Journal of Economic Literature
Vol. XXXV (September 1997), pp. 1320–1346

Corruption and Development: A Review of Issues

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I am grateful for useful comments on earlier drafts from Jean-Claude Berthelemy, Andrew Goudie, Mancur Olson, Dani Rodrik, Susan Rose-Ackerman, and Andrei Shleifer. The first draft of the paper was written for and presented at a meeting of the OECD Development Center, Paris.

I. *Introduction*

CORRUPTION IS an ancient problem. In a treatise on public administration dating back to the fourth century B.C. in India, Kautiliya writes in his *Arthasastra*:

> Just as it is impossible not to taste the honey (or the poison) that finds itself at the tip of the tongue, so it is impossible for a government servant not to eat up, at least, a bit of the king's revenue. Just as fish moving under water cannot possibly be found out either as drinking or not drinking water, so government servants employed in the government work cannot be found out (while) taking money (for themselves). (R. P. Kangle 1972, p. 91)

In a passage of characteristically remarkable precision Kautiliya states that there are "forty ways of embezzlement" and then goes on to enumerate these ways.

While corruption in one form or another has always been with us, it has had variegated incidence in different times at different places, with varying degrees of damaging consequences. While the tenacity with which it tends to persist in some cases easily leads to despair and resignation on the part of those who are concerned about it, there can be and have been ways in which a whole range of policy measures make a significant dent. In this paper, we start with a discussion of some of the alternative denotations of the problem of corruption; we then consider the ways in which the damaging consequences of corruption operate in the economy, while not ignoring its possible redeeming features in some cases; we pursue the question of why corruption is perceptibly so different in different societies; and finally, we examine the feasible policy issues that arise. Our approach in this paper is primarily analytical and speculative, given the inherent difficulties of collecting (and hence the nonexistence of) good empirical data on the subject of corruption; we refer in the Appendix to some subjective ordinal rankings of countries in terms of corruption that are available in the international media, for whatever they are worth.

In common usage the word "corruption" is used to mean different things in different contexts. Even if we choose to confine ourselves only to the economic

context, staying away, for example, from related issues of political corruption (i.e., where the ill-gotten gains are primarily in terms of political power), there are alternative denotations of economic corruption. In a majority of cases such corruption ordinarily refers to the use of public office for private gains, where an official (the agent) entrusted with carrying out a task by the public (the principal) engages in some sort of malfeasance for private enrichment which is difficult to monitor for the principal. There are, of course, many everyday cases of other kinds of corruption some of which may take place entirely in the private sector. For example, a private seller sometimes rations the supply of a scarce good (instead of using the price mechanism to clear the market), and we use various ways of bribing him or an agent to jump the queue (paying a higher price to a "scalper" for a sold-out theater show or a game, tipping a "bouncer" for entry into a crowded nightclub, using "connections," i.e., some form of long-run gift exchange, to get a job, and so on).

Sometimes one invokes legality and almost interchangeably uses the word "corrupt" and "illicit" in describing a transaction. But just as clearly not all illegal transactions are corrupt, nor are all instances of corruption or bribery illegal[1] (as when you tip the maitre d' to get a better table at a restaurant than other customers, or in the much more important cases of gift-giving by lobbyists to politicians, campaign contributions to Political Action Committees, or post-retirement jobs in private firms to bureaucrats of agencies meant to regulate them). Similarly, one should keep a distinction between "immoral" and "corrupt" transactions. When you pay a blackmailer, you may consider him immoral, but you are paying to stop him from revealing some information which may be unpleasant for you but which may be neither illegal nor corrupt. On the other hand, one can think of instances of corruption and bribery which some people may not regard as immoral (particularly those for whom end justifies means), as when you bribe a policeman not to torture a suspect. Having referred to these alternative meanings of even economic corruption, let me state that in this paper I shall mostly confine myself to the application of this term to imply the use of public office for private gain or the agency problem referred to in the preceding paragraph.

Even with this common use of the term among economists, there are many ambiguities. Does striving for private gain include policies that are primarily oriented to increasing the chances for remaining in office? The distinction between political and economic corruption can get blurred here. Then there are problems in common comparative use of the term in the obvious absence of any publicly available objective measures. A particular African country may be in some sense more corrupt than a particular East Asian country, even though the actual amount of bribe money exchanging hands may be much larger in the latter; this may be simply because rampant corruption may have choked off large parts of economic transactions in the former. Then there are cases where the bribe per unit of transaction (and the consequent inefficiency) may be higher (in the case of decentralized corruption, as we shall note later) than in situations of central-

[1] As Gordon Adams (1981, p. 177) notes, the U.S. Department of Defense directive 55007 allows gratuities when they are a part of a "customary exchange of social amenities between personal friends and relatives when motivated by such relationships and extended on a personal basis."

ized ("one-stop shopping") corruption where the inefficiency may be less, even though the total amount of bribe paid may be larger.

II. *Effects on Efficiency*

There is a strand in the corruption literature, contributed both by economists and noneconomists, suggesting that, in the context of pervasive and cumbersome regulations in developing countries, corruption may actually improve efficiency and help growth. Economists have shown that, in the second-best world when there are pre-existing policy induced distortions, additional distortions in the form of black-marketeering, smuggling, etc., may actually improve welfare even when some resources have to be spent in such activities. The argument for efficiency-improving corruption is a simple extension of this idea. As Nathaniel H. Leff (1964, p. 11) puts it simply: "if the government has erred in its decision, the course made possible by corruption may well be the better one." As noneconomists usually point out, corruption is the much-needed grease for the squeaking wheels of a rigid administration. Samuel P. Huntington (1968, p. 386) states it bluntly: "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."

Even without pre-existing distortions, one may look upon corruption as part of a Coasean bargaining process in which a bureaucrat (who is in the illicit business of selling property rights to a public resource in the form of issuing permits and licences) and the private agent (the prospective buyer) may negotiate their way to an efficient outcome. If in a bribery game there is competitive bidding by private firms for a government procurement contract, and the corrupt official awards the contract to the highest bidder in bribes, then allocation efficiency is maintained, as only the lowest-cost firm can afford the largest bribe. (This, of course, assumes that other goals of the program are not violated: this bidding procedure is clearly not acceptable in the case of University admissions, for example.) That the producer surplus lines the pocket of the bureaucrat and does not go to the public treasury (as would have happened in an open auction for the contract) does not seemingly affect the allocation efficiency.

This argument, however, is more complex when a briber does not have full information about the cost levels and therefore the bribing capacity of his competitors, and when he has to take into account strategic considerations in making any particular offer of a bribe. But the situation can be modeled as an n-person symmetric game with incomplete information on the part of each player and one can draw upon the theory of sealed-bid auctions. In such a context Paul J. Beck and Michael W. Maher (1986) and Donald H. D. Lien (1986) have shown that under the assumptions of the model, the lowest-cost firm is always the winner of the contract, and thus bribery can reproduce the efficiency consequences of competitive bidding procedures under imperfect information. Inefficiency may, of course, result if the official is influenced by considerations other than just the size of the bribe (for example, favoritism for a particular client or nepotism); or when the briber can get away with supplying a low-quality good at a high-quality price, and the official lets in unqualified applicants with a high willingness to pay; or when bribery is used to limit the competition (as in the

case of bribing the police or tax inspectors to harass rival firms).[2]

Another efficiency argument in favor of corruption is to look upon it as "speed money" (for which there are distinct terms in different countries, like *lagay* in the Philippines), which reduces delay in moving files in administrative offices and in getting ahead in slow-moving queues for public services. Queuing models which have received some attention in the theoretical literature allow the possibility for the corrupt bureaucrat to practice price discrimination among clients with different time preference. In an interesting equilibrium queuing model with some special assumptions Francis T. Lui (1985) derives bribing functions where the size of the bribe (decided by the briber, not the server of the queue) is linked to the opportunity costs of time for the individual client and shows that the bribing strategies will form a Nash equilibrium of this noncooperative game that will minimize the waiting costs associated with the queue, thereby reducing the inefficiency in public administration. (The model can also be useful in designing schedules of incentive payments in the pay structure of civil servants.)

One does not have to take a moralistic position on corruption to see that some of these arguments above in favor of the efficiency effects of corruption are fraught with general problems, even though in individual instances some redeeming features of corruption may be present. For example, in the second-best case made above, it is usually presumed that a given set of distortions are mitigated or circumvented by the effects of corruption; but quite often these distortions and corruption are caused or at least preserved or aggravated by the same common factors. The distortions are not exogenous to the system and are instead often part of the built-in corrupt practices of a patron-client political system. As we have indicated above, bidding procedures in such a system may still end up in allocational inefficiency.

As for speed money, Gunnar Myrdal (1968), citing the 1964 Santhanam Committee on the Prevention of Corruption appointed by the Government of India, has argued that corrupt officials may, instead of speeding up, actually cause administrative delays in order to attract more bribes.[3] (I am told that in Russia there is a clear terminological distinction between *mzdoimstvo*, taking a remuneration to do what you are supposed to do anyway, and *likhoimstvo*, taking a remuneration for what you are not supposed to do.) Lui's equilibrium queuing model is meant to question the validity of Myrdal's hypothesis at the theoretical level. But, as Jens C. Andvig (1991) points out, from the point of view of imperfect information and strategic considerations queues as allocation mechanisms are more complex and many-sided than has been recognized in the literature, and different ways of organizing the queue may give rise to different outcomes on the average waiting time. In Lui's otherwise very interesting model, for example, both sides in the corrupt transaction are honest in the sense that they stick to a deal, that no new bribe offers are made by the waiting clients after the new entrants have arrived, that there is no moral hazard about the reliability of the sale by the server of a priority in the queue, and so on. The model's results may not be robust to these kinds of considerations.

