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Government efficiency and corruption: A country-level study with implications for entrepreneurship



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ABSTRACT

If and how the efficiency of governments plays a role in determining relationships between corruption and entrepreneurship has not been examined at length. The empirical findings on control of corruption are inconclusive, and our knowledge regarding the moderation of efficient or less-efficient governments is rather limited. Using a multisource panel dataset of 59 countries, we find that any conclusion suggesting that corruption is universally good or bad for entrepreneurship may risk being overstated because the degree to which governments are efficient moderates the nonlinear effects of control of corruption on entrepreneurship.

1. Introduction

Corruption, defined as abuse of public power for private gain, is often viewed as a negative phenomenon (Warren, 2004), but can have a complex impact on the economy (e.g. Méndez and Sepúlveda, 2006). Similarly, studies on entrepreneurship suggest that corruption can have nonlinear, insignificant, or moderated impacts at the country level (Aidis et al., 2012; Anokhin and Schulze, 2009; Dreher and Gassebner, 2013). Corruption under different contexts can have varying effects on entrepreneurship. One factor that alters the effects of corruption is the ways in which businesses are regulated (Tonoyan et al., 2010). Red tape, over-regulation, and rigidity could redefine how corruption impacts entrepreneurship as corruption under such conditions can grease the wheels of entrepreneurship (Dreher and Gassebner, 2013).

Put differently, the effects of corruption on entrepreneurship are complex and can have nonlinear and both positive and negative effects depending on the context. To further stimulate the ongoing discussion, we examine the nonlinear relationship between corruption and nascent entrepreneurship with a focus on how it is moderated through government efficiency. Government efficiency refers to the absence of over-regulation, ambiguity, and wastefulness. Although nonlinearity in the relationship has been studied before (Anokhin and Schulze, 2009), we investigate how such nonlinearity is shaped by different levels of government efficiency. Our findings have implications for determining how much effort policy makers should dedicate to combating corruption under different levels of government efficiency while fostering entrepreneurship.

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2. Corruption and government efficiency

2.1. Control of corruption

Corruption refers to the abuse of public power for private gain (Rodríguez et al., 2005), and control of corruption refers to the extent to which it is contained. Various researchers have studied the effects of corruption on different economic factors (e.g., Mauro, 1995; Mo, 2001; Méndez and Sepúlveda, 2006) and more recently on entrepreneurship. The results concerning entrepreneurship have however been mixed. For example, Dutta and Sobel (2016) and Anokhin and Schulze (2009) found negative effects of corruption while other studies have found no direct country-level effects (Aidis et al., 2012). On the other hand, Dreher and Gassebner (2013) and Belitski et al. (2016) found positively moderated effects. In addition to complex nature of the relationship, differences in methodologies used (especially regarding whether cross-sectional or panel data are used or whether the measure of entrepreneurship used only captures official entrepreneurship) have arguably also contributed to mixed results.

2.2. Government efficiency

Government efficiency refers to efficiency of government in terms of regulation burdens, government wastefulness, regulation transparency, and efficiency of legal frameworks (Schwab and Sala-i-Martin, 2015). Scholars such as Lee and Whitford (2009) and Portes and Haller (2010) consider government efficiency as government performance (when resources are not wasted) and non-burdensome of regulations (when there is no over-regulation). Accordingly, we define government efficiency as the extent to which governments do not waste resources or place burdensome and ambiguous regulations on institutions, organizations, and individuals in a country (Schwab and Sala-i-Martin, 2015). Government efficiency and corruption refer to two different phenomena, as corruption is understood as an abuse of public positioning for private gain (Rodríguez et al., 2005). This distinction is in line with what is known as the “grease the wheels” hypothesis. It suggests that corruption can be beneficial when regulations burden businesses, when there is over-regulation and inflexibility, when governments waste resources, and when regulations are not transparent to businesses. In other words, in studying the grease (or sand) the wheels hypothesis (e.g., Méon and Sekkat, 2005), scholars clearly distinguish issues of bribery and other corrupt practices from issues such as over-regulation, red tape, and inflexibility.

