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Gautam Bose

School of Economics
Australian School of Business
UNSW Sydney NSW 2052 Australia
<http://www.economics.unsw.edu.au>

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Aspects of bureaucratic corruption

GAUTAM BOSE*
School of Economics
University of New South Wales
UNSW 2052, Australia
g.bose@unsw.edu.au

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Abstract

This review attempts to identify treatments of corruption that draw upon characteristics of underdevelopment either as causes or as consequences. It focuses on three aspects of corruption in developing economies: red tape, rent-seeking, and the abundance of intermediaries. Red tape is presented as arising from differences in ability-to-pay and willingness-to-pay, which is a consequence of incomplete or absent markets in LDCs. Rent-seeking is viewed as a reason for inefficient allocation of resources. We emphasise that there is very little analysis of intermediation, but analysis is necessary to understand the structure of corruption markets.

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1 Introduction

Corruption is as old as government. Observations of contemporary commentators on corruption in civilisations ancient and modern have been liberally cited in the recent literature. The focus on corruption in contemporary economics dates from Rose-Ackerman's 1975 paper (see also Rose-Ackerman, 1978). Shleifer and Vishny (1993) remains a particularly influential contribution, as is the survey by Bardhan (1997). Several substantial books and edited volumes have appeared on the subject, including Klitgaard (1988), Rose-Ackerman (1999, 2007), and Abed and Gupta (2002). International bodies including the World Bank have over these decades laid increasing emphasis on corruption as one of the primary forces retarding development in the developing world.

Most Indians are intimately familiar with corruption in the news as well as in personal transactions. Anecdotes, indicators and evidence abound both in the popular press and in academic writing, whether of economists or other social scientists, as well as in contemporary literature and film. Indeed, a prototype of the popular hero in old Bombay movies is the police officer that is *not* corrupt, and therefore stands out from the crowd (e.g., Amitabh Bachhan in *Zanjeer*, or Sanjeev Kumar in *Sholay*). Outside the movies, bribes have to be paid by the common man to obtain a driver's license or a building completion certificate, while the uncommon one may rake in millions from manipulating the award of a public contract.

Several definitions of corruption have been offered. There are differences in detail, nuance, and emphasis in the ways that various authors conceive corruption, but not severe disagreements of substance. The recent literature contains several discussions of the appropriateness of alternative definitions. I will sidestep that conversation, and adopt the definition that corruption happens when a government official ("bureaucrat") breaks the rules of his office to obtain a private gain (Banerjee, Hanna, and Mullianathan, 2009). Our specific concern is with situations where the official alters the terms of a transaction with a private individual in which he acts on behalf of the government. The alteration in terms constitutes the deviation from rules and benefits the individual, who pays a consideration to the official in return. The consideration may be in kind, such as a favour in return, or the acknowledgement that the bureaucrat has discharged a parochial obligation.

The context of corruption is thus a transaction in which the government is involved, represented by a bureaucrat. One way to eliminate corruption, therefore, is for the government not to be involved in the corresponding transactions. This is clearly a non-starter in the case of goods and services that require state involvement to preserve their nature (such as law-enforcement and justice), and difficult with others that possess characteristics of non-exclusivity or give rise to significant externalities. We now do know however that many operations in which government participation was previously thought to be necessary (such as natural monopolies with extensive network effects) can in fact be effectively privatised using sophisticated mechanism design principles and regulatory devices. When corruption is a serious problem, such alternative solutions must first be explored. If privatising the activity generates greater net welfare than under second-best government operation with corruption, then it is the optimal solution. I have discussed this further in Section 3.1. There are papers in the literature

that analyse corruption, and mechanisms to reduce it, in situations where privatisation is the obvious answer. The focus of the literature is probably better placed upon situations where it is not.

That still leaves a large array of activities that governments must participate in, and where corruption remains a persistent problem. This essay addresses only a narrow slice it. We focus on transactions that occur between a bureaucrat and a member of the public, either directly or as mediated by a professional who specialises in arranging corrupt transactions. In particular we do not primarily address optimal punishment schemes (see Mookherjee and Png, 1995, and related contributions) or corruption in hierarchical structures (see Mishra, 2007, for a recent survey). The survey by Aidt (2003) covers ground similar to this essay, but uses a different conceptual organisation. In addition there are sections of macroeconomic literature that study the conjunction of corruption and growth (Mauro, 1995), corruption and foreign aid (Neeman, Paserman, and Simhon, 2008; Alesina and Weder, 2002) etc., which we abstract from altogether.

A second consideration in the study of corruption is that, while it is not unknown in the developed world, it is a nagging and everyday problem prominently in the developing (and not-so-developing) world. Since our concern is with this context, it seems reasonable to position the study of corruption with reference to salient characteristics of underdevelopment. Focus on attributes such as poverty, inequality and severely incomplete markets have in recent decades yielded rich dividends in understanding the genesis and dynamics (or stasis) of underdevelopment. In that vein, it may be productive to ask how characteristics of underdevelopment can create occasions for corruption—especially the varieties that are rife in less-developed economies—and how corruption may lead to sluggish development or the lack of even that. Section 2 briefly discusses some of the literature relevant to this question. The suggestion is that our analytical understanding of this nexus is still incomplete. I have indicated at least one correlate of corruption that may be especially relevant in the Indian context, and has not yet been extensively studied.

The emphasis of this essay, however, is on microeconomic treatments of two salient aspects of corruption. Section 3 formally analyses the familiar phenomenon of red tape. It focuses on a scenario in which credit constraints (in the background) drive a wedge between citizens' willingness-to-pay and ability-to-pay for a service, and thus create the need for government involvement in its distribution. It is this wedge that also produces the need to institute red tape as a screening device for recipients of the service, and gives rise to a specifically recognisable attribute of state engagement and corruption in developing economies. Section 4, which nominally addresses rent-seeking behaviour, in large part turns its attention to corruption which results in drawing away resources from productive to unproductive activities.

Section 5 addresses a salient aspect of the industrial organisation of the corruption market: the fact that most corruption activities are organised and channeled through established and professional intermediaries. We know from experience that effective regulation of an activity requires an understanding of how the market is organised; we also know that intermediaries are ubiquitous in arranging corrupt transactions in the developing world (as well as in the developed—see Lambsdorff (2002) for several case studies), and yet there is little analytical attention that has been paid to this phenomenon. The section reviews some of the surprisingly thin literature there is, and

ends with a suggestion that an explanation of the plentifulness of middlemen in less-developed countries may also be sought in familiar economic characteristics of these countries.

The general emphasis of this essay is that the study of corruption should identify sectors in which privatisation is not a solution for corruption, and there explore links between essential attributes of underdevelopment and corruption. Further the organisational structure of corruption markets must be paid greater attention, and the genesis and consequences of established intermediation better understood.

2 Corruption and development

Cursory observation readily confirm that corruption in its everyday bureaucratic transactions is more pervasive in the less-developed countries than in developed ones, a relationship that also emerges strongly from empirical analysis (see Treisman, 2000). Following the work of Mauro (1995) it is also generally accepted that corruption is associated with slower growth. Bardhan (1997) observes that “over the last 100 years or so corruption has generally declined with economic growth in most rich countries” (p.1329).¹ Neeman, Paserman, and Simhon (2008) find that the relationship between corruption and GNP per capita is conditioned by the openness of the economy; in open economies the relationship is decidedly negative, but in closed economies there is no clear relationship between the two.

In recent decades there have been several attempts to unravel the causal relationships that may link corruption, underdevelopment and the growth process. Mauro (1998) argues that “predatory behavior by corrupt politicians distorts the composition of government expenditure” into channels from which it is easier to extract rents, and finds that empirically corruption reduces expenditure on education. Murphy, Shleifer, and Vishny (1993) show that when property rights are weak and rent-seeking is a viable option, resources will be channeled out of productive activities into rent-seeking. Despite these and other attempts, however, the literature is far from providing a comprehensive theory that relates corruption and development.