[2] For an account of many such harmful effects of corruption, see Rose-Ackerman (1996).

[3] Abhijit Banerjee (1994) examines situations where bureaucrats create red tape and use it to screen clients of different types.

This also suggests the problem with looking upon bribes simply as side payments in a Coasean bargaining process between officials or politicians and firms (even apart from the agency problem that the bribee is not representing the interests of the principal, the public). Of course, the briber and the bribee may fail to agree on the appropriate size of the bribe on account of bargaining in a situation of asymmetric information and also, there are collective action problems when several firms have to get together to bribe a single politician or bureaucrat. But more important than these is the fact, emphasized by Maxim Boycko, Shleifer, and Robert Vishny (1995), that corruption contracts are not enforceable in courts and there is many a slip between the bribing transaction and the actual delivery of the good or the service involved. The control rights on the latter are often arbitrary and uncertain, leaving a lot of leeway for the bribee to renege on his understanding with the briber, or to come back and demand another bribe. (It used to be said of General Noriega of Panama in his heyday that he could not be *bought*, he could only be *rented*.) Of course, the bribee may have to worry about his reputation in the long run about keeping promises (but many corrupt politicians have too short a time horizon), or sometimes the briber can hire hoodlums to discipline the bribee (but the transaction costs for such ways of enforcement can be high).

A. *Centralization of Bribery*

Sometimes the bribee cannot deliver not because he wants to cheat, but because there is a multiple veto power system in operation, which makes centralized collection of bribes in exchange of guaranteed favors very difficult. One high official in New Delhi is reported to have told a friend : "if you want me to move a file faster, I am not sure if I can help you; but if you want me to stop a file I can do it immediately." This ability to "stop a file" at multiple points (a system often installed to keep corrupt officials in check) may result in increasing the inefficiency as well as the rate of bribes. In general centralized corruption has less adverse consequences for efficiency than decentralized bribe-taking, because in the former case the bribee will internalize some of the distortionary effects of corruption (assuming similar powers at all levels to determine the overall rents in the system).

Shleifer and Vishny (1993) illustrate this point with an elementary model comparing a case of independent monopolists (where different public agencies provide complementary government goods or services independently) with that of a joint monopolist agency providing the same goods or services. Suppose a customer needs two permits or two complementary inputs from two different agencies in the former case. Each agency as an independent monopolist will take the other agency's sales as given and so the bureaucrat in charge of it will set the bribe-inclusive price in such a way that marginal revenue is equal to the marginal cost, the bribe per unit of sale being the difference between the price and the monopolist's marginal cost (i.e., the official price of the good supplied). The joint monopolist, on the other hand, takes into account the effect of an extra unit sold on the sales of the complementary good and thus on the revenue from bribes from the other source as well, so that in equilibrium the marginal revenue in the supply of each good is less than the marginal cost. Thus the per unit bribe is higher and the supply of each good lower in the independent monopolist case than in the case of collusion. Of course, the aggregate revenue from

bribes is larger in the latter case, but the customer gets a larger supply of both inputs. The problem is made much worse when complementarity can be artificially created (just when you think you have bribed two agencies to get the required two permits, another independent monopolist comes along and tells you that you need a third permit from him to get your business in place) and corruption opportunities stimulate the entry of permit-dispensers armed with new regulations. Free entry in this game allows the officials to "overfish" in the "commons" or the rental havens.

Shleifer and Vishny would explain the increase in the inefficiency flowing from corruption in post-Communist Russia in comparison with Communist Russia in these terms. Formerly, the Communist Party used to centralize the collection of bribes and effectively monitored (sometimes with the help of the KGB) deviations from agreed-upon patterns of corruption. Now different ministries, agencies, and levels of local government all set their own bribes independently in a decentralized attempt to maximize their own revenue. It is usually suggested that the regulatory state is at the root of the inefficiency due to corruption spawned by the regulations; the above analysis suggests that a weak central government with its inability to stop the setting up of independent corruption rackets (a kind of economic warlordism) makes the problem of inefficiency particularly acute. This may be relevant in a comparison of corruption in, say, Indonesia with that in India. Table 2 in the Appendix suggests that in the perception of foreign businessmen the two countries are about equally corrupt;[4] and yet the economic performance by most accounts has been much better in Indonesia. Could it be that Indonesian corruption is more centralized (controlled largely by the first family and the top military leadership in cahoots with the ethnic Chinese-run conglomerates) and thus somewhat more predictable, whereas in India it is a more fragmented, often anarchic, system of bribery?

Centralization of the political machine also makes it possible to have a system approximating "lump-sum" corruption, without distorting too many decisions at the margin. It has been suggested, for example, that corruption in countries like South Korea[5] may have been more in the form of lump-sum contributions by the major business leaders to the president's campaign slush fund, without taxing economic activity at the margin. The important question here is how the ruler can credibly promise to keep the contributions lump-sum, and not come back again for individual quid pro quo deals at the margin. This ability to credibly commit is a feature of "strong" states that very few developing countries have.

The idea of the differential efficiency effects of centralized versus decentralized corruption is akin to Olson's (1993) idea of smaller distortionary effects of the tax impositions of the state as a "stationary bandit" (having thus an "encompassing interest" in the domain over which its rent-exacting power is exercised) as opposed to those of the "roving bandit." One may, however, point out that even centralized corruption is more distortionary than taxation (not to speak of the extra burden of taxes that public revenue losses from corruption

[4] According to Table 1 in the Appendix, corruption in Indonesia was perceived to be much worse than in India in the early 1980s.

[5] It is interesting to note from Appendix Table 1 that perceived corruption in Korea in the early 1980s is not significantly different from that in Brazil or even India.

may necessitate). This is because of the need to keep corruption secret, as Shleifer and Vishny (1993) point out. Efforts to avoid detection and punishment cause corruption to be more distortionary than taxation. Because different activities have different chances of detection for bribes, there will be some substitution effect following from corruption by which corrupt officials will try to induce investment and transactions in the direction of lower-detection activities (or contractors who are less likely to squeal, even though they may be less efficient). Bureaucrats in poor countries may, for example, opt for imports of complex technology or goods (where detecting improper valuation or overinvoicing is more difficult) in preference to more standardized, but possibly more appropriate, technology or goods. For similar reasons, allocating government funds in a few large defense contracts may look more attractive to the officials involved than spending the money in building numerous small rural health clinics. To preserve the secrecy of deals, a small elite group may also try to raise entry barriers for outsiders, which in many situations has the effect of discouraging the flow of new ideas and innovations. Secret payments, particularly by foreign companies, also tend to be accumulated and spent not inside the country but abroad.

B. *Bribes Relative to Rents*

Before we leave the subject of costs of corruption, it may be useful to comment on the magnitude of bribes in relation to that of the rent they are supposed to procure for the briber. The early literature on rent-seeking, as in Anne O. Krueger (1974), assumed a process of competitive bidding by the rent-seekers which resulted in a complete dissipation of the rent. Since then there have been models of barriers to entry in the rent-seeking sector (including models of dynamic games of moves and counter-moves of the contending rent-seekers) and of the various transaction costs and risks that the rent-seekers have to face. But what is still astonishing is the extremely small size of the usual bribe compared to the rent collected (Gordon Tullock, 1980, had pointed this out quite early, and the phenomenon is sometimes referred to in the public choice literature as the "Tullock paradox"). The anecdotes are endless. Tullock (1990) cites the case of the New York Congressman Mario Biaggi, who manipulated the federal government to save from bankruptcy an enormous Brooklyn dockyard, for which he received three Florida vacations worth $3,000. Spiro Agnew had to resign from the Vice Presidency of the Nixon Administration for continuing to take bribes of an incredibly trifling amount from an arrangement made earlier in his political career. Most such anecdotes are from democratic polities. On the other hand, there are anecdotes of corrupt income running to billions of dollars for authoritarian rulers in much poorer countries, like Mobutu sese Seko in Zaire or Ferdinand Marcos in the Philippines. This may point to a particular coordination problem in bribe collection in democratic polities that Eric Rasmusen and Mark Ramseyer (1994) have tried to model.

They use a coordination game among wealth-maximizing legislators to show that, if the latter cannot coordinate their actions, they may supply private-interest statutes for bribes even less than the costs they incur. Only when they can enforce agreements with one another, solving a prisoner's dilemma problem, will they come close to collecting the full benefits of the statutes they pass. Rasmusen and Ramsayer

(1994) have a simple example to illustrate the difference between a democratic and an autocratic government in this context. Suppose that private-interest statute S14 would provide a benefit of 14 for a lobbyist and would cost an autocratic government 50 because of, say, an increased probability of public discontent or even rebellion. The autocrat will supply this statute only if offered at least 50, which the lobbyist will be unwilling to offer, so S14 will not pass. Suppose that a second statute, S80, would cost the autocrat 50 but benefit the lobbyist by 80; the autocrat will supply this statute for a bribe anywhere between 50 and 80.

