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Corruption as a Response to Regulation*

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Abstract

Previous research has found a negative effect of corruption on growth in the United States. However, some theory suggests corruption might have a positive impact in places with dysfunctional political institutions. This paper investigates whether the corruption-growth link is conditional on the extent of government involvement across U.S. states. Even though no state approaches the level of government intervention found in many developing countries, we still find evidence that corruption's harmful effects on growth are smaller when regulation is greater.

Key words: Corruption, U.S. States, Growth, Regulation

JEL classifications: K4, O1, H7, H0, D7

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1 Introduction

Corruption, commonly defined as the abuse of public power for private gain, is an endemic feature of political life around the globe. It exists even in countries that enjoy relatively good governance. Corrupt practices are widely condemned and a consistent target of laws and investigations, even in regions where such behavior is common (Noonan, 1984; Klitgaard, 1988). Arguments about the intrinsic immorality of corruption go a long way in explaining these reactions. However, public outrage and frustration are also driven by a sense that corruption has detrimental consequences for our social, political, and economic lives.

The impact of corruption on economic growth is the subject of a large social science literature. Many early researchers, sometimes known as the "greasers," claimed corruption might have a positive impact in places with dysfunctional political institutions (Leff, 1964; Leys, 1965). It could do so by effectively greasing the wheels of commerce in the face of significant political obstacles. The opposite view, which has been called the "sanders" position, argues that corruption "sands" the wheels of commerce and is detrimental to economic growth (Aidt, 2009). According to one recent review, this last position has "...achieved the status of received wisdom" (Haggard et al., 2008, 212).[1]

While we acknowledge the dominant point of the "sanders" that corruption is generally bad for economic growth, this paper makes a useful contribution to the debate by offering support to the much-denigrated position of the "greasers." We find that corruption can be economically beneficial in certain political environments. In particular, we show that, among the American states where government intervention in the economy is relatively high, corruption's effect on growth is less injurious to economic development and even potentially positive. The intuition is that bureaucrats will offer businesses corrupt bargains when government rules are particularly burdensome. In high-regulation environments corruption may therefore be associated with higher economic growth.[2]

[1] A third group of scholars (Drury et al., 2006) argue that corruption has little impact one way or the other.

[2] While on the margin corruption may increase growth under some circumstances, this finding obviously does not imply that corrupt acts are justifiable, or that governments wishing to encourage economic prosperity ought to find ways to foster corruption.

2 Background

Although there is now a voluminous amount of research on the causes and consequences of corruption, academic interest into these issues is relatively new. Indeed, most of the academic literature dates from the last 40 years. This may be due to what Gunnar Myrdal (1970) identified as a "taboo" about engaging in research on the issue – something that has fortunately been overcome.[3]

Many of the first scholars to address the specific issue of the relationship between corruption and economic growth thought that it might actually play a positive role under certain conditions. These were the theoretical originators of the "greaser" school of thought. Leff (1964), for example, proposed that corruption can further economic growth in countries with elites "hostile" to development by incentivizing bureaucrats to aid entrepreneurs, reducing investor uncertainty about future government intervention, and "sabotaging" bad economic policies. Likewise, Nye (1967, 427) thought that corruption in some instances might provide "the only solution to an important obstacle to development." In particular, it could help promote capital formation, cut red tape, and free entrepreneurs and minorities from hostile bias against them (420).

Most infamously, Huntington (1968, 68) argued that during modernization "[c]orruption may be one way of surmounting traditional laws or bureaucratic regulations which hamper economic expansion." In fact, he thought that good or efficient governance in such an instance might actually be worse for economic growth than a corrupt regime. As he pithily noted, "The only thing worse than a society with a rigid, overcentralized, dishonest bureaucracy is one with a rigid, overcentralized, honest bureaucracy" (69).

