

# **On the Opportunity Cost of Corruption**

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## **ABSTRACT**

The paper investigates the relation between corruption, prosperity and the scope of government. Corruption and government size are argued to be jointly endogenous, while corruption can be negatively related to prosperity not because corruption deters prosperity but because potential prosperity makes corruption too costly to ignore. Empirical findings support the argument that there is a positive relationship between the amount of government and the amount of corruption. They also provide some support for an open economy and competition in political markets as ways to generate endogenous corruption reduction. The endogenous nature of corruption over the development process is argued to be an important but neglected phenomenon. Cultural factors are found to be exaggerated as determinants of corruption.

## I. INTRODUCTION

Corruption is a curious phenomenon, costly yet commonplace. On the one hand, corruption is a problem to be addressed by the law. It can be controlled through legal enforcement, although inveighing against corruption is one thing, while exerting the costly resources needed to combat it is another. For example in China corruption is often a capital offense, and while harsh prison sentences and even executions are fairly common, China is still thought to have a great deal of corruption. On the other hand, the law can be the friend as well as the enemy of private subversion of the public purpose. The power to pass laws provides government officials with ownership of resources necessary for production and exchange through the power to issue licenses, subsidies and other discriminatory privileges. When combined with the fact that both corruption and its control have opportunity costs for the public and private sectors, a complete theory of corruption becomes a complicated question.

Theoretical research into the causes and nature of corruption has expanded significantly in recent years, no doubt spurred in part by the widely varying experience of post-Soviet societies, as well as the bursting of the East Asian financial bubble. Even institutions in the development community, such as the World Bank, that have previously given corruption short shrift are devoting increasing attention to it (Stapenhurst and Kpundeh, 2000). A significant empirical literature on the effects of corruption on economic growth also exists (e.g., Olson et al., 2000; Tanzo and Davoodi, 1997; Mauro, 1995). But the exploration of endogenous corruption is still fairly limited. Acemoglu and Verdier (2000) view it as a second-best tradeoff for a welfare-maximizing authority

between unavoidable bribe-taking and the need to control market failure. In an empirical paper Ades and Di Tella (1999) found that the most consistent determinant of the amount of corruption was the rents available to domestic firms. However, while they employ several proxies for available rents, they do not attempt to measure the size of government itself, which some theory suggests should be a major influence on corruption. This omission is partially remedied in Erlich and Lui (1999), but their empirical concern is again primarily with the effects of corruption on growth rather than with the determinants of corruption.

This paper tries to explain the extent of corruption in various societies. In doing so it draws from three disparate strands of economic literature in addition to the aforementioned work. These threads include the literature on rent-seeking (Krueger, 1974; Tullock, 1967), on endogenous governance, especially Wittman (1989), and on the evolution of property rights (Demsetz, 1967). Its theoretical findings bear some relation to Murphy et al. (1993). But in that paper the productivity of rent-seeking technology plays a critical role in determining the equilibrium amount of rent-seeking and the level of protection of property rights is taken as exogenous, and the rewards to rent-seeking, which they define as the extent of protection of property rights, are also exogenous. Here the focus is on the determinants of the endogenous level of such protection. Further, the costliness of rent-seeking comes in part explicitly from the diversion of scarce resources from production and their ability to interfere with productive efficiency. The argument is a much more general version of the more limited claims of Daron Acemoglu, Simon Johnson and James A. Robinson (2001) and William Easterly and Ross Levine (2002) with respect to the endogenous development of institutions and quality governance. The

former find that mortality rates of European colonists determined the quality of institutions, which in turn determined per capita income. The latter, investigating the provocative claims of Diamond () about the geographic, linguistic and other non-economic, non-institutional sources of prosperity, claim that a greater handicap from “tropics, germs and crops” leads to worse institutions, which again do the heavy lifting in terms of predicting economic performance.

Here the interest is not just in extreme conditions such as mortality rates motivating investment in good governance, but economic potential generally. The paper thus provides a different explanation for the stylized fact that the most cleanly governed countries tend to be rich, while corrupt ones tend to be poor. Its findings also suggest that corruption’s dynamics are consistent across societies. Section II presents a simple theoretical model of corruption, Section III presents several empirical tests of it, Section IV interprets the results, and Section V lays out their policy implications, especially in developing countries.

## II. THE BASIC MODEL

### *A. The theoretical backdrop*

An important foundation for what follows is the rent-seeking school of corruption. This theory, which Bardhan (1997) has termed the “fatalist” school of corruption, argues that the benefits of preferential government regulation, taxation and spending are allocated by auction (i.e., bribery) to contending citizens or groups of citizens. This gives government decision-makers an incentive to increase the state’s reach so as to be able to solicit more bribes, and gives citizens a parallel incentive to devote more resources to rent-seeking rather than wealth creation. The problem can even

become catastrophic if a vicious circle is created in which resources are diverted to redistributing production, lowering the amount of product to be distributed, perhaps increasing the relative marginal gain to investment in appropriative activity and diverting even more resources from production.

An empirical implication of this view is that corruption and the size of government are positively correlated. However, other factors may influence the amount of corruption. In particular, economic agents have an interest in general efficiency in addition to the income they can obtain via transfers. Thus, in addition to the pressure to allocate specific privileges government officials face simultaneous political pressure to decrease corruption generally. The latter is an increasing function of corruption's social cost, i.e. the amount of consumption goods not produced because of diversion of scarce resources into rent-seeking. But this is a problem in endogenous governance, and several papers in that body of work are relevant. In the view of Becker (1983) and Wittman (1989) political competition causes relatively inefficient methods of implementing politically mediated wealth transfers to be replaced by relatively efficient ones.<sup>1</sup> Landes and Posner (1975) have argued that the judiciary in particular is specifically constructed to be independent of the redistributive machinery so as to provide stability to rent entitlements and avoid constant cycling of rents from one party to another at great social cost. The rule of law, defined as institutions that restrict government officials' discretion to allocate the rewards of productive exchange via regulations or redistributions of

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1. Becker's argument is a general one about all forms of governance, and Wittman's argument concerns democracy in particular.

income, is thus a way to make rent-seeking agreements reached in the elected branches of government reliable, which serves to constrain rent-seeking expenditures.