Following Becker and Stigler (1974), one would expect that corruption would be lower when bureaucrats draw higher salaries and face greater likelihood of losing salaried positions if they are caught taking bribes. Treisman (2000) finds weak evidence that high salaries associate with lower corruption. Rijkeghem and Weder (2001) do find some support for the hypothesis, but conclude that it would take very large increases in salaries to eliminate corruption. There are well-known cases where corruption has been drastically reduced in a short time by improving vigilance and weakening the ability of bureaucrats to establish long-term relationships with potential clients. Analyses of such successful anti-corruption efforts in the Philippines income-tax system and the Hong Kong police force, for example, can be found in the classic study by Klitgaard (1988).

If remedies that are in the nature of a “big push” are successful, then it is possible that the initial malaise was a bad draw from a set of multiple coordination equilibria. An equilibrium with corruption is then the result of a historical accident; a country that finds itself in such an equilibrium could have, under an alternate history, alighted in a no-corruption equilibrium. Nabin and Bose (2008) provide a model which possesses

multiple equilibria with and without widespread corruption. However, if most poor countries are corrupt, then this explanation must be considered incomplete at best.

One possibility is that both the level of corruption and the extent and trajectory of development are simultaneously co-determined by salient historical factors. Thus Treisman (2000) finds that countries with Protestant traditions and histories of British colonial rule are likely to be less corrupt, and long exposure to democracy is associated with less corruption. More developed countries (measured by GDP per capita) are less corrupt, and a federal structure predicts somewhat greater corruption than a unitary one.

In a different investigation, Acemoglu, Johnson, and Robinson (2001) find that, in formerly colonial economies, the rise of development-friendly institutions is associated with the mortality rates of early European colonisers; Europeans formed settler colonies in the countries with lower mortality rates, and these economies developed suitable institutions that in turn predicted higher per capita GDPs.²

Distant history cannot be readily altered by contemporary policy. It is of greater interest to know if there are near-term measures that can significantly affect the level of corruption. Studies bear out the immediate intuition that more government intervention, an extensive regulatory structure and restricted competition correlate with greater corruption (Tanzi, 1994; Ades and Tella, 1999). It is widely agreed, for instance, that the continuing reduction in industrial and commercial regulations that has taken place in India over the past two decades has brought in its wake a significant fall in the incidence of corruption.

Perhaps of greater interest is the relation between corruption, press freedom and the availability of information. When official complaints are cumbersome and costly, a free press provides an alternative channel for citizens to draw attention to, and seek redress from, extortive practices of the bureaucracy. Even when corruption occurs in collusive agreements between a citizen (or firm) and a bureaucrat, journalists have professional incentives to uncover such deals. In an econometric study of 125 countries, Brunetti and Weder (2003) find a strong association between increasing press freedom and decreasing levels of corruption. They conclude that “an independent press may represent an important check against corruption.”³

A more fundamental way in which information impacts upon corruption is by making it possible for members of the public to assess the exact nature of rules and regulations they are subject to, the services they are entitled to receive, and the extent to which these are dispensed evenly and without prejudice.⁴ This is brought into sharp relief by a field experiment conducted by Pandey, Sehgal, Riboud, Levine, and Goyal (2007) among a population of primarily poor rural subjects in Uttar Pradesh. The researchers conducted information sessions in a number of village clusters to provide information about legitimate levels of school fees and entitlements to prenatal and child health services. Individuals in these villages were surveyed before the treatment as well as a year after the treatment to observe the rates at which they accessed the corresponding services. A parallel (control) set of village clusters, in which information sessions had not been conducted, were also similarly surveyed. The surveys found that, while there were no significant difference in access rates between the treatment and the control villages before the treatment, utilisation of prenatal care and immunisation services were significantly higher in the treatment villages a year after the information

sessions. There was also a significant difference in the degree to which children in the two sets paid school fees in excess of the government-mandated levels (the informed villages paid less excess fees). The authors conclude that “Interventions that emphasize educating resource-poor populations about entitled services may improve the delivery of such services.”

What light do these investigations shed on corruption in India? India is squarely placed in the British colonial tradition, and derives much of its legal and administrative structure from that tradition. Among the less-developed countries, India arguably has the oldest and most robust democracy, and a fiercely free press. Yet among the 99 countries ranked by Transparency International in 1999, India squeaks in at 72nd. By 2009, 180 countries are ranked and India is in 84th place. However, of the 95 countries that are ranked in both surveys, we find that India has improved its position from 70th in 1999 to 59th in 2009, and there is a marginal improvement in the (subjectively determined) corruption score. In the decade between the two surveys, India’s GDP has grown at a startling pace, the economy has become remarkably more open, real wages of public officials have improved significantly, and there has been a substantial reduction in regulations and procedural inconveniences. Does this suggest that corruption slows down growth, or is it growth that leads to a reduction in corruption? And what then is the status of the institutional correlates stressed by Acemoglu and his coauthors and by Treisman, as well as the various other variables invoked by the authors of the several studies referred to above?

These are not questions that are otherwise settled, nor can they be answered within the context of a single country. However, focus on a single country permits the luxury of attention to peculiarities, which is an indulgence cross-sectional analysis cannot accommodate. Further, it is commonplace that India is an unusual example of a “single country”, woven as it is of innumerable diversities. In a recent paper, Kingston (2005) argues that a society cleft by parochial allegiances may be able to sustain corruption that is not readily remedied by legal and electoral action. In his formulation, a bureaucrat dispenses corrupt services to his client-kinsmen in return for services that are rendered to him in other spheres of social interaction.⁵ However, it is difficult or impossible to remove such a corrupt bureaucrat from office because his constituency—consisting of members of his own group as well as others—is never united in denouncing him. Kingston looks for support in an empirical analysis of bureaucratic transfers; he argues that transfers are more common in states that are less riven by differences of caste and language, which may indicate that concerted social action against corrupt officials is more successful in these states.

The consequence of caste divisions on corruption cannot be tested in cross-country studies, but some of the macro analyses we encountered above do incorporate a similar variable: ethno-linguistic fragmentation. Indeed, Mauro uses ethno-linguistic fragmentation (ELF) as an instrument for corruption to avoid problems of endogeneity between corruption and growth. ELF is clearly an exogenous variable, and Mauro finds that it is highly correlated with corruption. Treisman also includes ELF as an explanatory variable for corruption in his regressions. He finds that ELF is positive and highly significant in explaining corruption if GDP per capita is not included among the independent variables, but drops to insignificance and becomes marginally negative when GDP per capita is included. While both authors have good reasons to draw

their respective interpretations from their analyses, it is likely that the role of divisive allegiances in the genesis of corruption have not been sufficiently illuminated in existing research. Especially in the context of India, where ethnic and linguistic divisions are only a small fraction of factors that fragment the country, investigations in this direction may be especially fruitful.

3 Red tape

I use the term “red tape” to denote any non-pecuniary costs that are imposed on the agent in the process of applying for a service. In some cases, red tape is part of the official procedure for obtaining the service, and hence exogenously built in to the system. In other cases it is endogenously imposed by the bureaucrat in order to elicit bribe income. The actual amount of red tape in a given instance may, of course, be jointly determined by the two imperatives.

Red tape may purely be a waste of time which occurs as a consequence of insufficiently resourced government offices or inefficient regulation, or as a result of rent-seeking by bureaucrats. Alternatively, it may be a necessary part of the process, as when an agent is required to provide various kinds of information and documentation to prove that he is qualified to receive the service, and consequently needs to fill out many forms. Such screening is unavoidable in the case of publicly funded medical services, academic merit scholarships or university places, awards of driving licenses, etc. Bureaucrats may similarly use red tape to screen for potential payers of bribes.

We will primarily focus on situations in which red tape is used to resolve conflicts arising from a discrepancy between ability-to-pay and willingness-to-pay on the part of an agent. An alternative rationale exists for the use of red tape in situations where the social benefit of allocating to different categories of agents diverges from their private benefits. We will not discuss this latter case in detail, bar a reference at the end of this section. Academic scholarships provide an example of the former problem and driving licenses of the latter. In subsection 3.1 we provide arguments why, absent these differences, red tape may be eliminated and allocation made efficient by privatising the distribution of the service. In the following section we discuss cases where ability-to-pay falls short of willingness-to-pay.