Many others have followed in their footsteps, often adding empirical evidence to support the "greaser" claim (Lui, 1996). Rock and Bonnett (2004, 1010), for example, argue that while corruption in many developing countries is bad for growth, corruption in large East Asian countries helped spur high growth by providing "stable and mutually beneficial exchanges of promotional privileges for bribes and kickbacks." Likewise, Egger and Winner (2005, 949) find that "corruption is a stimulus for FDI." More starkly, Méon and Weill (2010) demonstrate that corruption is positively correlated with efficiency in countries with "ineffective" institutions. Some more narrow and descriptive studies like

[3]Although Myrdal's pronouncement is more famous, the editor of the *American Behavioral Scientist* noted the taboo a half decade before Leff (1964) wrote his famous piece.

Levy (2007) also lend support to the greaser position.

The dominant view today, however, is that corruption has a negative impact on economic growth, especially in developing countries. Indeed, the "sander" literature is expansive and identifies a variety of different causal pathways by which corruption is corrosive of development. For example, Mauro (1995, 683) found that corruption lowers investment even in places "...in which bureaucratic regulations are very cumbersome." Méon and Sekkat (2005) build on this by noting that corruption is bad for growth even controlling for the investment route. Murphy et al. (1991) and Murphy et al. (1993) claim that corruption harms growth by misallocating key resources while buttressing inefficient businesses. Shleifer and Vishny (1993) argue that corruption encourages secrecy, distortionary regulation, and bribery which, in turn, reduces economic efficiency and growth.[4]

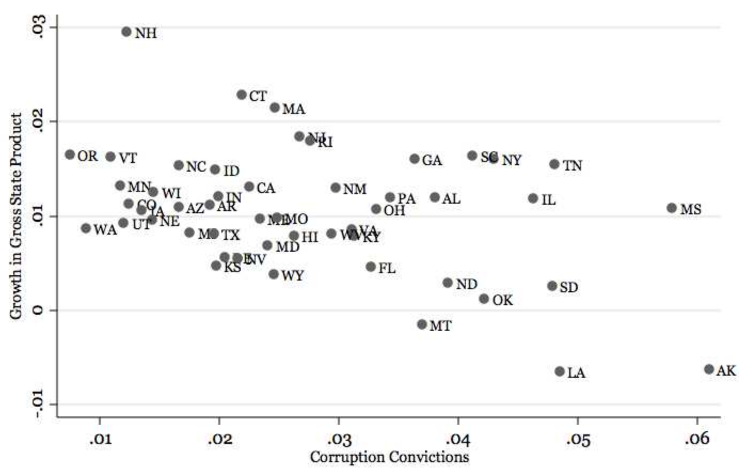


Figure 1: The Effect of Corruption Convictions on U.S. State Growth. Corruption convictions per 100,000 people and growth rate of real gross state product are measured as averages between 1975 and 2000.

Most studies of the relation between corruption and economic growth focus on developing countries. But is the impact of corruption in the developed world also negative and important? Drury et al. (2006) provide empirical evidence that corruption has no significant impact either way in democracies. Yet there is disagreement about how corruption impacts growth in the United States. Glaeser and Saks (2006) find no significant effect of corruption on U.S. growth. By contrast, Johnson et al. (2011) find that it reduces growth and investment. Figure 1 seems to buttress the intuition that there

[4]See also Rose-Ackerman (1999), La Porta et al. (1999), Ades and di Tella (1999), Treisman (2000), Drury et al. (2006), Fisman and Svensson (2007), and Aidt (2009).

is a strong negative correlation between places with more corruption and the growth in Gross State Product. As for Huntington, it is not clear whether he thought corruption would grease the gears in fully modernized economies – but probably not given that his examples of the virtues of corruption are all places in the process of modernization. However, one could argue that corruption would play the same role regardless should government display the features of rigidity, overcentralization, and sclerosis due to excessive governmental regulation (even though he probably did not think that highly institutionalized states would display these features by definition). Indeed, this point is supported by Goel and Nelson (1998), who find that state government size and spending levels influence the amount of corruption.