2.3. Corruption, government efficiency, and entrepreneurship

The findings of Anokhin and Schulze (2009) suggest that corruption and entrepreneurship may have a convex (also known as concave upward) relationship. Other authors such as Dreher and Gassebner (2013) discuss how corruption can grease the wheels of entrepreneurship (i.e., in countries with inefficient governments, corrupt practices such as “speed money” benefit businesses) (Mauro, 1995). Thus, under inefficient governance with over-regulation, initial efforts to combat corruption can harm entrepreneurial efforts. However, as Rothstein and Uslaner (2005) note, when governments continuously combat corruption, they establish trust in a society which in turn benefit entrepreneurship. Consequently, under inefficient governments, the relationship between control of corruption and entrepreneurship is first downward and then upward (i.e., convex).

As governments become more efficient, effects of the grease the wheels hypothesis and trust decrease. First, since regulations are more transparent, less burdensome, and less excessive, entrepreneurs do not need to bribe officials to get their businesses started. Second, as societal trust is higher in countries with efficient governments, pushing for higher control of corruption has a less positive effect. However, when governments become highly efficient, some degree of rigidity and inflexibility (a type of red tape) emerges because of the transparent and unquestionable nature of regulations. In such high-trust societies, some corruption can once again grease the wheels of entrepreneurship. Taken together, as government efficiency increases, the relationship between control of corruption and entrepreneurship grows less convex, and in extreme cases, it can become concave.

H1: Government efficiency negatively moderates the convexity of the relationship between control of corruption and entrepreneurship.

3. Data and method

3.1. Data

We performed the empirical analysis using a multisource 339 country-year dataset of 59 countries for 2008–2015. Information on entrepreneurship was collected from the Global Entrepreneurship Monitor (GEM) (Acs et al., 2004). In addition to data on two control variables, data on government efficiency was obtained from the Global Competitiveness Report (GCR) (Schwab and Sala-i-Martin, 2015). For control of corruption, we used Kaufmann et al. (2011) measure, which is used in the World Governance Indicators (WGIs). Finally, the rest of the control variables were collected from the World Development Indicators (WDIs) (World Bank, 2016). The resulting panel dataset was strongly unbalanced with several lengthy gaps; therefore, we used observations belonging to sub-panels with at least three consecutive years of data for a country.

3.2. Dependent variable

Following Arenius and Minniti (2005), we found the nascent entrepreneurship rate measure of the GEM to be a suitable

dependent variable. The nascent entrepreneurship rate is the percentage of “individuals, between the ages of 18 and 64 years, who have taken some action toward creating a new business in the past year” (Acs et al., 2004, p. 16) in a country. Hence, it is not limited to measuring formal entrepreneurship.

3.3. Independent variable

Our independent variable captures the extent to which corruption, i.e., “perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by elites and private interests.” (Kaufmann et al., 2011, p. 4), is controlled. We followed the approach of Anokhin and Schulze (2009) and used control of corruption of the WGI.

3.4. Moderator variable

In its institutions section, the GCR includes a measure of government efficiency that includes five sub-indexes relating to regulation burdens, government wastefulness, regulation transparency, and legal framework efficiency in changing regulations and settling disputes. Consistent with previous research, we used GCR measures, namely government efficiency, to study corruption (Ulman, 2013).

3.5. Control variables

In line with prior studies, we controlled for several factors. First, we controlled for the sheer size of an economy measured by population (log-transformed). In line with Thai and Turkina (2014), we examined supply and demand side factors. On the supply side, we controlled for per capita GDP (PPP) (2010 USD) and unemployment rates. On the demand side, we controlled for environment innovativeness and financial market development. We further controlled for FDI (as a percentage of GDP; log-transformed) and openness (trade as a percentage of GDP). Year dummies were also applied. With the exception of data on innovative environments and financial market development, which were collected from GCR, control variables were obtained from the WDIs.

3.6. Method of analysis

The fixed effects (i.e., within) estimator is suited for the analysis of this panel, and it controls for endogeneity arising from time-invariant unobserved heterogeneity. We tested for moderating effects of nonlinear relationships (cf. Anokhin and Schulze, 2009; Méndez and Sepúlveda, 2006) by including the interaction between control of corruption squared and government efficiency. Independent, moderator, and control variables were lagged for one year and then centered.

4. Results

Table 1 shows the descriptive statistics and correlation matrix. Regression estimates are summarized in Table 2. Finally, Fig. 1 illustrates predicted values of the dependent variable based on interaction effects.

