Social Structure, Collective Action, and Corruption: Theory, and Evidence from India

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Corruption often creates a collective action problem: several citizens or firms may each have an incentive to pay bribes in an effort to obtain preferential treatment, but they would all be better off if they could mutually commit not to pay bribes. If, however, they can sanction each other in other games, then by strategically "linking" the games they may be able to escape this "briber's dilemma". Accordingly, we argue that the level of corruption will be lower in societies with an "integrated" social structure, in which interactions are frequently short-lived and single-stranded, and individuals interact with different people for different purposes, than in a "segmented" society in which people tend to engage in stable, multi-stranded informal interactions within close-knit groups. An empirical test using Indian data supports the model over several alternative hypotheses about *how* social structure might affect the quality of government.

1   Introduction

Cross-country regression studies have found that aspects of a society's "informal rules" - variables such as "social capital" (Knack and Keefer 1997), "cultural values" (Licht et al. 2003), or ethnic heterogeneity (Easterly and Levine 1997; La Porta et al. 1999), are correlated with measures of corruption and bureaucratic inefficiency.[1] Yet the cross-country regression approach reveals little about *how* these factors affect the quality of government in particular settings. So, because most of these social and cultural variables would appear to be exogenous, it is hard to derive policy implications.

This paper explores one way in which social structure (which is one aspect of a society's "informal rules") can affect the quality of government, and tests the hypothesis in a way which enables us to reject alternatives. The basic idea is as follows: suppose that a government official allocates a fixed rent among several "clients" (which might be individuals, firms, villages, or ethnic groups, for example, depending on the context). The official can either allocate the rent according to formal policy rules, or he can offer the clients preferential treatment in exchange for bribes. If he is corruptible, then the clients face a collective action problem (a "briber's dilemma"): if they all pay bribes, they will all end up, on average, worse off; nevertheless, each has an incentive to pay bribes. This paper's main theoretical point is that their ability to escape from such a dilemma may depend on the amount of informal social and economic contact between them in other games. For example, in the simplest case, suppose that two individuals compete for a rent allocated by an official, and that they also "trade" with each other in a technologically unrelated game. Then, if the trade relationship is sufficiently valuable, their desire to avoid a breakdown of trade can enable them to mutually commit not to pay bribes, by strategically linking the games.

More generally, even if those caught in a briber's dilemma do not trade with each other directly, third-party (community) enforcement

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[1] For example, Mauro (1995:693) finds in a cross-country study that "ethnolinguistic fractionalization" (the probability that two randomly selected individuals are of different ethnicities) is significantly correlated with corruption and government inefficiency.

may enable them to "trust" each other. Therefore, we will argue that citizens' ability to overcome corruption may depend on the kind of social structure in which they are embedded. We distinguish between an *integrated* social structure, in which interactions are frequently short-lived and single-stranded, and individuals interact with different people for different purposes, and a *segmented* society in which people tend to engage in stable, multi-stranded informal interactions within relatively close-knit ethnic or kinship groups. We will show because individuals can make more extensive use of third party enforcement in an integrated society, the level of corruption will be lower.

For empirical support, we focus on public administration in India. Various potential explanations are discussed for the extreme rapidity with which government officials are transferred between posts. Frequent transfers are generally regarded as a symptom of corruption and political instability. Accordingly, a number of possible theories might predict that both corruption and transfer frequency would be lower in more integrated societies. However, in an incomplete-information extension of the model, we show that this paper's argument, while still predicting that social integration will reduce corruption, also reveals the surprising possibility that it may increase transfer frequency. The intuition, roughly, is that social integration reduces the level of corruption, but does so by enabling the collective action which can lead to corrupt officials being transferred. Thus, by examining how social integration affects transfer frequency, we can empirically test between alternative theories about *how* social integration might reduce corruption.

This paper departs in several ways from previous approaches to studying corruption. Most of the theoretical literature treats corruption as a principal-agent problem between "the state" and government officials, focusing primarily on the state's optimal choice of monitoring intensity, incentives and sanctions to constrain officials' behavior.[2] In contrast, this paper emphasizes that monitoring of officials is often carried out by the *clients* (those affected by the officials' decisions), through complaints to their political representatives, rather than by the state itself directly. The focus in this paper is on how interactions among these clients can affect the efficacy of this monitoring, and thereby affect officials' incentives to engage in corruption.

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[2]For example, Becker & Stigler (1974); Banerjee (1997).

The "briber's dilemma" central to the model is essentially a modified "rent-seeking" contest. There is a substantial literature investigating the properties of such contests (see Nitzan 1994 for a survey). In terms of this literature, this paper's main innovation is to use a linked-game approach to investigate how relationships among the clients in *other* games can help them to overcome their briber's dilemma.

The sociological contrast between traditional, segmented societies, in which trust is generally limited to ethnic or other local groups, and modern, integrated societies, in which mutual interdependence can act as an important source of more generalized trust, goes back at least to Durkheim (1997 [1893]). Greif (1994) has investigated the effects of social structure in the context of medieval trade. There is also a small literature which attempts to explain the link between social structure and the quality of government. This literature has predominantly focused on political struggles over policy *choice*. For example, Alesina et al. (1999) model a situation in which members of different ethnic groups have conflicting preferences over public policies, which, under a majority voting rule, leads to lower provision of public goods. This paper's argument is complementary; taking policy *choice* as given, we emphasize instead the impact of social structure on the quality of policy *implementation* - in particular, on the level of bureaucratic corruption.

Political scientists including Putnam (1993) have also studied the relationship between social structure and the quality of government. Putnam's argument that a "civic" society improves the quality of government is part of a large and diverse literature which explores state-society relations using the rather nebulous concept of "social capital". This paper can be seen as modelling how a particular form of social capital (social integration) can improve the quality of government by facilitating (possibly implicit) agreements to collectively resist corruption. In this, it builds on Weingast's (1997) argument that self-enforcing agreements among citizens are necessary to deter government transgressions, adding that such agreements are facilitated by an integrated social structure.

The empirical approach taken here also differs from previous studies in several important respects. In empirical studies of corruption, the dominant approach has been to carry out cross-country tests based on subjective corruption indices. However, it can be hard to draw policy

lessons from such studies. Both formal rules and informal rules (including social structure) vary greatly across countries, so corruption in different countries can have very different causes, forms, and effects, and (if formal laws are badly designed) can even be beneficial. Therefore,

> Cross-country empirical work... is of little use in designing anti-corruption strategies... In fact, it is not even clear what it means for a country to rank highly on a corruption index... The surveys give no information that would help one understand their underlying meaning. (Rose-Ackerman 1999:3-4)

In contrast, this paper focusses on the states of India (many of which are larger than most countries), where a relatively uniform formal system interacts with diverse cultural and social environments.[3] Secondly, unlike almost all the empirical literature on corruption, we do not rely on subjective corruption survey indices to measure corruption. Instead, our variables of interest are the frequency with which government officials are transferred between posts, and the number of riots. Clearly, this will give us some explaining to do, but the transfers data are objective. And finally, "informal rules" are generally very hard to change, so in terms of policy prescriptions, rather than attempting to "build social capital", a more realistic goal is to try to design formal rules which will complement existing informal rules. For this purpose, we need to know not just *whether*, but also *how* social structure affects the level of corruption. As we will see, focussing on transfer frequency, rather than a straightforward proxy for corruption, will enable us to address this issue.

This paper proceeds as follows. The next section presents a simple two-client model which formalizes the basic argument that informal contact in other games can enable clients to more easily escape a Briber's Dilemma. Section 3 extends the model to the case of a large population, highlighting the effect of social structure on corruption. Section 4 gives some illustrative examples. Section 5 discusses public administration in India, and generates a number of contrasting hypotheses about the relationships between social integration, corruption, and transfer frequency. Section 6 explains why riots are used as a proxy for social segmentation in the Indian context. Section 7 describes

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[3]Svensson (2003) is a recent exception to the cross-country approach.

the data, and empirically tests the hypotheses generated in section 5. Section 8 concludes.