In the analysis below, corruption nominally takes the form of a cash (bribe) payment. However, a payment in kind would not in any way alter the conclusions. Indeed, in the Indian context, petty corruption most familiarly works through “connections”. In order to obtain a government service efficiently, an individual accesses a bureaucrat whom he knows personally, or goes through the good offices of someone who knows the bureaucrat. Personal acquaintance or a parochial relationship carries with it a traditional obligation of reciprocal favours. In order to remain in good standing within his community and access favours from others, a bureaucrat must be seen to dispense corresponding favours that are within his power to grant. Bypassing red tape to provide a service efficaciously is a favour that should be valued as equal to the bribe that would have to be paid in the absence of the “connection”. Kingston (2005) (discussed in Section 2) provides a model of this kind of corruption. Bardhan (1997) notes:

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.

3.1 Red tape as pure waste

Starting with Leff (1964) and Huntingdon (1968), it has been recognised that corruption may be efficient in a second-best sense if the underlying bureaucratic processes are ill-designed and inefficient. This is the “grease-in-the-wheels” view; the bureaucrat works harder to cut through unproductive delays and deliver the service to the applicant, who pays him a piece-rate bribe in return. Aidt (2003) has an extended discussion and further references.

However, corruption increases efficiency only if the red tape is exogenous. If the bureaucrat can endogenously generate red tape then the efficiency result no longer holds. The bureaucrat (or politician, or rapacious government) then increases red tape in order to generate rents that can be extracted by demanding appropriate bribes. Myrdal pointed to this tendency, and the consequences of rent-seeking behavior has been explicated by Krueger (1974) and Murphy, Shleifer, and Vishny (1993), among others. In general endogenous red tape raises the cost of the service to applicants, so that those applicants who have a lower valuation for the service drop out of the market, reducing welfare (Bose, 2004). Saha (2001) analyses the distribution of rents from varying levels of red tape between heterogeneous agents. Djankov, La Porta, de Silanes, and Shleifer (2002) and Kaufman and Wei (1999) report from separate empirical studies that high levels of regulation correlate positively with high corruption.

Some of the papers cited above construct models of red tape with varying degrees of sophistication, but the focus of this literature can be captured in a simple conceptual model. Suppose different applicants have different valuations for the service and different costs of suffering red tape. Suppose also that there is no distinction made between an agent’s private valuation of the good and the social welfare generated when the good is allocated to the corresponding agent, and that agents are able to pay up to the extent of their valuation for the good.

When red tape is exogenous and the bureaucrat can reduce it at some (possibly zero) cost, he constructs a schedule of different bribe payments and associated levels of red tape to maximise his bribe income. This is a familiar problem of contracting under imperfect information. If the bureaucrat can choose the level of red tape, he constructs such a schedule for each possible exogenous level of red tape and calculates the associated bribe income for each level. He then chooses that default level of red tape which maximises his income, and offers the associated schedules.⁶ Conditions can then be derived under which the optimum levels of red tape exceed or falls short of those determined by institutional parameters.

This is an agency problem between the government (principal) and the bureaucrat (agent). Given the agency problem, the constrained optimum can be attained by privatising the sale of the service, if possible competitively through several providers, and instituting appropriate tax/subsidy policies and/or efficiency-wage schemes.⁷

Thus there is no clear reason why the service needs to be provided directly by the

government, nor is there an improvement in the outcome achieved when the good is publicly provided. In particular, if wasteful red tape is specifically a characteristic of public (but not private) provision, then provision should be privatised, as suggested by the “efficient corruption” literature. This argument is made by Banerjee (1997) and echoed in Banerjee, Hanna, and Mullianathan (2009), and provides the motivation for the alternative framework that is considered in the next section.

3.2 Red tape with an allocation function

Banerjee, Hanna, and Mullianathan (2009) propose a framework which departs from the one above in two respects. The focus is again on a service provided by the government to members of a heterogeneous population. However, the private valuation of a prospective recipient may diverge from the value society places on the receipt of the service by that recipient. Further, the ability-to-pay of the recipient may also diverge from his willingness-to-pay.

Private and social valuations may differ in cases such as driving licenses and building permits. There is no *a priori* reason why a bad driver should value a license any less than a good one, but the former poses a greater potential threat to safety. An applicant with a faulty building plan may similarly value a permit as much as one with a structurally sound plan, but poses a hazard were the building to be built. To take another example, societies that care about equity and equal opportunity would prefer to allot free hospital beds and tuition scholarships upon the less affluent, but if health-care and education can be bought on the market then value of an allotment is independent of the recipient’s wealth.

Continuing the last example, suppose aspirants to higher education have two attributes—academic ability and wealth, and further suppose that individuals are credit constrained and hence cannot pay more than their current wealth as payment for a higher education slot.⁸ The private value of a higher education slot to an individual is measured by the extent to which the individual’s earning ability will increase due to education, and hence is higher for those with high ability. The individual’s willingness-to-pay is given by this value, but his ability-to-pay is constrained by wealth. If some high ability aspirant is severely wealth-constrained, then he may well be outbid by a low-ability agent who is less wealth-constrained. If the distribution of education slots were privatised, or otherwise made to the highest bidder, then allocation will necessarily be inefficient. Further, as we will see, it is possible to attain a more efficient allocation that necessarily requires the use of red tape.

In this discussion, an important distinction has to be made between two cases: one in which the service is not scarce, but for reasons of social welfare should only be allocated to qualified individuals (e.g., driving licenses). The second is the case where a limited quantity of the service is available, and should be first distributed to agents where it generates greater social value (e.g., publicly funded higher education places). We shall call the first type of service a “license”, and the second a “slot”. Here we focus on slots. Guriev (2004) analyses a model in which the service is better described as a licence.

Below, I describe a simplified framework, based loosely on Banerjee (1997) and Banerjee, Hanna, and Mullianathan (2009), within which such allocation problems can

be analysed.

The economy consists of the government, bureaucrats that dispense the service, and a large number of potential applicants. Each applicant is described by three attributes, and for simplicity we allow each attribute to take one of two values. V is the social value of his being allocated the service, $V \in \{H, L\}$, $H > L$. v is his private valuation of the service, and y is his ability to pay. We refer to individuals with $V = H > 0$ as the “high” types and $V = L$ as the “low” types.

The government sets some guidelines for the provision of the service. The bureaucrat—in return for a bribe—may contravene the guidelines in dispensing the service to individual applicants. Clearly, if the government has no means to check the performance of the bureaucrat, then it cannot design mechanisms to influence allocation in the direction of the social optimum. At least two simple mechanisms may be considered. First, the applicant may be required to undertake tests that provide a signal on type, and it is costly for the bureaucrat to falsify a test report to the government. Alternatively, the government may be able to *ex post* sample and obtain an estimate of the type-composition of the successful applicants.

Suppose there is a unit measure of slots that must be allocated among a population of measure $N > 1$. Type H applicants constitute a measure $N_H < 1$, and type L the remaining $N - N_H$. The objective of the government is to maximise social welfare, thus it would like to allocate scarce slots to high types first. Assume $H > L > 0$, thus any remaining slots should be allocated to the low types.⁹

Let private valuations and ability-to-pay be determined by type, so all high types have value v_H and ability-to-pay $y_H \leq v_H$, while low types have v_L and $y_L \leq v_L$. This provides a 2x2 typology $\{v_H > v_L, v_H \leq v_L\} \times \{y_H > y_L, y_H \leq y_L\}$. Some salient points emerge from the analysis about the problem of optimal design in such a context, as well as potential allocations, corruption and red tape in equilibrium.

The most important observation is that non-market allocation mechanisms are necessary to improve social welfare precisely in the case of goods or services for which there is a divergence between social and private valuations, or a divergence between ability and willingness to pay. Hence these are the arenas in which government needs to step in and make rules. Secondly, in many of the cases, improved allocation requires the imposition of non-pecuniary costs upon applicants, which we have labeled “red tape”. Thirdly, when the government has some control, but imperfect control over the bureaucrat, the latter may impose additional red tape to facilitate bribe income. In most cases, increased red tape is associated with increased corruption. However, the existence of red tape also indicates that the mechanism is at least partially successful in combating corruption and improving allocation, compared to the outcome that would be obtained if the distribution of the service were fully privatised.