The high interclass correlations shown in Table 1 highlight the stationary nature of many of our variables at the country level. However, the within correlations are moderate. Furthermore, variable-specific and average within VIF statistics suggest that multicollinearity is not a significant concern for the within estimator.

Table 1
Descriptive statistics and correlation matrix.

Variable	Descriptive Statistics					Correlations ^b								
	Mean	SD	Min	Max	ICC	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Nascent Entrepreneurship Rate (%)	6.23	4.35	0.76	24.69	0.85									
2. Control of corruption	0.62	1.03	-1.15	2.53	0.99	-0.11								
3. Government Efficiency	3.80	0.81	2.12	5.92	0.94	0.02	0.29							
4. Population (millions) ^a	3.15	1.54	0.27	7.22	1.00	0.13	-0.09	-0.06						
5. Financial Market Development	4.50	0.69	2.39	6.17	0.82	-0.13	0.28	0.50	-0.08					
6. Innovative Environment	3.92	0.95	2.09	5.84	0.98	0.08	0.07	0.42	0.20	0.06				
7. GDP (PPP) per capita (th USD)	27.46	16.41	1.65	91.37	0.99	0.11	0.30	0.28	0.27	0.40	0.15			
8. Unemployment rate (%)	8.66	5.68	0.70	29.70	0.85	0.09	-0.33	-0.42	-0.01	-0.61	-0.01	-0.67		
9. FDI (%) ^a	1.33	0.99	-2.84	5.55	0.38	-0.04	0.04	0.12	-0.14	0.26	0.01	0.11	-0.17	
10. Openness (%)	90.29	58.44	22.11	377.30	0.98	0.18	-0.19	-0.12	-0.13	-0.28	0.21	0.02	0.16	0.00

N = 339 country years for 59 countries. Variables 2–10 are lagged by one year.

^a : $\pm \log(|x| + 1)$: Positive unless x is negative.

^b : Within Pearson correlations. Absolute values of 0.11 or greater are significant at the $p < 0.05$ level.

Table 2
Fixed-effects (within) regression estimates. Dependent variable: nascent entrepreneurship rate.

Variables	Model 1	Model 2	Model 3	Model 4
Control of corruption		−1.503 (1.097)	−1.525 (1.151)	−0.657 (1.107)
Control of corruption Squared			1.099 (0.708)	1.439 ⁺ (0.701)
Government Efficiency		1.178 (0.712)	1.276 [†] (0.719)	1.932 ^{**} (0.699)
Control of corruption X Government Efficiency			−0.638 (0.733)	−0.456 (0.741)
Control of corruption Squared X Government Efficiency				−0.877 ^{**} (0.428)
Population ^a	6.144 (9.220)	4.572 (9.592)	2.516 (9.600)	2.860 (9.610)
Financial Market Development	−0.152 (0.533)	−0.377 (0.557)	−0.479 (0.567)	−0.569 (0.544)
Innovative Environment	0.382 (0.914)	−0.363 (1.046)	−0.478 (1.059)	−0.590 (1.037)
Per capita GDP (PPP)	0.293 [†] (0.156)	0.314 ⁺ (0.138)	0.324 [†] (0.152)	0.341 ⁺ (0.147)
Unemployment rate	0.107 (0.0661)	0.116 [†] (0.0618)	0.129 [*] (0.0639)	0.145 [*] (0.0623)
FDI ^a	0.0220 (0.0712)	0.0155 (0.0764)	0.0299 (0.0698)	0.0631 (0.0679)
Openness	0.0409 (0.0261)	0.0374 (0.0247)	0.0372 (0.0242)	0.0442 [†] (0.0233)
Year Dummies	Yes	Yes	Yes	Yes
R ² (within)	0.127	0.143	0.155	0.166
Adjusted (within) R ²	0.090	0.100	0.108	0.117
R ² (between)	0.087	0.078	0.093	0.090
R ² (overall)	0.084	0.079	0.109	0.107
ΔR ² (within)		0.016 [†]	0.012	0.011 ⁺
Cohen's f ² (within)		0.019	0.014	0.013
Average VIF (within)	2.71	2.68	2.60	2.64

N = 339 country years; 59 countries. Constant included in all models. Independent variables lagged by one year.