Now take a democracy where five legislators vote on statutes S14 and S80. For each statute, each legislator loses 5 by voting "yes" when the others vote "no," but 10 if the statute passes. The government thus loses (again in terms of public discontent) a total of 50 if a statute passes, exactly the same cost as in the case of the autocratic government. Take first the statute S14. If each legislator thinks that the others will vote "no," then all voting "no" will be the equilibrium. The lobbyist could overcome these expectations by offering a bribe of 5 to three legislators, but that is too costly for him for a statute worth 14. But if each legislator thinks the others will vote "yes," then each may as well vote "yes" for an infinitesimally small bribe, because he will lose 10, no matter how he votes (so that his marginal cost of voting "yes" is 0). Thus a democratic government may sell a private-interest statute at below cost when the autocratic government would not. Consider now the statute S80. Here too there is an equilibrium in which the statute passes in the democratic legislature with an infinitesimally small bribe, when the autocrat would do it only for a large bribe.

It is often said that autocratic rulers are more corrupt than democratic ones because the former do not have to worry about re-election. (This is not quite true as elections have become very expensive, and to dispense favors in exchange for campaign contributions is a major source fof corruption in democratic regimes.) In the example above, the cost of corruption is deliberately kept the same for both autocratic and democratic governments, and yet the equilibrium bribe amount is larger under the former. The essential problem is due to an externality that each democratic legislator's vote potentially imposes on every other legislator, when they cannot coordinate their votes to demand a bribe which compensates them for that externality. In some actual democratic polities, of course, such coordination problems are reduced by committee systems, disciplined factions and party political machines.[6] It is reported that in the past few decades Japan's Liberal Democratic Party (particularly its so-called Policy Affairs Research Council, where important policies were made and payoffs were coordinated behind closed doors) has been quite successful in centralizing bribery and raking off billions of dollars' worth in the process.

III. *The Growth Process*

Corruption has its adverse effects not just on static efficiency but also on investment and growth. A payment of bribes to get an investment license clearly reduces the incentive to invest (even apart from affecting the composition of investment, in view of the considerations of secrecy and uncertainty alluded to in the previous section). One

[6] Rose-Ackerman (1978) has noted that well-organized legislators may be able to extort larger amounts than disorganized legislators.

might add that in the taxation system of many countries, negative profits (losses) can be deducted from taxable investment income, but there is no corresponding loss offset in the case of bribes, so that the latter are particularly harmful for risk-taking in the context of innovation.

Similarly, when public resources meant for building productivity-enhancing infrastructure are diverted for politicians' private consumption (cement for public roads or dams used for luxury homes) growth rates obviously will be affected adversely. Another growth effect follows from the fact that higher bribes imply declining profitability on productive investments relative to rent-seeking investments, thus tending to crowd out the former. As Kevin Murphy, Shleifer, and Vishny (1993) point out, there are many reasons why there are increasing returns to rent-seeking, so that an increase in rent-seeking lowers the cost of further rent-seeking relative to that of productive investment. In general when there is slow growth the returns to entrepreneurship (particularly in production of new goods) fall relative to those to rent-seeking, and the ensuing increase in the pace of rent-seeking activities further slows down growth. Besides, innovators are particularly at the mercy of corrupt public officials, because new producers need government-supplied goods like permits and licenses more than established producers. In any case, as Romer (1994) has suggested, corruption as a tax on ex post profits may in general stifle entry of new goods or technology which require an initial fixed cost investment.

Some of these growth effects have been statistically corroborated from cross-country data. On the basis of corruption rankings data assembled from the Business International correspondents[7] in 70 countries in the early 1980s, as reported in Table 1 in the Appendix, Paolo Mauro (1995) finds a significant negative association between the corruption index and the investment rate or the rate of growth (even after controlling for some other determinants of the latter, and correcting for a possible endogeneity bias in the data). A one-standard-deviation improvement in the corruption index is estimated to be associated with an increase in the investment rate by about 3 percent of GDP.[8] The negative relation seems to hold even in subsamples of countries where bureaucratic regulations are reported to be cumbersome, indicating that corruption as a way of by-passing these regulations may not have been very beneficial.

Historians, of course, point to many cases when a great deal of corruption in dispensing licenses, or loans, or mining and land concessions has been associated with (and may have even helped in) the emergence of an entrepreneurial class. In European history the latter class grew out of the sales of monopoly rights, tax farms, and other forms of privileged access to public resources. In the U.S. "gilded age" of 1860s and 1870s widespread corruption of state legislatures and city governments by business interests and those seeking franchises for public utilities is reported to have helped rather than hindered

[7] One problem with this data set is that it is based on the perception of foreign businessmen whose experience of corruption may be different from what domestic businessmen face in a country. The former may have less insider knowledge about the intricacies of the indigenous bureaucracy and even less patience with its slow processes. So they may end up paying much larger bribes than what the latter settle for at the end of long negotiations and endless cups of coffee in familiar terrain. This discrepancy may vary from country to country and thus bias the results of statistical analysis on the basis of this data set.

[8] These results are confirmed in Mauro (forthcoming) with a larger and more up to date data set.

economic growth.[9] More generally, corruption may have historically played some role in undermining the sway of collective passions that used to fuel internecine group warfare. As Ronald Wraith and Edgar Simpkins (1963, p. 60) say of English history: "For two hundred and fifty years before 1688, Englishmen had been killing each other to obtain power. . . . The settlements of 1660 and 1688 inaugurated the Age of Reason, and substituted a system of patronage, bribery, and corruption for the previous method of bloodletting." In this century, the highly corrupt system institutionalized in the PRI enabled Mexico to transcend the decade of bloodletting that followed the Revolution. Without denying the positive role that corruption may have played in history in some situations, in many developing countries today, however, corruption is perceived to be so pervasive and endemic that it is unlikely to have good net effects, on grounds that we have discussed earlier in this section and because corruption tends to feed on itself (as we shall discuss in the next section) and it is impossible to confine corruption to areas, if any, of relative beneficial effects.

What about the effects of the growth process on the extent of corruption? Although the requisite time-series evidence in terms of hard data is absent, circumstantial evidence suggests that over the last 100 years or so corruption has generally declined with economic growth in most rich countries (and in some developing countries, like Singapore, it is reported to have declined quite fast in recent decades). While the historical relationship between economic growth and corruption is thus likely to have been negative in general, it is possible to envisage some nonlinearities in this relationship: in particular, in some countries with the process of modernization and growth corruption may have got worse for some time before getting better. What kind of forces work toward possibly increasing corruption at the earlier stages of economic growth? As the economy expands and becomes more complex, public officials see more opportunities for making money from their decisions, which now go beyond simple functions like maintaining law and order and collecting land revenue. As the markets in many new products are "thin" for quite some time, this gives scope for those officials to milk the process of granting monopoly rights and franchises. In the process of transition from controlled to market economy in Eastern Europe, China, and Vietnam it has often been observed that there are some special factors increasing corruption even as income grows. For a considerable period of time the transition economy is on a dual-track system: a part of output is still under obligatory delivery at controlled prices, while the rest is allowed to be sold at market prices. This creates all kinds of new opportunities for corruption. The process of privatization of state-owned enterprises in many countries has also given rise to opportunities for public officials to get kickbacks from "crony capitalist" buyers of those enterprises and contractors.

Yet, it is probably correct to say that the process of economic growth ultimately generates enough forces to reduce corruption. Rewards to entrepreneurship and productive investment relative to rent-seeking investment rise when there is sustained growth. A prospering economy can also afford to pay its civil servants well, reducing their motivation for corruption. And to the extent prosperity in the long run brings more demand, at least on the part of

[9] See Robin Theobald (1990) for a discussion.

the middle classes, for democratic reforms, the latter may install institutions that check corruption. Not merely is the coordination problem in bribe-collection among legislators rendered more difficult under democracy, as we have discussed at the end of the preceding section, but, more important, democratic institutions build mechanisms of accountability and transparency at different levels which make it difficult for the networks of corruption to be sustained for long. A qualifier to this argument relates, as we have noted before, to campaign finance in democratic elections which leads to influence peddling on the part of politicians. Thus while rich democracies have been quite successful in better *enforcement* of laws, they have been in some cases less successful in reducing the influence of money on the process of *enactment* of those laws.

IV. *Factors Behind Differential Incidence and Persistence*

We now turn to the question of why the incidence of corruption is so palpably different in different countries and the related question of why in some cases corruption is so persistent. Liberal economists, of course, have an easy answer to this: it is the regulatory state with its elaborate system of permits and licences that spawns corruption, and different countries with different degrees of insertion of the regulatory state in the economy give rise to varying amounts of corruption. This explanation is no doubt valid to a large extent, but inadequate. It cannot, for example, explain why corruption, in the judgment of many perceptive observers, may have increased in post-Communist Russia or in China after the onset of the market reforms in recent years. Comparing across countries in Appendix Table 1 (based on the Business International survey data for the early 1980s), it cannot explain why corruption is supposed to be so much more in Mexico than in, say, South Korea or Taiwan in the early 1980s (when in the latter countries the state was not much less interventionist than in Mexico).