To cement the idea that corruption may be efficient in in the presence of costly regulation, consider the theoretical framework of Shleifer and Vishny (1993). They consider a simple, but realistic, situation in which the government has imposed a regulation which requires the purchase of a license or permit in order to engage in trade. A bureaucrat is responsible for selling this license at a price P. For simplicity, the cost of a permit is assumed to be zero. Figure 2 illustrates the equilibrium in the market for permits. The total number of permits sold is equal to Q_1, which is well below the efficient amount of trade which would occur where the demand curve $D(P)$ intersects the x-axis. Thus, at least within this narrow comparative statics framework, this is a case in which the government has imposed an inefficient regulation on market activity.[5]

Now imagine that the bureaucrat is corrupt and he requires a bribe for each permit sold. If the bureaucrat continues to also pay the government P for each permit sold, then this corresponds to a situation in which corruption unambiguously increases the size of the deadweight loss. The new "price" of a permit is illustrated in Figure 2 as $P+Bribe$ which corresponds to fewer permits being granted. The corrupt agent sells Q_2 permits whereas his honest counterpart sells Q_1. However, as Shleifer and Vishny (1993) point out, it is also possible that the corrupt bureaucrat chooses to steal from his government employers and, instead of setting the price of a permit at $P + Bribe$, he could make more money by simply setting the price at $Bribe$. In this case of "Corruption with theft (from the government)," the amount of trade is Q_3 and efficiency is increased relative to the no corruption case. By contrast, if the bribe is set above the official price of a permit, then we are back in the world in which corruption decreases market efficiency.

[5]Of course, this model has nothing to say about externalities, let alone distributional issues.

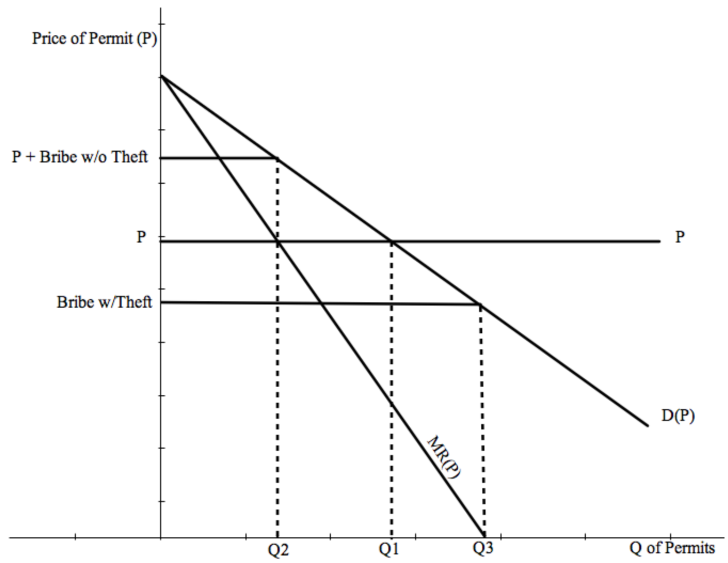


Figure 2: Equilibrium trade under no corruption, corruption without theft from the government, and corruption with theft from the government.

The foregoing discussion suggests some theoretical reasons why we might expect the marginal social cost of corruption to be less in places with more costly regulation. In U.S. states in which government size and scope is relatively small, higher growth levels will naturally result and development will face less economic drag due to the downside of corruption highlighted by the "sanders." However, where state size and scope are significantly greater, some level of corruption will work to grease the gears of growth by allowing individuals to avoid costly regulation, thus creating a more stable and favorable investment climate than in a system without corruption (Leff, 1964).[6] As suggested by the simple theory outlined above, however, whether corruption decreases or increases trade is ultimately an empirical question.

