0.458**	-0.445**	-0.432**	-0.123**	-0.458**	-0.445**	-0.432**
	(0.053)	(0.215)	(0.216)	(0.217)	(0.053)	(0.215)	(0.217)	(0.218)	(0.053)	(0.215)	(0.217)	(0.218)
Observations	106334	106331	106331	106331	106334	106331	106331	106331	106334	106331	106331	106331
Adj. R^2	0.01	0.20	0.27	0.27	0.01	0.20	0.27	0.27	0.01	0.20	0.27	0.28
Nr. countries	135	135	135	135	135	135	135	135	135	135	135	135
Sector-Year FE		Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Country FE		Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Firm-level controls			All	All			All	All			All	All
Country-level controls				All				All				All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country $\times$ survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 2: Interactions between PSCI and bribery variables

Dep. variable:	Growth of sales, per annum					
PSCI	-0.454**	-0.441**	-0.427**	-0.454**	-0.444**	-0.429*
	(0.215)	(0.216)	(0.217)	(0.216)	(0.218)	(0.219)
Bribery share	-0.286	-0.436*	-0.411*			
	(0.236)	(0.232)	(0.233)			
PSCI × Bribery share	0.168	0.291	0.242			
	(0.393)	(0.387)	(0.388)			
Non-zero Bribery				0.030	0.013	0.017
				(0.028)	(0.027)	(0.027)
PSCI × Non-zero Bribery				-0.032	-0.010	-0.015
				(0.044)	(0.041)	(0.041)
Observations	106331	106331	106331	106331	106331	106331
Adj. R^2	0.20	0.27	0.27	0.20	0.27	0.27
Nr. countries	135	135	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls		All	All		All	All
Country-level controls			All			All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP

Robustness Exercises

- Additional controls for:
  1. Institutional and cultural factors. Go
  2. Knowledge. Go
  3. Colonial background. Go
  4. Geography. Go
  5. Hofstede et al. (2010) 6-D Model of National Culture. Go
  6. Falk et al. (2018) Global Preferences Survey. Go
  7. Different perceptions as obstacles. Go
- Heterogeneity at sector level. Go
- Alternative proxies to define firm performance. Go
- Alternative proxy to define country-level corruption index. Go
- Alternative sample measurements. Go

Institutional and cultural factors

- Variables $\longrightarrow$ Ashraf and Galor (2013)
- Cultural variables:
  1. **Share of religions** $\rightarrow$ Share of religions on the origin country.
  2. **Legal origins** $\rightarrow$ Legal origin of the Commercial Law / Code of each country.
- Institutional variables:
  1. **Executive constraints** $\rightarrow$ Average index which quantifies the extent of constitutional constraints on the decision-making power of chief executives.
  2. **Social Infrastructure** $\rightarrow$ Average index for the period 1960-2000, which quantifies the wedge between private and social returns to productive activities.
  3. **Democracy** $\rightarrow$ Average index for the period 1960-2000, which quantifies the extent of institutionalized democracy.

Back

Table 3: Effects of religion on sales growth

Dep. variable:	Growth of sales, per annum							
Bribery share	-0.238	-0.243	-0.250	-0.252	-0.314*	-0.317*	-0.324*	-0.326*
	(0.173)	(0.172)	(0.170)	(0.173)	(0.166)	(0.163)	(0.167)	(0.168)
Non-zero Bribery	0.022	0.024*	0.024*	0.022	0.028**	0.030**	0.030**	0.029**
	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)
PSCI	-0.123**	-0.130**	-0.138**	-0.137**	-0.108**	-0.115**	-0.126**	-0.125**
	(0.051)	(0.055)	(0.062)	(0.062)	(0.050)	(0.054)	(0.059)	(0.059)
Protestants	0.079			0.102	0.051			0.063
	(0.099)			(0.110)	(0.115)			(0.126)
Catholics		-0.000		0.024		-0.026		-0.005
		(0.031)		(0.046)		(0.034)		(0.043)
Muslims			0.017	0.039			0.032	0.039
			(0.058)	(0.076)			(0.060)	(0.070)
Observations	105301	106012	106012	105301	105301	106012	106012	105301
Adj. R^2	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Nr. countries	132	134	134	132	132	134	134	132
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE					Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 4: Effects of legal origins on sales growth

Dep. variable:	Growth of sales, per annum							
Bribery share	-0.245	-0.249	-0.264	-0.264	-0.319*	-0.314*	-0.322*	-0.325*
	(0.169)	(0.175)	(0.172)	(0.172)	(0.163)	(0.165)	(0.167)	(0.166)
Non-zero Bribery	0.024*	0.025*	0.027**	0.027*	0.030**	0.029**	0.031**	0.031**
	(0.014)	(0.013)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)
PSCI	-0.122**	-0.133**	-0.126**	-0.124**	-0.099*	-0.112**	-0.105*	-0.099*
	(0.053)	(0.055)	(0.054)	(0.053)	(0.053)	(0.052)	(0.054)	(0.053)
British legal origin	0.026			0.057	0.033			0.071
	(0.033)			(0.053)	(0.034)			(0.056)
French legal origin		0.014		0.045		0.002		0.048
		(0.026)		(0.048)		(0.024)		(0.050)
Socialist legal origin			-0.045	0.003			-0.047	0.007
			(0.057)	(0.066)			(0.056)	(0.066)
Observations	106012	106012	106012	106012	106012	106012	106012	106012
Adj. R^2	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Nr. countries	134	134	134	134	134	134	134	134
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE					Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 5: Effects of institutions on sales growth