2 Model (Complete Information)

This model uses an infinitely-repeated game to show how patterns of interaction among the clients of a bureaucracy can affect officials' incentives. We employ the concept of *strategic linkage*: when the same individuals encounter each other in several different repeated games, they can make their actions in one game contingent on their opponents' actions in another game (Bernheim and Whinston 1990). In this way, they can "pool" the incentive constraints across games, so that the threat of a breakdown of cooperation in one game can enable cooperation to be more easily sustained in another game.

Consider a situation in which a government official allocates a rent R between two "clients", whom we label x and y. The official cannot himself consume R.[4] All players are risk-neutral, and discount future payoffs at a rate δ.

Assume that government policies (formal rules) specify criteria which determine the clients' entitlements to portions of the rent, but these criteria can be properly applied only by the (expert) official, so the actual entitlements are a random variable observed only by the official. For simplicity, assume that if there is no policy distortion, each client's expected entitlement is $\frac{R}{2}$. This fact is common knowledge.

The stage game proceeds as follows. First, the official chooses whether to be honest (h) or demand bribes (d). Then the clients, x and y, move simultaneously. Each can either pay any nonnegative bribe to the official, or complain about the official to his superiors, at a cost c. Note that we assume that clients cannot both bribe and complain (perhaps complaining negates any good will earned by bribery, so that a complaining client will never wish to pay nonzero bribes). Let $b_x \geq 0$ and $b_y \geq 0$ denote the bribes, if any, paid by x and y, and let r_x and $(1-r_x)$ denote the fraction of the rent received by x and y respectively.

If the official chooses h, then he uses formal government policy criteria to determine the rent allocation (thus, $E(r_x) = \frac{1}{2}$), and the payoff

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[4]If the official *can* embezzle some portion of the rent, R represents the remainder.
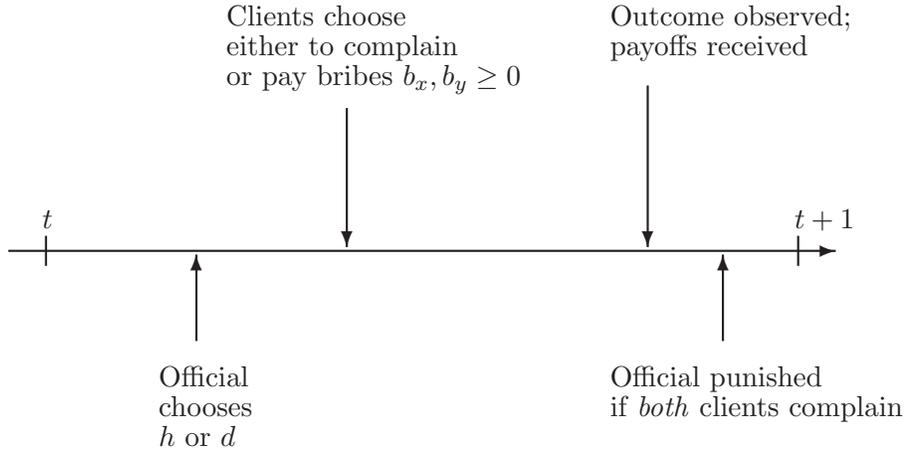
Figure 1: Time line, briber's dilemma

to the official is 0. Clearly, in this case the clients have no incentive to pay nonzero bribes, or to incur the cost of complaining.

If instead the official chooses d, then the allocation of the rent depends on the clients actions. We assume that in this case the rent is allocated as follows:[5]

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[5]This is a "rent-seeking" model: an official chooses a function mapping bribes into allocations, in response to which the clients noncooperatively decide how much to pay. An alternative formulation, following Bernheim and Whinston (1986), is the "menu auction" approach, in which the order of play is reversed: first the clients non-cooperatively choose menus of payments contingent on the allocations they receive, then the official chooses an allocation to maximize his payoff given these schedules. The model presented in this section can be reformulated using the menu-auction approach without substantively affecting the results. Another modelling possibility would be to allow the official to choose any function $r_x(b_x, b_y)$. In this case, there are several possible ways in which the official can build the game in order to capture the whole of the rent, including the function shown in (1).

$$r_x(b_x, b_y) = \begin{cases} \dfrac{b_x^2}{b_x^2 + b_y^2} & \text{if } b_x + b_y > 0, \\ \frac{1}{2} & \text{if } b_x = b_y = 0. \end{cases} \tag{1}$$

As mentioned earlier, most of the theoretical literature on corruption treats it as a principal-agent problem, with the official being monitored by his superiors. A key difference in this model is that officials are monitored by citizens (clients) rather than by "the state".

Assumption 1. *If both x and y complain, the official is punished at the end of the period. Punishment inflicts a disutility T on the official. However, isolated complaints are ignored.*

Assumption 1 is crucial in what follows. It states that the government will punish officials in response to *coordinated* complaints from clients. So, in order to deter corruption, citizens must be able to achieve *collective action* against corrupt officials. A central idea of this paper is that in many situations, overcoming corruption poses a collective action problem for the clients of a bureaucracy. Several examples will be given in section 4.

The disutility T suffered by an official following coordinated complaints might incorporate a fine, demotion, dismissal or embarrassment. However, in section 5 when we motivate this assumption in the Indian context, we will interpret the "punishment" as a transfer to a different post.

Lemma 2.1. *A one-shot Briber's Dilemma game has a unique subgame-perfect equilibrium, in which both clients pay bribes.*

Proof: First consider the subgame in which an official has chosen d. Suppose that a client complains. Then the other client's optimal strategy is to pay a tiny bribe and obtain the whole of the rent. But then the first client would prefer to pay a bribe rather than incur the cost of complaining - so no client complains in equilibrium. Then the first-order condition for client x is

$$\frac{\partial \Pi_x}{\partial b_x} = \frac{\partial}{\partial b_x}\left[\frac{b_x^2}{(b_x^2 + b_y^2)}R - b_x\right] = \frac{2b_x(b_x^2 + b_y^2) - b_x^2(2b_x)}{(b_x^2 + b_y^2)^2}R - 1 = 0$$

By symmetry, in equilibrium, $b_x = b_y = \beta$, where β is the Nash equilibrium bribe. Solving, $\beta = \frac{1}{2}R$. Thus, there is a unique symmetric

Nash equilibrium in which both pay bribes of $\frac{R}{2}$, and the official's pay-off is R. Now consider the subgame in which the official has chosen h. In this case, both clients have a strictly dominant strategy of paying a zero bribe and not complaining (ie., doing nothing). The official's payoff is zero.

Thus, by backward induction, there is a unique subgame-perfect equilibrium in a one-shot driber's dilemma, in which the official chooses d and obtains a payoff of R, and the clients both pay bribes of $\frac{R}{2}$ and obtain payoffs of 0. □

This game is a "dilemma" for the clients because if they could both credibly commit to complain after an official chose d, they could assure themselves of an expected payoff of $\frac{R}{2}$ each by avoiding the necessity of paying bribes. As usual, if the game is repeated with some probability, they may be able to escape their dilemma.

Lemma 2.2. *If the briber's dilemma is played with probability p in each time period, then non-bribery can be sustained as a subgame-perfect equilibrium if and only if*

$$\frac{R}{2} + c \leq p\left(\frac{\delta}{1-\delta}\right)\frac{R}{2}$$

Proof: Consider a grim trigger strategy. Since both players receive a payoff of zero in a one-shot Nash equilibrium, this is an optimal penal code (Abreu 1988). In the event that an official chooses d, a client consid-ering defection weighs the loss of future benefits ($\frac{R}{2}$ with probability p in each future period) against the immediate gain from defection. Therefore, non-bribery can be sustained by a grim trigger strategy if and only if

$$R \leq \frac{R}{2} - c + p\left(\frac{\delta}{1-\delta}\right)\frac{R}{2}$$

□

Suppose now that in addition to the briber's dilemma, the clients, x and y, can also engage in some other social or economic interaction, which we will refer to as "trade". "Trade" might represent a variety of social or economic interactions; the key feature of trade is that enforce-ment is informal, in the sense that opportunism is constrained by the

"trust" generated through repeated interaction, rather than by a third party.