Another common explanation of differential corruption, popular among sociologists, is that social norms are very different in different countries. What is regarded in one culture as corrupt may be considered a part of routine transaction in another. (Visiting Westerners are often aghast that an Asian or an African will sometimes not carry out his ordinary service without *baksheesh* or tips; the latter, on the other hand, finds the high degree of monetization even in personal transactions in advanced capitalist countries somehow "corrupt.") But a more important issue is involved. It is widely recognized that in developing countries gift-exchange is a major social norm in business transactions, and allegiance to kinship-based or clan-based loyalties often takes precedence over public duties even for salaried public officials. Under such circumstances use of public resources to cater to particularistic loyalties become quite common and routinely expected. At the same time, it will be wrong to suggest that concern about public corruption is peculiarly Western. In most of the same developing countries, public opinion polls indicate that corruption is usually at the top of the list of problems cited by respondents. But there is a certain schizophrenia in this voicing of concern: the same people who are most vocal and genuinely worried about widespread corruption and fraud in the public arena do not hesitate at all in abusing public resources when it comes to helping out people belonging to their own kinship network. (It is a bit like the

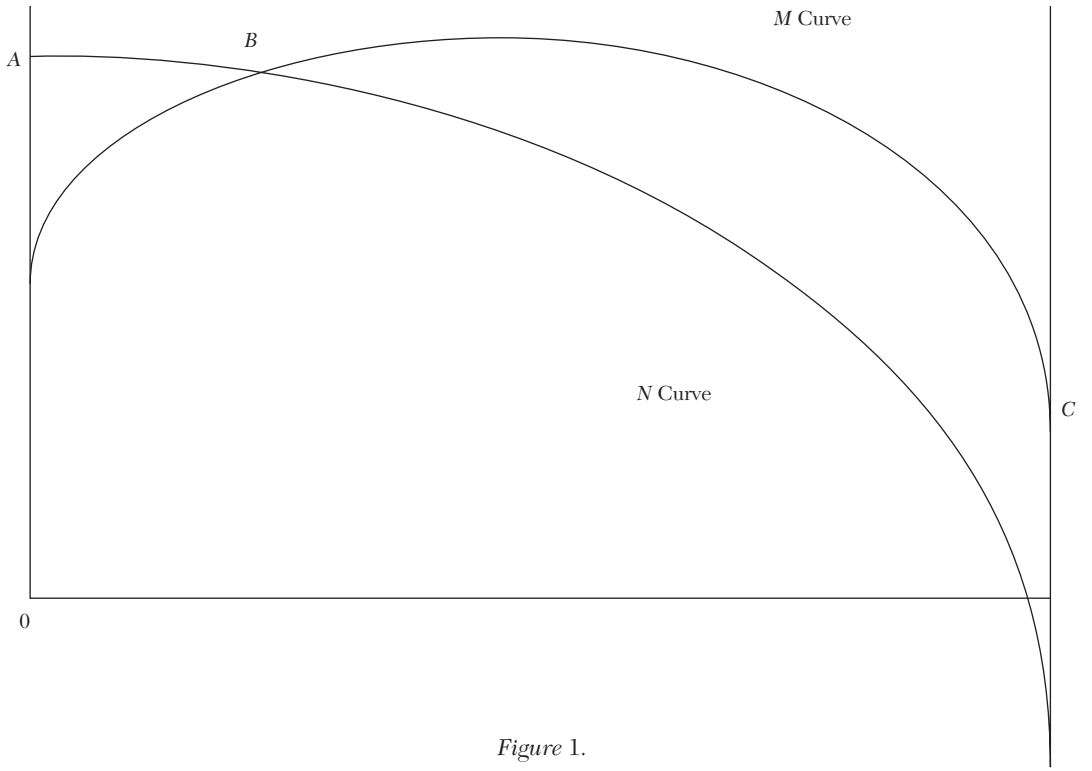

Figure 1.

U.S. Congressmen who are usually livid about the rampant pork-barrel politics they see all around them but they will fiercely protect the "pork" they bring to their own constituency.) Edward C. Banfield (1958) comments on the prevalence of what he calls "amoral familism" in the Mezzogiorno in Italy, but Robert Putnam (1993) observes in his study of comparative civicness in the regions of Italy that the amoral individuals in the less civic regions clamor most for sterner law enforcement. Mayfair Yang (1989) notes how people in China generally condemn the widespread use of *guanxi* (connections) in securing public resources, but at the same time admire the ingenuity of individual exploits among their acquaintances in its use.

A major problem with norm-based explanations is that they can very easily be near-tautological ("a country has more corruption because its norms are more favorable to corruption"). A more satisfactory explanation on these lines has to go into how otherwise similar countries (or regions in the same country like North and South in Italy) may settle with different social norms in equilibrium in, say, a repeated game framework, and how a country may sometimes shift from one equilibrium into another (as has happened in the case of today's developed countries in recent history with respect to corruption).

The idea of multiple equilibria in the incidence of corruption is salient in some of the recent economic theorists' explanations. The basic idea is that corruption represents an example of what are called frequency-dependent equilibria, and our expected gain from corruption depends crucially on the number of other people we expect to be corrupt. At a very simple level the idea may be illustrated, as in Andvig (1991), with a

so-called Schelling diagram shown in Figure 1. The distance between the origin and any point on the horizontal axis represents the proportion of a given total number of officials (or transactions) that is known to be corrupt, so that the point of origin is when no one is corrupt, and the end-point n is when everyone is corrupt. The curves M and N represent the marginal benefit for a corrupt and an honest official respectively for all different allocations of the remaining officials in the two categories. The way the curve N is drawn, the benefit of an honest official is higher than that of a corrupt official when very few officials are corrupt, but it declines as the proportion of corrupt officials increases and ultimately becomes even negative when almost all others are corrupt. The M curve goes up at the beginning when more and more officials are corrupt (for the marginal corrupt official lower reputation loss when detected, lower chance of detection, lower search cost in finding a briber, etc.), but ultimately declines (when the size of bribe is bid down by too many competing bribers, for example), even though at the end-pont the pay-off for a corrupt official remains positive.

In Figure 1 there are three equilibrium points, A, B, and C. A and C are stable, but B is not. At point A all are honest and it does not pay to be corrupt. At C all are corrupt, and it does not pay to be honest. At B, any given official is indifferent (between being corrupt and honest) but if only one more official is corrupt it pays to become corrupt; on the other hand, if one fewer is corrupt, the marginal official will choose to be honest. So initial conditions are important: if the economy starts with (or gets jolted into) a high average level of corruption it will move toward the high-corruption stable equilibrium C; if the initial average corruption is low, the economy gravitates toward the honest equilibrium A. The diagram illustrates in an elementary way how two otherwise similar countries (both in socio-economic structures and in moral attitudes) may end up with two very different equilibrium levels of corruption; also, how small changes may have a large impact on corruption if one starts out at points close to B.

The problem with such simple diagrams is that the mechanisms through which the economy reaches one or the other equilibrium are not fully spelled out. There are now several theoretical models in the literature which try to do that rigorously, and also get away from the naive informational presumptions implicit in the diagram. We shall briefly touch upon the main ideas in a few of them. Olivier Cadot (1987) has a model of corruption as a gamble, where every time an official asks for a bribe in a bilateral situation, there is a risk of being reported to and sacked by a superior officer. The optimal Nash strategy of a corrupt official is derived under alternative assumptions about the information structure. The comparative-static results show that a higher time discount rate, a lower degree of risk-aversion, and a lower wage rate will induce him, under certain conditions, to be more corrupt. Then Cadot goes on to introduce corruption also at the level of the superior officer who can be bribed (beyond a certain threshold) to cover up lower-level corruption. The interaction of corruption at different hierarchical levels of administration leads to multiple equilibria (one with only petty corruption and the other with more pervasive corruption), as the probability of being sacked diminishes with the general level of corruption in the civil service, and corruption at each level feeds on the other. In the rent-seeking litera-

ture also it has been pointed out by Arye L. Hillman and Eliakim Katz (1987) that there are extra social costs when there is a hierarchical structure such that a lowly customs official is obliged to pay a part of his take of bribes to a superior. The usual presumption of that literature—which is, as we have seen, in any case questionable—that bribes used in contesting a rent do not entail a social cost because they are only transfers, is seriously vitiated when one takes into account multitiered rent-seeking, with the official positions to which the bribes accrue are themselves contested with real resources.

Andvig and Karl O. Moene (1990) in their model assume, as in Cadot (1987), that the expected punishment for corruption when detected declines as more officials become corrupt, because it is cheaper to be discovered by a corrupt rather than a noncorrupt superior. There is a bell-shaped frequency distribution of officials with respect to their costs of supplying corrupt services. On the demand side the potential bribers' demand for corrupt services decreases as the bribe size increases and as the fraction of officials who are corrupt decreases (raising the search cost for a potential bribee). This model generates two stable stationary equilibria of the Nash type and highlights how the profitability of corruption is positively related to its frequency and how temporary shifts may lead to permanent changes in corruption.