Dep. variable:	Growth of sales, per annum							
Bribery share	-0.215	-0.092	-0.221	-0.070	-0.302*	-0.180	-0.307*	-0.168
	(0.172)	(0.179)	(0.173)	(0.180)	(0.164)	(0.172)	(0.166)	(0.171)
Non-zero Bribery	0.021	0.009	0.021	0.007	0.030**	0.018	0.030**	0.017
	(0.014)	(0.018)	(0.014)	(0.019)	(0.013)	(0.017)	(0.013)	(0.018)
PSCI	-0.116**	-0.105	-0.116**	-0.103*	-0.087*	-0.075	-0.089*	-0.051
	(0.050)	(0.068)	(0.051)	(0.062)	(0.049)	(0.066)	(0.051)	(0.065)
Executive constraints	0.066*			0.008	0.089*			-0.061
	(0.039)			(0.164)	(0.049)			(0.179)
Social infrastructure		0.028		-0.014		0.087		0.026
		(0.069)		(0.070)		(0.096)		(0.090)
Democracy			0.062*	0.042			0.076*	0.155
			(0.035)	(0.157)			(0.042)	(0.186)
Observations	104199	84599	104199	83534	104199	84599	104199	83534
Adj. R^2	0.17	0.17	0.17	0.16	0.17	0.18	0.17	0.18
Nr. countries	126	101	126	95	126	101	126	95
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE					Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Knowledge

- Variables $\longrightarrow$ Ashraf and Galor (2013)
- **Scientific articles** $\rightarrow$ Average scientific articles per capita for the period 1981-2000.
- **Years of schooling** $\rightarrow$ Average years of schooling for the period 1960-2000.

Back

Table 6: Effects of knowledge on sales growth

Dep. variable:	Growth of sales, per annum					
Bribery share	-0.298	0.042	0.039	-0.367*	-0.030	-0.033
	(0.202)	(0.184)	(0.184)	(0.191)	(0.165)	(0.166)
Non-zero Bribery	0.023*	0.005	0.005	0.030**	0.009	0.010
	(0.014)	(0.017)	(0.017)	(0.013)	(0.016)	(0.016)
PSCI	-0.166***	-0.181**	-0.182**	-0.143**	-0.165**	-0.164**
	(0.061)	(0.076)	(0.080)	(0.060)	(0.076)	(0.080)
Scientific articles	-0.023		0.042	-0.052		0.067
	(0.089)		(0.068)	(0.090)		(0.070)
Years of schooling		0.013**	0.012**		0.019**	0.018**
		(0.005)	(0.005)		(0.008)	(0.008)
Observations	99132	89893	88738	99132	89893	88738
Adj. R^2	0.18	0.19	0.19	0.18	0.20	0.20
Nr. countries	119	101	98	119	101	98
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE				Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Colonial background

- Variables $\longrightarrow$ COLDAT (Becker, 2019)
- It identifies:
  1. The countries that were once colonies.
  2. The colonial powers that occupied them.
  3. The duration of the colonial rule.
- We focus on the countries that were colonies $\longrightarrow$ Dummy variables for the following colonial powers:
  1. France
  2. Netherlands
  3. Portugal
  4. Spain
  5. UK

Back

Table 7: Effects of colonial background

Dep. variable:	Growth of sales, per annum									
Bribery share	-0.238	-0.244	-0.241	-0.244	-0.243	-0.314*	-0.321**	-0.318*	-0.320*	-0.317*
	(0.171)	(0.171)	(0.172)	(0.172)	(0.171)	(0.162)	(0.162)	(0.164)	(0.164)	(0.164)
Non-zero Bribery	0.026*	0.024*	0.024*	0.025*	0.026**	0.031**	0.032**	0.031**	0.031**	0.032**
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
PSCI	-0.121**	-0.120**	-0.108**	-0.111**	-0.117**	-0.110**	-0.100*	-0.090*	-0.094*	-0.100*
	(0.055)	(0.055)	(0.053)	(0.054)	(0.054)	(0.056)	(0.054)	(0.053)	(0.053)	(0.053)
UK colony	-0.025					-0.033				
	(0.029)					(0.039)				
French colony		0.019					-0.005			
		(0.034)					(0.030)			
Dutch colony			-0.078					-0.073		
			(0.048)					(0.050)		
Portuguese colony				0.025					0.038	
				(0.046)					(0.047)	
Spanish colony					0.009					0.049
					(0.033)					(0.041)
Observations	106331	106331	106331	106331	106331	106331	106331	106331	106331	106331
Adj. R^2	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Nr. countries	135	135	135	135	135	135	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE						Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 8: Interactions between colonial background and PSCI

