Does Bribery Grease the Wheels of Economic Growth?

Mayo, Robert

2016

DOES BRIBERY GREASE THE WHEELS OF ECONOMIC GROWTH?

Robert L. Mayo

George Mason University

November 2013

Abstract

This paper examines whether corruption can be an efficiency enhancing adaptation to poor institutional environments. Prior research on this question has not taken into account the heterogeneity of corruption or the possibility that petty bureaucratic corruption in the form of bribery may grease the wheels of an economy at the same time that grand political corruption such as diversion of state funds may sand the wheels of economic growth. By differentiating between grand and petty corruption and narrowly framing poor institutional quality as the burden of regulation on economic activity, I am able to show that bribery is not an efficiency enhancing adaptation to poor regulatory environments. To the contrary, given the specific type of corruption and institutional environment most conducive to an efficiency enhancing effect, the opposite effect was found.

1. Introduction

Are there some types of corruption, or some environments within which it can occur, where corruption is less economically harmful than others? Are there any conditions where the effects of corruption cross the threshold from being less negative, to being positive and efficiency enhancing? Simply put, is corruption always and everywhere a bad thing?

A search of EconLit shows that over the course of the past decade, from November 2003 to November 2013, over two thousand papers have been published in peer reviewed economics journals on the subject of corruption. This figure does not include research published in journals of political science, sociology, psychology, international relations, or anything published in any language other than English. And yet within this vast landscape of literature, the answer to this

fundamental question remains unclear.

The bulk of the economic literature on this subject begins from the assumption that corruption is economically destructive and then proceeds to ask questions such as: How destructive it? (Fisman et al. 2007) Why does it persist? (Mishra 2006) How can we reduce it? (Riley 1998) A small subset of the literature does explicitly examine the question of whether, or under what conditions, corruption may have substantially different economic effects. Blackburn et al. (2009) study the issue of why corruption seems more harmful in some countries than in others, and conclude that an important factor is the degree to which government officials coordinate their illicit actions. Rock et al. (2004) examine the Asian growth paradox of simultaneously high levels of corruption and high rates of growth and find that the corrupt relationships exist in a more symbiotic than predatory form.

A smaller group of papers examine the specific question of whether corruption can be a net positive for an economy. The phrases frequently used as shorthand to refer to this question are: does corruption "grease the wheels" of economic activity or does it "sand the wheels"? An example of the grease the wheels hypothesis is Johnson et al. (2012) who study variations in corruption and economic performance in the United States as a function of State level regulations and find that corruption inhibits economic activity less where regulation is more vigorous. Dreher et al. (2013) provide additional support for the grease the wheels hypothesis in a study of 43 countries where corruption is found to facilitate firm entry in burdensome regulatory environments.

The reasoning behind grease the wheels is that corruption can be a form of Coasian bargaining, as an efficiency enhancing response to defective institutions. This principle was

expressed succinctly by Nathaniel Leff (1964), *"if the government has erred in its decision, the course made possible by corruption may well be the better one."* This sentiment was put more bluntly by Samuel Huntington (1968) , *"In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized, honest bureaucracy."*

The sand the wheels theory holds that, although there may be some variations in effect, corruption is never a net benefit. Mauro (1995) finds a significant negative association between corruption and investment resulting in lower GDP in high corruption states. Banerjee (1994) finds that rather than reducing the burden of inefficient regulation, corruption may cause it to increase due to government officials having an incentive to create economic road blocks that require bribes to avoid.

Papers addressing this question reach a large variety conclusions, many of which are contradictory, (Campos et al. 2010). Given the large quantities of capital, both financial and political, devoted to anti-corruption efforts it seems a reasonable goal to know under what conditions our efforts are ineffective, or even counterproductive.