Raaj Sah (1988) has a model of corruption with intertemporal behavioral externalities in the context of overlapping generations and a Bayesian learning process in belief formation. The bureaucrats and citizens both start off with a subjective probability distribution which tells them how likely it is that the agent they will meet in a transaction is corrupt. Corrupt (noncorrupt) agents would prefer meeting agents on the other side of the transaction who are similarly corrupt (noncorrupt). For each corrupt agent they meet, they will revise upwards their subjective probability estimates of meeting corrupt people, and are more likely to initiate a corrupt act in the next period. This is how beliefs about the nature of an economic environment one faces formed on the basis of one's past experience of dealing with that environment feeds into the perpetuation of a culture of corruption. Again, there are multiple equilibria and two economies with an identical set of parameters can have significantly different levels of corruption; the particular steady state to which the economy settles is influenced by the history of the economy preceding the steady state.

Sah's model admits the possibility that sometimes there may be discrepancies between beliefs about corruption frequency and its actual incidence. Philip Oldenburg's (1987) account of the land consolidation program in villages in U.P. in Northern India provides an interesting case study in this context. A land consolidation program involves a major reorganization of the mapping of the existing cultivation plots, their valuation and carving out of new plots in a village, and thus provides a lot of scope for corruption for the petty officials in charge. But Oldenburg's field investigations found very little evidence of actual *official* corruption. Complaints of corruption usually came from farmers who had not got precisely what they wanted, and did not understand the process fully, and so assumed that other farmers who in their perception did better must have bribed to get their way. Bribes were often paid to a middleman, who pocketed the money while telling the villagers that it was primarily

meant to bribe the Assistant Consolidation Officer. (He even made a show of paying a visit to the Officer.) There may actually be more corruption in other cases, but Oldenburg makes a valid point that the middlemen in general have a vested interest in spreading (dis)information that "nothing gets done without bribing the Officials," and when everybody believes that, it may even have the effect of inducing an official to indulge in corruption, as he is assumed to be corrupt anyway. This is a familiar self-fulfilling equilibrium of corruption.[10] (The middleman's role in corruption is similar to what Diego Gambetta (1988, p. 173) observes in his study of the Italian Mafia: "the mafioso himself has an interest in *regulated injections of distrust* into the market to increase the demand for the product he sells—that is, protection.")

In an overlapping generations framework with dynamic complementarity between past and future reputation Jean Tirole (1996) has argued that the persistence of corruption in a society may be explained partly by the bad collective reputation of previous generations: younger generations may inherit the reputation of their elders with the consequence that they may have no incentive to be honest themselves. This means, if for some temporary reasons (say, due to a war or some other disruption in the economic system) corruption in an economy increases, it has lasting effects: collective reputation once shattered is difficult to rebuild. Similarly, a one-shot reduction in corruption (through, say, an anti-corruption campaign) may have no lasting effect: it may take a minimum number of periods without corruption to return to a path leading to the low-corruption steady state.

We have discussed in this section the reasons for the persistence of corruption that have to do with frequency-dependent equilibria or intertemporal externalities. Let us end it by referring to a simpler reason for persistence in the case of some types of corruption. There are many cases where corruption is mutually beneficial between the official and his client, so neither the briber nor the bribee has an incentive to report or protest, for example, when a customs officer lets contraband through, or a tax auditor purposely overlooks a case of tax evasion, and so on. Shleifer and Vishny (1993) call it corruption with theft (a better name may be collusive corruption), to distinguish it from cases where the official does not hide the transaction in which the client pays the requisite price, fee, or fine to the government, but only charges something extra for himself, what Shleifer and Vishny call corruption without theft. The former type is more insidious, difficult to detect and therefore more persistent. One should add that this type also includes many cases of official relaxation of quality control standards, in inspection of safety in construction of buildings and bridges or in supplies of food and drugs, in pollution control, etc.

V. *Policy Issues*

We now turn to policy issues arising from our analysis above. We shall in general avoid paying much attention to the policy positions taken by the "moralists" and the "fatalists" on corruption, even though it is sometimes tempting to take their side. The "moralists" empha-

[10] Myrdal (1968, pp. 408–09) quotes Prime Minister Nehru: "Merely shouting from the housetops that everybody is corrupt creates an atmosphere of corruption. People feel they live in a climate of corruption and they get corrupted themselves."

size that without fundamental changes in values and norms of honesty in public life—a kind of ethic cleansing through active moral reform campaigns—no big dent in the corrosive effects of corruption is likely to be achieved. The "fatalists" are more cynical, that we have reached a point of no return in many developing countries, the corruption is so pervasive and well entrenched that for all practical purposes nothing much can be done about it. Our discussion in the last section on the history-dependence of the high-corruption equilibrium and the forces that tend to perpetuate it does point to the difficulties of getting out of the rut, but there exist some examples of success in controlling corruption even in the recent history of developing countries: Robert Klitgaard (1988) cites several examples, of which the cases of the Hong Kong Police Department and the Singapore Customs and Excise Department are the most successful, but in some sense the valiant efforts by one tax commissioner to fight pervasive corruption in the Bureau of Internal Revenue and the substantial impact he made in the 1970s in a hopelessly corrupt country like the Philippines under Marcos provide the most striking case. Without minimizing the importance of moral exhortations in anti-corruption campaigns, our focus here will be on incentive structures that may induce even opportunists to forego corrupt practices and the general problems and prospects of implementing them.

The first point that is commonly made, no doubt with a great deal of justification, is that regulations and bureaucratic allocation of scarce public resources breed corruption, and so the immediate task is to get rid of them. In some sense the simplest and the most radical way of eliminating corruption is to legalize the activity that was formerly prohibited or controlled. As Klitgaard (1988) notes, when Hong Kong legalized off-track betting, police corruption fell significantly, and as Singapore allowed more imported products duty free, corruption in customs went down. Sometimes, however, turning over a government agency's functions to the market implies essentially a shift from a public monopoly to a private monopoly, with a corresponding transfer of the rent,[11] but without much of an improvement in allocational efficiency (except that due to a removal of the distortion caused by secrecy discussed in Section II).

While regulations designed primarily to serve the patronage-dispensing power of politicians and bureaucrats are common, there are many regulations which serve some other valued social objectives, and there may be a tradeoff between these objectives and that of reducing corruption through deregulation. Suppose a scarce but essential consumer good (like food) in a poor country is currently rationed by the government so that the poor people can have some access to it. The rations are administered by corrupt officials. What will be the welfare consequences for the poor of replacing this system by the market?[12] To simplify, let us assume that the government is the only source of food under the rationing scheme, that food obtained under ration cannot be resold, and that corruption takes the form of the official charging a price higher than the stipulated ration price. In Figure 2 the ration price p is given by the slope of AB and the consumer's income by OA. The ration, $\bar{x}$, is binding

[11] The history of privatization in the last few years in many developing countries is replete with instances of corrupt transfers to cronies of politicians.

[12] For a taxonomic analysis of different cases for this question, see Peter J. Gordon (1994). The idea of Figure 2 is due to T. N. Srinivasan.

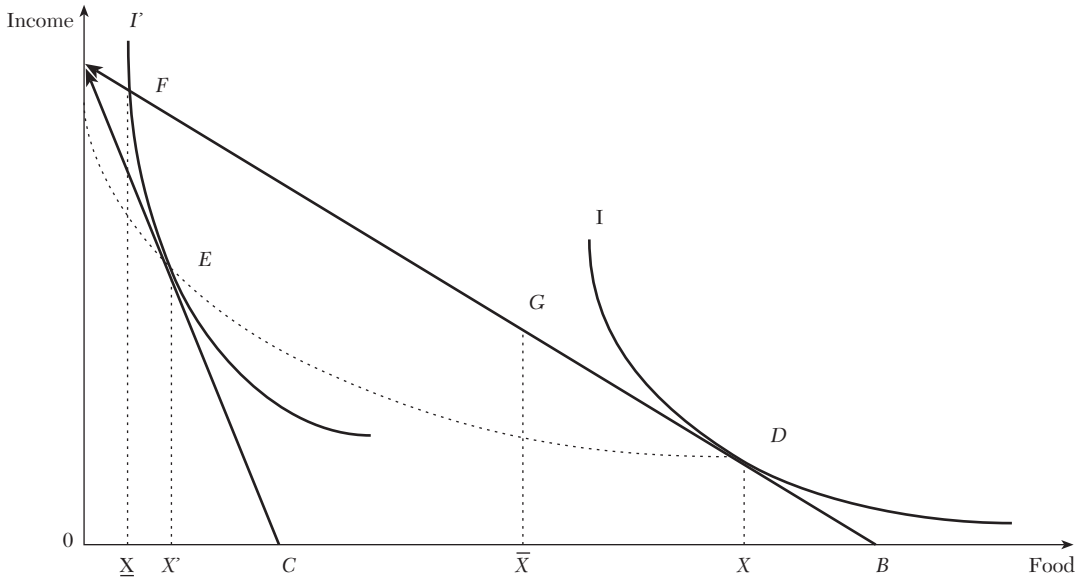

Figure 2.