Dep. variable:	Growth of sales, per annum									
Bribery share	-0.376***	-0.406***	-0.401***	-0.402***	-0.402***	-0.311*	-0.321**	-0.319*	-0.322*	-0.318*
	(0.136)	(0.138)	(0.138)	(0.138)	(0.138)	(0.164)	(0.162)	(0.165)	(0.165)	(0.164)
Non-zero Bribery	0.032***	0.032***	0.031***	0.031***	0.031***	0.032**	0.032**	0.030**	0.031**	0.034***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
PSCI	-0.052	-0.387*	-0.352	-0.428**	-0.432*	-0.097*	-0.098*	-0.090*	-0.096*	-0.122**
	(0.160)	(0.226)	(0.229)	(0.216)	(0.236)	(0.052)	(0.056)	(0.053)	(0.053)	(0.057)
PSCI × UK colony	-1.702**					-0.090				
	(0.848)					(0.074)				
PSCI × French colony		-0.801					-0.010			
		(0.674)					(0.044)			
PSCI × Dutch colony			-1.802***					-0.130		
			(0.684)					(0.079)		
PSCI × Portuguese colony				-0.106					0.122	
				(1.144)					(0.100)	
PSCI × Spanish colony					-0.000					0.117**
					(0.472)					(0.057)
Observations	106331	106331	106331	106331	106331	106331	106331	106331	106331	106331
Adj. R^2	0.28	0.28	0.28	0.28	0.28	0.18	0.17	0.17	0.17	0.17
Nr. countries	135	135	135	135	135	135	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes					
Continent FE						Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 9: Effects of common colonial power and legal origin on sales growth

Dep. variable:	Growth of sales, per annum			
Bribery share	-0.254	-0.254	-0.331**	-0.320*
	(0.165)	(0.172)	(0.159)	(0.163)
Non-zero Bribery	0.025*	0.025*	0.032**	0.032**
	(0.013)	(0.013)	(0.013)	(0.013)
PSCI	-0.104**	-0.122**	-0.083	-0.098*
	(0.053)	(0.054)	(0.052)	(0.053)
Colony = UK & British Legal origin	0.050		0.054	
	(0.037)		(0.036)	
Colony = FR & French Legal origin		0.028		-0.012
		(0.036)		(0.037)
Observations	106331	106331	106331	106331
Adj. R^2	0.17	0.17	0.18	0.17
Nr. countries	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes
Continent FE			Yes	Yes
Firm-level controls	All	All	All	All
Country-level controls	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 10: Interactions between common colonial power and legal origin and PSCI

Dep. variable:	Growth of sales, per annum			
Bribery share	-0.400***	-0.405***	-0.327**	-0.319*
	(0.135)	(0.138)	(0.157)	(0.163)
Non-zero Bribery	0.031***	0.032***	0.032**	0.032**
	(0.011)	(0.011)	(0.013)	(0.013)
PSCI	-0.403*	-0.386*	-0.099*	-0.095*
	(0.223)	(0.226)	(0.052)	(0.055)
PSCI × Colony = UK & British Legal origin	-0.150		0.089	
	(0.576)		(0.070)	
PSCI × Colony = FR & French Legal origin		-0.836		-0.019
		(0.680)		(0.051)
Observations	106331	106331	106331	106331
Adj. R^2	0.28	0.28	0.17	0.17
Nr. countries	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes		
Continent FE			Yes	Yes
Firm-level controls	All	All	All	All
Country-level controls	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Geography

- Variables $\longrightarrow$ Ashraf and Galor (2013)
- Latitude (Centroid).
- Mean distance to the nearest waterway.
- Subsistence mode in 1000 CE $\longrightarrow$ It takes values from 0 to 1, where
  - 0: Hunting and gathering.
  - 0.5: Agriculture = Secondary mode of subsistence.
  - 1: Agriculture = Primary mode of subsistence.
- Temperature (log) $\longrightarrow$ Intertemporal average monthly temperature of a country in degrees Celsius per month over the 1961–1990 time period.