[6]Of course, these potential stories invite the question of why politicians and bureaucrats in low regulation states do not pursue more regulatory efforts in order to extract rents from potential clients who will pay to overcome them. In other words, why are these people leaving money on the table, so to speak? The answer presumably has to do with the incentives of politicians to delegate bureaucratic discretion or constrain bureaucrats (Duvanova, n.d.). Although it is beyond the scope of this paper, it may be that there is a relationship between freedom and public probity, or a political culture that helps produce both.

3 Data and Identification Strategy

To test whether the economic cost of corruption decreases where government involvement is greater, we estimate the following model:

$$growth_i = \alpha + \beta_1 corruption_i + \beta_2 freedom_i + \beta_3 corruption_i * freedom_i + \gamma initial\ capital_i + X_i'\eta + regions_i + \epsilon_i \tag{1}$$

where i subscripts each state, X is a vector of control variables, *regions* is a vector of region dummies, and ϵ is an i.i.d. error term.

The dependent variable is real annualized growth in gross state product (GSP) per worker over the period 1975-2000, taken from the Bureau of Economic Analysis. We choose this period because it is the longest period over which we have both GSP and corruption data available.

Our central independent variables are corruption, "freedom," and the interaction between the two. Corruption is the annual number of federal corruption convictions of federal, state, and local officials per 100,000 population from the U.S. Department of Justice. This indicator has been commonly used in the literature, and previous research has found it to be related directly and inversely to the growth in gross state product (Johnson et al., 2011). Because corruption may be endogenous in this model, we will also instrument for it in several specifications (details below). We expect corruption to be negatively related to growth when freedom is at its maximum ($\beta_1 + \beta_3 < 0$). When freedom is at its minimum, corruption's effect on growth should be smaller, perhaps even zero or positive ($\beta_1 + \beta_3 = 0$).

To measure government intervention in the economy, we use various indicators of "freedom" at the state level. The Fraser Institute has for a number of years produced an indicator of economic freedom for American states and Canadian provinces, consisting of fiscal and labor market policy measures (Karabegović and McMahon, 2008). This project produces two sets of numbers, one measuring only state- and provincial-level interventions and one that includes the differential impact of federal policies on different states. An odd aspect of the latter measure is that it penalizes states for the federal spending within their borders, even though this spending is financed by the country as a whole. There is therefore very little crowding-out of private GDP within a state due to federal spending within that state. (Of course, aggregate federal spending *everywhere* may crowd out private GDP.) Supporting these contentions, Garrett and Rhine (2010) find that only the purely state- and provincial-level indicators of different categories of economic freedom are positively associated with employment growth. We therefore use the state-level variable here.

Recently, Ruger and Sorens (2009) produced a set of indicators of economic, personal, and "overall" freedom (overall freedom is the sum of the economic and personal freedom variables), coded as of January 1, 2007, published by the Mercatus Center. The economic freedom concept includes various regulatory and judicial policies in addition to the usual fiscal variables, from minimum wage rates to eminent domain requirements. The "personal freedom" concept also includes so-called "paternalistic" regulations such as medical marijuana laws, home and private school regulations, and gambling restrictions. Given that the type of regulations most commonly considered harmful to trade are contained in the "economic freedom" measure, we choose to focus on it in our analysis.

We rescale both freedom variables to range from 0 (most government involvement in economy) to 1 (least government involvement in economy). As expected, the two measures are highly correlated ($\rho = 0.66$). Descriptive statistics for both variables are given in Appendix A.

As Johnson et al. (2011) note, using initial GDP per capita requires an assumption of fixed technology across states. If this assumption is false, undesirable multicollinearity intrudes on independent variables intended to measure aspects of technology such as political institutions. As such, we include initial capital per capita in all regressions to control for convergence effects (Barro and Sala-i-Martin, 1992; Mankiw et al., 1992; Solow, 2000). Our capital stock variable comes from Garofalo and Yamarik (2002) and should be negative ($\gamma < 0$). We also include controls for human capital, demography, and state fiscal policies, and regional fixed effects. All of these variables are described in Appendix A.