But efficiency can only be defined relative to a given production technology. If corruption control is costly, optimal investment in it must depend in part on that technology. It is universally agreed that corruption, by introducing economic distortions and diverting resources from production to redistribution, is costly to prosperity. If that is true, then competitive political markets or other ways to lower the costs of fighting corruption might make corruption-control measures more beneficial to government officials as their societies' potential wealth increases through the introduction of modern technology and division of labor.

A very simple model illustrates the argument. Let the basic production function for the economy be  $Y = Af(l)$ .  $l$  is total input of labor to productive activity. There are positive but diminishing returns throughout, so that  $f_l > 0$ ,  $f_{ll} < 0$ , with  $f(0) = 0$ . To illustrate the argument as parsimoniously as possible, assume that government has no role in providing public services in and of themselves. Its only functions are to (imperfectly) enforce property rights and to restrict the options in private production. This can be modeled by having the government be simply a dispenser of permits.  $X$  is the number of government permits that exist. These can be thought of as inputs that must be purchased to enable production, even though they come at a cost of deadweight loss in production. One might imagine that each permit is a weight that a worker must strap to his back when entering the workplace, or a monitor who requires laborers to divert time from production to demonstrate compliance with government directives. Assume then

that production once permits exist is actually  $Y' \equiv Af(l)(1 - t(X))$ , where  $X$  is the number of permits and  $t' > 0$ ,  $t'' < 0$  and  $t(0) = 0$ .

Permits are paid for like labor, out of produced income. And like output, they are generated by applying the only scarce resource, labor, according to  $X = g(e; \alpha)$ , with diminishing returns again prevailing, so that  $g_e > 0$ ,  $g_{ee} < 0$ .  $\alpha$  is a shift parameter that is negatively related to the marginal productivity of effort in creating permits, so that  $g_{e\alpha} < 0$ . It can be thought of as the degree of rule of law or anti-corruption effort that exists in the society, and is taken by all labor owners in the economy as exogenous. It is produced according to the cost function  $C(\alpha)$ , with  $C' > 0$ , which can be thought of as a fixed cost of production. The economy operates under a full employment constraint:

$$e + l = N, \tag{1}$$

with  $N$  the economy's labor endowment. Government is thus not a single entity issuing directives, but an outlet for entrepreneurial endeavor like productive activity.

Total income produced accrues either to laborers, permit producers or to the exogenous cost of the rule of law:

$$Y = w_e e + w_l l + C(\alpha). \tag{2}$$

$w_e$  and  $w_l$  are the wages in each activity. They will be equal to the value of marginal product:

$$w_e = pg_e(.), \quad (3)$$

$$w_l = Af_l(.)(1 - t(X)). \quad (4)$$

$p$  is the price of permits, measured against the numeraire, consumption. The model is closed by imposing the equilibrium condition that the marginal return to labor in the two activities is equal:

$$w_e = w_l. \quad (5)$$

Given the exogenous  $\alpha$ , there are thus eight unknowns – the wage rates  $w_e$  and  $w_l$ , the permit price  $p$ , total consumption  $C$ , total labor devoted to each activity  $e$  and  $l$ , permits produced  $X$  and output produced  $Y$ . Some important figures for the analysis here are the total number of permits in equilibrium  $X^*$ , the equilibrium amount of effort devoted to permit production  $e^*$ , and the loss of output relative to the equilibrium with no permits:

$$\bar{Y} = Af(N) - Af(l^*)(1 - t(X^*)). \quad (6)$$

Note that it is possible to have a golden equilibrium in which no permits are issued and income is maximized. A sufficient condition for such an equilibrium is that



$g_e(0, \alpha) < Af(N)$ . Such a golden equilibrium is more likely as  $\alpha$  is greater. If it does not hold than an interior solution obtains.

Several results follow directly from analysis of the above framework. First, the equilibrium size of the state,  $X^*$ , is an increasing function of the equilibrium amount of corruption,  $e^*$ . Second, corruption is a negative function of the rule-of-law parameter  $\alpha$ . The lower the rule of law, the bigger the relative return to rent-seeking and hence the larger the relative division of  $N$  among  $l$  and  $e$ . This result is explicitly derived in Krueger (1974), and is the central point of Tullock (1967). Thus, states with higher (lower)  $\alpha$  should have both more (less) government interference and more (less) corruption. The idea that corruption and government are both endogenous also appears in Erlich and Lui (1999).

Another important implication is that more technologically advanced societies may have less corruption, for at least one and possibly two reasons. In the usual way, technological progress in production is modeled as an increase in  $A$ . Totally differentiating (6) and rearranging terms yields

$$\frac{d\bar{Y}}{dA} = f(N) - f(l)[1 - t(X)] - Af(l)[1 - t(X)] \frac{dl}{dA} + Af(l) \frac{dt(X)}{dX} \frac{dX}{dA}. \quad (7)$$

The result of an increase in  $A$  is depicted in Figures 1 and 2. Figure 1 depicts total output with two levels of technology,  $A$  and  $A'$ , and Figure 2 depicts the corresponding equating of marginal revenue products in the two activities. As Figure 1 indicates,  $\bar{Y}$  will always have two components. The first is due to the direct opportunity

cost of a given amount of rent-seeking. Output must be created using less than the full employment endowment  $N$  because labor in the amount  $e^*$  is diverted from production to permit creation. This distance, the diversion effect, is given by  $A[f(N) - f(e^*)]$ , and is represented by the vertical distance between 0 and 1. The second source of inefficiency, the millstone effect, is that caused by production away from the frontier, represented by the movement from (1) to (2).