We model trade as follows. At the start of each period, each individual produces one indivisible unit of a consumption good. They derive utility u from consumption of their own product, and $u + z$ from consumption of the other's product, where z reflects the net benefit from trade, if any. Each player may defect by not giving the consumption good to the other as promised. So, assuming that trade is potentially welfare-enhancing ($z > 0$), it is a prisoner's dilemma, with payoffs:

	Cooperate	Defect
Cooperate	$u + z, u + z$	$0, 2u + z$
Defect	$2u + z, 0$	u, u

Lemma 2.3. *Honest bilateral trade can be sustained as a subgame-perfect equilibrium iff*

$$\frac{\delta z}{1 - \delta} > u \qquad (2)$$

Proof: Consider a grim trigger strategy according to which any deviation from honest trade is punished by a permanent suspension of trade. This is an optimal penal code in a repeated prisoner's dilemma (Abreu 1988), and is subgame perfect. With this enforcement regime, defection nets the defector a maximum one-shot gain of u; the net loss in each future period is z. Therefore, defection is optimal unless (2) holds. Conversely, suppose (2) holds. Then a grim trigger strategy can support honest trade as a subgame-perfect equilibrium. $\square$

Definition

$$S(u, z, \delta) = \frac{\delta z}{1 - \delta} - u$$

$S(u, z, \delta)$ is the amount an individual who cheated in trade would stand to lose. We will refer to $S(u, z, \delta)$ as the "slack" in the trade game.

In principle, the briber's dilemma and "trade" are technologically distinct and might be treated as strategically unrelated. However, it is natural to suppose that two individuals who found themselves playing a briber's dilemma would have an incentive to link the games, if by "staking their reputations" as fair traders on non-bribery in the briber's dilemma, they may be able to avoid having to pay bribes and thereby capture the rent. Therefore, suppose that the games are played simultaneously in each period, according to the timeline depicted in figure 2. The briber's dilemma need not be repeated with the same frequency as trade; assume that the briber's dilemma will be played in each future period with probability p (thus, in particular, if $p = 0$, we have a one-shot briber's dilemma).
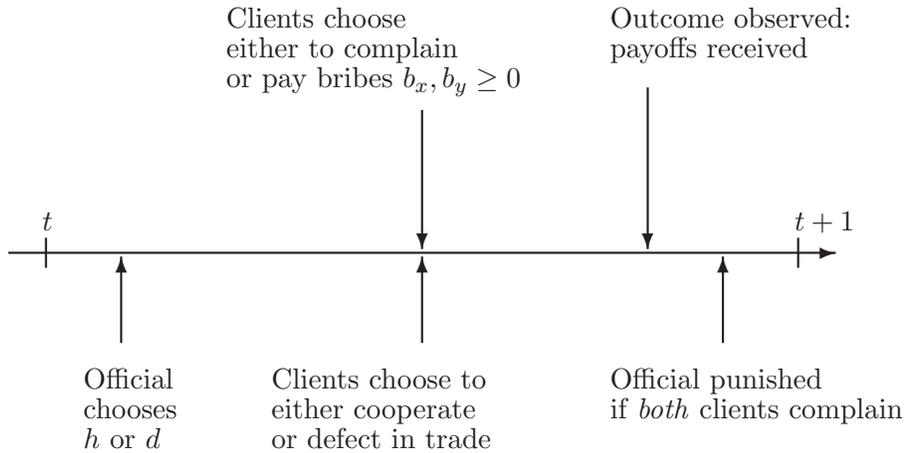

Figure 2: Time line, linked games

Proposition 1. *Non-bribery can be sustained in a subgame-perfect equilibrium through strategic linkage if and only if*

$$\frac{R}{2} + c \leq S(u, z, \delta) + p(\frac{\delta}{1 - \delta})\frac{R}{2} \tag{3}$$

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Proof: Consider a grim trigger strategy according to which defection in the briber's dilemma, or cheating in trade, is punished by Nash reversion in both games. With this enforcement regime, an individual would prefer to defect in both games simultaneously than in either alone. A player would therefore be willing to defect unless

$$R + (2u + z) + \frac{\delta}{1 - \delta}(u) \leq \frac{R}{2} - c + (u + z) + \frac{\delta}{1 - \delta}[(u + z)] + \frac{\delta}{1 - \delta}[\frac{pR}{2}]$$

The right-hand side shows the one-shot payoffs from defection in both games, plus the stream of payoffs from the trade game following Nash reversion. The left-hand side shows the value of the expected payoff stream from cooperation in both games after an official has chosen d, assuming the other player also cooperates. This inequality simplifies to (3). □

Proposition 1 shows that strategic linkage relaxes the incentive constraints in the briber's dilemma. In particular, although bribery is inevitable in a one-shot briber's dilemma without strategic linkage, a non-corrupt equilibrium can nevertheless be sustained if the slack in the trade game, $S(u, z, \delta)$, is sufficiently large. Since the role of strategic linkage in overcoming bribery is most sharply defined for the case of a one-shot briber's dilemma, and for the sake of expositional simplicity, in the remainder of the paper we will focus on this case - that is, we will assume that $p = 0$.

3   Social Structure and Corruption

So far we have dealt with a population of just two clients, and have seen that they may be able to enforce a non-bribery agreement, if they are able to sanction each other in another game. In this section, we analyze a more general situation in which there there may be many potential clients embedded in a larger society, in order to see how different kinds of social structure may affect the level of corruption.

In a larger population, the likelihood of any particular pair of individuals having a direct "trade" relationship may be small. However, even if they do not interact with each other directly, they may still be able to enforce an agreement, if they can identify each other to third parties who can punish defectors.

The question then becomes: given two randomly selected individuals, what is the probability that they can sanction each other informally via third party enforcement? If individuals interact mainly within closed groups with rigid boundaries, it may be hard for people from different groups to identify and thereby trust one another. In contrast, if group boundaries are porous, people will be able to form more extensive chains of contact and enforce non-bribery agreements (perhaps socially experienced as implicit anti-bribery "norms") with many other individuals.

Consider, then, an infinite population of individuals divided into N "networks" (these might correspond to villages, or ethnic groups, for example; if we think of the players as firms, these might be business networks). We assume that individuals have perfect information about the history of play of those within their networks, but cannot identify members of other networks. There might be many reasons for this - cultural or linguistic boundaries, historical enmities, geographic divides, and so on. However, the networks need not necessarily correspond to any particular kind of social, ethnic or religious boundaries. For example, if enough information is available to support high levels of trust between members of different ethnic groups, then these ethnic groups would be contained within the same network.

Social structure in this model is reflected in the number of networks, N. A society with few networks (low N) is more "integrated" than a society with many networks, which we will refer to as "segmented". In particular, the probability that two randomly-selected individuals are members of the same network (and can therefore identify each other) is $\frac{1}{N}$. In a totally integrated society, in which every individual can identify everyone else, N would simply be one.[6]

In each period, each individual has the opportunity to engage in some kind of informal (self-enforcing) social or economic interaction with K other randomly selected members of his or her network. We will refer to all of these interactions as "trade", and model them as one-shot two-person prisoner's dilemmas like that described in the previous section. Notice that the *amount* of informal interaction is the same for any value of N; what differs is the *pattern* of informal interaction: who

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[6]Kali (2002) presents an alternative, complementary approach to analyzing social structure: the "small world" phenomenon.

trades with whom.