A research design to answer this question must begin with a theory of why previous approaches have not yielded one generally consistent answer. I propose it is for two reasons: First, most papers attempting to find the effect of corruption on growth do not differentiate between institutional settings. To extend the metaphor, believing corruption can grease the wheels of an economy presupposes that the wheels are squeaking and in need of additional grease. This is analogous to economic activity within a framework of substantially inefficient institutions. If the institutional inefficiencies are small, making them smaller through corruption,

or any other process, will not yield large improvements. If this is true, then failing to find an efficiency enhancing effect of corruption on growth may be due to two different reasons. The effect may not exist, or the particular environments studied may not have large enough inefficiencies for corruption to perceptibly correct. If the entire universe of environments are studied, then failure to see a positive effect of corruption only reveals that either the effect does not exist, or it is not perceptible in the average institutional environment. This approach cannot reveal whether the effect exists within a minority of environments where institutions are especially poor. A prominent example of a study that avoids this problem by differentiating between weak and strong institutional environments is Meon et al. (2010) which finds that corruption can improve economic efficiency where institutions are particularly ineffective. Aidt et al. (2008), however, make the same distinction and find that although corruption is more harmful in strong institutional environments, it does not have a positive effect on growth in environments with weak institutions.

A second reason that finding consistent conclusions has been difficult in this area is the lack of differentiation in these studies between types of corruption. The broader corruption literature divides corruption into two primary types; "grand corruption", also sometimes referred to as "political corruption" and "petty corruption" also sometimes called "bureaucratic corruption", (Bohn, 2013), (Mashali, 2012). To clarify the difference, an example of petty corruption would be a bribe to obtain a construction permit. An example of grand corruption would be diverting a portion of foreign aid into a Swiss bank account. Although such a distinction may have been incorporated into studies of the effect of corruption on economic growth, it is sufficiently rare that I have not encountered an example.

Averaging over multiple types or environments of corruption where there is scant theoretical basis for believing the effect would exist could dilute the the appearance of any efficiency enhancement to the level of being undetectable. Therefore, in order to determine how corruption effects economic growth, it is necessary to examine the specific type of corruption and the specific environment of corruption where theory predicts any efficiency enhancing effect would occur.

To that end, in this paper I focus my investigation on the bribery subset of broadly defined corruption and the burdensome business regulations subset of broadly construed poor institutions that bribery is used to remedy. If corruption can be grease, it should be evident here.

2. Methodology

I regress per capita income growth on two primary variables, a measure of bribery and a measure of the burden on economic activity imposed by the regulatory environment and an interaction term between the two primary variables. I include three control variables commonly used in similar studies, literacy rate as a proxy for human capital (Ranis et al. 2000), tariff rate as a proxy for openness to international trade (Eris et al. 2013), and government size (Oriakhi et al. 2013) resulting in the regression equation:

$$growth_i = \beta_0 + \beta_1 bribe_i + \beta_2 regulation_i + \beta_3 bribe_i * regulation_i + \beta_k X'_i + \epsilon_i \quad (1)$$

Where *growth* is per capita GDP growth, *bribe* is the rate of bribery, *regulation* is the efficiency of regulations on business, *bribe*regulation* is an interaction term, X is a vector of k control variables, and ε is an error term. The subscript i indexes countries. The key to the regression is the interaction term. Following the method of Meon et al. (2010), this is most

easily understood by taking the partial derivative of equation (1) with respect to bribery:

$$\frac{\delta\, growth_i}{\delta\, bribe_i} = \beta_1 + \beta_3\, regulation_i \qquad (2)$$

Assume that the grease the wheels hypothesis is correct. In the case of infinitely burdensome regulations on business *regulation* would be zero. This would cause the $\beta_3\, regulation_i$ term to drop out, leaving $\frac{\delta\, growth_i}{\delta\, bribe_i} = \beta_1$ Then β_1 would have to be positive in order for *bribery* to have a positive effect on *growth.* In the alternate case of infinitely efficient regulations on business, $regulation_i$ would be one, β_1 would still be positive, but β_3 would now have to be negative to reduce the beneficial effect of *bribe* on *growth* in the best institutional environment below its value in the worst institutional environment. If we take the opposite assumption, that the sand the wheels hypothesis is correct, then equation (2) must never be positive and the damage done to *growth* by *bribe* must increase as institutions get worse. This requires β_1 to be negative so that *bribe* reduces *growth* in the worst institutional environment where *regulation* would be zero. Further, if β_1 is negative, then in the best institutional environment where regulation is one, β_3 would have to be positive to cause the effect of *bribery* on *growth* to decline as *regulation* improved.