Standard errors clustered by country in parentheses.

*** p < 0.001.

^a : ± log(|x| + 1); Positive unless x is negative.

[†] p < 0.1.

* p < 0.05.

** p < 0.01.

The results provide support for Hypothesis 1, as Model 4 shows a negatively significant coefficient for the joint interaction term ($\beta = -0.877$, $p < 0.05$). Jointly, the coefficients in Model 4 imply that the convexity of the relationship between control of corruption and entrepreneurship varies depending on how efficient governments are. As a robustness check, we removed the extreme $\pm 2.5\%$ of residuals, which resulted in a further decrease in the p-value for the interaction term.

Fig. 1 further illustrates the relationship for different levels of government efficiency and control of corruption. Due to the moderating effect, the difference in predicted nascent entrepreneurship rates between low and high (± 1 standard deviations) rates of government efficiency is recognizable. The difference becomes more pronounced once we extend the range of government efficiency to its minimum and maximum values. Although Table 2 shows only a modest improvement in model fit when the final interaction term is added (ΔR^2 (within) = 0.011; $p < 0.05$), the visualization of the predicted probabilities suggests that the joint effects may result in relatively strong changes in the Nascent Entrepreneurship Rate.

5. Discussion and conclusion

From the debate regarding the positive or negative impact of corruption on entrepreneurship (Dreher and Gassebner, 2013; Dutta and Sobel, 2016), we provide empirical evidence for the moderating role of government efficiency in the nonlinear relationship between control of corruption and entrepreneurship. Several scholars have argued that corruption has a negative impact on entrepreneurship (Aidis et al., 2012; Dutta and Sobel, 2016). Among them, Anokhin and Schulze (2009) also found evidence of a nonlinear convex (upward concave) relationship between control of corruption and entrepreneurship. Specifically, as control of corruption becomes stricter, its positive effect on entrepreneurship increases. However, inspired by previous literature on the “grease the wheels” hypothesis, we investigated whether the convexity of the relationship is moderated by government efficiency.

Our findings suggest that under less efficient governance, the relationship between control of corruption and entrepreneurship is