Lemma 3.1. *Honest trade can be sustained as a subgame-perfect equilibrium within a network iff*

$$\frac{\delta z}{1 - \delta} > u \tag{4}$$

Proof: Consider a "community enforcement" strategy according to which all network members agree to trade honestly. Any defection from honest trade is to be punished by a suspension of future trade between the cheater and all other network members, with the provisos that (i) if any other player defects in the future, that player is subsequently punished while all previous defections are forgiven, and that (ii) simultaneous deviations are ignored (these conditions ensure subgame perfection).

With this enforcement regime, an individual considering cheating has an incentive to cheat all of those with whom she trades. So, defection nets the defector a maximum one-shot gain of Ku; the net loss in each future period is Kz (assuming all other network members adhere to the community enforcement strategy). Therefore, defection is optimal unless (4) holds. Conversely, suppose (4) holds. Then the "community enforcement" strategy described above can support trade as a subgame-perfect equilibrium. □

The community enforcement strategy used in the proof, in which players adopt a "social norm" that an individual who cheats any other network member is to be ostracized from future trade, is based on that described by Kandori (1992:67). As Kandori showed, to enforce honest trade, "changing partners itself is unimportant and the crux of the matter is information transmission among the community members" (Kandori 1992:64) (thus, (4) is the same as (2)). Here, we have simply assumed perfect and costless information transmission within each network.

Now assume that, in each period, a finite number of pairs of individuals are randomly selected from the entire (infinite) population, to play one-shot briber's dilemmas. How will social structure be related to corruption in this model?

Lemma 3.2. *When two members of the same network play a briber's dilemma, an agreement not to pay bribes can be sustained in a subgame-perfect equilibrium through strategic linkage if and only if*

$$\frac{R}{2} + c \leq KS(u, z, \delta) \tag{5}$$

Proof: Consider a strategy according to which defection in the briber's dilemma, or cheating in trade, is punished by exclusion from all future trade. When a defection occurs, all previous defections are forgiven; and simultaneous defections are ignored. With this enforcement regime, after an official has chosen d, an individual considering defecting would prefer to defect in all K trade games and the briber's dilemma simultaneously. The player can expect to be excluded from all future trade (assuming that all other network members never cheat). A player will therefore prefer to defect unless

$$R + K(2u + z) + \frac{\delta}{1 - \delta}(Ku) \leq \frac{R}{2} - c + K(u + z) + \frac{\delta}{1 - \delta}[K(u + z)]$$

which simplifies to (5). $\square$

Proposition 2. *If* (5) *holds, a more integrated society (one with a lower N) can sustain a lower level of corruption in equilibrium than can a less integrated society.*

Proof: Suppose that all members of all networks strategically link the briber's dilemma and trade games using the strategy described in the proof of Lemma 3.2. By Lemma 3.2, this can sustain non-bribery when both clients are members of the same network. By Lemma 2.1, when members of different networks play a briber's dilemma, bribery is inevitable. So, in equilibrium, bribery will occur only when the two clients are members of different networks, which happens with probability $\frac{N-1}{N}$. Therefore no equilibria exist in which bribery occurs with probability less than $\frac{N-1}{N}$, which is increasing in N. $\square$

To illustrate Proposition 2, suppose $N = 1$. Then we have a totally integrated society, and as long as (5) holds, a universal "norm" against bribery can ensure that bribery never occurs. If $N = 3$, then bribery will occur in approximately $\frac{2}{3}$ of the briber's dilemmas played, since the probability that the two clients are members of the same network is $\frac{1}{3}$.

4   Examples

Propositions 1 and 2 showed that informal social or economic inter-
action between a bureaucracy's clients can enable the clients to over-
come "briber's dilemmas". This section briefly discusses two examples
of situations in which overcoming corruption poses a collective action
problem for the clients of a bureaucracy, which can be overcome if the
clients are socially or economically "integrated".

First, consider a situation in which firms compete for contracts or
licenses allocated by government officials, or can bribe officials to over-
look regulations. A firm which refuses to bribe to obtain a contract, or
to obtain reliable telephone service, or to evade excise duty, risks being
priced out of the market by less scrupulous competitors. As a result,
these firms face a "briber's dilemma". If some firms are willing to pay
bribes, the others have no choice but to follow suit.

However, suppose that the firms form an association which under-
takes mutually beneficial activities such as personnel training, technol-
ogy sharing, lobbying, setting industry standards, or price collusion.
Proposition 1 implies that if these activities are of sufficient value to
members, the threat of expulsion may enable the firms to escape their
briber's dilemma, coordinate opposition to officials seeking bribes, and
enforce boycotts of firms found to be paying them.[7]

For example, Kochanek (1993) argues that in Bangladesh, business
associations are too weak to prevent government policies being under-
mined by individual firms seeking exemptions. As a result, rent-seeking
is ubiquitous and collective action infrequent. The empirical studies in
Maxfield and Schneider (1997) contain several similar examples, but
also some examples of situations in which firms successfully used busi-
ness associations to overcome corruption through collective action. For
example, among clothing manufacturers in Turkey,

> Members who contemplate circumventing the association to seek
> particularistic benefits have to weigh the likelihood and costs of
> losing membership in the association against the likely benefits
> from private relations with government officials. (Maxfield and
> Schneider 1997:24)

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[7]Greif et al. (1994) argue that medieval merchants used guilds to achieve collec-
tive action in a related context.

Thus, organized business "lobbies", which are often regarded as affecting policy in negative ways, may have beneficial effects in controlling corruption. If the benefits of membership in an association outweigh the potential gains from bribery, the association may be able to enforce a mutually beneficial non-bribing rule among its member firms.

As a second example, consider economic anthropologist T. Scarlett Epstein's (1962, 1998) comparative study of two South Indian villages. The villages were initially broadly similar, but an exogenous technological change (the introduction of canal irrigation to the area in 1939) caused their paths of development to diverge.

The introduction of canal irrigation strengthened economic interdependence among the villagers in the first village, enabling them to enforce mutual cooperation by threat of economic sanctions.[8] As a result, members of this village interacted (relatively) harmoniously, and presented a "united front" when dealing with government officials:

> Villagers refused to let the Government set them to competing with each other; their feeling of unity as against the Government outweighed the economic interests of individual villagers (1962:145)

In contrast, the irrigation canals bypassed the second village, because it lay above the canal water level, on the fringe of the "irrigated belt" of villages. So, when irrigation was introduced, many villagers purchased land or sought employment in nearby irrigated villages. Social and economic interaction within the village decreased, and factional conflict intensified. This reduced the villager's capacity for collective action, with the result that amenities such as schools and temples were allowed to deteriorate, and villagers used personal contacts, caste loyalty, and bribery to rally external authorities (such as the police) to their support in internal disputes.[9]

These examples illustrate how a mutual vulnerability based on economic interdependence can enable a community to engage in collective action, and thereby affect its' relationships with government officials.

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[8]This was illustrated by a lockout which persisted until "both Peasant employers and Untouchable laborers found the situation economically untenable" (Epstein 1962:187).

[9]Epstein et al. (1998: 123, 157-8, 202, 231, 283-4, 288-90).

Members of a more integrated community, who can punish each other by "linking the games", are therefore less likely to try to obtain preferential treatment from government officials at each other's expense.

5 "Transfers" and Public Administration in India

Proposition 2 showed that social integration may be associated with a lower level of corruption. One possible approach to testing the theory would be to attempt to find a proxy for corruption and see if it were negatively correlated with a proxy for "social integration". However, even if satisfactory proxies could be found, it would hardly be surprising if they were negatively correlated. A variety of possible theories might explain such a correlation, so observing it would not shed much light on the important question of *how* social structure affects corruption.

This paper therefore adopts a different approach. In accounts of public administration in India, the frequency with which government officials are transferred between posts is often identified as a variable closely linked to corruption. However, as discussed below, depending on *how* social integration reduces the level of corruption, we might expect to find either a positive or a negative relationship between social integration and transfer frequency. Thus, studying transfer frequency will enable us to investigate not just whether, but also *how*, social integration reduces the level of corruption.