Back

Table 11: Effects of geography on sales growth

Dep. variable:	Growth of sales, per annum									
Bribery share	-0.230	-0.242	-0.243	-0.235	-0.240	-0.317*	-0.335**	-0.337**	-0.316*	-0.333*
	(0.181)	(0.168)	(0.174)	(0.171)	(0.182)	(0.174)	(0.161)	(0.169)	(0.163)	(0.173)
Non-zero Bribery	0.023	0.024*	0.021	0.024*	0.020	0.031**	0.032**	0.030**	0.032**	0.031**
	(0.014)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)	(0.014)
PSCI	-0.136**	-0.128**	-0.151**	-0.128**	-0.166***	-0.123**	-0.126**	-0.138**	-0.113**	-0.143**
	(0.053)	(0.054)	(0.058)	(0.054)	(0.059)	(0.053)	(0.054)	(0.058)	(0.053)	(0.057)
Subsistence mode in 1000 CE	-0.093*				-0.061	-0.094*				-0.014
	(0.055)				(0.077)	(0.048)				(0.090)
Geodesic centroid latitude		0.001*			0.001		0.002***			0.002**
		(0.001)			(0.001)		(0.001)			(0.001)
Mean distance to nearest waterway			0.036*		0.041			0.045**		0.015
			(0.021)		(0.035)			(0.020)		(0.031)
Log [temperature]				-0.072*	0.030				-0.133**	-0.080
				(0.037)	(0.063)				(0.056)	(0.075)
Observations	102272	106331	105053	106012	102272	102272	106331	105053	106012	102272
Adj. R^2	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.18
Nr. countries	119	135	126	134	119	119	135	126	134	119
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE						Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 12: Split the sample by continent

Dep. variable:	Growth of sales, per annum				
Continents:	Africa	Asia	Europe	North America	South America
Bribery share	-0.020	-1.069***	-0.524*	-0.258	-0.790***
	(0.142)	(0.368)	(0.299)	(0.242)	(0.171)
Non-zero Bribery	0.005	0.034*	0.041*	0.003	0.099**
	(0.019)	(0.019)	(0.024)	(0.030)	(0.040)
PSCI	-0.559*	-1.021**	0.384	-0.328	-0.569
	(0.310)	(0.432)	(0.262)	(0.193)	(0.602)
Observations	20994	43423	24749	6954	9958
Adj. R^2	0.24	0.47	0.26	0.19	0.24
Nr. countries	43	32	33	11	12
Sector-Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All
Country-level controls	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Table 13: Removing one continent

Dep. variable:	Growth of sales, per annum				
Without:	Africa	Asia	Europe	North America	South America
Bribery share	-0.811***	-0.181	-0.383**	-0.409***	-0.397***
	(0.192)	(0.118)	(0.150)	(0.141)	(0.142)
Non-zero Bribery	0.048***	0.022	0.027**	0.030**	0.028**
	(0.014)	(0.014)	(0.013)	(0.012)	(0.011)
PSCI	-0.531**	-0.234	-0.577**	-0.462**	-0.391*
	(0.256)	(0.200)	(0.275)	(0.231)	(0.212)
Observations	85336	62904	81579	99377	96373
Adj. R^2	0.32	0.21	0.29	0.28	0.29
Nr. countries	92	103	102	124	123
Sector-Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All
Country-level controls	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey-year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

6-D Model of National Culture (Hofstede et al., 2010)

- **Collectivism vs. Individualism** → Focus on the degree to which *"people feel independent, as opposed to being interdependent as members of larger wholes"*.
- **Power Distance Index (PDI)** → Focus on the degree to which *"less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally."*.
- **Motivation towards Achievement & Success (originally: Femininity vs. Masculinity)** → A masculine society values achievements, heroism, and material rewards, while a feminine society values cooperation and caring for others.
- **Uncertainty Avoidance Index (UAI)** → It measures *"a society's tolerance for uncertainty and ambiguity"*, that is the degree to which a society embrace or avert an event of something unexpected, unknown, or away from the current status quo.

6-D Model of National Culture (Hofstede et al., 2010)

- **Short-term vs. Long-term Orientation** → It deals with the change. A short-term oriented society is characterized by the importance of honoring and maintaining traditions, while a long-term oriented society considers adapting and pragmatic problem solving necessary.
- **Restraint vs. Indulgence** → It measures *"the degree of freedom that societal norms allow citizens in the fulfillment of their human desires"*. An indulgent society considers good to be free, while in a restrained society in a restrained society, the norm is that life is challenging and duty is the normal state of being.

Back

Table 14: Effects of culture (Hofstede et al., 2010) on sales growth

Dep. variable:	Growth of sales, per annum											
Bribery share	-0.085	-0.087	-0.083	-0.086	-0.218	-0.229	-0.121	-0.126	-0.123	-0.124	-0.257	-0.279*
	(0.177)	(0.176)	(0.177)	(0.177)	(0.161)	(0.167)	(0.159)	(0.159)	(0.160)	(0.160)	(0.156)	(0.163)
Non-zero Bribery	0.035**	0.033**	0.034**	0.034**	0.036**	0.035*	0.036**	0.035**	0.036**	0.035**	0.042**	0.042**
	(0.015)	(0.015)	(0.015)	(0.015)	(0.017)	(0.018)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.017)
PSCI	-0.129**	-0.122**	-0.135**	-0.139**	-0.157**	-0.153**	-0.130**	-0.129**	-0.135**	-0.139***	-0.152**	-0.152**
	(0.051)	(0.058)	(0.058)	(0.054)	(0.063)	(0.069)	(0.052)	(0.060)	(0.059)	(0.053)	(0.062)	(0.072)
Power Distance Index	-0.035						-0.032					
	(0.073)						(0.073)					
Individualism		0.078						0.060				
		(0.063)						(0.071)				
Motivation toward Achievement-Success			-0.076*						-0.073			
			(0.045)						(0.044)			
Uncertainty Avoidance Index				-0.014						-0.011		
				(0.064)						(0.065)		
Long-term Orientation					0.166*						0.259**	
					(0.093)						(0.123)	
Indulgence						-0.012						-0.075
						(0.059)						(0.060)
Observations	93252	93252	93252	93252	89457	83773	93252	93252	93252	93252	89457	83773
Adj. R^2	0.14	0.14	0.14	0.14	0.15	0.15	0.14	0.14	0.14	0.14	0.16	0.16
Nr. countries	93	93	93	93	83	75	93	93	93	93	83	75
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE							Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Global Preferences Survey (Falk et al., 2018)