We estimate our model using both ordinary least squares (OLS), two-stage least squares (2SLS), and limited-information maximum-likelihood (LIML) regression. Our 2SLS and LIML estimations instrument for corruption and the corruption-freedom interaction term with waiting periods for voting eligibility, campaign finance restrictions, and durability of the state constitution. These variables are strong predictors of corruption and also plausibly satisfy the exclusion restriction that they be uncorrelated with state growth through any channel other than their effect on corruption.[7]

4 Econometric Results

In Table 1, we present the results for the "baseline" model which includes the corruption variables and the controls but excludes the freedom variables and their interactions. We present the coefficients and robust standard errors for the corruption and initial capital per person variables to conserve space. We report the results for each estimator for completeness but focus on the LIML results since they are robust to weak instruments.

	OLS	2SLS	LIML
	(1)	(2)	(3)
Corruption convictions per 100,000 people (1975–2000)	-0.1299*	-0.2661**	-0.2701**
	(0.0694)	(0.1165)	(0.1181)
	[0.24]	**[0.49]**	**[0.50]**
ln(capital per worker in 1970)	-0.0083*	-0.0078**	-0.0078**
	(0.0046)	(0.0039)	(0.0039)
	[0.25]	**[0.23]**	**[0.23]**
Controls and Region Dummies	x	x	x
Obs	50	50	50
R-squared	0.57	--	--
First Stage F-stat	--	4.95	4.95
Shea Partial R-squared	--	0.28	0.28
Hansen/Sargan J-stat (p-value)	--	0.82	0.82

Table 1: Baseline Regression Results (Dependent Variable = Growth in Real State GSP). Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Numbers in brackets indicate the percentage of a standard deviation of the dependent variable a one standard deviation change in the independent variable induces. All regressions include controls described in Appendix A as well as region dummies.

As suggested in the existing literature, corruption is detrimental to growth. The coefficient is negative and statistically significant. Also consistent with the literature, initial capital stock is negatively related to growth.

In Table 2, we present the results for the complete model which includes the freedom variables and their interactions. Panel A shows the estimates using the Fraser Institute's Economic Freedom to proxy for government intervention in the economy, while

[7] Johnson et al. (2011) provide a more in depth discussion.

Panel B shows the estimates using the Mercatus Center's Index of Economic Freedom (Ruger and Sorens, 2009). Consistent with our predictions, the coefficient on $freedom$ is always positive, though it is only significant under instrumental variables estimation. The coefficient on *corruption* is positive (though consistent with zero) whereas the coefficient on the interaction between *corruption* and $freedom$ is consistently negative. The interaction variable is both statistically and economically significant under instrumental variables estimation. According to our preferred LIML estimate in Panel B, a one standard deviation increase in the interaction term results in almost a three standard deviation decrease in the growth of GSP between 1975 and 2000. In other words, as the amount of government intervention in the economy decreases, the negative effect of corruption on growth strengthens. This result is strongest under our LIML estimates, which control for potentially weak instruments.

According to our discussion in Section 2, we expect the marginal effect of corruption on economic growth to vary positively with the extent of government intervention. As such we are interested in examining the sum of both the direct effect of corruption on growth (β_1) and the indirect effect (β_3). Using equation (1), we can write the marginal effect as,

$$\frac{\partial growth}{\partial corruption} = \beta_1 + \beta_2 freedom_i \tag{2}$$

where the standard error is,

$$\sigma = \sqrt{var(\hat{\beta}_1) + (freedom_i)^2 var(\hat{\beta}_2) + 2(freedom_i)(cov(\hat{\beta}_1\hat{\beta}_2)} \tag{3}$$

Both the point estimate (2) and the standard error (3) of the marginal effect of corruption on economic growth depends upon the value of $freedom$. To facilitate the interpretation of our results, we follow Brambor et al. (2006) and plot the marginal effect (2) along with the 95% confidence interval using (3). Figure 3 presents these plots using our preferred LIML results from Table 2.[8]

Both figures show that when freedom is above its mean corruption is harmful for growth. However, for states in which government intervention in the economy is greater than

[8] The plots for the other regressions look similar.