An increase in  $A$  increases the marginal return to production labor, and so labor is reallocated from  $e$  to  $l$ . The diversion effect is unequivocally smaller, and is represented in (7) by  $f(l)[1 - t(X)] \frac{dl}{dA}$ . However, the direction of the change in the millstone effect, and hence the total loss  $\bar{Y}$ , is ambiguous. On the one hand less effort is being diverted from production, and fewer permits are being produced, so the tax on production  $t(e^*)$  is smaller. In (7) this is given by  $Af(l) \frac{dt(X)}{dX} \frac{dX}{dA}$ , which can be restated as  $-Af(l) \frac{dt(X)}{dX} \frac{dX}{de} \frac{dl}{dA}$ . On the other hand, the smaller fraction is being taken of greater output, and so in absolute terms it is still possible for  $\bar{Y}$  to grow. This positive effect of higher productivity on  $\bar{Y}$  is given by the remaining terms in (7),  $f(N) - f(l)[1 - t(X)]$ .

Whether or not the total loss to corruption increases or decreases because of the increase in  $A$  thus becomes an empirical question. The answer depends first on the responsiveness of  $g$  to changes in  $e$ . The more concave  $g$  is, the less reallocation of  $e$  will be needed to restore wage equality in the two sectors. This means that the absolute value of the diversion effect is lower and the likelihood that the total millstone effect on output, and hence the two effects combined, is negative is greater. An analogous argument

holds for the concavity of  $f$ : the less concave it is, the less reallocation of labor between the sectors occurs. If large, discrete changes in  $A$  occur, this increases the vertical dimension of the millstone effect, and hence makes it more likely that the deadweight loss from corruption increases.

The reason the direction of the change in  $\bar{Y}$  is of interest is that it determines whether or not a nation ought to invest more in the rule of law measure  $\alpha$ . To maximize  $Y'$  the optimal investment in  $\alpha$  is simply an increasing function of  $\bar{Y}$ . Thus, technological progress, particularly if rapid, may imply that it is desirable to increase investment in the rule of law, which would cause  $e^*$  to decline even further. This requires that, first, (7) be positively signed, and that its magnitude be greater than the increase in the marginal cost of additional anti-corruption investment,  $dC(\alpha)/d\alpha$ . Whether these conditions are consistent with the empirical evidence is analyzed in Section III below.

Other than in Murphy et al. (1993), the relation between the state of production technology and the social cost of corruption has not been emphasized in the literature. Indeed, one of the few papers to try to empirically disentangle the overall relation between prosperity and governance claims a negative relation (Kaufmann and Kraay, 2000). Here, nations with more advanced division of labor or production technology may have more to lose from corruption. In a society with low productivity, the effort spent seeking permits may be diverted from, for example, street peddling. But in an advanced society, permit-generating effort will be diverted from productive activity of far greater value owing to complex division of labor and the presence of large amounts of productivity-enhancing technology, and hence is certainly more costly on a per-unit basis and may be more costly in total.

This is a significant claim because of the light it sheds on the relation between corruption and prosperity. While it is well-established that corruption harms economic growth, it is also true that economic growth, or at least the potential for it, may raise the cost of corruption and thus make it rational to invest more in its control. The stylized fact of the coincidence of prosperity and clean governance may not be simply a function of corruption deterring growth, but of lack of growth providing little motivation for investment in fighting corruption, and a great deal of motivation for engaging in it. If the model is an accurate description of the corruption process, nations with higher productivity will empirically have less corruption and will be wealthier, not just because they are more productive but because there is less deadweight loss from permit-seeking.

### III. EMPIRICAL TESTING

To summarize, several empirical implications emerge from the above theory. First, corruption and the size of government are both endogenous variables. Second, national productivity should be related to corruption, although the direction is uncertain. Third, corruption should be negatively correlated with independent factors that lower the cost of deterring it, i.e.  $C(\alpha)$ . More specific manifestations of these predictions are outlined below as the data are described.

#### *A. The data on corruption*

Data on the amount of corruption in various countries are published annually by the anti-corruption group Transparency International as its Corruption Perceptions Index (CPI). This group is a non-governmental

organization whose mission is “to curb corruption by mobilizing a global coalition to promote and strengthen international and national integrity systems” (Transparency International, 1998). Its data are compiled from surveys by other organizations of people who do business in foreign countries, which TI uses to create corruption rankings that range from zero (most corrupt) to ten (least corrupt). A total of seventeen surveys were conducted by the various groups in the 1999 data used here, and for a country to be included at least three surveys had to be available for that country). A total of **71 countries** were used in the analysis, and they represent a wide variety of regions and standards of living. They are listed in Table 1.