in the sense that the consumer with his income *OA* and ration price *p* would like to buy *x* which is more than $\overline{x}$. If there were no corruption his rationed consumption equilibrium will be at some point *G* on the line *AB* to the left of *D*. Suppose the alternative nonrationed market equilibrium is given by point *E*, where the market price line, which is the slope of *AC*, is tangent to indifference curve *I'*, and the consumption is given by *x'*. As long as *G* is to the right of *F* (where the indifference curve through *E* intersects *AB*), the consumer prefers the uncorrupt ration scheme to the market system. Now suppose the corrupt official charges a price higher than the ration price while distributing a stipulated total amount of food. The broken curve in Figure 1 is the locus of points of tangency on the indifference map as the price line is rotated with *A* as its focus starting at *AB* and converging to the vertical axis. It is easy to see that this locus is also the locus of consumption points to which the consumer is driven to by the corrupt official as the ration is reduced from $\overline{x}$ to zero, because at each point on the locus the slope of the indifference curve represents the maximum price the consumer is willing to pay for the associated ration. As long as the ration exceeds *x'*, the consumer will prefer the corrupt ration scheme to the market system. The basic point is simple, although it can be made with more complicated models, and should be brought to the attention of those who in their zeal for deregulation and the market system with a view to reducing corruption lose sight of the social objective that the regulation was supposed to serve. (It is not an accident that getting rid of the corrupt public distribution systems in food under structural adjustment programs in developing countries has been politically so unpopular.) In general the literature on corruption often overlooks the distributional implications of corruption (apart from noting that the poor do not have the resources

or the "connections" to be able to bribe their way through).[13]

One way of reducing bureaucratic corruption is to reduce the monopoly power of the bureaucrat when a client faces her in trying to get a licence or some subsidy or transfer. Rose-Ackerman (1978) has suggested that, instead of giving each official a clearly defined sphere of influence over which she has monopoly control, officials should be given competing jurisdictions so that a client who is not well-served by one official can go to another. When collusion among several officials is difficult, competition will tend to drive the level of bribes to zero. Of course, without an appropriate incentive payment system, this can encourage laziness in some officials, because clients who are tired of waiting can turn to another official, instead of complaining to the official's superior. Also, in cases of what Shleifer and Vishny (1993) call corruption with theft, competitive pressure might increase theft from the government (including relaxation of minimum quality standards) at the same time as it reduces bribes. So in such cases, competition in the provision of government services has to be accompanied by more intensive monitoring and auditing to prevent theft. Rose-Ackerman (1994) has suggested that multiple officials with overlapping jurisdictions may also help in such cases, because the potential briber has to face the prospect of "persuading" all the officials involved, which raises costs and uncertainty for the corrupt project. (It has been reported that in the United States the overlapping involvement of local, state, and federal agencies in controlling illegal drugs has reduced police corruption.) In case of legitimate business projects, however, this raises the multiple veto power problem discussed in Section II.

In some cases, on account of large fixed costs, indivisibilities, and coordination problems, bureaucratic competition through overlapping jurisdictions is not feasible (nor desirable, if bargaining advantages are to be pressed), as in the case of large defense contracts or when the government buys in bulk in world commodity markets (say, in petroleum) or expensive single items like aircrafts. Not surprisingly, some of the major corruption scandals in developing countries (with substantial kickbacks from foreign contractors) involve politicians and bureaucrats in charge of such large procurement cases. On the bribe-givers' side it should be noted that when competition among the foreign contractors is intense, very few governments of industrially advanced countries discourage the bribing of officials in the purchasing countries (in fact tax-deductibility of bribes by the companies often makes the tax-payers complicit in the payment of such bribes). Even in the exceptional case of the U.S. where there is the 1977 Foreign Corrupt Practices Act forbidding American companies from making payments to foreign officials, what are described as "grease payments" to speed up transactions are not ruled out. (In fact, the 1988 amendments to the Act expand the range of such payments allowed.)

Many countries launch periodic "spring-cleaning" through anticorruption campaigns. How effective are they? It varies from situation to situation. To be effective, they have to be credible and sustained. As suggested by the frequency-dependent equilibrium models, a critical mass of opportunist individuals have to be convinced over a long enough period that corruption is not cost effective. But as has happened many times in the recent history of Africa or

[13] In some cases the poor may not be completely left out. They get the rationed good after waiting in line (unless the good is extremely scarce), while the rich bribe to jump the queue.

China, anticorruption campaigns are usually ad hoc, and targeted at political enemies or at best at small fry, exempting the big fish, or the important cronies and accomplices of the political rulers. Short-lived campaigns and repeated amnesties to offenders (designed to wipe the slate clean) only increase the cynicism about the next round and give out the wrong signals. As we have discussed in connection with Tirole's (1996) intertemporal collective reputation model, trust takes several periods to reestablish itself. What is important is to institutionalize various kinds of accountability mechanisms (like an independent office of public auditing, an election commission to limit and enforce rules on campaign contributions in democratic elections, independent investigating agencies (like the Hong Kong Independent Committee against Corruption which directly reports to the Governor General), an office of local ombudsman with some control over the bureaucracy, citizens' watchdog committees providing information and monitoring services and pursuing public-interest litigation, a vigorous and independent, even muckraking, press, less stringent libel laws or laws protecting official secrecy, etc.).[14] For the watchdog committees it is important not merely to unearth and publicize egregious cases of public corruption, but also to highlight credible cases where the automatic and cynical presumption of the local people that the officials are corrupt turns out to be gross exaggerations, thus cutting down on the feedback effects of rumors and designs of middlemen.

Many other measures of reform within public administration have been suggested: cutting down on the proliferating functions of government departments (using vouchers and competition with private suppliers to serve a public need when customers can "vote" with their feet) and concentrating these functions largely in areas where, on account of elements of natural monopoly or a public good or quality standards not easily discernible to the customers, a voucher plan is not an efficient way of providing the service; making supervisors answerable for gross acts of malfeasance by their subordinates; well-established procedures of encouraging "whistle-blowers" and guaranteeing their anonymity; authorization of periodic probing of ostensible but "unexplainable assets" of officials; working in teams (for example, in Singapore customs agents were asked to work in pairs) when lower bureaucrats face a customer instead of one-on-one so that there is some check in the bargaining process (this is a simpler form of the overlapping jurisdictions case discussed above); well-defined career paths in civil service that are not dependent on the incumbent politicians' favor; periodic job rotation so that a bureaucrat does not become too cosy with a customer over a long period; a more elaborate codification of civil service rules reducing the official's discretion in granting favors; and so on. Of course, in many of these cases one can also argue on the opposite side. Too many rules rather than discretion may have the perverse effect of providing opportunities for corruption simply to circumvent mindless inflexibilities. The practice of frequent job rotation may provide an incentive to officials for maximum loot[15] in the shortest possible time, discourage

[14] For a discussion of some of the "countervailing actions" that victims of corruption can undertake, see M. Shahid Alam (1995).

[15] In Robert Wade's (1985) case study in South India, an Executive Engineer in charge of irrigation may pay as bribe up to 14 times his annual salary in order to obtain a two-year tenure at a particular location. This suggests the lower bound of how much he expects to earn in bribes in two years.

ing on the job, and in general provide the politician (or the senior officer) a weapon to transfer an honest official bent on rocking the boat of existing patronage distribution. The opportunity to probe the private finances of an official is sometimes abused against rivals and political opponents. Working on teams in facing a customer may sometimes encourage unnecessary delays or collusion in demands for larger bribes. And so on.

VI. *Incentive Payments for Civil Servants*

Let us now turn to the important policy issue of an incentive pay structure in public administration that is often cited as one of the most effective ways of fighting corruption. In imperial China under the Ch'ing dynasty district magistrates were paid an extra allowance called *yang-lien yin* ("money to nourish honesty"). Klitgaard (1988, p. 81) cites a quote from the historian Macaulay's account of Robert Clive's attempt to reduce the corruption rampant in the British East India Company in 1765: "Clive saw clearly that it was absurd to give men power, and to require them to live in penury. He justly concluded that no reform could be effectual which should not be coupled with a plan for liberally remunerating the civil servants of the Company." In recent times both Singapore and Hong Kong have followed an incentive wage policy for public officials with a great deal of success. Current reforms in tax enforcement in many countries, which include a bonus to the tax officer based on the amount of taxes he or she collects, have often been associated with significant improvements in tax compliance (see, for example, Dilip Mookerjee 1995). In some cases (like in Singapore) a wage premium above private sector salaries has been found useful, consistent with the efficiency wage theory. The potential cost of job loss (including the wage premium and seniority benefits) on detection may stiffen official resistance to temptation for corruption. International agencies pushing for structural adjustment policies sometimes ignore that, while deregulation reduces opportunities for corruption, another part of the same policy package aimed at drastic reductions of public spending may result in lower real wages for civil servants increasing their motivation for corruption. One should also keep in mind that when today's rich countries had beaten the worst of corruption in their history, the average salary of an official was many times that of what obtains in most poor countries.

While the argument for incentive payment is clear, the relationship between public compensation policy and corruption can sometimes be quite complex. This is because our objective is not merely to reduce corruption in an official agency but, at the same time, not to harm the objective for which the agency was deployed in the first place. Much of the theory of rent-seeking does not worry about this, because the presumption often is that government is nothing but organized theft and the less of it the better. But, as we have already seen in the case of rationed distribution of food to the poor, if we have another valued social objective, there may be cases where the corrupt administered system is preferable to the market. We shall now discuss the compensation policy for corruptible enforcers of a regulation when the latter has a valued social purpose. Let us take, for example, the case of public inspectors charged with monitoring pollution from a factory. We shall follow the theoretical model of Mookherjee and I. P. L. Png (1995) to understand the nature of the tradeoff among corruption, pollution, and en-

forcement effort and consider the consequences of strategic interaction between the polluting factory and the corruptible inspector.