To see the intuition behind the results consider the following variation of the model. First let $v_H = H > L = v_L$, i.e., private and social valuations are equal. Suppose each applicant is rich with probability α and poor with probability $1 - \alpha$. Rich applicants have wealth $y_R \geq v_H$ while the poor have wealth $y_P \leq v_L$. Social optimum requires that all N_H high-value individuals get slots, while the remaining $1 - N_H$ slots be distributed among the low-value ones. This allocation cannot be implemented through pure market means, since the cash price q of slots cannot exceed y_P if the high-value poor are to be included, and at this price everyone will apply. An additional non-price

mechanism is required to separate the high and low value applicants. This can be done by instituting some pure-waste red tape as a prerequisite for priority allocation of slots; those who refuse to suffer red tape go into a lottery for the slots that remain after the priority allocations are made.

Let q be the cash price, and t the cost of red tape that is instituted. High-value applicants must prefer to suffer red tape and get slots for sure, while low-value applicants must prefer to pay only the cash price and get slots with probability $\frac{1-N_H}{N_L}$. Only those who are allocated slots are required to pay the cash price and suffer any associated red tape. The respective conditions are:

$$\begin{aligned} v_H - (q + t) &\geq (v_H - q) \frac{1 - N_H}{N_L} \\ (v_L - q) \frac{1 - N_H}{N_L} &\geq v_L - (q + t) \end{aligned}$$

which reduce to the condition:

$$\begin{aligned} (N - 1)(v_H - q) &\geq N_L t \geq (N - 1)(v_L - q) \\ \Rightarrow t &\in \left[\frac{N - 1}{N_L}(v_L - q), \frac{N - 1}{N_L}(v_H - q) \right] \end{aligned} \quad (1)$$

so for any $q \leq y_P$ there is a corresponding interval of values for t that will produce the desired outcome. Let $T(q)$ denote the interval on the right-hand-side of (1). Since red tape has a cost, it is efficient to set t at the left-hand boundary of $T(q)$. Note that the interval $T(q)$ shifts down as q increases.¹⁰

Now suppose the relevant bureaucrat is corrupt, but he cannot deviate from the efficient allocation of slots because the government samples the successful applicants and gets a reliable estimate of the proportions in which they are allocated, and the bureaucrat is penalised sufficiently severely if this proportion deviates from the efficient one.

The bureaucrat can nevertheless collect bribes by changing the mechanism in the following ways. Let q' be the government-mandated cash price, and q the price that the bureaucrat actually institutes.

First, if $q' < y_P$ he can set $q = y_P$ and ask for a bribe of $b_1 = q - q'$ across the board in return for lowering red tape from $\min T(q')$ to $\min T(q)$. Secondly, he may ask for an additional bribe of $b_2 = \min T(q)$ to eliminate red tape altogether for applicants in the priority category. Rich high-value applicants would be willing to pay the bribe, while the poor ones choose to suffer red tape.

Thirdly, he can raise the level of red tape to $\max T(q)$, and ask for an additional bribe of $b_3 = \max T(q) - \min T(q)$ to reduce this additional red tape, which high-value rich applicants will again be willing to pay, while high-value poor applicants suffer extra red tape. In this last mechanism he reaps $(q - q')$ from the unit measure of successful applicants, plus $\max T(q)$ from the αN_H high-value rich applicants. Setting $q = y_P$, this gives a profit of

$$\pi = (y_P - q') + \alpha N_H \left(\frac{N - 1}{N_L} \right) (v_H - y_P)$$

Let the welfare generated by an allocation mechanism be the (possibly weighted) sum of individual net payoffs from the allocation process. A recipient's net payoff is

his valuation net of any bribe he pays, minus the cost of the red tape he suffers. The bureaucrats net payoff is the sum of the bribes he receives. Thus bribes are a transfer, and do not affect welfare unless payoffs are differentially weighted.

If the welfare of all agents (including bureaucrats) are weighted equally, then the first method of collecting bribes is welfare neutral. The second method may increase welfare since high-value rich applicants do not suffer red tape, while the last one is welfare decreasing. However, note that in all three cases the existence of red tape signals that some social objectives are being achieved; if the social benefit from allocating the slots were not a concern then revenue-maximising market mechanisms could be designed which require no red tape, and in which allocations are made in decreasing order of priority to high-value rich, low-value rich, and poor applicants. A rapacious bureaucrat could reap at least as much bribe income, and typically more, as under the scenario discussed above, since he is not constrained to allocate in optimal proportions.¹¹

In the above we have not dealt with licenses, where the problem is to deny applicants who have social value $L < 0$. In a related paper, Guriev (2004) explores the case where $v_L > 0$ but $L < 0$, and the bureaucrat's job is to test applicants and award licenses to only the high types. The amount of testing is a choice variable; high types always pass tests while low types fail with greater probability as the number of tests is increased. The bureaucrat may accept a bribe to reduce the number of tests, or to falsely report a "pass" when an applicant has failed the test. Clearly the red tape (testing) is necessary here to distinguish types, it turns out that when the possibility of corruption is admitted, the equilibrium level of red tape always exceeds the optimal level. It is again important to note that red tape in equilibrium signals that the mechanism at least partly attains its objective—without any constraints the bureaucrat would simply sell licenses without regard to recipient types at a monopoly price, and there would be no red tape.

4 Some consequences of rent-seeking

If private agents have an incentive to circumvent regulations, then enforcing those regulations requires the use of real resources, which must be diverted away from production. Thus regulation and enforcement is rational only when adherence to regulation create social benefits that outweigh the private costs of regulated agents. Optimal enforcement must balance, at the margin, the benefit to social welfare against the sum of the private cost of compliance and the resource cost of enforcement. This reflects a fundamental and more general intuition of contract theory. When enforcers of regulations are corruptible, there are additional costs of reducing corruption. In such cases, the optimum will typically prescribe an outcome with some positive level of corruption, rather than a complete absence of corruption.

Discussion of rent-seeking was initiated by Krueger (1974), and developed with important early contributions including Buchanan, Tollison, and Tullock (1980) and Bhagwati (1982). Here we focus on three aspects of rent-seeking. First, rent-seeking on the part of corrupt bureaucrats can lead to a reduction of competition in product markets, and result in a corresponding loss of social surplus. Secondly, rent-seeking behaviour on the part of some agents reduce the incentive on the part of other agents

to undertake productive activity by reducing their residual claims on the proceeds of such undertakings. Thirdly, when bureaucrats that are charged with enforcing regulations engage in rent-seeking, the optimal enforcement mechanism involves a *larger* government sector—which draws labour away from productive activity—coupled with *higher* wages for bureaucrats, which makes government employment comparatively more attractive than entrepreneurial ventures even for agents with relatively greater entrepreneurial ability.

4.1 Restricting competition

We draw upon Bliss and Di Tella (1997) and Shleifer and Vishny (1993) to elucidate two aspects of the first concern listed above. The context is a market in which firms need to obtain licenses in order to produce and sell output.¹² Licences are free, and licensed firms sell output in a standard market where greater competition leads to greater social surplus in the familiar textbook pattern. Potential firms have different fixed costs c that are drawn from some known distribution $F(c)$. All firms have identical variable cost functions. In the absence of corruption, there is a cutoff level of the fixed cost c^* such that all firms with cost $c \leq c^*$ enter the market, and the marginal firm with $c = c^*$ earns zero profit. Let $n^* = F(c^*)$.

Next suppose that there is a single bureaucrat that disburses the licenses, and this bureaucrat is corrupt. He asks for some bribe B from each firm that requests a license. Now in equilibrium the marginal firm must earn a pre-bribe profit of B , which leads to an equilibrium with a smaller number of firms, a higher market price, and some loss of social surplus. The licensing cost B acts exactly like a lump-sum tax, and its magnitude can be fixed by solving the profit-maximising problem of the bureaucrat.¹³ One way in which the government can avert corruption is by establishing multiple licensing offices each with an independent bureaucrat, and allow each firm to obtain a license from any one of them. If bureaucrats compete in Bertrand fashion then corruption can be eliminated at the cost of hiring one extra bureaucrat, as long as this extra cost is justified by the corresponding gain in surplus. If they compete Cournot, then a corresponding exercise will yield the optimal number of bureaucrats that should be hired. Without further detail, Bertrand competition seems the natural assumption, but further detail may well be critical in this regard.