- **Time preference - Patience** → Derived from the combination of responses:
  1. **Quantitative** → Participants made five sequential binary choices between receiving a smaller payment today or a larger payment in 12 months, with each choice influencing the next.
  2. **Qualitative** → Respondents rated their willingness to wait on an 11-point Likert scale (0-10), answering: *"How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future?"*

- **Risk preference** → Derived from the combination of responses:
  1. **Quantitative** → A series of 5 binary choices were presented between a fixed lottery (chance to win x or 0) and varying sure payments (y).
  2. **Qualitative** → Respondents rated their willingness on an 11-point Likert scale (0-10), answering: *"In general, how willing are you to take risks?"*

Global Preferences Survey (Falk et al., 2018)

- **Positive reciprocity** → Derived from the combination of responses:
  1. **Quantitative** → Respondents imagined getting lost in an unfamiliar area and a stranger offering to guide them to their destination. They were then asked to choose one of six "thank you" gifts, valued between 5 and 30 euros (or equivalent), for the stranger.
  2. **Qualitative** → Respondents rated their willingness on an 11-point Likert scale (0-10), answering: *"In general, how willing are you to return a favor?"*

- **Negative reciprocity** → Derived from the combination of 3 qualitative responses on an 11-point Likert scale (0-10) :
  1. *"How willing are you to take revenge if you are treated very unjustly, even if doing so comes at a cost?"*
  2. *"How willing are you to punish someone for being unfair to you?"*
  3. *"How willing are you to punish someone for being unfair to someone else?"*

Global Preferences Survey (Falk et al., 2018)

- **Altruism** → Derived from the combination of responses:
  1. **Quantitative** → Respondents were asked to imagine unexpectedly receiving 1,000 euros and to indicate how much of this amount they would choose to donate.
  2. **Qualitative** → Respondents rated their willingness to donate on an 11-point Likert scale (0-10), answering: *"How willing are you to give to a good cause without expecting anything in return?"*

- **Trust** → Derived from one quantitative response, that is, respondents rated their willingness to trust others on an 11-scale Likert scale (0-10), answering: *"Is it true that people only have the best of intentions?"*

Back

Table 15: Effects of preferences (Falk et al., 2018) on sales growth

Dep. variable:	Growth of sales, per annum											
Bribery share	-0.192	-0.177	-0.204	-0.207	-0.201	-0.204	-0.183	-0.178	-0.193	-0.181	-0.188	-0.194
	(0.185)	(0.183)	(0.184)	(0.184)	(0.182)	(0.184)	(0.182)	(0.181)	(0.181)	(0.181)	(0.179)	(0.181)
Non-zero Bribery	0.019	0.023	0.024	0.024	0.024	0.024	0.019	0.022	0.024	0.020	0.024	0.024
	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
PSCI	-0.203**	-0.206***	-0.210***	-0.200**	-0.215***	-0.210**	-0.213**	-0.204**	-0.222***	-0.195**	-0.229***	-0.219**
	(0.079)	(0.079)	(0.078)	(0.077)	(0.080)	(0.082)	(0.084)	(0.080)	(0.079)	(0.078)	(0.083)	(0.087)
Patience	0.066*						0.064*					
	(0.034)						(0.037)					
Risk-taking		-0.082**						-0.077				
		(0.039)						(0.050)				
Positive reciprocity			0.014						0.027			
			(0.044)						(0.052)			
Negative reciprocity				-0.060						-0.077		
				(0.042)						(0.050)		
Altruism					0.041						0.061*	
					(0.032)						(0.034)	
Trust						0.019						0.034
						(0.051)						(0.051)
Observations	76244	76244	76244	76244	76244	76244	76244	76244	76244	76244	76244	76244
Adj. R^2	0.18	0.18	0.17	0.18	0.18	0.17	0.18	0.18	0.18	0.18	0.18	0.18
Nr. countries	63	63	63	63	63	63	63	63	63	63	63	63
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE							Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Different constraints as main obstacles

- Firms consider different constraint(s) as significant obstacle(s) for doing business.
- Each obstacle is ranked on a five-point scale from 0 to 4, where 0 = "No obstacle" while 4 = "Very severe obstacle".
- We focus on the following constraints:
  - Telecommunications, customs and trade regulations, practices of competitors, courts, crime-theft-disorder, tax rates, tax administrations, business licensing and permits, political instability, corruption, access to finance, labor regulations, inadequately educated workforce.
- Each constraint is regarded as an obstacle for a firm when the score is 2 (= "Moderate obstacle) or higher.