In this section, therefore, we discuss public administration in India in more detail, focusing in particular on the importance of transfer frequency. Based on this discussion, we will generate several contrasting hypotheses concerning the likely relationships between social integration and transfer frequency. Then, in section 6, we will motivate our measure of social integration (a low level of riots), before proceeding to the empirical analysis in section 7.

Transfers of government officials from one post to another are extremely rapid in India. While official rules specify that officials should be transferred every 3 to 5 years, in fact they "can always and at any moment be transferred" (de Zwart 1994:53), and are sometimes transferred several times in a single year. Transfers are generally considered

to be closely related to corruption; indeed, "A conversation about transfers is more or less equal to a conversation about corruption" (de Zwart 1994:10). This close relationship between transfers (which are visible), and corruption (which is not), makes transfer frequency an excellent variable with which to investigate corruption in India. However, the relationship is not entirely straightforward; several factors can affect transfer frequency.

First, transfers may be carried out by (benevolent) governments in an effort to reduce corruption by creating "social distance" between officials and members of the public.

Second, transfers often result from political interference. For example, widespread transfers are common following a change of government, as politicians reward their supporters and tighten their control over administrative decisions by installing loyal officials in important posts, and removing officials loyal to their opponents. In addition, officials frequently bribe politicians and other officials to obtain transfers to desirable posts.

A third common cause of transfers, related to the second, are complaints to politicians, or informal lobbying of politicians, by clients. It is not so much the merits of complaints which matter, because the formal accountability procedures are extremely weak. Isolated complaints, however valid, are easily ignored. However, if a sufficient *volume* of complaints about a particular official builds up, politicians have an incentive to accommodate their constituents' wishes by transferring the official in question.

Next, we discuss each of these causes of transfers in more detail, in order to generate testable hypotheses.

5.1   Transfers to combat parochial corruption.

In traditional societies, "parochial" corruption (or "nepotism") often occurs because of the prevalence of strong personal relationships between officials and members of the public. A frequent rationale for transferring officials is to prevent this kind of corruption, by breaking up networks of corrupt individuals and creating "social distance" between officials and their clients. Indeed, in India, the system of transfers was initially created in the 1770s in a (successful) attempt to combat

endemic corruption in the East India Company (de Zwart 1994). From the government's point of view, however, carrying out frequent transfers may also entail costs; for example, officials may need to be compensated for the inconvenience of frequent transfers, and may take time to "learn the ropes" and become effective in a new role.

What relationship does this view predict between social integration and transfer frequency?

If, as seems likely, parochial corruption is indeed less of a problem in more integrated societies characterized by extensive but short-lived interpersonal interactions than in segmented societies characterized by dense and long-lived interactions within small groups, and if transfers are carried out to reduce parochial corruption, then, from the government's point of view, transferring officials ought to be less effective at reducing the costs of corruption in more integrated societies (in a society with no parochial corruption, there would be no need for transfers at all). Therefore, we would expect

Hypothesis 1. *If governments transfer officials to combat parochial corruption, then the level of social integration will be negatively correlated with (the government's optimal choice of) transfer frequency (and also with the level of corruption).*

5.2   Transfers caused by political interference

Indian politicians often intervene in transfers of government officials. For politicians, influence over transfers is a key political resource which helps politicians to achieve re-election in two main ways.[10]

First, influence over transfers enables politicians to obtain administrative favors for their supporters: hospital beds, government jobs or contracts, grants or loans, shortcuts past queues or red tape, and so forth.

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[10]Nominally, transfers are decided by senior officials rather than local politicians. However, in practice, Chief Ministers in the states, who appoint the most senior officials, must retain the support of local politicians, as their power is constantly under threat from defections to rival factions. They therefore routinely delegate influence over transfers to local politicians, often quite explicitly, in exchange for their support. As a result, the transfer system in practice is subject to political interference at all levels.

Second, the ability to have officials transferred enables politicians to extract bribes from officials vying for particular jobs. Some of the funds generated in this way can then be used, for example, to distribute cash, clothes, blankets and alcohol to voters at election time, or to cultivate "vote banks" through contributions to caste associations. Politicians may also need money to pay bribes in order to obtain party nominations.

In Wade's (1982, 1989) detailed study of an Indian irrigation department, for example, irrigation officials obtained bribes from farmers by manipulating their water supply, and from contractors in exchange for the award of construction and maintenance contracts. Junior officials often bribed their superiors to obtain transfers to especially lucrative posts, the price for each post being dependent on the projected earnings. In this way, bribe money was aggregated and channeled up the hierarchy to senior officials and, ultimately, politicians. The transactions were generally impersonal, based on well-established conventions governing the sharing out of funds as well as the transfer "market", and the sums involved far exceeded the official's salaries. Thus,

> The transfer is the politicians' basic weapon of control over the bureaucracy ... With the transfer weapon not only can the politicians raise money by direct sale; they can also remove someone who is not being responsive enough to their monetary demands or to their requests for favors to those from whom they get money and electoral support. (Wade 1982:319)

de Zwart (1994) calls this system the "leasing of offices": officials effectively "lease" posts from politicians, providing them with administrative favors and a share of the bribes, in exchange for transfers to desirable posts and protection from complaints.

This discussion might lead one to suppose that in well-governed states, political interference will be less frequent, and the transfer system will operate more according to sound administrative procedures. Since transfers are such an integral part of the system of administrative corruption in India, we might therefore expect transfer frequency to be lower in well-governed (less corrupt) states. Accordingly,

Hypothesis 2. *If transfers are a suitable proxy for corruption, and social integration helps to reduce corruption, then social integration will*

be negatively correlated with transfer frequency (and also with the level of corruption).

Another result of political interference in transfers is that wholesale transfers frequently occur following changes of government (eg., Singh 1988), as politicians reward their supporters by transferring loyal officials into important posts while banishing their opponents. As a result, we might expect transfer frequency to be higher in years in which there is political instability, elections, or changes in government. Therefore,

Hypothesis 3. *Transfer frequency will be higher during times of political instability, or in states with greater political instability. So, if social integration reduces political instability, it should be negatively correlated with transfer frequency.*

5.3   Transfers caused by coordinated complaints

As we have seen, politicians in India use transfers to discipline and coerce officials in order to increase their chances of re-election. Accordingly, one reason politicians may intervene to transfer officials is in order to "keep the peace" in response to complaints from constituents.

> The most common situation that produces [transfers] is a flow of complaints about individual civil servants, offices, or departments, especially complaints concerning corruption. The first administrative reaction is usually to order a number of transfers. (de Zwart 1994:8)

"Complaints" may take a variety of forms. Informal lobbying of local politicians to have an official transferred is common. Anonymous letters are another possible means of complaint (Wade 1982:311; de Zwart 1994:92,130). In extreme cases, direct agitations, such as stoppage of traffic, *gherao*s, demonstrations, etc., may occur.

However, although transfers often result from complaints, Indian bureaucracy is generally viewed as unresponsive to complaints. "(D)enunciations are so common that, to exaggerate only a little, no one takes any notice" (Wade 1989:95). How can complaints be so important and yet so ineffective?

Both formal legal protections against dismissal, and informal solidarity among government officials,[11] make it relatively easy to protect an official from formal complaints. As a result, isolated complaints are largely ineffective. But if many constituents complain about a particular official, then politicians have an incentive to have them transferred. For the politician, a transfer is just as effective at "keeping the peace" as having an official dismissed, and far easier to achieve. Usually, therefore, irrespective of the merits of the case, officials who face a *large volume* of complaints are transferred.[12] The upshot is that an official's objective is to

> maximize revenue subject to the constraint of maintaining complaints about his performance at a low level; a 'low' level being that which is insufficient to set off the transfer mechanism (Wade 1989:77).