A variation of the problem arises if each firm needs multiple licenses, say two. Suppose the licenses are disbursed by two independent bureaucrats, each setting his own bribe-price. Now Cournot competition seems natural, and again in equilibrium the market surplus generated will fall short of the no-corruption case. Note that if the bureaucrats could collude and thus charge a unified monopoly price, then in equilibrium there would be more firms in the market than when they compete in Cournot fashion, and there would be a smaller loss of surplus. This suggests that it may be socially beneficial, in the presence of corruption, to combine multiple licenses or permits needed for a single venture in a “single window”.

4.2 Compromising property rights

Murphy, Shleifer, and Vishny (1993) explore the consequence of corruption on prop-

erty rights. In their formulation, rent-seeking shows increasing relative returns in the aggregate because an increase in rent-seeking behaviour reduces the security of property and hence diminishes the expected returns to legitimate productive activity, thus tilting the marginal choice between productive activity and rent-seeking in favour of the latter. Agents can engage in one of three activities: production with a high-return technology that produces a marketed output, production with a low-return technology that produces a self-consumed output, and rent-seeking that appropriates part of the producers' returns from the marketed output. Individually, each activity is subject to diminishing returns. However, each producer's expected net payoff from the market activity declines as the number of rent-seekers increases. With appropriate parameter values, the economy possesses multiple stable equilibria; in the worst equilibrium agents distribute themselves between the three activities and the returns to each agent is driven down to the level of the low-productivity activity. If rent-seeking is interpreted as corruption, then this equilibrium corresponds to a erosion of property rights to the extent that no producer has an incentive to switch to occupations with higher productivity.

A different aspect of the link between corruption and the erosion of property rights is explored in Acemoglu and Verdier (1998), who focus on the allocation of talent between productive and bureaucratic activities. Agents have different levels of talent in productive activities, which are reflected in their fixed costs of setting up production. Agents that choose to produce find themselves equally divided between upstream and downstream activities, and each upstream producer is paired with a downstream producer. An upstream producer can invest in superior technology which improves the probability that his downstream partner will produce a high-value output. The investment cannot be verified, thus incentive contracts for the supply of inputs must be made contingent on the realised value of the downstream output. The downstream producer has an incentive to falsify this value when good output has been produced, thus these contracts need to be enforced by the legal mechanism acting through the bureaucrat.

However, bureaucrats may be corrupt and hence willing to ratify a false report in exchange for a bribe. This reduces output (upstream producers are no longer willing to invest) so the government would find it optimal to curtail corruption. Corrupt bureaucrats are caught with some probability and lose both the bribe and their wage; hence the government can provide an incentive for them to be honest by paying a higher (efficiency) wage. However, this increases the attractiveness of jobs in the bureaucracy, and hence draws relatively talented agents away from production. Acemoglu and Verdier (1998) show that it is possible over some ranges of bureaucratic wages for there to be a "free lunch"; the increased contract enforcement produces better incentives to invest, and as a result total output increases with bureaucratic compensation. However, in general it is optimal not to enforce perfect property rights because this requires wages that are too high and therefore drain more talented agents from the private sector.

4.3 Diverting resources from production into enforcement

The tradeoff between reducing corruption and devoting resources to production is investigated by Acemoglu and Verdier (2000). In their model the government employs

bureaucrats to enforce compliance by entrepreneurs with a regulatory measure that produces a positive externality. Bureaucrats become unavailable for productive activity. I present a simplified version of the model below in some detail.¹⁴

There is a unit measure of agents in the economy, of which a fraction $1 - n$ are hired by the government as bureaucrats to enforce regulations, and earn a wage w . The remaining fraction n become entrepreneurs. Entrepreneurs can use a “bad” technology which costs nothing, or a “good” technology that has a non-pecuniary cost of c . Both technologies produce output y , but the good technology produces an additional non-pecuniary externality β for *each* agent in the economy. Let a measure $x \leq n$ of the entrepreneurs use the good technology, then each entrepreneur obtains a net profit of $y + \beta x$ if he uses the bad technology, and $y + \beta x - c$ if he uses the good technology.¹⁵

The government aims to maximise social welfare. To provide incentive to use the good technology, the government offers a subsidy of s to the entrepreneurs who do so, and levies a tax (penalty) of τ on those that do not. The penalty cannot exceed the entrepreneurs net profit (otherwise compliance could be enforced using very few bureaucrats and a very high penalty). Taxes and subsidies are assessed only on entrepreneurs who are identified as using the corresponding technology. To this purpose, each bureaucrat audits exactly one entrepreneur. Assuming $n \geq \frac{1}{2}$, the probability of being audited is $\frac{1-n}{n}$. Those entrepreneurs that are audited are given the subsidy or levied the tax, the rest only receive their net profit as described earlier.

If bureaucrats are corrupt, then they can threaten to misreport a compliant entrepreneur, who would then suffer a loss of $(s + \tau)$. Correspondingly, he could offer to misreport a non-compliant entrepreneur who would then gain the same amount. In either case, therefore, the corrupt bureaucrat asks for a bribe to report the entrepreneur as compliant. Assume this bribe is a given fraction σ of the threat. Bureaucrats that accept a bribe are caught with some exogenous probability ϕ , and lose their bribe $\sigma(s + \tau)$ plus the wage. With probability $1 - \phi$ they keep both the wage and the bribe. Honest bureaucrats only earn the wage. Thus a higher wage translates into a larger expected penalty for being corrupt.

While the model appears specific (e.g., environmental regulations), it can readily be reinterpreted to cover a variety of contexts. For example, c may be the income tax owed by the entrepreneur, which is then used by the government to provide public goods that generate a positive benefit to each citizen. Tax-evaders that are caught are punished with a fine. Note that it is the net incentive $s + \tau$ that matters, and in this case $s = 0$. Tax-inspectors who collected bribes from both compliant and non-compliant citizens have been reported in Klitgaard (1988) in the context of the Philippines. For detailed discussion of corruption in tax administrations, both theoretical and empirical, see Mookherjee (1997) and Dasgupta and Mookherjee (1998).

The instruments at the government’s disposal include the parameters s and τ of the tax-subsidy scheme, the size of the government sector $(1 - n)$, and the wage paid to the bureaucrats, w . s and τ determine the entrepreneurs incentives, $(1 - n)$ fixes the allocation of labour resources between production and enforcement, and w determines the incentive of the bureaucrats to be honest. Solving the system requires four conditions, of which two are immediately obvious; the penalty τ must be set at the maximum feasible value y , and the net proceeds of the tax-subsidy scheme must cover bureaucrats wages. The remaining two equations follow from the incentive constraints

of the entrepreneurs and bureaucrats respectively.

Since the relevant payoff functions are linear in x , and all entrepreneurs are identical, in equilibrium they will all adopt the same technology. If this is the bad technology then the government is better off not enforcing at all, hence our interest lies in the equilibrium in which entrepreneurs choose the good technology. Implementing this equilibrium is worthwhile only when the gain from the externality is large enough to offset the cost of diverting resources to the government sector, thus the government will enforce compliance only when the externality β is sufficiently high.

First suppose that bureaucrats are incorruptible. Then the expected gain of an entrepreneur from choosing the good technology instead of the bad is $\frac{1-n}{n}(s + \tau) - c$, which must be non-negative, and at the optimum is set to zero. This gives

$$s + \tau = \frac{n}{1-n}c \quad (2)$$

Bureaucrats' wages must match entrepreneurs' incomes (exactly, at the optimum), which gives

$$w = y - c + \frac{1-n}{n}.s \quad (3)$$

These two additional conditions determine the optimum, and fix the proportion of agents that the government hires as bureaucrats.