**[Insert Table 1 here]**

### *B. The empirical model*

The relation to be tested involves a nation’s corruption and the size of its government. Because some government activity is consumed, although still subject to corruption, standard rent-seeking models of the Tullock (1967) variety predict that the amount of rent-seeking activity should depend on the size of government, while the model here predicts that the amount of rent-seeking activity will increase the size of government. At the same time, the equilibrium amount of income produced,  $Y'$ , depends negatively on the equilibrium amount of corruption. This suggests the following empirical formulation:

$$SCORE = f(GOV, A, TRADE, FDI, POLFREE, CIVLIB, AFRICA, ARAB, ASEAN, LATAMER, SOVIET) \quad (8a)$$

$$GOV = g(SCORE, PCGNP, POLFREE, HUMCAP, URBAN, POP, GINI) \quad (8b)$$

$$PCGNP = h(A, SCORE, TRADE, FDI) \quad (8c)$$

This approach differs from that of Ades and DiTella (1999), who use ordinary least squares with corruption as the dependent variable but without a measure for the size of government. *SCORE* is the 1999 TI rating for each country. In the basic model the proxy for the size of government is *GOV*, the ratio of government expenditure to gross domestic product for 1998, obtained from the World Bank.<sup>2</sup> This measure is also used in Erlich and Lui (1999).

Two distinct instruments are used for *A*. The first is personal computers per 1000 population, and comes from the World Bank. The second is obtained by conducting a standard growth regression on data from the Penn World Tables. *A* is defined as the proportion of a country's gross domestic product not attributable to the labor input. The estimated equation is

$$\log Y = 4.012166 + 0.9841521 \log L + .5949104 \log K, \quad (9)$$

(48.98)                      (148.48)                      (81.67)

with the figures in parentheses *t* statistics,  $N = 1613$ ,  $F = 15,515.78$  and  $R^2 = 0.9507$ . The increment to labor productivity for each country *i* is defined as the

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2. World Bank, Country Data, [www.worldbank.org/countrydata/countrydata.html](http://www.worldbank.org/countrydata/countrydata.html).

1990 value of  $Y_i - 0.9841521L_i$ . The regressions employing the personal-computer and Solow-residual formulations of  $A$  are found, respectively, in the left- and right-hand columns of Table 2.

Several variables in (8) are proxies for  $C(\cdot)$ . *TRADE* and *FDI* are designed to measure the exposure to the competitive forces of the global economy. They are, respectively a country's exports and imports and its total foreign direct and portfolio investment as a percentage of GDP. The first variable comes from the Penn World Tables v6.0, and the latter from the World Bank.<sup>3</sup> There are two ways that openness might lower the cost, political and material, of investing in corruption control. First, it exposes nations, perhaps with some lag in adoption, to more advanced technology. Second, it will increase the costs of corruption because the more globalized a country is the more vulnerable it is to the flight of foreign investors if corruption increases. The corruption tax function  $t$  is thus monotonically higher. The optimal investment in  $\alpha$  will then be higher. For standard reasons in international-trade theory openness may promote higher per capita income independently of its effects on corruption, and so *TRADE* and *FDI* enter (8c) as well, along with *SCORE* and  $A$ .

In addition, there are institutional factors determining  $C(\cdot)$ . The Wittman (1989) hypothesis argues that elections are an efficient means of political competition. Greater political competition might translate into a monotonically p

measure of electoral competitiveness. It ranges from one to seven, with one being the most competitive. In addition, the search costs that each country's citizens face for information about government malfeasance will determine the public's awareness of corruption costs. Greater protection of press, speech and religious freedoms lowers entry costs for producers of politically relevant information, and thus might make the market for information about the government more competitive. Other things equal, it should therefore lead to less corruption. Freedom House also compiles an analogous rating of civil-liberties protection. Because of the high degree of correlation between the two measures ( $\rho = 0.87$ ), which raises concerns about multicollinearity problems, both measures enter in logarithmic form. *POLFREE* and *CIVLIB* are, respectively, the natural logarithms of the Freedom House measures of electoral competitiveness and civil-liberties protection.<sup>4</sup> *POLFREE* also enters the government equation, because some fatalist theoreticians of corruption (e.g., Cheung, 1998) argue that democracy leads to more government, as groups band together in possibly transitory majorities and use elections to extract wealth from the losers.

The other variables in (8b) are included based on findings in the literature on the growth of government. *GINI* is the Gini coefficient measure of income

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4. A large body of work also examines the impact of "economic freedom," and several cross-country measures of this variable exist. However, much corruption is in essence restrictions on such freedom, in that the government may redistribute property rights in a corrupt state at any moment. (This point is outlined in detail in Section V below.) Thus, economic freedom is largely what is being measured in the TI surveys.



inequality, contained in World Bank data from 1996 (World Bank, 2000). A great deal of work on the growth of government over time (e.g., Peltzman, 1980; Ferris and West, 1996) argues that such inequality spurs public demand for more redistribution. Some other variables have also been identified in this literature as important determinants of government size. *URBAN* is the percentage of the country's population living in urban areas (Kau and Rubin, 1981). *POP* is the country's estimated 1998 population. It is also derived from the U.S ODCI (1999) and is emphasized in Ferris and West (1996), Borcharding (1985), and McCormick and Tollison (1981).

It is also often claimed that corruption is simply a cultural phenomenon. What appears to be corrupt to an international businessman from one society may be ordinary hospitality or social duty in the country in which he operates.<sup>5</sup> Such cultural differences might manifest themselves as individual preferences yielding different equilibrium levels of corruption in different societies. These are in essence idiosyncratic differences in preferences, which do not directly result from the model. To test for this alternate possibility, *LATAMER*, *ASEAN*, *ARAB*, *AFRICA*, and *USSR* are entered as dummy variables in (8a) measuring whether the country is a Latin American nation, a member of the Association of Southeast Asian Nations, a member of the Arab League, an African nation that is not a member of the Arab League, or a former Soviet nation. The dummies are of course not perfect measures of cross-cultural variation. However if, for example,

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5. A theoretical model in which many equilibrium levels of corruption and the social norms controlling it are possible is found in Huang and Wu (1994).