Propositions 1 and 2 showed how social integration can facilitate coordinated complaints against corrupt officials. To see more clearly how this will be reflected in transfer frequency, we must return to the model and allow for incomplete information (so that transfers due to coordinated complaints will sometimes occur on the path of play).

Model (Incomplete Information)

When faced with a pair of clients, an official does not necessarily know the nature of the relationship between them. In the context of our model, officials may not be certain whether two individuals are in fact members of the same network. So, we will now modify the model of section 3 by assuming that at the start of a briber's dilemma game, the official receives a signal which indicates whether the clients with whom he is dealing are members of the same network, and that this signal is incorrect with probability $\mu > 0$ (as a result, officials will sometimes make mistakes on the path of play).

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[11] "(D)epartments take advantage of every procedure to delay inquiries, investigations, and prosecutions ... [officials have] two codes of conduct, two allegiances if you will, one to the group of departmental colleagues, the other to the administration as a whole." (Palmier 1985:111-2)

[12] Wade (1982:311; 1989:77,95); de Zwart (1994:8,71,130)

After the signal is observed, play proceeds as in section 3. First, the official chooses whether to demand bribes (d), or not (h). If he chooses h, each client expects to receive, on average, half the rent ($\frac{R}{2}$). If he chooses d, the two clients (x and y) receive fractions r_x and $(1 - r_x)$ of the rent respectively, where r_x is given by (1). The clients then simultaneously choose whether to complain (at a cost c), or bribe the official, and if they bribe, how much to pay. Simultaneously, they play the "trade" games within their respective networks. Assume that the number of networks, N, is common knowledge, and that $N \geq 2$.

We continue to assume that the only way the government monitors officials is by punishing them in response to coordinated complaints from clients (Assumption 1). We can now interpret this punishment as a transfer to another post. An official who is transferred suffers a disutility T.

To see how social integration, corruption, and transfer frequency will be related in this model, we define the following variables:

Definition. The *level of corruption*, γ, is the expected proportion of briber's dilemmas in which bribery occurs.

Definition. *Transfer frequency*, λ, is the expected probability that an incumbent official is transferred in any period.

Consider the following "linked" strategy for the clients:

- If a member of one's own network cheats another member in either the briber's dilemma or in trade, that member is subsequently to be considered "ostracized" unless the person they cheated was already ostracized. When a defection occurs, all previously ostracized players are forgiven; and multiple simultaneous defections are ignored.

- In the trade games, trade honestly as long as neither player has been ostracized; otherwise, play the static Nash strategy (ie., cheat).

- When playing the briber's dilemma against a member of one's own network, if the official chooses d, complain if neither player

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is ostracized; otherwise, play the static Nash strategy (ie., pay a bribe of $\frac{R}{2}$).

- When playing the briber's dilemma against a member of another network, play the static Nash strategy.

Lemma 5.1. *If all clients choose the "linked" strategy described above, then there exists $\mu^* > 0$ such that the following "believe the signal" strategy is among an official's best responses for all $\mu \leq \mu^*$:*

- if the signal indicates that the clients are members of the same network, choose h; otherwise, choose d.

Proof: The expected payoff to an official who chooses h is zero, whatever the identity of the clients. If an official chooses d, and the clients adopt the "linked" strategy, then if two clients are members of the same network, the official will face coordinated complaints and will be transferred. As a result, his payoff will be $-T$. On the other hand, if the clients are members of different networks, the payoff to choosing d will be R, since each client pays a bribe of $\frac{R}{2}$. Having observed a signal that indicates that the clients are members of the same network, therefore, the official's expected payoff to choosing d is $\mu R - (1-\mu)T$. If μ is sufficiently small, this is negative, so the official will prefer to choose h for a payoff of zero. Similarly, the expected payoff to choosing d in the case of a signal which indicates that the clients are members of different networks is $(1-\mu)R - \mu T$. If μ is sufficiently small, this is positive, so the official will choose d. Since $R > 0$ and $T > 0$, we can find μ small enough to satisfy both these conditions. $\quad\square$

Lemma 5.2. *If all pairs of clients play the "linked" strategy and all officials play the "believe the signal" strategy, then the level of corruption will be lower in a more integrated society, that is,*

$$\frac{\partial \gamma}{\partial N} > 0$$

Proof: If all players follow the specified strategies, payment of bribes will occur when two things happen: an official faces a pair of clients who are members of different networks, and he receives a correct signal. Therefore, $\gamma = (\frac{N-1}{N})(1-\mu)$, so $\frac{\partial \gamma}{\partial N} = (\frac{1}{N^2})(1-\mu) > 0$. $\quad\square$

This is quite intuitive: it says that in a more segmented society, a larger fraction of randomly selected pairs of clients are members of different networks; so, officials will more frequently be able to successfully demand bribes - as long as mistakes are infrequent.

Lemma 5.3. *If all pairs of clients play the "linked" strategy and all officials play the "believe the signal" strategy, then transfer frequency will be lower in a less integrated society, that is,*

$$\frac{\partial \lambda}{\partial N} < 0$$

Proof: If all players follow the specified strategies, officials will be transferred when two things happen: an official faces a pair of clients who are members of the same network, and receives an incorrect signal, so he demands bribes and, (to his surprise), faces coordinated opposition (complaints). Therefore, $\lambda = (\frac{1}{N})\mu$, so $\frac{\partial \lambda}{\partial N} = (-\frac{1}{N^2})\mu < 0$.   □

Proposition 3. *Suppose that (5) holds. There exists $\mu^* > 0$ such that, for all $\mu < \mu^*$, there exists a Perfect Bayesian equilibrium in which officials all play the "believe the signal" strategy and the clients all play the "linked" strategy. In this equilibrium,*

$$\frac{\partial \gamma}{\partial N} > 0 \qquad and \qquad \frac{\partial \lambda}{\partial N} < 0$$

Proof: Lemma 5.1 established that for small values of μ, the "believe the signal" strategy is a best response for the official. If officials follow the "believe the signal" strategy, and (5) holds, then, by Lemma 3.2, the "linked" strategy is an equilibrium for the clients. Therefore, these strategies constitute an equilibrium strategy profile. Given this strategy profile, Lemma 5.2 establishes the first inequality. Lemma 5.3 establishes the second.   □

Proposition 3 shows that as long as "mistakes" (arising from incorrect signals) are rare, then, even though some officials are transferred as a

result of attempted corruption, and the level of corruption is *decreasing* in the level of social integration, transfer frequency is *increasing* in the level of social integration.

The intuition is as follows: as long as mistakes are infrequent, officials will seek bribes if and only if they estimate that the pair of clients with whom they are currently dealing are members of different networks. Officials can make two kinds of errors in this situation. If the clients are members of different networks, and the official "mistakenly" does not attempt to obtain bribes from them, he loses an opportunity to make money, but faces no coordinated opposition from the clients and is therefore not transferred (or, more realistically, is transferred only as a matter of normal administrative routine). Officials who misread the situation when their clients are in fact members of the same network, however, are likely to demand bribes and thereby trigger a storm of complaints which results in their speedy transfer.

Therefore, even though bribes are less frequently demanded (and paid) in a more integrated society, the transfer frequency may be higher, since a higher proportion of pairs of clients will have the capacity to join in collective action against a corrupt official.[13]

Hypothesis 4. *To the extent that collective action against corruption causes transfers, social integration will be positively correlated with transfer frequency (and negatively correlated with the level of corruption).*

Note that Hypothesis 4's prediction of a positive relationship between social integration and transfer frequency contrasts with the negative relationship predicted by Hypotheses 1, 2 and 3 (all four hypotheses agree, however, that social integration ought to reduce the level of corruption). These hypotheses do not necessarily exhaust all the possible arguments that might be made. For example, we might also consider

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[13]All this assumes that μ is independent of social structure. But it seems reasonable to suppose that, in fact, it will be more difficult for officials to discover whether informal connections exist between his clients in a more integrated social setting, whereas in a segmented social setting, some proxy such as religion, ethnicity, etc, may usefully indicate to an official the nature of a client's set of informal contacts. Then mistakes will be more likely in an integrated social setting, further increasing transfer frequency, and strengthening the above argument.

the implications of the standard principal-agent view which is the dominant approach to modelling corruption. Presumably, the more corruption there is, the more officials would be caught engaging in corruption. In India, as we have seen, transfers are the usual way of disciplining officials. So, if social integration, or something like it, somehow reduces corruption, then this gives us yet another reason why social integration might be negatively correlated with transfer frequency. The main point, however, is simply that a variety of reasonable theories might predict that social integration would be negatively correlated with transfer frequency, and that this contrasts with the prediction we have made based on our model above.