Next suppose bureaucrats are potentially corrupt. We are still looking for the equilibrium in which there is full compliance, so no bribes are paid and hence the entrepreneurs' incentive condition continues to be given by (2). However, the bureaucrats wage must now be set so that the payoff from remaining honest, w , is at least as large as the expected payoff from being corrupt. Recall the corrupt bureaucrat's expected payoff is $(1 - \phi)[\sigma(s + \tau) + w]$. This yields the "no corruption constraint",

$$w \geq \frac{1-\phi}{\phi} \cdot \frac{n}{1-n} \cdot \sigma \cdot c \quad (4)$$

where we have substituted for $(s + \tau)$ from (2). If the probability of detection is sufficiently low, then this requires a wage higher than when bureaucrats are incorruptible. In that case, the optimum prescribes a higher wage, as well as a larger measure of bureaucrats, which relaxes the no-corruption constraint by reducing the net subsidy $(s + \tau)$ in (2). Thus implementing the regulation with corruptible bureaucrats is more costly in terms of the resources it drains away from the productive sector. It also follows that the threshold benefit β that makes it worthwhile to implement the regulation is now higher.

In the equilibria above, all bureaucrats remain honest because agents are homogeneous. To obtain an equilibrium with partial corruption we need some heterogeneity. Suppose that some bureaucrats are better at hiding bribes than others, so that the probability of detection is different for the two groups. Then it is possible to find an equilibrium in which the bureaucrats with the higher probability of detection remain honest, while the rest collect bribes.

The primary intuition is that, when bureaucrats are corrupt, high-powered incentives for compliance generate greater bribe opportunities and bureaucrats must be paid higher wages to induce them to remain honest. At the margin it is optimal to reduce

compliance incentives (and hence bureaucratic salaries), and compensate instead by increasing the size of the bureaucracy which raises the probability that non-compliance will be detected. If the probability of identifying and punishing corrupt bureaucrats were endogenously determined by resources allocated to this end, then at the margin more resources would also be spent in this direction. Thus the existence of corruption makes for larger government and greater diversion of resources towards (intrinsically unproductive) enforcement activity. As a consequence, governments in countries more prone to corruption will only enforce compliance that generate greater positive externalities. For example, it has often been noted that in India the income-tax base is narrow, because the minimum taxable level of income is high enough to exclude a large mass of income earners. By the argument above, this may well be the optimal structure when the cost of enforcing compliance is taken into account.

A further critical observation, which echoes a point made in connection with red tape, is that enforcement is only warranted in cases where the neoclassical model of the private market fails to allocate resources optimally. If the benefits from compliance were private, then individual incentives or Coasian contracting would be sufficient to ensure optimality without government intervention.

5 Intermediaries in corruption markets

In the preceding sections we focused on markets where there is a clear rationale for the government to be involved in distribution, and hence bureaucratic involvement is inevitable. Bureaucrats utilised their special position in the process to potentially collect bribes, or to be compensated above market in order to be given incentives not to do so. We did not pay much attention to the *process* of corruption; it was implicitly assumed that bribes are handed directly to the bureaucrat by members of the public.

This is clearly a drastic simplification of the process. While direct bribes may be common in very petty corruption (e.g., paying a parking inspector to avoid a ticket, or a traffic policeman to allow a loaded truck past a “no trucks” sign), they are unlikely to constitute a major portion of the total value of bribes. For example, it is Oldenburg’s (1987) opinion that “...[I]t is likely that corruption transactions involving only two actors, although perhaps the most numerous...are not the most significant.” Similarly, Lambsdorff (2002, p.222) thinks “...corrupt agreements are more likely to employ middlemen or result as a by-product of legal exchange...” In very few government offices would one actually pay a bribe at the official window that accepts or dispenses an application. Most bureaucratic corruption is channeled through intermediaries—touts, front men, lawyers, consultants, facilitators, and various others.

In the typical instance of corruption, a public official allows a private agent a privilege which that agent is legally not entitled to, in return for a payment in cash or kind. The official may also delay or withhold a service the agent is entitled to, unless a consideration is paid. Quick service then becomes a privilege by default. Corruption therefore requires the involvement of at least two parties—the official and the agent seeking the privilege—and necessitates agreement on a price. Every act of corruption thus presupposes a market transaction. Standard reasons for the existence of middlemen therefore apply, arising from arguments based on imperfect information, economies of scale, contract enforcement, reputation effects and so on.

The market for corruption has the special characteristic that buyers and sellers cannot conduct their search for trading partners publicly. This distinguishes it from markets for everyday goods and renders information about potential partners more difficult to acquire, correspondingly making it more profitable to specialise in the acquisition and dissemination of such information. When we say that corruption is "endemic" in a country, or in its police force or in its tax system, we mean that there is a well-developed network of specialists or institutional processes that facilitate corrupt transactions; as a consequence it is easy to locate potential partners and negotiate prices, making the corruption channel an attractive and lower-cost alternative to legal transactions. Agents therefore choose corrupt transactions over legal ones, in turn ensuring that the intermediaries stay in business.

Intermediaries may sometimes amass significant fortunes and influence, and actively thwart attempts to change the laws and restrictions which agents circumvent using corrupt transactions. This may mean that intermediaries lobby in favour of retaining strict codes (e.g. building and safety codes); it may also mean that they oppose rationalisation of outdated legislation and reduction of import duties. This is one sense in which corruption "undermines development by distorting the rule of law and weakening the institutional foundation on which economic growth depends".¹⁶

It is surprising, therefore, that there are relatively few systematic studies of intermediaries in corruption activities. However, there are a few that are detailed and insightful, and point towards an initial framework within which such activities may be understood. Some of these are discussed in Subsection 5.1. In Subsection 5.2 I draw upon a number of contributions in an attempt to outline the roles that middlemen fulfil, and briefly review the (few) attempts at modeling middlemen.

5.1 Evidence of middlemen

In a perceptive study of the land consolidation process in Uttar Pradesh, Oldenburg (1987) emphasises that, in order for mediators to be active in corruption, there must be a strong prevailing belief that rank and file bureaucrats are, in fact, corrupt. Conversely, middlemen serve to strengthen this belief. It is significant that Oldenburg is discussing a process in which he found (somewhat unusually) very little evidence of corruption. He concludes that this is because land consolidation was an open and transparent process where decisions were made in participative meetings between all concerned farmers and were subject to unanimous agreement. Further, there were no government funds to be disbursed. However, there was widespread belief that there was substantial corruption, and that money had been paid to ensure that farmers got fair allocations. He argues that traditional intermediaries, who anticipated that outcomes would be fair, convinced "clients" that intercessions on their behalf was necessary to ensure fairness, and that bribes had to be paid. The clients in turn believed this because corruption was the norm in their other dealings with the bureaucracy. Farmers who paid "bribes" to the intermediaries, and then in fact received fair allocations, believed that the bribes had been instrumental. Intermediaries often promised to return the money if results were not achieved.¹⁷ Reliance on middlemen was thought necessary to convey the bribes because middlemen enjoyed privileged access to officials, whether because of contact through other (lawful) dealings or owing to caste or kinship ties.

In an early study that remains a landmark, Wade (1982) described in detail the hierarchical structure of corruption in the distribution of canal water for irrigation in a South Indian state. Huge sums of money were paid as kickbacks to the irrigation department by contractors who received construction contracts, and as bribes by agricultural users of irrigation water. Farmers paid bribes to ensure that they received their entitlements, as well as to obtain more than their entitlement, for example, because they grew crops that their land was not zoned for. Wade does not explicitly mention middlemen, but he does indicate that the actual payments were usually made by water-users not to officials but to the private contractors, and contractors often held this money, as well as the kickbacks they themselves paid, in trust for the corrupt officials of the irrigation department. Wade writes:

The [Assistant Engineer] may tell the Supervisor to ask the farmers to pay the money directly to a named contractor, or the Supervisor may take the money and immediately pass it to the contractor. The only person with any money (evidence) on his hands is thus the contractor. If by chance he should be investigated by the police and large sums of money found in his possession he can say he has taken out loans for his works (p.297).

The executive engineer lends money to contractors

...not primarily to get the interest, but to have the very large amount of money he collects each year held not in his own hands...and not all in a bank...but in the hands of people over whom he has tight control...[H]e lends them money to do the works, they present him with their bills, he (legitimately) encashes the bills at the bank and pays them and then directs the contractors what to do with 'his' portion of the funds (p.294).

The chain continues up,

When...the Minister calls for money, the [Executive Engineer] may tell one of his banker-contractors to pay the Minister's agent (the Minister too never touches the money...) (p.295).