Panel A: Conditioning Variable = Freedom (Fraser)

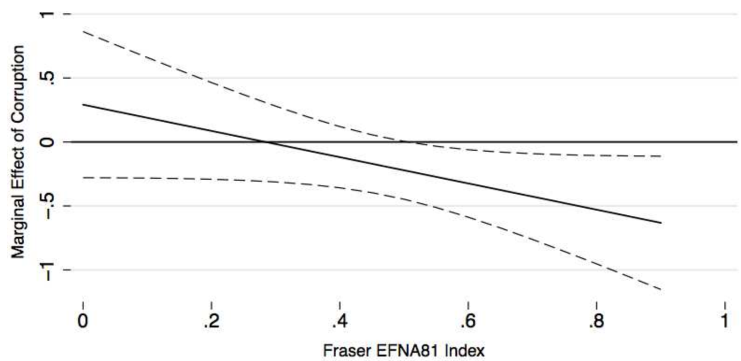
	OLS	2SLS	LIML
	(1)	(2)	(3)
Corruption convictions per 100,000 people (1975–2000)	0.0258	0.240	0.292
	(0.161)	(0.287)	(0.291)
	[0.05]	**[0.45]**	**[0.54]**
Overall Freedom (Fraser)	0.00582	0.0219	0.0260*
	(0.00736)	(0.0158)	(0.0158)
	[0.20]	**[0.74]**	**[0.87]**
Corruption * Freedom	-0.291	-0.879	-1.026*
	(0.300)	(0.556)	(0.564)
	[0.46]	**[1.38]**	**[1.61]**
Controls and Region Dummies	x	x	x
R-squared	0.58	--	--
Hansen/Sargen J-Stat (p-value)	--	0.49	0.60

Panel B: Conditioning Variable = Economic Freedom (Mercatus)

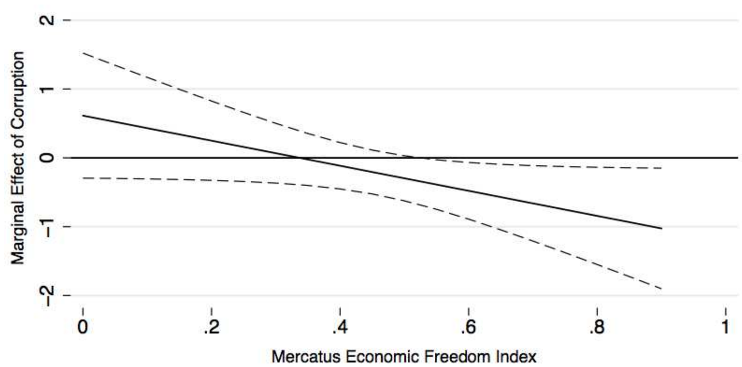
	OLS	2SLS	LIML
	(1)	(2)	(3)
Corruption convictions per 100,000 people (1975–2000)	0.0791	0.444	0.614
	(0.136)	(0.377)	(0.463)
	[0.15]	**[0.83]**	**[1.14]**
Economic Freedom (Mercatus)	0.00964	0.0388*	0.0515*
	(0.00837)	(0.0206)	(0.0276)
	[0.32]	**[1.31]**	**[1.74]**
Corruption * Freedom	-0.364	-1.379**	-1.821*
	(0.234)	(0.675)	(0.945)
	[0.57]	**[2.17]**	**[2.86]**
Controls and Region Dummies	x	x	x
R-squared	0.59	--	--
Hansen/Sargen J-Stat (p-value)	--	0.64	0.71

Table 2: The less regulation in a state, the more negative is the impact of corruption on growth (Dependent Variable = Growth in Real State GSP). Larger values of the variable "freedom" indicate *less* regulation in a state. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Numbers in brackets indicate the percentage of a standard deviation of the dependent variable a one standard deviation change in the independent variable induces. All regressions include controls described in Appendix A as well as region dummies.

average, the effect of corruption is ambiguous. At the very lowest levels of freedom, corruption may even be good for growth.