Russians define corruption differently from residents of other countries, the Russian definition is presumably closer to that of Ukraine than to that of Holland, Nigeria or Indonesia.

Table 2 contains the results of the estimations of (8). The more corrupt a society, other things equal, the larger a government it is likely to have, with the *GOV* coefficient highly significant. Given a country's standard of living and other considerations in (8a), more government leads to more corruption. In addition, *SCORE* is significant in (8b), the government equation, suggesting that rent-seeking efforts result in more government. The dim view posited by the fatalist school is borne out by the data.

**[Insert Table 2 here]**

However, the story is more complex than this. The country's level of labor productivity is in both formulations negatively and significantly associated with corruption, even as corruption negatively affects per capita income. In addition, per capita income positively affects the level of government spending, in agreement with the growth-of-government literature. Together, the results suggest that wealthier societies tend to prefer more government services even as they have less corruption. This would of course imply that governments provides consumption services rather than functioning simply as an arena for rent-seeking.

There are several results that involve both *C*, the cost of investment in the rule of law, and the cost of corruption *t*. *CIVLIB* is significant in the expected direction in the second specification, although not in the personal-computer specification. Democracy, on the other hand, is not significant in either

specification. There is thus no evidence to support the Wittman (1989) model of electoral competition in particular. In addition, one measure of exposure to the global economy, *TRADE*, is also positively and significantly associated with clean governance, although *FDI* is not. The result for *TRADE* is in accord with Ades and DiTella (1999), albeit from a different theoretical basis. The policy implications of this are substantial, in that opening up an economy, at least from the trade perspective, should endogenously cause corruption to go down. The reform process in developing economies, this suggests, should pay at least as much attention to facilitating open economies, at least on the trade side, as to political reform. To the extent that the latter are of concern, elections may not be the most important reforms to enact in the earliest stages.

Another notable result is that none of the variables derived from the literature on the size of government, *HUMCAP*, *POP*, *URBAN* and *GINI*, are statistically significant in (8b) after accounting for corruption. This suggests that corruption is an important additional explanatory variable that must be accounted for in work in this vein. In addition, there does not seem to be any evidence that greater democracy per se leads to more government.

Finally, the evidence with respect to cultural determinants of corruption is not particularly compelling. Three such dummies are significant between the two specifications, but neither is significant in both. Indeed, *ARAB* is actually positively signed. Mindful of the aforementioned caveats with respect to the precision of the dummies as measures of cultural variation, there is little evidence

here that such variations must in and of themselves be significant predictors of corruption, once more fundamental considerations have been taken account of.

While government expenditure as a proportion of GDP is widely used as a measure of government size, if rent-seeking motivates government size then per capita expenditure is arguably equally reasonable. In such a framework individuals, alone or as members of groups, attempt to maximize their own net transfers from other citizens, and so a per capita measure might be superior as a proxy for an object of an individual's maximizing rent-seeking activity. As a check, Table 3 repeats the estimation in Section IIC, using per capita government expenditure (*GOVPC*) instead of *GOV*. The results are broadly similar, with both *SCORE* and *PCGNP* being significant in the predicted direction.

**[Insert Table 3 here]**

#### IV. INTERPRETATION

The results are suggestive on a number of counts with respect to the causes and effects of corruption. One finding is that the relation between corruption and government spending is exactly what fatalist models would predict, other things equal. In addition, a cursory examination of national-accounting data will indicate that it is in many of the wealthiest nations, particularly in Europe, that the government/GDP ratio is the highest. But that is precisely the phenomenon that begs explanation. Given that large amounts of income are transferred via the government in such programs as state pensions and health-care systems, why are these programs not more corrupt than they are? In

addition, large government spending also diverts resources from private production. If corruption also causes each unit of government spending to be subject to waste, more corruption implies that these opportunity costs, too, are greater.

In light of these considerations, the analysis thus supports a theory of government that implies that it expands via social-welfare transfers as countries become rich, while the same forces that made the country rich also raise the opportunity costs of corruption, which must in turn be controlled if such transfers are not to impose an intolerable burden even as they impose a similarly high opportunity cost of foregone private production. While the results do not explicitly support this particular mechanism, the role of an independent judiciary as suggested by Landes and Posner (1975) provides one plausible means of corruption control. The lack of any measures of judicial independence prevents a direct test of an association between government spending and such independence, but the positive correlation between government spending (after accounting for per capita GDP) and corruption suggests that there are corruption problems intrinsic to bigger government, which necessitate more effective anti-corruption efforts if its expansion is not to occur at prohibitive cost.

There is thus also support for a version of political-efficiency theory. That national wealth is associated with less corruption and more welfare spending suggests that political competition may work to control the higher opportunity costs associated with corruption in a wealthy society. However, recall that the competitiveness of elections is not a significant predictor of clean governance.

While there is not support for the Wittman (1989) variant of political-efficiency theory, which relies on elections to accomplish political competition, Becker (1983) argues that voting is only one of innumerable ways in which political pressure, including pressure to control corruption, can be implemented. The significance of *CIVLIB*, which emphasizes such preconditions of meaningful political competition as freedom of expression and associational and organizational rights, suggests that greater competition in the marketplace of ideas does translate, via some unspecified political competition mechanism, into less corruption.

The findings may also explain what has come to be known as the “Tullock paradox.” Fatalist scholars have puzzled for years over the seemingly small amount of rent-seeking expenditures relative to the size of the rents being sought. Most of the evidence has been anecdotal, and Tullock himself (1997) cites a large number of examples from the U.S. But societies that invest a great deal in the rule of law both lower the returns to rent-seeking and insure that the rents that are parceled out are more stable. While the paradox has always focused on the high benefit/cost ratios for the rent-seeking winners, it is worth remembering that for every winner there may be many losing pressure groups. An effective investment in the rule of law will also cause each of these groups to spend few resources in its unsuccessful efforts. The most important effect of cleaner governance is thus to insure that the combined amount spent by winners *and* losers is small.