3. Data

The dependent variable is GDP per capita growth taken from the World Bank on-line data catalog. This was chosen for several reasons. First, growth reflects the behavior of an economy as it is currently, in contrast to a measure such as per capita GDP which reflects the accumulated

behavior of an economy over time. Since the other data used in the regression were not the product of accumulations over time, economic growth was chosen to maintain consistency. Second, GDP per capita growth is constructed from GDP and population. Both of these are relatively unambiguous characteristics of a country and are measured by well established standards. Other measures of economic performance have been used in in similar studies such as a stochastic frontier efficiency rating. That approach was considered for this paper, but was eventually rejected on the grounds that it introduced an additional layer of uncertainty in the interpretation of the results of the regression.

The two core independent variables are the rate of bribery, more formally referred to as informal payments to public officials, and ease of doing business. Informal payments to public officials is taken from the World Bank World Development Indicators data set. This indicator originates in the World Bank Enterprise Survey of 130,000 firms in 128 countries and is expressed as the percentage of firms reporting the payment of a bribe in the prior three years. An obvious concern in collecting survey data on corruption is that it is, by definition, an illegal act. Even in cultural contexts where there is little or no associated stigma, it is reasonable to question whether the respondents are sufficiently forthcoming for the resulting data to be reliable. The Enterprise Analysis Unit of the World Bank addresses this issue in their Methodology section:

> *Due to sensitive survey questions addressing business-government relations and bribery-related topics, private contractors, rather than any government agency or an organization/institution associated with government, are hired by the World Bank to collect the data.*
>
> *Confidentiality of the survey respondents and the sensitive information they provide is necessary to ensure the greatest degree of survey participation, integrity and confidence in the quality of the data. Surveys are usually carried out in cooperation with business organizations and government agencies promoting job creation and economic growth, but confidentiality is never compromised.*

The second core independent variable, ease of doing business, is from the World Bank, Doing Business project. The ease of doing business index is an average of the ranking of a county's scores on ten topics: starting a business; dealing with construction permits; getting electricity; registering property; getting credit; protecting investors; paying taxes; trading across borders; enforcing contracts; and resolving insolvency. The information used to construct each score is derived only from primary sources such as reading the national tax code to determine rates or consulting directly with local government officials. I considered it preferable to use this fact based data approach to measuring institutional quality rather than an opinion or perceptions based approach, such as is used in the World Economic Forum Global Competitive Index, in order to make the definition of strong versus weak institutions in this context as objective as possible. The number was rescaled from one to 189 with one being best to zero to ten with ten being best.

Three control variables were selected; literacy rate, average tariff rate, and government expense as a fraction of GDP. Literacy rate of all adults defined as 15 years of age or older was taken from the World Bank World Development Indicators database and is expressed as a percentage. Literacy is included as a control due to its usefulness as a proxy for human capital as shown by Hanushek (2013). Average import tariff rate was also taken from the World Bank World Development Indicators database. It is included as an indicator of openness to trade. The third control variable, government expenditure as a fraction of GDP, is taken from the same dataset. These three controls were selected on the basis of having both a strong theoretical association with economic growth and being common in the corruption/growth literature. Campos et al. (2010) found they were used in 73 percent (human capital), 32 percent (trade

openess), and 40 percent (government spending) of papers on that topic. Dependent, primary, and control variable data was averaged over the period 2000 to 2010. Summary statistics are shown in table 1.

Table 1. Summary statistics

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
Per capita GDP growth	199	2.5929	2.6145	-4.9269	13.6104
Bribe rate	130	31.8759	21.36.52	0.4000	88.4750
Ease of doing business	188	4.9778	2.8659	0.0526	9.9473
Interaction term	130	120.6580	89.5569	2.2000	408.8526
Literacy rate	150	81.3271	19.64.79	19.0318	99.9982
Tariff rate	180	9.3105	5.9732	0.0000	30.2600
Government size	138	25.3164	11.1365	3.3507	78.3830

4. Results

Table 2 shows the results of the primary regression.