(a) Fraser Freedom Index



(b) Mercatus Economic Freedom Index

Figure 3: Effect of Corruption on State Growth as Regulation Decreases. Panel A uses specification (3) from Panel A of Table 2. Panel B uses specification (3) from Panel B of Table 2. Dashed lines show 95% confidence intervals. Both figures indicate a marginal cost of corruption consistent with zero for highly regulated states. By contrast, states with less invasive regulatory environments face a negative and statistically significant marginal cost of corruption.

5 Implications

We have presented evidence for the "grease" hypothesis about corruption and growth in the United States, as unlikely a place as any for such a finding. It is commonly thought that advanced industrial democracies have strong enough institutions that corruption, to the extent that it exists, is an unalloyed negative. However, given the United States' federal structure, state and local governments have considerable scope for economic regulation. It appears that in the most highly regulated states the burden on business is such that, on the margin, corruption may not actually be deleterious for growth. In fact, it could even be positive.

The usual cautions about interpreting causation from observational, non-experimental data apply. However, we have done our best to address endogeneity concerns by instrumenting corruption in accordance with standard measures in the literature.

It is worth emphasizing that we do not advocate corruption as a solution for inefficiencies introduced by "big government." At best, it is only a second-best palliative in relatively dysfunctional political systems. The best growth records we observe are those states with both low corruption and little regulation. The economic lesson we take from these results is that people don't leave $100 bills on the sidewalk. If there is inefficiency in a market, individuals will attempt to convert deadweight loss into surplus. The real policy lesson from these results is that corruption can be a response to regulation. As such, the possibility that rule of law may be undermined by the introduction of market-distorting rules ought be considered in the regulation-making process.

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Appendix A: Variable Definitions and Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Growth rate in real GSP per worker (annual average 1975–2000)	0.010	0.007	-0.006	0.030
Corruption convictions per 100,000 people (1975–2000 average)	0.027	0.013	0.007	0.061
Economic Freedom (Mercatus) (higher = less regulation)	0.569	0.237	0.000	1.000
Freedom (Fraser Institute) (higher = less regulation)	0.513	0.235	0.000	1.000
Controls				
ln(capital per worker in 1970)	10.790	0.207	10.391	11.428
Share of adult population with high school degree or less in 1970	0.105	0.021	0.067	0.149
State and local government consumption share of personal income (1972)	0.157	0.025	0.121	0.258
State and local government capital outlays share of personal income (1972)0	0.039	0.017	0.022	0.143
State and local tax revenue share of personal income (1972)	0.020	0.010	0.005	0.040
Instruments				
Residency (number of days to vote in 1970)	110.700	86.985	0.000	365.000
Campaign finance restrictions (index, 1970)	0.520	0.292	0.000	1.000
Number of years with current constitution (1970)	85.520	44.096	1.000	190.000

Table 3: Corruption convictions are reported by the U.S. Department of Justice (various years). Fraser economic freedom data are from Karabegović and McMahon (2008). Mercatus economic freedom data are from Ruger and Sorens (2009). Real investment and capital stock data are from Garofalo and Yamarik (2002). Real GSP data are from Beemiller and Downey (1998) and Renshaw et al. (1988). Labor and population data are from the Bureau of Labor Statistics (www.bls.gov). Education data are from the 1970 Census of Population and Housing. Fiscal variables are from the 1972 Census of Governments. Residency requirements, campaign finance, and constitution adoption data are from *Book of the States* (1970).