Based on this discrepancy, section 7 will attempt to empirically evaluate the relevance of these alternative possible explanations for transfer frequency and thereby attempt to shed light on the mechanism by which social structure affected corruption in a specific setting. First, however, we need a proxy for social structure.

6   Riots and Social Structure in India

Indian society is extremely diverse, containing numerous social groups divided by caste, religion, language and other traits. Many social and cultural activities, including mutual reciprocal aid, tend to be concentrated within these groups, and group boundaries are often very rigid. However, despite this social heterogeneity, members of different social groups in India may be highly economically interdependent. Traditionally, this interdependence often took the form of a caste-based division of labor; low-caste laborers and artisans served wealthier high-caste landowners in exchange for an implicit assurance of survival in bad crop years and emergencies (Platteau 1995).

In modern India, the nature and extent of social and economic "integration" varies greatly. Because these widely varying informal environments interact with a relatively uniform formal system, India is a particularly appropriate context in which to study the interaction between formal and informal "rules".

But there's a problem: in the face of this tremendous diversity, how can we measure the level of social integration in a quantifiable yet meaningful way? To measure the level of integration properly, we would

need to be able to observe which "groups" are relevant in each instance (and Indian society contains many cross-cutting divisions) and the type of interaction between their members. Clearly, any direct measurement of this sort is impossible, so our measure must necessarily be indirect.

There are two main approaches to indirectly measuring related variables ("trust", "civic-ness", "social capital" etc.) in the literature. The first is to use survey responses (eg., Knack and Keefer 1997). The second approach is to look for suitable proxies. For example, Putnam (1993) uses membership in formal associations, newspaper readership, and voter turnout in referenda to compare "civic-ness" in Italian regions. Putnam's indices are less appropriate to the Indian context, but this section argues that in India, the incidence of riots can serve as a proxy for social integration (a low level of riots reflecting a high level of social integration).

Why do riots occur in some places more than in others? Fearon and Laitin (1996) argue that in situations where intergroup conflict can occur, potentially violent situations are often defused if some members of each group have an interest in intergroup harmony (for example, because they are involved in valuable intergroup trade). When trouble is brewing, individuals with a vested interest in peace often step in to calm things down.

In India, although many different kinds of sparks can ignite intergroup violence, [14] riots often reflect an accumulation of underlying tensions. "Two communities start a slow pirouette of confrontation which gradually builds up to the moment when the tension must explode into violence" (Akbar 1988:151). Fearon and Laitin's argument, then, suggests that these tensions are more likely to be defused, and riots are therefore less likely to occur, if some members of each group have an interest in preserving intergroup harmony.

This sort of argument is made most explicitly in the Indian context by Varshney (2002). He contrasts three pairs of demographically similar Indian cities. One city in each pair is comparatively peaceful, whilst the other experiences frequent communal (Hindu-Muslim) violence. Varshney finds that in each case, for various historical or eco-

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[14]In Krishna's (1985) data, proximate causes of communal violence included festivals, quarrels over the honor of women, desecration of religious places, cow slaughter, etc.

nomic reasons the populace in the peaceful cities is relatively integrated compared to the violence-prone cities. In the more integrated cities, formal and informal "networks of civic engagement", frequently built on an economic symbiosis between groups, which facilitate communication and constrain polarizing behavior, are decisive in preventing communal riots.

For example, Hyderabad has a history of Hindu-Muslim violence, while Lucknow, which is a similar size and has a similar proportion of Muslims in the population, does not. The essential difference between the two cities is not that intergroup tensions do not appear in Lucknow, but rather that they are more easily defused before they lead to violence. Varshney identifies an economic symbiosis between Muslim embroiderers and Hindu textile merchants as the key factor in maintaining peace. The textile industry operates informally: "lacking explicit and formal contracts, the entire system works on trust" (*ibid*:178). In the process, a large reservoir of trust, as well as a mutual interest in peace, is formed out of everyday economic interactions. When tensions rise, members of both communities come together to "build bridges", and defuse them.

In contrast, in Hyderabad, there is no comparable economic symbiosis, and, except at elite levels, no other major sources of cross-community integration. "Associations of traders, when they are built, are formed along intracommunal lines" (*ibid*:180). As a result, rumors and minor incidents frequently spiral into major riots, and large-scale violence is common.

The argument, then, is that riots are likely to develop less frequently in environments where there is a high level of social or economic interaction between members of different groups. This is exactly what we have referred to above as an integrated social structure. Accordingly, we will use a low level of riots as a proxy for social integration in Indian states. A further advantage of using riots as a proxy is that we need not identify the particular groups and divisions relevant in each instance, which might be impossible.

7 Empirical Analysis

The Data on Transfer Frequency

No official figures on transfer frequency exist (de Zwart 1994:54). However, one source of data is available. Potter (1987) traced movements of officials over a ten-year period (1976 to 1985) by directly comparing records of each individual's post on 1 January each year, and from this obtained annual transfer frequency data for each state. This is the data used below.[15]

These data are for the Indian Administrative Service (IAS), an elite group whose members occupy most top posts in the civil service. The colonial administrative structure in India was designed so that large areas could be administered by a few colonial officials, and this structure was preserved following Independence. As a result, IAS officials have substantial powers over a wide range of government activities.

Transfers of IAS officials are extremely rapid. For example, in Rajasthan between 1956-65, a 3-year minimum incumbency rule for IAS Collectors was *broken* in 98.5% of cases (Bhatnagar and Sharma 1973). In Potter's data, well under 50% of officials lasted even a year in their posts, on average. When surveyed, IAS officers identified short tenure as the greatest perceived problem they faced (Singh and Bhandarkar 1994).

IAS personnel are allocated to a particular state, and transferred only within that state.[16] Like many other government officials, they are often exposed to substantial political pressure from local politicians.

> Any Collector [the senior IAS official in a district] was continually being pushed by politicians from different groupings to allocate scarce resources in one particular direction or another. (Potter 1986:224)

Inevitably, "some Collectors were more easily pushed than others". According to Godbole (a former IAS officer), IAS officials "are faced

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[15]Potter records the proportion of officials who moved *at least once* during the year. This data is transformed to obtain the average transfer frequency assuming a Poisson process. With a Poisson distribution, $P(0) = e^{-\lambda}$, so the transformation is $\lambda = -ln(P(0)) = -ln(1 - P(\geq 1))$, where $P(\geq 1)$ is the data reported by Potter.

[16]Except for a small number on deputation to the Government of India.

with the prospect of making difficult choices involving personal honesty, integrity and moral rectitude early in life"(1997:66), while Gill (also former IAS) states that IAS officers "are exposed to the same temptations, and succumb to them the same way as others do."(1998:139) [17]

The fact that the data on transfer frequency pertain to the IAS is a mixed blessing. On the one hand, IAS officers have considerable power, and for this reason alone, the forces which influence their transfers are important. On the other hand, however, the pressures and incentives they face may differ from those faced by officials at lower levels of the administrative hierarchy. Therefore, if data were available, it would be interesting to see whether similar findings to those reported below hold for lower-level officials.