Back

Table 16: Effects of perceptions about constraints on sales growth

Dep. variable:	Growth of sales, per annum						
Obstacle:	Telecommunications	Customs & Trade Regulations	Practices of competitors	Courts	Crime	Tax rates	Tax administrations
Bribery share	-0.685***	-0.364**	-0.355**	-0.419**	-0.536**	-0.607***	-0.339**
	(0.185)	(0.154)	(0.147)	(0.172)	(0.211)	(0.162)	(0.131)
Non-zero Bribery	0.032	0.013	0.029*	0.050***	0.031*	0.034**	0.022
	(0.020)	(0.016)	(0.015)	(0.016)	(0.018)	(0.014)	(0.014)
PSCI	-0.512	-0.561**	-0.362**	-0.491**	-0.183	-0.407**	-0.502**
	(0.408)	(0.241)	(0.166)	(0.204)	(0.217)	(0.180)	(0.212)
Observations	14309	28208	43688	26839	30129	55596	42505
Adj. R^2	0.31	0.29	0.25	0.24	0.24	0.25	0.25
Nr. countries	113	134	134	134	134	135	135
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All	All
Obstacle:	Business Licensing	Political Instability	Corruption	Access to Finance	Labor Regulations	Inadequately Educated Workforce	
Bribery share	-0.238*	-0.581***	-0.518***	-0.673***	-0.649***	-0.573***	
	(0.144)	(0.179)	(0.165)	(0.187)	(0.165)	(0.127)	
Non-zero Bribery	0.012	0.038**	0.037**	0.059***	0.042**	0.037**	
	(0.017)	(0.015)	(0.015)	(0.016)	(0.019)	(0.017)	
PSCI	-0.461**	-0.356*	-0.513***	-0.347*	-0.481**	-0.483**	
	(0.216)	(0.187)	(0.191)	(0.210)	(0.201)	(0.192)	
Observations	31345	46298	45984	42690	32145	43327	
Adj. R^2	0.27	0.24	0.24	0.27	0.27	0.26	
Nr. countries	135	135	134	135	133	135	
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	
Firm-level controls	All	All	All	All	All	All	
Country-level controls	All	All	All	All	All	All	

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Sector-level heterogeneity

- We split our sample by sector.
- Following Fisman et al. (2024), we determine the following categories:
  - Light manufacturing.
  - Heavy manufacturing.
  - Utilities and construction.
  - Wholesale and retail.
  - Other.
- Sectors are classified by ISIC Rev. 3.1.

Back

Table 17: Baseline results by sector

Dep. variable:	Growth of sales, per annum				
Sector:	Light manufacturing	Heavy manufacturing	Utilities & construction	Wholesale & retail	Other
Bribery share	-0.503**	-0.190	-0.648**	-0.410	-0.582***
	(0.202)	(0.139)	(0.274)	(0.277)	(0.219)
Non-zero Bribery	0.022	0.019	0.035	0.031	0.059**
	(0.024)	(0.015)	(0.031)	(0.019)	(0.024)
PSCI	-0.431*	-0.371	-0.070	-0.477*	-0.254
	(0.229)	(0.233)	(0.279)	(0.269)	(0.328)
Observations	23125	40500	5821	24836	12048
Adj. R^2	0.33	0.26	0.28	0.33	0.29
Nr. countries	133	135	130	134	134
Year FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All	All
Country-level controls	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Light manufacturing includes the production of food, beverages, textiles, and paper products. Heavy manufacturing includes production of chemicals, plastics, metals, wood, electrical products, furniture, and machinery. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Alternative measures of firm performance

- Following the existing literature (among others, Hanousek and Kochanovac, 2016; Fisman et al., 2024), we utilize the following outcome variables:
  1. **Real labor productivity growth** $\longrightarrow$ Logarithm difference of sales per worker one year and three years prior survey year, divided by 2.
  2. **Employment growth** $\longrightarrow$ Logarithm difference of the number of full-time employments one year and three years prior, divided by 2.