Table 2. Results of regression of GDP per capita growth

	Coefficient	t	P>|t|
Bribe rate	-0.0157	-0.65	0.519
Ease of doing business	-0.0058	-0.03	0.975
Interaction term	0.0138 **	2.58	0.012
Literacy rate	0.0429 **	2.58	0.012
Tariff rate	0.1363 **	2.23	0.028
Government Size	-0.0426	-1.43	0.156
Constant	-1.7755	-0.87	0.386

*** Significant at the 1% confidence level
** Significant at the 5% confidence level
* Significant at the 10% confidence level

The signs of bribe rate and the control variables are as expected, but the sign of ease of doing business is unexpectedly negative. Although it is not plausible that making it harder to conduct business is good for economic growth, this counterintuitive result is not indicative of a problem with the regression for two reasons. First, the p-value of 0.975 indicates that the result is far from significant. Second, the inclusion of an interaction term alters the meaning of the primary variables such that even if it was highly significant, it would mean that the coefficient was -0.0058 only when the other component of the interaction term was exactly zero, which is never the case.

Putting the regression coefficients into equation (2) yields the following:

$$\frac{\delta GDP\ per\ capita\ growth}{\delta\ bribe\ rate} = -0.016 + 0.014 * ease\ of\ doing\ business \tag{3}$$

To more easily interpret the equation's meaning, consider the extreme cases. If ease of doing business takes its smallest possible value of zero, implying maximum difficulty to do business, then the second term drops out and we are left with:

$$GDP\ per\ capita\ growth = -0.016\ bribe\ rate + constant \tag{4}$$

Ignoring the constant, assume now that the bribe rate takes its most extreme possible values; 0% and 100%. In the former case the bribe rate has no effect on GDP growth, and in the latter case it reduces GDP growth. If, on the other hand, the value of ease of doing business takes its largest possible value of one, then the result is:

$$\frac{\delta GDP\ per\ capita\ growth}{\delta\ bribe\ rate} = -0.016 + 0.014 * 1 = -0.002 \tag{5}$$

Which again indicates an inverse relationship between the rate of bribery and growth of per capita GDP.

5. Robustness

5.1 *Robustness to controls*

A possible objection is that the results were due to incorrect specification of the control variables. To test for this condition, robustness of the regression to alternative groupings of control variables was conducted. The regression was run again excluding each control variable in turn and then excluding all three. Results are shown in table 3. There was no change in sign of any variable as compared to the original results with the exception of tariff rate which changed from significant positive to not significant negative when literacy rate was excluded from the regression.

Table 3. Results of regression of GDP per capita growth with alternative controls

Variable	Literacy rate excluded	Tariff rate excluded	Government size excluded	All controls excluded
Bribe rate	-0.015	-0.019	-0.028	-0.027 *
Ease of doing business	-0.116	-0.109	-0.168	-0.197
Interaction term	0.015 ***	0.014 **	0.017 ***	0.017 ***
Literacy rate	--	0.022	0.017	--
Tariff rate	-0.018	--	0.050	--
Government Size	-0.012	-0.046	--	--

*** Significant at the 1% confidence level
** Significant at the 5% confidence level
* Significant at the 10% confidence level

5.2 *Robustness to sample*

A second objection may be that the results could be due to the influence of one or more outliers in the data. To test for this possibility, the regression was run again on a randomly selected subset of the data consisting of 100 of the 199 countries used in the original data. This

procedure was repeated a total of ten times, each using a new random subset. In no case did a variable change sign and remain significant at the 10% confidence level.

6. Conclusion

In this paper I examined whether corruption can be an efficiency enhancing adaptation to poor institutional environments. Prior research on this question has not taken into account the heterogeneity of corruption and the possibility that petty bureaucratic corruption in the form of bribery may grease the wheels of an economy at the same time that grand political corruption such as diversion of state funds may sand the wheels of economic growth.