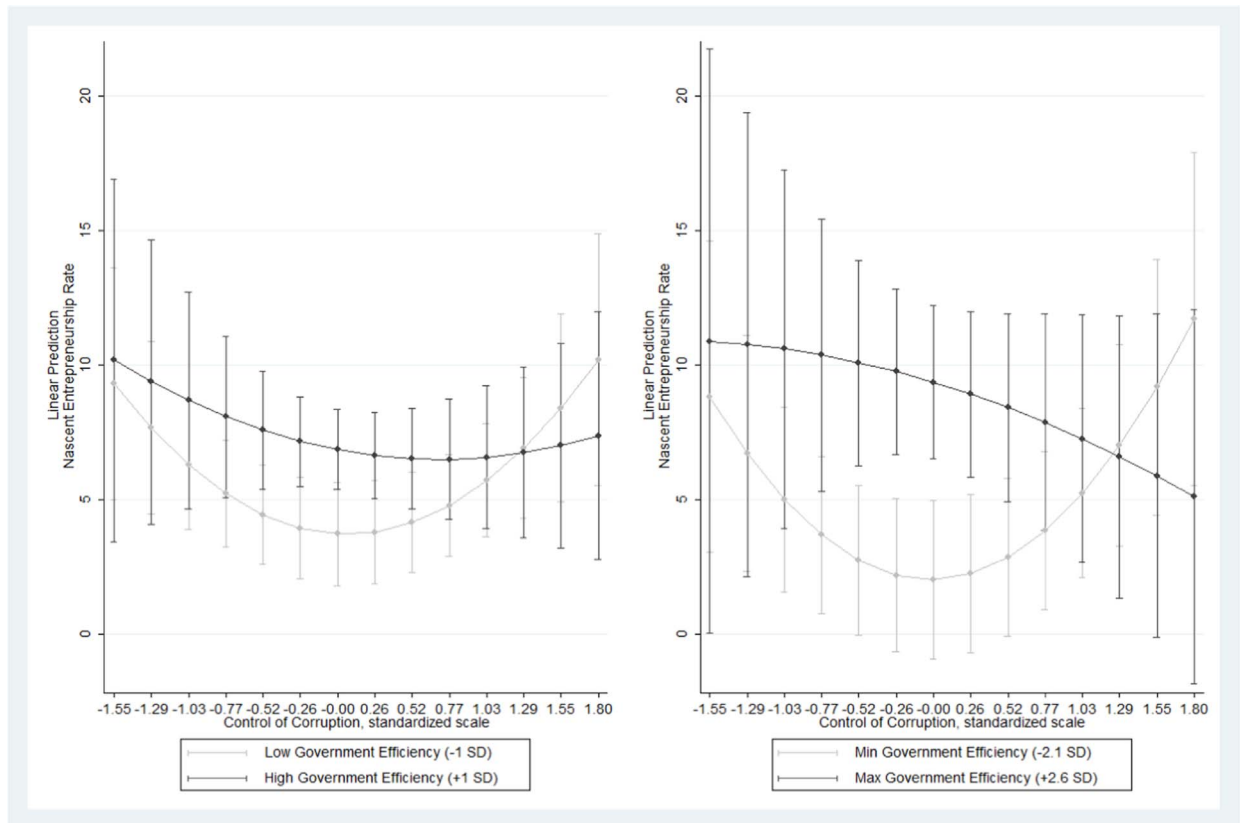


Fig. 1. Model predictions with 95% confidence intervals.

convex (concave upward) (Anokhin and Schulze, 2009)—that is, first downward and then upward. It first slopes downward because when inefficient governments are in power, entrepreneurs can use corrupt practices to bypass highly regulated, wasteful, and ambiguous regulative arrangements. Corruption, in this case, “greases the wheels” of entrepreneurship (Dreher and Gassebner, 2013). However, if governments persist in controlling corruption, societal trust emerges (Rose-Ackerman, 2001), which in turn favors entrepreneurship. The convexity of the relationship weakens as governments become more efficient because there is less need for corruption to grease the wheels, and the level of trust is higher in the first place. The relationship can become concave-shaped (but decreasing) in extreme cases of highly efficient governance because such governments carry a degree of inflexibility, which brings back the need for the greasing role of corruption.

The results of this research imply that corruption is not universally good or bad for entrepreneurship. Both the effectiveness of efforts to control corruption and overall government efficiency determine how corruption affects entrepreneurship. However, we also acknowledge prior research arguing that corruption can harm the economy in general through other means, for example, by increasing unproductive or destructive entrepreneurship (Baumol, 1996) or by decreasing growth-oriented entrepreneurship (Aidis and Mickiewicz, 2006). As a result, an alternative approach to greasing the wheels of entrepreneurship—one with low corruption and minimal “red tape”—is beneficial for the economy as a whole (i.e., not just for entrepreneurship). Similarly, several scholars have argued that corruption and over-regulation are second best to less corruption and fewer over-regulations (Dutta and Sobel, 2016; Guriev, 2004). At the same time, governance that is too efficient may generate a degree of inflexibility. That is, red tape exists under both over-regulated, ambiguous, inefficient governance and highly efficient but somewhat rigid governance (Guriev, 2004). In both cases, corruption can grease the wheels. This implies that ideal governance should effectively keep corruption under control while balancing between being efficient (i.e., transparent and not excessively regulated) and being flexible (i.e., avoiding an excessive “one size fits all” approach). To examine this topic further, future research could focus on different measurements and types of red tape and their roles in the “greasing the wheels” hypothesis. For example, how businesses respond to corruption in efficient but inflexible governmental institutions as a measure of red tape might be different from a measure based on how they respond to corruption in the presence of red tape from ambiguous, over-regulated governmental institutions. Examining different types of red tape and the roles they play in the “greasing the wheels” hypothesis could take discussions on corruption and entrepreneurship to a new level.

Our research findings also have implications for policies that fight corruption. When creating such policies, policymakers should consider whether their government has over-regulation, trust, or rigidity issues. In particular, policymakers should focus on both controlling corruption and developing government efficiency as pursuing changes in only one of these areas can lead to suboptimal outcomes for entrepreneurship. Furthermore, policymakers should be careful when pursuing higher government efficiency, ultimately ensuring it does not lead to excessive inflexibility, which would reduce productive forms of entrepreneurship.

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