Suppose the regulator can directly control neither the inspector's monitoring effort nor his underreporting of the factory's pollution for which he gets bribed, a double moral hazard problem in a principal-agent model. The regulator has three instruments: a rate of reward r for the inspector (a percentage commission based on the fines for pollution collected from the factory), a penalty p (depending on the amount of underreporting of pollution) on the inspector when corruption is discovered, and a penalty q (a mark-up over the usual fine for the evaded pollution) on the factory for bribing the inspector. The probability that the inspector will unearth the factory's true pollution level (assuming, of course, that he will not overreport) depends on the monitoring effort exerted by the inspector. There is also an exogenous probability that the inspector's underreporting and the bribe paid are discovered by the regulator. Given the regulator's policy package (r, p, q), the factory and the inspector simultaneously choose the pollution level and the monitoring intensity respectively. The two parties (assumed risk-neutral) then jointly determine the bribe, if any, as part of a Nash bargaining solution.

Suppose the factory has polluted and the inspector has found out about it. If bribery is going on, then small increases in r or p may merely raise the level of the bribe: a compensation policy whereby the larger reward for the inspector or a higher penalty for taking a bribe, raises the cost borne by the inspector for underreporting pollution, and so the inspector demands and receives a larger bribe, and corruption *increases*. Mookherjee and Png show that it takes a sufficiently large, discrete, increase in the reward or the penalty to eliminate corruption (when the inspector's demand for bribe rises beyond the factory's willingness to pay). One way to reduce the bribe, however, is to raise q, the penalty on the bribe-giver (making bribing more costly for him), while reducing the penalty p for the bribe-taker (so that the latter does not demand a larger bribe): this contrasts with the typical practice of punishing bribe-givers less severely than bribe-takers.

What effect does the compensation policy have from the point of view of the primary objective of regulating pollution? A small increase in the reward rate r, by raising the bribe and hence the price of pollution will lower the incentive for the factory to pollute. The larger bribe will increase the inspector's incentive to monitor, further deterring the factory. The reduction in pollution, on the other hand, will discourage the inspector from monitoring. In equilibrium the net effect is to reduce pollution. By contrast, when the regulator raises the penalty rate p on the inspector, this will reduce his incentive to monitor; the reduction in monitoring can reduce the expected penalty for pollution for the factory, and hence the result may be more pollution. Thus although the inspector is risk-neutral, the carrot (reward for reporting pollution) and the stick (penalty for taking a bribe) can have opposite effects on the level of pollution. All this is not to discourage a suitable incentive payment system in the context of corruption but to point to the nature of complexities involved.[16] The analysis also suggests

[16] Timothy Besley and John McLaren (1993) show that in the case of tax collectors hetero-genous in their corruptibility, the revenue author-ity may sometimes prefer a regime of corruption among the tax collectors than paying them effi-ciency wages.

e reward system should be more geared to the incidence of the primary harm that the regulator is supposed to control. (This indicates that in the case of controlling corruption in the Customs department the value of paying rewards to customs officials should be assessed by their effect on the open-market price of the product subject to import controls.)

Finally, policy issues on corruption cannot be discussed without involving the larger question of the nature of the state that is supposed to carry out the policies. This is too large a topic to be covered here,[17] but one may nevertheless point out that to assume that all states are predatory, as is customary in much of the public choice literature in the context of developing countries, does not help in understanding why corruption is more in some countries than in others (even with similar extent of state intervention), and why countries with similar over-all levels of corruption differ in its effect on productivity and growth. We have noted in Section III that political competition can reduce corruption (unless the transaction costs in the political market, in the form, say, of campaign finances, are too large), but what is particularly important in deciding the economic consequences of corruption is the extent of centralization in the rent-collection machinery. Weak and fragmented governments (even under authoritarian rulers) with rampant economic warlordism can let loose a regime of decentralized looting that is particularly harmful for static and dynamic efficiency.

Some African states in recent history became predatory in their rent-extraction not because they were strong, but because they were weak: the state could not enforce the laws and property rights that provide the minimum underpinnings of a market economy and thus lost respect; disrespect quickly led to disloyalty and thievery among public officials. The strong states of East Asia with their centralized rent-collection machinery and their dense "encompassing" network with business interests stand in sharp contrast, even though by some measures corruption has been quite substantial. As we have emphasized in our discussion of "lump-sum corruption" in Section II, the ability to precommit credibly may have been an important feature of the "strength" of such states. This is not to deny that getting rid of many of the dysfunctional regulations remains a major first step in anti-corruption policy, whatever the nature of the state. In addition, it is imperative to institutionalize the various kinds of accountability mechanisms at different levels of the government (that we have briefly discussed in Section V) as part of the agenda for any meaningful policy reform in this context.

[17] For a discussion of the role of the state in the context of development, see Bardhan (1996).

References

ADAMS, GORDON. *The iron triangle: The politics of defense contracting.* New Brunswick: Transaction Books, 1981.

ALAM, M. SHAHID. "A Theory of Limits on Corruption and some Applications," *Kyklos*, 1995, *46*(43), pp. 419–35.

ANDVIG, JENS CHRISTOPHER. "The Economics of Corruption: A Survey," *Studi Economici*, 1991, *43*, pp. 57–94.

ANDVIG, JENS CHR. AND MOENE, KARL, OVE. "How Corruption May Corrupt," *J. Econ. Behav. Organ.*, Jan. 1990, *13*(1), pp. 63–76.

BANERJEE, ABHIJIT. "A Theory of Misgovernance." Working Paper. MIT Economics Dept., 1994.

BANFIELD, EDWARD C. *The moral basis of a backward society.* New York: Free Press, 1958.

BARDHAN, PRANAB K. "The Nature of Institutional Impediments to Economic Development." Working Paper. Dept. of Economics, U. of California at Berkeley, Mar. 1996.

BECK, PAUL J. AND MAHER, MICHAEL W. "A Comparison of Bribery and Bidding in Thin Markets," *Econ.Letters*, 1986, *20*, pp. 1–5.

BESLEY, TIMOTHY AND MCLAREN, JOHN. "Taxes

and Bribery: The Role of Wage Incentives," *Econ. J.*, Jan. 1993, *103*(416), pp. 119–41.

BOYCKO, MAXIM; SHLEIFER, ANDREI AND VISHNY, ROBERT. *Privatizing Russia.* Cambridge MA: MIT Press, 1995.

CADOT, OLIVIER. "Corruption as a Gamble," *J. Public Econ.*, July 1987, *33*(2), pp. 223–44.

GAMBETTA, DIEGO. "Mafia: The Price of Distrust," in *Trust making and breaking cooperative relations.* Ed.: DIEGO GAMBETTA. Oxford: Blackwell, 1988, pp. 158–75.

GORDON, PETER J. "Welfare of the Poor Given a Corrupt Non-Market System." Working Paper. U. of West Indies, Jamaica, 1994.

HILLMAN, ARYE L. AND KATZ, ELIAKIM, "Hierarchical Structure and the Social Costs of Bribes and Transfers," *J. Public Econ.*, Nov. 1987, *34*(2), pp. 129–42.

HUNTINGTON, SAMUEL P. *Political order in changing societies.* New Haven: Yale U. Press, 1968.

KANGLE, R. P. *The Kautiliya Arthasastra, Part II.* Bombay: U. of Bombay, 1972.

KLITGAARD, ROBERT E. *Controlling corruption.* Berkeley: U. of California Press, 1988.

KRUEGER, ANNE O. "The Political Economy of the Rent-Seeking Society," *Amer. Econ. Rev.*, June 1974, *64*(3), pp. 291–303.

LEFF, NATHANIEL H. "Economic Development through Bureaucratic Corruption," *The American Behavioral Scientist*, Nov. 1964, *8*(2), pp. 8–14.

LIEN, DONALD H. D. "A Note on Competitive Bribery Games," *Econ. Letters*, 1986, *22*, pp. 337–41.

LUI, FRANCIS T. "An Equilibrium Queuing Model of Bribery," *J. Polit. Econ.*, Aug. 1985, *93*(4), pp. 760–81.

MAURO, PAOLO. "Corruption and Growth," *Quart. J. Econ.*, Aug. 1995, *110*93), pp. 681–712.

———. "The Effects of Corruption on Growth, Investment, and Government Expenditure," in *Corruption in the world economy*. Ed.: KIMBERLY A. ELLIOTT. Washington DC: Institute for International Economics, forthcoming.

MOOKHERJEE, DILIP. "Reforms in Income Tax Enforcement in Mexico." IRIS-India Working Paper No.6. U. of Maryland, 1995.

MOOKHERJEE, DILIP AND PNG, I. P. L. "Corruptible Law Enforcers: How Should They be Compensated?" *Econ. J.*, Jan. 1995, *105*(428), pp. 145–59.

MURPHY, KEVIN M.; SHLEIFER, ANDREI AND VISHNY, ROBERT W. "Why Is Rent-Seeking So Costly to Growth?" *Amer. Econ. Rev.*, May 1993, *83*(2), pp. 409–14.

MYRDAL, GUNNAR. *Asian drama*. Vol. II. New York: Random House, 1968.

OLDENBURG, PHILIP. "Middlemen in Third-World Corruption," *World Politics*, 1987, *39*, pp. 508–35.