By differentiating between grand and petty corruption and narrowly framing poor institutional quality as the burden of regulation on economic activity, I was able to show that bribery is not an efficiency enhancing adaptation to poor regulatory environments. To the contrary, these results indicate that given the specific type of corruption and institutional environment most conducive to an efficiency enhancing effect, the opposite effect was found. On this basis I conclude that the grease the wheels theory of corruption is not correct.

In answer to the question posed at the beginning of this paper: yes, corruption is always and everywhere a bad thing.

References

Aidt, Toke, Jayasri Dutta and Vania Sena. "Governance regimes, corruption and growth: Theory and evidence." *Journal of Comparative Economics* 36 (2008): 195-220.

Banerjee, Abhijit. "A Theory of Misgovernance." *The Quarterly journal of economics* 112 (1997): 1289-1332.

Blackburn, Keith and Gonzalo Forgues-Puccio. "Why is Corruption Less Harmful in Some Countries Than in Others?." *Journal of Economic Behavior & Organization* 72 (2009): 797-810.

Bohn, Frank. "Grand corruption instead of commitment? Reconsidering time-inconsistency of monetary policy." *Journal of International Money and Finance* 32 (2013): 478-490.

Campos, Nauro, Ralitza Dimova and Ahmad Saleh. "Whither Corruption? A Quantitative Survey of the Literature on Corruption and Growth." *CEPR Discussion Paper No. 8140* (2010)

Dreher, Axel and Martin Gassebner. "Greasing the wheels? The impact of regulations and corruption on firm entry." *Public Choice* 155 (2013): 235-261.

Eris, Mehmet and Bulent Ulesan. "Trade openness and economic growth: Bayesian model averaging estimate of cross-country growth regressions."*Economic modeling* 33 (2013): 867-883.

Fisman, Raymond and Jakob Svensson. "Are corruption and taxation really harmful to growth? Firm level evidence." *Journal of Development Economics*83 (2007): 63-75.

Hanushek, Eric. "Economic growth in developing countries: The role of human capital." *Economics of education review* (2013), , http://dx.doi.org/10.1016/j.econedurev.2013.04.005 (accessed November 30, 2013).

Huntington, Samuel. *Political order in changing societies*. New Haven: Yale University Press, 1968. (accessed November 30, 2013).

Johnson, Noel, Willaim Ruger, jason Sorens and Steven Yamarik. "Corruption as a response to regulation." *working paper Munich Personal RePEc Archive* (2012), http://mpra.ub.uni-muenchen.de/36873/ (accessed November 30, 2013).

Leff, Nathaniel. "Economic Development through Bureaucratic Corruption." *The American Behavioral Scientist* 8 (1964): 8-14.

Mashali, Behzad. "Analyzing the relationship between perceived grand corruption and petty corruption in developing countries: case study of Iran."*International Review of*

*Administrative Sciences*78 (2012): 775-787.

Mauro, Paolo. "Corruption and Growth." *The Quarterly journal of economics* 110 (1995): 681-712.

Meon, Pierre-Guillaume and Laurent Weill. "Is Corruption an Efficient Grease?." *World Development* 38 (2010): 244-259.

Mishra, Ajit. "Persistence of corruption: some theoretical perspectives." *World Development* 34 (2006): 349-358.

Oriakhi, Dickson and Liberty Arodoye. "The Government Size – Economic Growth Relationship: Nigerian Econometric Evidence Using a Vector Autoregression Model."*International Journal of Business and Management* 8 (2013): 126-133.

Ranis, Gustav, Frances Stewart and Alejandro Ramirez. "Economic Growth and Human Development."*World Development* 28 (2000): 197-219.

Riley, Stephen. "The political economy of anti-corruption strategies in Africa." *The European Journal of Development Research* 10 (1998): 129-159.

Rock, Michael and Heidi Bonnett. "The Comparative Politics of Corruption: Accounting for the East Asian Paradox in Empirical Studies of Corruption, Growth and Investment." *World Development* 32 (2004): 999-1017.

World Bank World Databank http://databank.worldbank.org/data/home.aspx (accessed November 30, 2013)

World Economic Forum Global Competitiveness Index data platform http://www.weforum.org/issues/competitiveness-0/gci2012-data-platform/ (accessed November 30, 2013)