## V. POLICY IMPLICATIONS

The support for the basic government-corruption relationship predicted by rent-seeking theory reinforces the risk of extensive government in poor societies, even as the results also suggest that a sufficiently wealthy society can have a rather heavy state without having to tolerate a great deal of corruption. Unfortunately, the recommendations made by many scholars and advisers from the developed world to transition states have not taken account of this risk. There has been an explosion of such advice to government officials in countries undergoing structural adjustment in the former Soviet Union and elsewhere. As recounted by Zakaria (1997), it usually emphasizes the particular importance of regular, cleanly counted elections and establishing a government that will be able to implement policies quickly, without separation-of-powers constraints. But such separation via, for example, the construction of an independent judiciary capable of credibly refereeing the disputes and restraining the power of the other branches of government is arguably the most important reform principle of all. Unfortunately, it is significantly less emphasized by well-meaning reform advisers than elections and centralized power.

In addition, it is possible that there is an under-emphasized dynamic and endogenous aspect to corruption. While it is surely true that corruption hampers economic growth, it is also true that rapid growth and rising prosperity increase the opportunity cost of corruption. If the market for governmental authority is at least somewhat competitive, whether via elections or not, then as nations prosper their political systems should begin to weed out the most corrupt practices accordingly. The relatively high amount of corruption in poorer societies may be

due not just to the deleterious effects of corruption on growth but to the fact that the opportunity costs, political and otherwise, of the investments needed to protect against it are not yet justified by the benefits. If technological productivity and the division of labor advance sufficiently rapidly to enable rapid growth even in the presence of substantial corruption it is possible to “leapfrog” into a state of development in which corruption control becomes politically easier, and if not countries may stagnate in the rent-seeking trap.<sup>6</sup> A specific example of rapid economic transformation through endogenous adjustment to the lack of the rule of law during the early high-corruption stage is given by Miwa and Ramseyer (2000) in their analysis of the textile industry in Taisho-era Japan.

Note the similarity between the argument that corruption control emerges only when the benefits justify the costs and the well-known argument of, among other, Demsetz (1967) that property rights in general emerge only when the benefit to having them exceeds the cost of enforcing them. The similarity is not coincidental, because in a sense corruption reflects the creation of monopoly privileges for government officials that restrict the rights of other property owners to compete as they see fit. Suppose an entrepreneur wishes to purchase 100 dollars in U.S. currency to import a piece of equipment which he intends to use in combination with ten workers. If holding U.S. dollars requires a foreign-currency license, then the opportunities in exchange for him, his would-be workers and the

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6. In contrast, Erlich and Lui (1999) view low-corruption/low-poverty and high-corruption/high-poverty results as distinct steady states, with the former not necessarily leading to the latter.



foreign-currency dealer (not to mention his potential customers) are constricted. This is the very essence of a restriction on property rights, and the more such government regulations, transfers and other special privileges exist and the more frequently they are subject to change (including but not limited to via bribery) the less meaningful property rights are. If corruption is thought of in this way, the positive correlation between development and clean governance may be a particular example of the phenomena the literature explores. The results suggest two means in particular of encouraging the stabilization of property rights: greater openness to trade, and greater protection of civil liberties.

The hypothesis of relatively high benefits to corruption (and relatively low benefits to corruption control) in poor societies has not been emphasized in the theoretical literature on corruption. The pattern of corruption may have an endogenous timeline as a country industrializes, just as income distribution has been demonstrated to have (Kuznets, 1968). It is interesting to note that Singapore and Hong Kong, which are now thought of as model states with respect to corruption, are generally considered to have been quite corrupt until reforms were launched in the mid-1960s. Similar launches of anti-corruption efforts have been documented for the United Kingdom, the first industrial power, in the mid-nineteenth century and for the U.S. later in that century (Rose-Ackerman, 1999). If the dating of these efforts is accurate it appears that they all occurred after the industrialization process was well underway. And while he does not make the connection, Barzun (2000) notes that Venice was by a substantial margin the best-

governed state in late-Renaissance Europe, even as it was the most commercial and open.

## VI. CONCLUSION

The paper has several significant findings. A key policy implication of rent-seeking theory is borne out in the data. Government tends to respond to efforts to expand it to achieve opportunities for corruption-related income. There is also support for the general Becker (1983) model of political competition, in that the results indicate that increasing prosperity leads to increased welfare spending, and is associated with less corruption. This strongly suggests that the high opportunity costs of corruption in the presence of substantial government spending make anti-corruption efforts more imperative. If wealthier societies construct more elaborate social-insurance plans, this need becomes even more compelling. Thus, corruption and corruption control are subject to the basic postulates of economic analysis, in that they obey the law of demand. Corruption's dynamics and endogeneity over the course of economic development are insufficiently appreciated empirical phenomena that should be incorporated into future theoretical studies of both corruption and development. This in turn implies that severe corruption is not invariably a hopeless problem, and that political competition (of whatever sort) can and will mitigate it if the gains to doing so are sufficiently large, particularly if the competitiveness of political markets is enhanced by civil-liberties protection. Most important, perhaps, the ability of an open economy to harness and even drive the forces of corruption control is an important policy-related outcome.