Bertrand, Djankov, Hanna, and Mullianathan (2007) report on a more recent study of corruption in the issue of drivers' licences in Delhi. The study is a field experiment, and directly addresses the role of middlemen. The investigators offered each member of one group of licence applicants a significant financial reward for obtaining a licence within a specified time ("bonus" group), while another group of applicants was given free driving lessons ("lesson" group). A third group was given no external stimulus. Thus the bonus group was better placed to offer bribes, while the lesson group was arguably better qualified as drivers. The experimenters independently tested applicants after the process to assess their ability to drive, and collected information on the process of obtaining licences.

There was evidence of systematic and widespread corruption in the process. The payment of bribes significantly increased the likelihood of obtaining a licence, often without the candidate having to take a driving test, and even when the independent test showed inadequate ability to drive. An interesting finding is that, of drivers who took a driving test once before resorting to extra-legal channels, about 35% failed the test, and "this percentage is *unrelated* to actual ability to drive...it is constant

across scores on the independent driving test.” (p.1642, emphasis in the original). The authors continue, “This interpretation is consistent with theories of ‘endogenous red tape,’ which emphasize that many bureaucratic hurdles might be the *result* of rent-seeking activities by bureaucrats...”. There is good support for the hypothesis that bureaucrats randomly fail test-takers (and this is known) so that aspirants are induced to seek the help of agents.

Most relevant in context is the finding that bribes are not paid directly to bureaucrats, but channeled through “agents”, who act in a private capacity to facilitate the obtaining of licences. The authors are of the opinion that “agents institutionalize corruption.” By and large, licence aspirants that hired agents did not need to take the driving test, while most of those that did not hire agents took the test. Indeed, drivers regardless of their ability used agents to save time, avoid harassment, and ensure results. On the other side of the table, all bribes were paid to agents, no communication relating to bribes is reported to have occurred directly with bureaucrats.

5.2 Functions of middlemen

From the accounts above, we can deduce two immediate reasons for the salience of intermediaries in corruption. Bureaucrats may act through intermediaries because it offers them some protection from being identified as corrupt, and from the corresponding criminal consequences. Since bureaucrats will not identify themselves, members of the public rely on middlemen to make the connection with corrupt bureaucrats, whether it is to be illegally granted a service, or to avoid harassment in the process of legally obtaining one. Middlemen may of course pose as “agents” or “consultants” who legally collect fees for their services; the transfer to the bureaucrat is a clandestine transaction between trusted parties and hence less vulnerable to detection.

There are further reasons why a person may use a middleman rather than directly approach the bureaucrats. Very often the applicant does not need the service repeatedly. A person may apply for a driver’s licence or a building permit only once in a lifetime. It may take significant effort to find out who needs to be bribed, and how much, since bureaucrats cannot advertise. Middlemen can discuss prices and options at length. It is in the middleman’s interest to collect information on corrupt bureaucrats and ascertain how much they can deliver at what price, since this information functions as the middleman’s capital. Besides, an individual who directly bribes a bureaucrat cannot ensure that the service will be rendered, and may have little recourse if it is not. The middleman, as the conduit for a steady stream of bribe income, can on the other hand be reasonably confident that the bureaucrat will deliver results (see Lambsdorff, 2002, p.230 for a discussion of reputation in this context).

Hasker and Okten (2008) analyse a model that assumes that intermediaries have a greater ability to enforce contracts, and bureaucrats have less chance of being caught when they accept bribes through intermediaries. Thus accepting bribes from an intermediary is safer for the bureaucrat, but he has to reciprocate (e.g., to protect his reputation with the intermediary), though he may not deliver after taking a direct bribe. There is a single (monopolist) bureaucrat and a large number of clients. The bureaucrat administers a regulation which he may reduce to a lower level in return for a bribe. The regulation is costly to clients. They may bribe the bureaucrat directly

to reduce it, or go through an intermediary. The intermediation sector is competitive. The paper finds that the use of intermediaries increases with the bureaucrat's expected punishment from taking an unmediated bribe, and when intermediaries are used in equilibrium the quality of regulation enforcement is lower than if there were no intermediaries. Further, in a market where no intermediaries are present, increasing expected punishment and reducing bureaucrat's discretion improves regulation enforcement, but in the presence of intermediaries these measures are less effective, and may in fact reduce regulation enforcement.

The information-brokering role is modeled in Bayar (2005). She posits a situation in which some bureaucrats are honest and some are corrupt. Clients are willing to pay bribes to avoid red tape which is imposed by corrupt bureaucrats, but do not know which bureaucrats are corrupt. Nor do they know the reservation bribe-prices of the corrupt bureaucrats. Clients are caught and penalised if they offer bribes to honest bureaucrats. Middlemen, when they exist, invest in collecting information about corrupt bureaucrats and their reservation prices. The authors find that clients are best off when bureaucrats set red tape at a low level (i.e., do not try to extract bribes). If corruption is present, then clients are better off when intermediaries are active than when they are not. However, the presence of intermediaries itself encourages greater corruption.

Middlemen may also serve a screening function. In Bertrand *et. al.* (2007), applicants that went to the official window waited a much longer time, had to visit the licence office more often, and went through more testing procedures than did applicants who went through an agent. This immediately recalls the formulation based on Banerjee, Hanna, and Mullianathan (2009) that was elaborated in Section 3.2, where bureaucrats sorted agents with different abilities to pay by imposing different levels of red tape. Applicants self-select across the menu by choosing one access or the other.

Bose and Gangopadhyay (2009) analyse a queuing model in which some bureaucrats are honest and some are corrupt. Correspondingly some clients have valid claims to the service being distributed (say a conditional subsidy) while others do not. Valid applications cannot be denied by either type of bureaucrat, but corrupt bureaucrats will also dispense the service against a (Nash-bargaining determined) bribe. A monopolist middleman learns the nature of each bureaucrat, and for a fee direct clients with valid and invalid applications to appropriate bureaucrats. Invalid clients place obvious value on this information, but valid clients value it as well because the waiting times are longer at the offices of corrupt bureaucrats, and time has value. In equilibrium, the fee charged from valid applicants is zero, while invalid applicants pay a positive fee. The existence of the middleman unequivocally reduces social welfare, as well as the expected utility of valid applicants.

Finally, when there are several bureaucrats involved in a process, a well-organised intermediary can coordinate their bribe demands and increase the total bribe-income. The middleman then serves as the organiser of a cartel. In hierarchical government departments that are steeped in corruption, as in Wade's canal irrigation study, there is usually one point of contact between the department and members of the public. Without such organisation each official in any position to extract a bribe would make his own demand uncoordinated with others (as in familiar examples of cartel instability) leading to an outcome that is inefficient for the department as a whole, and quite

possibly inefficient from a social point of view as well.

In Section 4.1 we outlined a simple model in which an applicant needs two licenses for which he applies simultaneously. If the two bureaucrats set bribes in Cournot fashion, they reap less revenue than if they formed a cartel, and social welfare is also lower. In such a market, a middleman who serves as an agent for a continuous stream of such applicants could promise each bureaucrat his Cournot equilibrium bribe income and cartelise the market.

Lambert-Mogiliansky, Majumdar, and Radner (2009) analyse a problem in which licences have to be obtained *in sequence* from several bureaucrats in order to undertake a project. Each applicant contemplates a project only once, but in this dynamic model new applicants appear in every period. This creates a holdup problem, and in the absence of middlemen in equilibrium, no project is undertaken with positive probability. They then introduce a middleman who is a long-term player, and can mediate applications from the entire sequence of applicants. This replaces a sequence of one-shot games with an infinitely repeated game, and hence by established results produces new equilibria in which some projects are in fact undertaken with positive probability.

It is possible that, in a static, partial equilibrium framework, the existence of established intermediaries will increase corruption, and simultaneously increase social welfare. Middlemen may save time and cost by providing ready access to information about corrupt bureaucrats and measures to slash red tape, which may more than compensate for welfare losses from increased corruption. Khanna and Johnston (2007) have argued that intermediaries serve various socio-psychological purposes: they give the interface between government and public a human dimension, reduce transactions costs, restore self-respect to bureaucrats and reaffirm official status.