Back

Table 18: Baseline results using alternative outcome variables

Dep. variable:	Growth of sales, real (annual, USD)	Labor productivity growth, real (annual, USD)	Employment growth (annual)
Bribery share	-0.402***	-0.342***	-0.093**
	(0.138)	(0.123)	(0.044)
Non-zero Bribery	0.031***	0.023**	0.009**
	(0.011)	(0.011)	(0.004)
PSCI	-0.432**	-0.402*	-0.028
	(0.218)	(0.210)	(0.043)
Observations	106331	106248	106248
Adj. R^2	0.28	0.29	0.15
Nr. countries	135	135	135
Sector-Year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Firm-level controls	All	All	All
Country-level controls	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variables are the annual growth rates of sales, labor productivity, and employment. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Alternative measures of country-level corruption index

- Relying on the V-Dem, we are using the following variables as alternative measures of the PSCI:
  1. Executive bribery and corrupt exchanges *(v2exbribe)*.
  2. Executive embezzlement and theft *(v2exembez)*.
  3. Public sector corrupt exchanges *(v2excrptps)*.
  4. Public sector theft *(v2exthftps)*.

- Every variable mentioned above, uses the same scaling as of the PSCI, where 0 = Least corrupted, and 1 = Most corrupted.

Back

Table 19: Baseline results using alternative proxies for the PSCI

Dep. variable:	Growth of sales, per annum			
Bribery share	-0.402***	-0.397***	-0.401***	-0.402***
	(0.138)	(0.135)	(0.138)	(0.137)
Non-zero Bribery	0.029**	0.029**	0.030***	0.030***
	(0.012)	(0.011)	(0.011)	(0.011)
Executive bribery and corrupt exchanges	-0.071			
	(0.132)			
Executive embezzlement and theft		-0.112		
		(0.174)		
Public sector corrupt exchanges			-0.211	
			(0.163)	
Public sector theft				-0.407**
				(0.178)
Observations	106331	106331	106331	106331
Adj. R^2	0.27	0.27	0.27	0.28
Nr. countries	135	135	135	135
Sector-Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Firm-level controls	All	All	All	All
Country-level controls	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote

Table 20: Baseline results using Public Sector Theft instead of the PSCI

Dep. variable:	Growth of sales, per annum		
Bribery share	-0.256**		-0.402***
	(0.117)		(0.137)
Non-zero Bribery		0.007	0.030***
		(0.010)	(0.011)
Public sector theft	-0.403**	-0.407**	-0.407**
	(0.177)	(0.178)	(0.178)
Observations	106331	106331	106331
Adj. R^2	0.28	0.27	0.28
Nr. countries	135	135	135
Sector-Year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Firm-level controls	All	All	All
Country-level controls	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variable is the annual growth rate of sales. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%. and 10% levels. respectivelv.

Alternative samples using in analysis

- 4 alternative measures of sampling:
  1. Excluding only the top 1% of sales growth (Chauvet and Ehrhart, 2018; Chauvet and Ferry, 2021)
  2. Excluding the top and bottom 1%, 5%, and 10% tails of sales growth, respectively.

Back

Table 21: Baseline results using alternative samples

Sampling	Excl. top 1%		Excl. top & bottom 1%		Excl. top & bottom 5%		Excl. top & bottom 10%	
Dep. variable:	Growth of sales	Labor productivity growth	Growth of sales	Labor productivity growth	Growth of sales	Labor productivity growth	Growth of sales	Labor productivity growth
Bribery share	-0.400***	-0.340***	-0.277**	-0.221*	-0.083	-0.001	-0.052	0.003
	(0.141)	(0.126)	(0.129)	(0.118)	(0.062)	(0.061)	(0.037)	(0.049)
Non-zero Bribery	0.031***	0.023**	0.025**	0.016	0.007	-0.002	0.002	-0.004
	(0.011)	(0.011)	(0.011)	(0.010)	(0.006)	(0.006)	(0.005)	(0.005)
PSCI	-0.443**	-0.412**	-0.249*	-0.222*	-0.159*	-0.140*	-0.110**	-0.127**
	(0.215)	(0.207)	(0.137)	(0.129)	(0.081)	(0.078)	(0.049)	(0.055)
Observations	106225	106142	105155	105072	97161	97091	86987	86925
Adj. R^2	0.27	0.28	0.21	0.21	0.20	0.17	0.20	0.16
Nr. countries	135	135	135	135	135	135	135	135
Dependent	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	All	All	All	All	All	All	All	All
Firm-level controls	All	All	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate OLS regression. The outcome variables are the annual growth rates of sales, and labor productivity. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back

Instrumental Variables approach

- Instrument $\longrightarrow$ Centuries that the Ottoman Empire influenced a region, based on the boundary changes every century from 0 to 2000 AD (Olsson and Paik, 2016).
- Correlation $\rho = 0.5943$ between PSCI and instrument, statistically significant at 1%.