OLSON, MANCUR. "Dictatorship, Democracy, and Development," *Amer. Polit. Sci. Rev.*, Sept. 1993, *87*(3), pp. 567–75.

PUTNAM, ROBERT D. *Making democracy work: Civic traditions in modern Italy*. Princeton: Princeton U. Press, 1993.

RASMUSEN, ERIC AND RAMSEYER, J. MARK. "Cheap Bribes and the Corruption Ban: A Coordination Game among Rational Legislators," *Public Choice*, Mar. 1994, *78*(3–4), pp. 305–27.

ROMER, PAUL. "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions," *J. Develop. Econ.*, Feb. 1994, *43*(1), pp. 5–38.

ROSE-ACKERMAN, SUSAN. *Corruption: A study in political economy*. New York: Academic Press, 1978.

———. "Reducing Bribery in the Public Sector," in *Corruption & democracy: Political institutions, processes and corruption in trasition states in East-Central Europe and in the former Soviet Union*. Ed.: DUC V. TRANG. Budapest: Institute for Constitutional & Legislative Policy, 1994.

———. "When is Corruption Harmful?" Working Paper. The World Bank, 1996.

SAH, RAAJ KUMAR. "Persistence and Pervasiveness of Corruption: New Perspectives." Yale Economic Growth Center Discussion Paper: 560, 48, Aug. 1988.

SHLEIFER, ANDREI AND VISHNY, ROBERT W. "Corruption," *Quart. J. Econ.*, Aug. 1993, *108*(3), pp. 599–617.

THEOBALD, ROBIN. *Corruption, development, and underdevelopment.* Durham, NC: Duke U. Press, 1990.

TIROLE, JEAN. " A Theory of Collective Reputations," *Rev. Econ. Stud.*, Jan. 1996, *63*(1), pp. 1–22.

TULLOCK, GORDON. "Rent-Seeking as a Negative-Sum Game," in *Toward a theory of the rent-seeking society.* Eds.: JAMES M. BUCHANAN, ROBERT D. TOLLISON, AND GORDON TULLOCK. College Station: Texas A&M U. Press, 1980, pp. 16–36.

——— "The Costs of Special Privilege," in *Perspectives on positive political economy.* Eds.: JAMES E. ALT AND KENNETH A. SHEPSLE. Cambridge and New York: Cambridge U. Press, 1990, pp. 195–211.

WADE, ROBERT. "The Market for Public Office: Why the Indian State Is Not Better at Development," *World Devel.*, Apr. 1985, *13*(4), pp. 467–97.

WRAITH, RONALD E. AND SIMKINS, EDGAR. *Corruption in developing countries.* London: Allen and Unwin, 1963.

YANG, MAYFAIR MEI-HUI. "The Gift Economy and State Power in China," *Comparative Studies in Society and History*, Jan. 1989, *31*(1), pp. 25–54.

Appendix

TABLE 1

Country in descending order of GNP per capita	Index of low corruption (1)	Index of low red tape (2)	Index of efficiency of the legal system (3)	Efficiency of the governance structure, average of (1)–(3)
Switzerland	10	10	10	10
Japan	8.75	8.5	10	9.08
Sweden	9.25	8.5	10	9.25
Denmark	9.25	9.5	10	9.58
Norway	10	9	10	9.67
United States	10	9.25	10	9.75
Germany	9.5	7.5	9	8.67
Austria	8	7.25	9.5	8.25
France	10	6.75	8	8.25
Finland	9.5	8.5	10	9.33
Belgium	9.75	8	9.5	9.08
Canada	10	9.5	9.25	9.58
Netherlands	10	10	10	10
Italy	7.5	4.75	6.75	6.33
United Kingdom	9.25	7.75	10	9
Australia	10	9.25	10	9.75
Singapore	10	10	10	10
Hong Kong	8	9.75	10	9.25
Kuwait	7.75	6.25	7.5	7.17
Spain	7	6	6.25	6.42
Israel	9.25	7.5	10	8.92
New Zealand	10	10	10	10
Ireland	9.75	7.5	8.75	8.67
Saudi Arabia	4.75	5.25	6	5.33
Portugal	6.75	4.5	5.5	5.58
Greece	6.25	4	7	5.75
Korea	5.75	6.5	6	6.08
Argentina	7.66	6.66	6	6.77
Trinidad/Tobago	6.5	4	8	6.17
Mexico	3.25	5.25	6	4.83
Uruguay	8	6	6.5	6.83
Venezuela	5.75	4	6.5	5.42
Malaysia	6	6	9	7
Brazil	5.75	4	5.75	5.17
South Africa	8	7	6	7
Chile	9.25	9.25	7.25	8.58
Iraq	10	3	6	6.33
Panama	5	7.25	6.75	6.33
Iran	3.25	1.25	2	2.17
Turkey	6	5.33	4	5.11

TABLE 1 (*Cont.*)

Country in descending order of GNP per capita	Index of low corruption (1)	Index of low red tape (2)	Index of efficiency of the legal system (3)	Efficiency of the governance structure, average of (1)–(3)
Thailand	1.5	3.25	3.25	2.56
Algeria	5	2.5	7.25	4.92
Jamaica	5	4	7.33	5.44
Colombia	4.5	4.5	7.25	5.42
Jordan	8.33	6.33	8.66	7.77
Ecuador	5.5	5	6.25	5.58
Dominican Rep.	6.5	6	6.75	6.42
Morocco	5.66	5.33	6.66	5.88
Peru	7.25	5.75	6.75	6.58
Cameroon	7	6	7	6.67
Philippines	4.5	5	4.75	4.75
Ivory Coast	6	7.75	6.5	6.75
Indonesia	1.5	2.75	2.5	2.25
Egypt	3.25	3	6.5	4.25
Zimbabwe	8.75	7.75	7.5	8
Sri Lanka	7	6	7	6.67
Ghana	3.66	2.33	4.66	3.55
Pakistan	4	4	5	4.33
Nicaragua	8.75	4	6	6.25
Nigeria	3	2.75	7.25	4.33
Kenya	4.5	5	5.75	5.08
India	5.25	3.25	8	5.5
Haiti	2	2	2	2
Bangladesh	4	4	6	4.67
Liberia	2.66	5	3.33	3.66
Angola	8.66	5.33	4	6
Zaire	1	2.66	2	1.89

Source: Mauro (1995). The scale is 10 for no corruption to 0 for maximum corruption. The indices are based on standard questionnaires filled in by Business International correspondents stationed in about 70 countries in 1980–83. It is likely that the indices reflect what are faced by foreign businessmen in a country, not necessarily what own citizens face.

TABLE 2
PERCEIVED CORRUPTION RANKING, 1996

Rank	Country	Mean Score	Variance	No. of Surveys Used
1	New Zealand	9.4	0.39	6
2	Denmark	9.3	0.44	6
3	Sweden	9.1	0.30	6
4	Finland	9.1	0.23	6
5	Canada	9.0	0.15	6
6	Norway	8.9	0.20	6
7	Singapore	8.8	2.36	10
8	Switzerland	8.8	0.24	6
9	Netherlands	8.7	0.25	6
10	Australia	8.6	0.48	6
11	Ireland	8.5	0.44	6
12	U.K.	8.4	0.25	7
13	Germany	8.3	0.53	6
14	Israel	7.7	1.41	5
15	USA	7.7	0.19	7
16	Austria	7.6	0.41	6
17	Japan	7.1	2.61	9
18	Hong Kong	7.0	1.79	9
19	France	7.0	1.58	6
20	Belgium	6.8	1.41	6
21	Chile	6.8	2.53	7
22	Portugal	6.5	1.17	6
23	South Africa	5.7	3.30	6
24	Poland	5.6	3.63	4
25	Czech Rep.	5.4	2.11	4
26	Malaysia	5.3	0.13	9
27	South Korea	5.0	2.30	9
28	Greece	5.0	3.37	6
29	Taiwan	5.0	0.87	9
30	Jordan	4.9	0.17	4
31	Hungary	4.9	2.19	6
32	Spain	4.3	2.48	6
33	Turkey	3.5	0.30	6
34	Italy	3.4	4.78	6
35	Argentina	3.4	0.54	6
36	Bolivia	3.4	0.64	4
37	Thailand	3.3	1.24	10
38	Mexico	3.3	0.22	7
39	Ecuador	3.2	0.42	4
40	Brazil	3.0	1.07	7
41	Egypt	2.8	6.64	4
42	Colombia	2.7	2.41	6
43	Uganda	2.7	8.72	4
44	Philippines	2.7	0.49	8

TABLE 2 (*Cont.*)
PERCEIVED CORRUPTION RANKING, 1996

Rank	Country	Mean Score	Variance	No. of Surveys Used
45	Indonesia	2.7	0.95	10
46	India	2.6	0.12	9
47	Russia	2.6	0.94	5
48	Venezuela	2.5	0.40	7
49	Cameroon	2.5	2.98	4
50	China	2.4	0.52	9
51	Bangladesh	2.3	1.57	4
52	Kenya	2.2	3.69	4
53	Pakistan	1.0	2.52	5
54	Nigeria	0.7	6.37	4

Source: Transparency International. The perceived corruption score is an average of data from several surveys, the respondents of which are mostly people working for multinational firms and institutions: it is a "poll of polls" (with the variance in the score from different surveys given in column 4). The scale is 10 for no corruption to 0 for maximum corruption.