Perhaps the most important policy-related conclusion concerns the nature of corruption and anti-corruption efforts. The latter materialize, the analysis suggests, when the former becomes sufficiently costly. Rather than fretting over the details of government contracting procedures, anti-corruption enforcement efforts and the like, the findings indicate that promoting openness and a liberal political climate, particularly with respect to civil liberties and freedom of association, are the most important steps countries can take to fight corruption. By making the costs of corruption higher, countries can ensure endogenously generated reform of the sort other nations engaged in when the time was ripe.

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Table 1

Countries used in analysis

Argentina	Estonia	Kyrgyz Republic	Senegal
Australia	Finland	Latvia	Singapore
Austria	France	Lithuania	Slovakia
Azerbaijan	Germany	Malawi	South Africa
Belarus	Ghana	Malaysia	Spain
Belgium	Greece	Mauritius	Sweden
Bolivia	Guatemala	Mexico	Switzerland
Botswana	Honduras	Moldova	Tanzania
Brazil	Hungary	Morocco	Thailand
Bulgaria	India	The Netherlands	Tunisia
Cambodia	Indonesia	New Zealand	Turkey
Canada	Ireland	Nicaragua	Uganda
Chile	Israel	Nigeria	United Kingdom
China	Italy	Norway	United States
Colombia	Ivory Coast	Pakistan	Uruguay
Costa Rica	Jamaica	Paraguay	Venezuela
Czech Republic	Japan	Peru	Zambia
Denmark	Jordan	The Philippines	Zimbabwe
Ecuador	Kazakhstan	Poland	
Egypt	Kenya	Romania	

El Salvador	Republic of Korea	Russia	
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Table 2

With PCs/1000 population as A

<u>SCORE</u>		<u>GOV</u>		<u>PCGNP</u>	
<u>Variable</u>	<u>Coefficient</u>	<u>Variable</u>	<u>Coefficient</u>	<u>Variable</u>	<u>Coefficient</u>
INTERCEPT	3.672256*** (6.23)	INTERCEPT	9.183606* (1.71)	INTERCEPT	2086.071* (1.86)
GOV	-0.03893* (-2.38)	SCORE	-1.95186** (-2.68)	SCORE	568.4587* (1.82)
PCS	0.013509*** (8.08)	PCGNP	0.000704** (3.07)	PCS	50.7088*** (8.91)
OPENNESS	0.603700* (1.69)	URBAN	-3.36945 (-0.62)	OPENNESS	-853.192 (-1.09)
FDI	-0.18504 (-0.23)	GINI	-0.07494 (-0.79)	FDI	323.9658 (0.15)
POLRIGHTS	-0.37541 (-1.07)	POLRIGHTS	0.633776 (0.37)		
CIVLIBS	-0.55538 (-1.00)	POP	-4.1E-09 (-0.82)		
AFRICA	0.273915 (0.63)				
ARAB	1.214548* (1.68)				
ASEAN	-0.10201 (-0.15)				
LATIN	-0.11037 (-0.28)				
USSR	-0.70443 (-1.30)				
$R^2$	0.83038	0.14800		0.88271	
$F$	28.48***	2.00*		133.59***	
$N$	76				

With *residual* population as A

<u>SCORE</u>		<u>GOV</u>		<u>PCGNP</u>	
<u>Variable</u>	<u>Coefficient</u>	<u>Variable</u>	<u>Coefficient</u>	<u>Variable</u>	<u>Coefficient</u>
INTERCEPT	-8.61916** (-3.29)	INTERCEPT	10.24154* (1.68)	INTERCEPT	0.389193*** (-7.37)
GOV	-0.04458* (-2.39)	SCORE	-2.08501** (-2.69)	SCORE	1715.359*** (6.58)
RESIDUAL	1.613430*** (6.24)	PCGNP	0.000764** (2.95)	RESIDUAL	6.67*** (6.67)
TRADE	0.759590* (1.83)	URBAN	-4.91199 (-0.77)	TRADE	44.24544 (0.05)
FDI	0.365531 (0.41)	GINI	-0.07848 (-0.78)	FDI	3647.036 (1.49)
POLRIGHTS	0.665149 (1.61)	POLRIGHTS	0.868157 (0.46)		
CIVLIBS	-2.14660*** (-4.38)	POP	-4.1E-09 (-0.88)		
AFRICA	0.845610 (1.55)				
ARAB	0.266348 (0.31)				
ASEAN	-0.26110 (-0.33)				
LATIN	-0.85663* (-2.01)				
USSR	-2.52893* (-1.97)				
$R^2$	0.7933	0.15534		0.85338	
$F$	20.21***	1.93*		94.58***	
$N$	70				