Table 22: Instrumental Variables results

Dep. variable:	Sales growth, per annum					
Bribery share	-0.086		-0.154	-0.120		-0.144
	(0.102)		(0.108)	(0.107)		(0.105)
Non-zero Bribery		0.003	0.012		-0.004	0.004
		(0.014)	(0.016)		(0.014)	(0.016)
PSCI	-0.302**	-0.302**	-0.302**	-0.213*	-0.213*	-0.213*
	(0.141)	(0.141)	(0.141)	(0.114)	(0.114)	(0.114)
First stage:	PSCI					
Centuries of Ottoman influence	0.032***	0.032***	0.032***	0.039***	0.039***	0.039***
	(0.007)	(0.007)	(0.007)	(0.010)	(0.010)	(0.010)
Observations	34251	34251	34251	34251	34251	34251
Nr. countries	38	38	38	38	38	38
First-stage F statistic	18.7	18.7	18.7	16.3	16.4	16.4
Sector-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Continent FE				Yes	Yes	Yes
Firm-level controls	All	All	All	All	All	All
Country-level controls	All	All	All	All	All	All

Notes: Each estimated coefficient is generated from a separate IV regression. The outcome variable is the annual growth rate of sales. The instrument is the centuries a country influenced by the Ottoman Empire. Firm-level controls include the logarithm of sales in US dollars 3 years ago, the logarithm of employment 3 years ago, propensity to complain ("kvetch index"), exporter status, ownership status (state or private foreign), and whether a firm has an Internet website. Country-level controls include the logarithm of GDP per Capita, the real GDP annual growth rate, and the logarithm of total population. Standard errors clustered at country × survey year level. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Conclusions

- A company that operates in an environment that is characterized by a high level of public corruption has a negative and significant impact on its growth process.
- A firm operating in a democratic country and well-educated people observes greater levels of firm performance.
- Geography plays a vital role in sales growth.
- Societies that are characterized by long-term orientation are more likely to positively affect business growth. Additionally, countries with high levels of patience have a positive effect on a company's growth.
- Our findings are consistent across all potential constraints that could affect doing business, as well as any alternative definition of outcome and key explanatory variables, and sampling measurement.

Thank you very much for your attention!

Table 23: Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Median	Min	Max
Growth of sales, real terms (annual, USD)	106334	0.053	0.374	0.039	-2.622	2.632
Bribery share	106334	0.008	0.035	0.000	0.000	0.500
Non-zero Bribery	106334	0.159	0.366	0.000	0.000	1.000
PSCI	106334	0.536	0.264	0.596	0.001	0.974
log(Sales t-3; USD)	106334	13.471	2.444	13.419	-0.463	28.430
log(Employees t-3)	106334	3.269	1.394	2.996	0.000	11.067
State ownership	106334	0.012	0.110	0.000	0.000	1.000
Foreign ownership	106334	0.067	0.234	0.000	0.000	1.000
Exporter	106334	0.204	0.403	0.000	0.000	1.000
Propensity to complain (kvetch index)	106334	0.003	0.878	-0.128	-2.408	3.662
log(Firm age)	106334	2.823	0.696	2.833	1.386	5.407
Firm has its own website	106334	0.548	0.498	1.000	0.000	1.000
log(GDP per capita, USD)	106334	8.158	1.260	8.015	4.886	11.658
Real GDP growth	106334	0.047	0.029	0.048	-0.077	0.239
log(Population)	106334	17.572	2.022	17.452	11.566	21.061

Back

Table 24: Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Growth of sales, real terms (annual, USD)	1.000														
(2) Bribery share	-0.004	1.000													
(3) Non-zero Bribery	0.002	0.511***	1.000												
(4) PSCI	-0.063***	0.109***	0.211***	1.000											
(5) log(Sales t-3; USD)	-0.183***	-0.066***	-0.056***	-0.293***	1.000										
(6) log(Employees t-3)	-0.022***	-0.021***	0.019***	-0.021***	0.647***	1.000									
(7) State ownership	0.001	0.028***	0.009**	0.023***	0.059***	0.095***	1.000								
(8) Foreign ownership	0.025***	-0.003	-0.009**	-0.080***	0.197***	0.197***	0.016***	1.000							
(9) Exporter	0.025***	-0.013***	-0.027***	-0.217***	0.305***	0.307***	0.049***	0.208***	1.000						
(10) Propensity to complain (kvetch index)	0.007*	0.041***	0.120***	0.015***	0.018***	0.019***	-0.009**	0.003	0.009**	1.000					
(11) log(Firm age)	-0.080***	-0.031***	-0.045***	-0.161***	0.262***	0.275***	0.042***	0.008**	0.156***	-0.019***	1.000				
(12) Firm has its own website	0.025***	-0.046***	-0.054***	-0.251***	0.386***	0.329***	0.032***	0.086***	0.258***	0.018***	0.175***	1.000			
(13) log(GDP per capita, USD)	-0.001	-0.109***	-0.230***	-0.669***	0.306***	0.033***	-0.022***	0.016***	0.193***	-0.015***	0.190***	0.321***	1.000		
(14) Real GDP growth	-0.023***	0.039***	0.099***	0.293***	-0.039***	0.022***	0.025***	-0.020***	-0.101***	0.003	-0.136***	-0.125***	-0.425***	1.000	
(15) log(Population)	-0.094***	0.027***	0.114***	0.402***	-0.000	0.120***	-0.010***	-0.140***	-0.108***	0.009**	0.002	-0.008**	-0.280***	0.318***	1.000

Notes: ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Back