An aspect of intermediation that is more difficult to capture in simple microeconomic models is that the presence of professional intermediaries may render it much more difficult to combat or reduce corruption in the long run. Intermediaries have an entrenched stake in corruption, and unlike bureaucrats cannot be bought off by efficiency wages. Some of them may amass significant fortunes, and get into positions that influence policy-making and electoral behaviour. While this may not be true for petty intermediaries, it has periodically emerged as a concern in Indian politics. As Bertrand *et. al.* aver, intermediaries “institutionalize corruption,” and in recent decades we have come to believe that, once conceived, institutions have a life and a resilience of their own that is not sensitive to marginal incentives.

It may be worthwhile exploring whether structural characteristics that explain aspects of underdevelopment may also be responsible for the occurrence of corruption, and the profusion of intermediaries in that market. Considerable microeconomic insights have been gained in recent decades into the causal connections between poverty and inequality, credit constraints, and aspects of underdevelopment. Coordination failure has also been identified a likely explanation for the persistence of some characteristics of underdevelopment. These may well be capable of shedding insight into the existence and structure of corruption as well.

As an illustration, consider the paper by Murphy, Shleifer, and Vishny (1993) discussed at the beginning of Section 4.2. This is a model with multiple equilibria, where one of the equilibria displays substantial rent-seeking. But now suppose that undertak-

ing production using the high-return technology requires some capital, and agents in this economy face various degrees of credit and wealth constraints. Then we can generate a configuration where only a rent-seeking equilibrium exists when many agents are credit-constrained, but a superior equilibrium appears once these constraints are sufficiently relaxed. For example, resourceful agents who act as intermediaries when they are credit constrained may well move into productive activities when they are not. Alternatively, if agents could use capital to counteract rent-seeking behaviour on the part of others (as in contest models such as Grossman and Kim (1995) or Hirshleifer (1995)), then a relaxation of credit constraints could lead to the disappearance of the bad equilibrium. Explanations that draw on inequality and market constraints would bring the analysis of corruption closer to the mainstream of contemporary development microeconomics.

6 Conclusion

In this essay I have attempted to draw selectively from the theoretical literature on corruption in developing countries to outline certain aspects of the problem that have received relatively less attention and merit further analysis. In Section 3 I have emphasised contributions that try to explain patterns of corruption from attributes that are specific to developing economies. In Section 4 I have outlined contributions that explore externalities created by corruption, that would go unremarked in studies that concentrate on the individual exchange between bureaucrat and client. Finally in Section 5 I have reviewed the few contributions on corruption market-makers, a category that has been largely ignored in the literature (though not in the popular press).

This selection of material is driven by the belief that effective analyses of corruption must address the industrial organisation of the market in which corrupt services are traded. Further they must be rooted in essential characteristics of underdevelopment, on the one hand, and connect with causes of continued underdevelopment, on the other. It seems unlikely that analysis which does not incorporate these strictures can shed light on the kind of corruption we have in mind, which is exclusively a developing country phenomenon; Petty bureaucratic corruption is rarely a problem in developed economies.

The emphasis of this paper has been on analysing the mechanics of specific types of corruption, rather than on devising mechanisms to control corruption. However, various context-specific policy instruments have been suggested in appropriate places. In allocation mechanisms of the type addressed in Section 3, we pointed out that sampling the recipients of the service is an effective way to attain second-best outcomes, and that the existence of red tape itself indicates that some welfare objectives are being achieved. In various places in Section 4 we pointed out the virtues of single-window processing, low-powered incentives in the form of efficiency wages, and enforcement sectors that are larger than the first-best size. These emerge as piecemeal remedies for specific problems, but much of the underlying intuition generalises easily to an array of similar problems.

There are several microeconomic studies of corruption, both theoretical and empirical, only a fraction of which have been discussed here. However, only a very small number of these recognise the existence of intermediaries in corruption. In this essay

I have devoted a significant amount of space to this phenomenon precisely because I feel this to be a serious omission. As indicated in the preceding section, attempts to model intermediaries in corruption have been few and sporadic, and the dividends are not yet spectacular. There is of course a substantial literature on intermediation in legitimate markets that can shed some light on our concerns. But the corruption market also has specific characteristics, as has been emphasised above, which are crucial in shaping the equilibrium outcomes and their welfare consequences. Prominent among these characteristics is the clandestine nature of the market, and the fact that increased trade in the market, *ceteris paribus*, corresponds to a decrease in welfare. Most existing papers have incorporated these characteristics somewhat superficially (if at all). However, these factors may well be critical in determining the industrial organisation of corruption markets.

Earlier in this essay we underlined the need to distinguish between markets in which government has reason to intervene, and hence corruption is a real problem, as opposed to markets in which corruption could be eliminated with little social consequence by privatising distribution. This explicit criterion for selecting material probably reveals the most enduring policy presumption of this paper: if the market can adequately solve an allocation problem, then the government should not intervene in it.

Notes

¹Bardhan's comment indicates that causality may run from economic growth to corruption, though Mauro explicitly adopts the opposite position.

²In a similar vein, in a study unrelated to corruption, Banerjee and Iyer (2005) find that differences in land tenure systems established in different areas of British India in the dim past robustly explain contemporary differences in agricultural investment.

³The broader realisation that an alert press can hold government to its responsibilities is not new. In the work on famines by Sen and his associates, this role of the press has been discussed frequently (see Ram, 1991, for an extended discussion).

⁴The Right to Information Act enacted by the Indian Parliament in 2005 and implemented by the states and territories enshrines this explicitly in law. The effectiveness of the act at present, and the ease with which relevant information can be accessed under its provisions, is not clearly established. One would suspect that in time specialist organisations will spring up that will mediate the work of accessing information under the act, much as lawyers mediate the access to justice. This would make the privileges guaranteed by the act more effective, if also more costly.

⁵Each person within a kin, caste, or linguistic group is expected to extend favours to others in that group, and in turn relies on similar favours extended to him.

⁶If all valuations are equal and the bureaucrat's cost is zero, then he simply sells the service with no red tape at the common value. If values are different but all agents place equal costs on suffering red tape, then again the bureaucrat sells the good at a uniform monopoly price with no red tape.

⁷See the discussion in Aidt (2003) and the references therein, especially Becker and Stigler (1974) and Mookherjee and Png (1995), for analyses of efficiency wages and related measures in this context.

⁸Alternatively, they may face employment constraints, so while they have time to wade through red tape, they are unable to convert this time into liquid funds by working for a wage.

⁹If $L < 0$ then the government would like to deny the service to the low types altogether. If in addition the service is not scarce, then it fits the description of a license.

¹⁰It also needs to be ensured that the aggregate cost of red tape is justified by the welfare gain compared to a purely random allocation. This requires v_H to be high enough for given α ; we assume this is true.

¹¹One could construct a further mechanism in which the priority price is either $v_L + \max T(v_L)$ with no red tape, or y_P plus red tape of $(v_L + \max T(v_L) - y_P)$. The non-priority price is either v_L or y_P with red tape $v_L - y_P$. Rich applicants for each allocation category pay the first price, and the poor pay the second. However, since prices are paid only by those who obtain allocations, the low-value poor must then suffer red tape *after* they have received an allocation in the non-priority lottery. The context must determine whether this is a realistic proposition.

¹²In keeping with our principal theme, we need a rationale for licensing that in some way involves a market failure. Otherwise optimal policy would prescribe that the licensing requirement be removed. An appropriate rationale may be provided by the need to tax the firms to fund public goods that generate significant benefits, or to enable the government to inspect health and safety measures instituted by the firms.

¹³A referee has pointed out that this conclusion may need to be qualified; the literature on informal sector and corruption shows that the total number of firms may be higher in the presence of corruption.

¹⁴Ehrlich and Lui (1999) analyse the allocation of investment between productive and political capital in a dynamic model that is similar in spirit.

¹⁵ β and c may be pecuniary quantities. This would complicate the algebra, but the qualitative results remain unaffected.

¹⁶Quoted from the World Bank website titled “Anticorruption”, at <http://www1.worldbank.org/publicsector/anticorrupt/index.cfm>.

¹⁷I was once told of a scam in which a “doctor” sold medicine that would enable pregnant women to conceive a child of the desired sex, or their money back. Half the treatments must have been successful. Many of course make an offering at temples for the same purpose, and half of those prayers are answered. Hence we cannot convincingly argue that God herself is immune to being swayed by a small consideration!

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