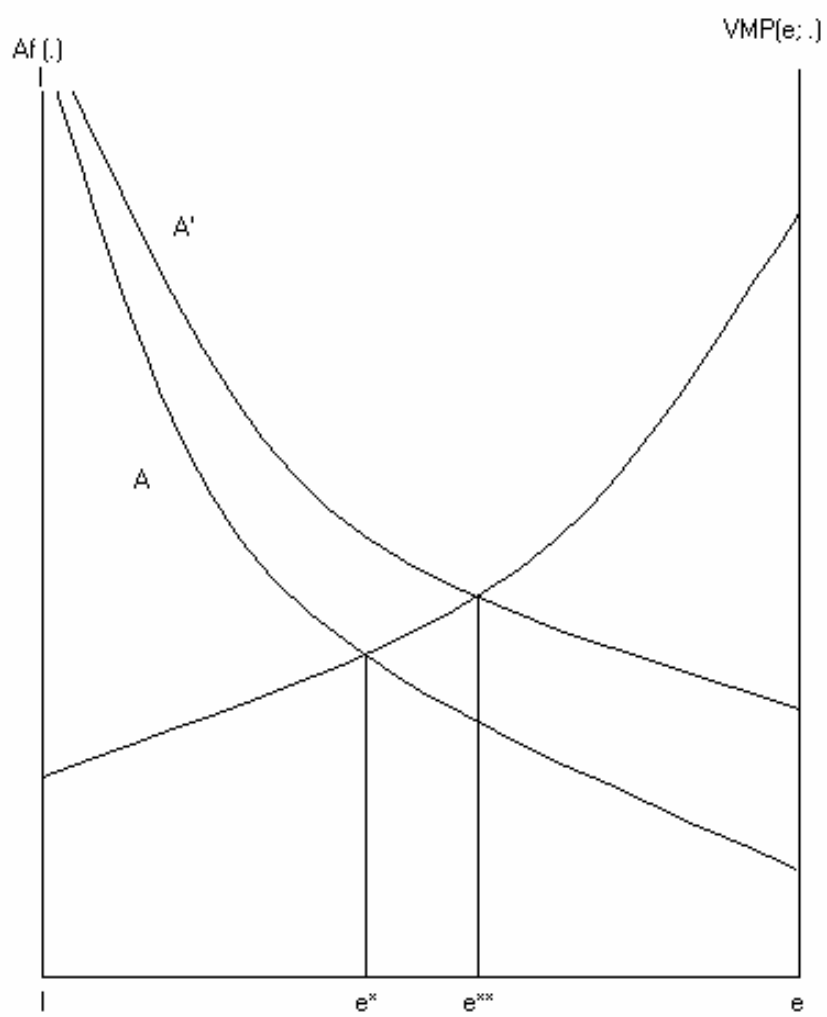


Figure 1 - Equilibrium in the labor market after technological change.

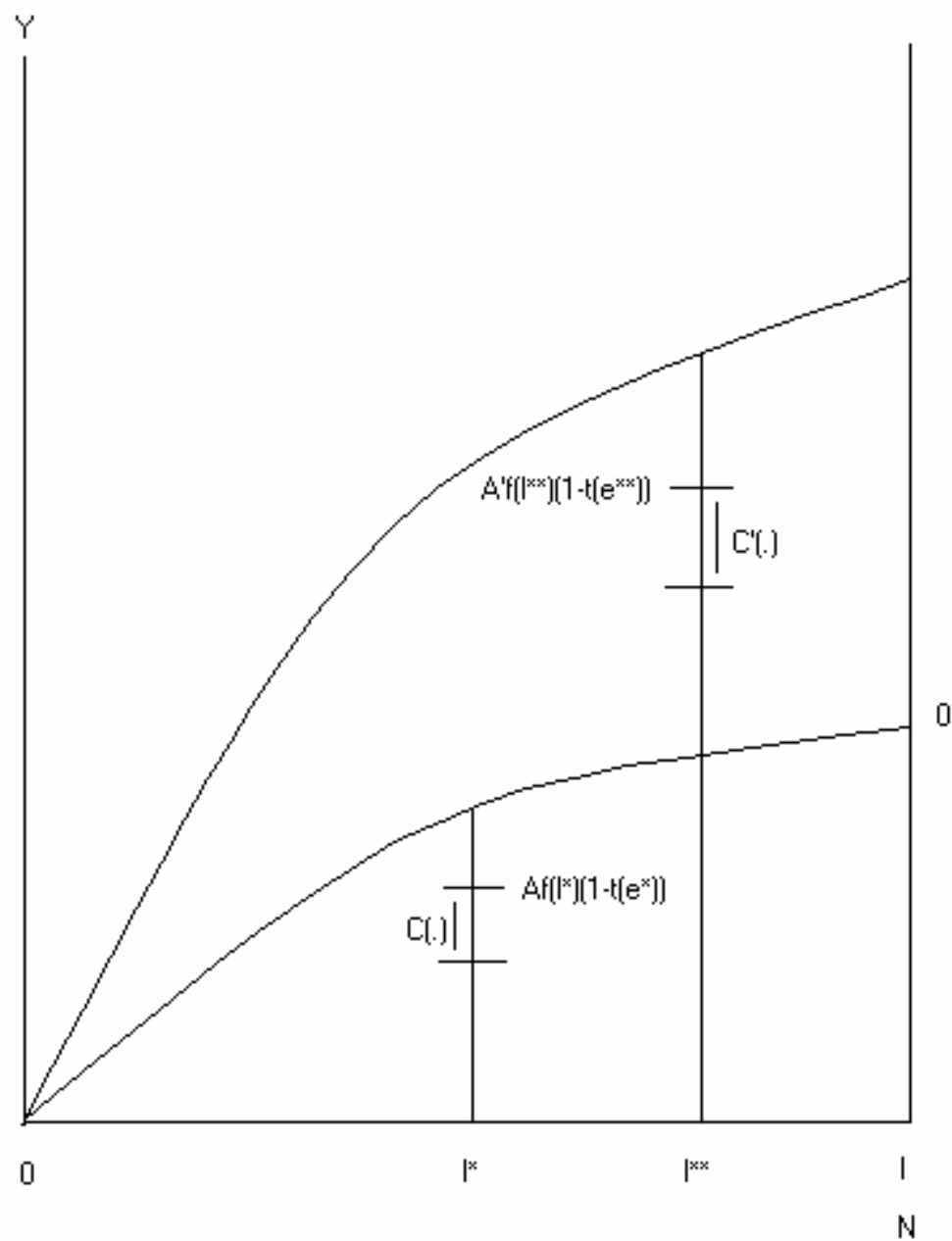


Figure 2 - Output, corruption-control costs and rent-seeking loss with technological change.