The Riots Data

We use two separate sources of riots data, which we will call *Riots-A* and *Riots-B*.

Riots-A: Our main source of riots data is the annual Government of India publication *Crime in India*, which provides yearly data on the number of riots[18] per 100,000 population for each Indian state. This data covers the same years as Potter's transfer frequency data.The all-India average number of riots per 100,000 people increased somewhat, from 10.4 in 1976 to 13.3 in 1985, with a peak of 16.3 in 1981. The total number of riots recorded varied from a low of 63,675 in 1976 (which was unusually low) to a high of 110,361 in 1981. Given the large numbers of riots reported, this data probably does not primarily measure large-scale Hindu-Muslim or inter-caste riots.[19] Instead, most of these "riots"

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[17]Though reports of corruption within the IAS are not hard to find, the theory does not depend on officials literally demanding bribes. Officials may face a choice between acting impartially or attempting to gain protection from transfers by aligning themselves with some locally powerful faction. One possible (loose) interpretation of the model is that one faction's willingness to collude with an official in this way can depend on how vulnerable faction members are to retaliation in other games.

[18]A "riot" is defined as five or more people who use violence or the threat of violence against others, and therefore includes intergroup conflict as well as political violence.

[19]On average, only(!) a few hundred large Hindu-Muslim riots occur each year

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are probably fairly minor incidents involving small groups. This makes the data quite suitable as a general measure of social and political conflict. This data has been used by Kohli (1990), among others, as a measure of political conflict and instability.

Riots-B: Krishna (1985) reports the proportion of districts in each state affected by Hindu-Muslim riots between 1961 and 1970. While this data does not cover the same time period as Potter's transfer data, it is useful because it will not be distorted by the presence of "hotspots" in several states (it measures the proportion of districts in which some violence occurred, but not the intensity or frequency of the violence).[20]

Control Variables

A number of other factors may affect corruption and/or transfer frequency. The variable most robustly associated with corruption in cross-country regressions is per-capita income.

A second promising control variable is newspaper readership, which may affect officials' bargaining power (literate and informed citizens are more aware of their rights), as well as the nature of democratic politics. Besley et al. (2002) show that governments are more responsive where newspaper circulation is higher.[21]

Thirdly, inequality among the clients of a bureaucracy may affect administrative behavior. For example, local governments may be more prone to "capture" by affluent groups if affluent voters are better informed than poor voters (Bardhan and Mookherjee 1998) ; this asymmetry may be more pronounced if inequality is severe.

Sample

The 19 IAS cadres included in the *Riots-A* sample are Assam-Meghalaya, Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu

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(eg., Brass 1994:240).

[20]The primary source cited is Government of India, Ministry of Home Affairs.

[21]Regressions using literacy instead of newspaper circulation produced similar results.

and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur-Tripura, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. Union territories are omitted. This sample corresponds exactly to those states with populations over 750,000 in 1981. For regressions involving the *Riots-B* variable, Manipur-Tripura, Nagaland, and Himachal Pradesh are omitted due to a lack of data. The resulting sample of 16 contains exactly those states with populations over 5 million in 1981.

Results

We have considered a number of possible hypotheses concerning the relationships between social integration, political instability, and transfer frequency. To summarize the predictions: several different theories might explain why social integration would reduce corruption. Of these, most would seem likely to predict a negative correlation between social integration and transfer frequency (eg., Hypotheses 1, 2 and 3). It is harder to tell stories which, like Hypothesis 4, predict a positive relationship. Thus, examining the relationship between social integration and transfer frequency enables us to see *how* social integration affects the level of corruption.

"Riots-A": Average Log Riots per 100,000 pop. (1976-85)   "Riots-B": Fraction of districts experiencing riots (1961-70)

Table I investigates the cross-sectional relationship between social integration (proxied by a low level of riots) and transfer frequency. Overall, it appears that, using either measure of riotousness, in states with a low level of riots, transfer frequency is higher. The explanation

TABLE I
DETERMINANTS OF AVERAGE TRANSFER FREQUENCY ($\bar{\lambda}$)
CROSS SECTION (OLS, CONSTANTS NOT SHOWN)

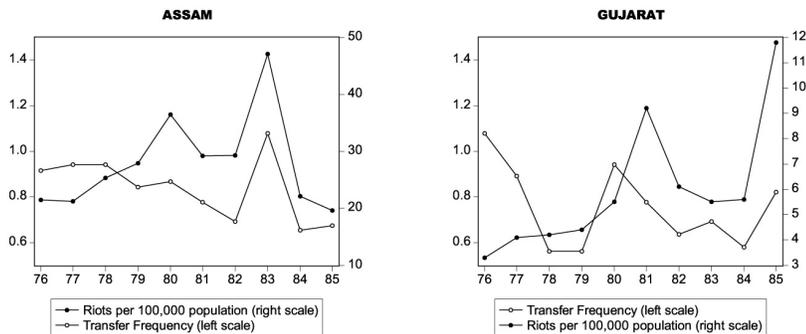|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\overline{ln(Riots\text{-}A)}$	-0.061 (2.22)	-0.034 (2.01)	-0.062 (2.16)	-0.035 (2.14)	-0.036 (1.83)				
Riots-B							-0.280 (4.27)	-0.200 (2.34)	-0.226 (2.52)
$ln(Income)$	-0.157 (1.16)		-0.152 (1.16)				-0.118 (1.28)		
$\overline{ln(Newspaper)}$	-0.062 (2.04)	-0.077 (2.11)	-0.036 (2.14)	-0.048 (2.35)		-0.050 (2.20)	0.009 (0.16)	-0.021 (0.72)	
Gini	1.619 (1.39)	1.655 (1.36)					-0.213 (0.18)		
# observations	17	17	19	19	19	19	16	16	16
Adjusted R^2	0.226	0.218	0.205	0.202	0.087	0.113	0.231	0.301	0.332

Absolute White heteroskedastic-consistent t-statistics are in parentheses. Dependent variable $\bar{\lambda}$ = average transfer frequency λ during 1976-85. Derived from Potter (1987). $ln(Riots\text{-}A)$ = average of ln(number of riots per 100,000 people per year) during 1976-85. Source: Government of India (various years). $Riots\text{-}B$ = Proportion of districts in the state affected by Hindu-Muslim riots between 1961-1970. Source Krishna (1985). $Income$: Per-capita income (Rupees) in 1980-81. Source Butler (1995). $\overline{ln(Newspaper)}$: Average of log of number of copies of newspapers/periodicals sold or distributed free per publishing day, per head of population, 1976-1985. Derived from sources: $Press\ in\ India$ (circulation), Census (population) (population was interpolated for inter-census years assuming constant exponential growth rates). $Gini$: Sum of the rural and urban gini coefficients of per-capita consumer expenditure in 1987-8, weighted by population (derived from Dreze and Sen 1995, Table A3). Some data for Manipur-Tripura and Assam-Meghalaya are calculated from disaggregated data.
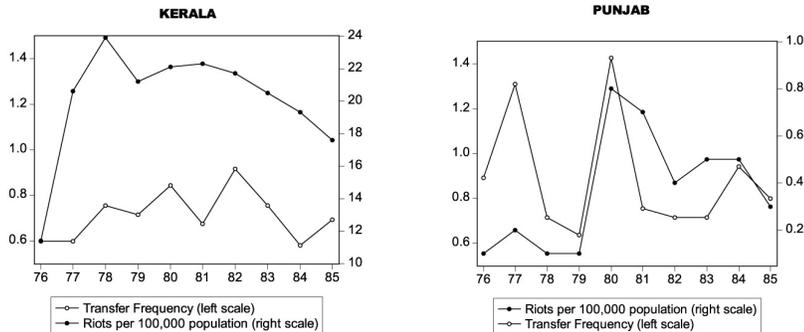
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offered, again, is that there is a hidden underlying variable, social integration, which tends to reduce the level of riots and to raise transfer frequency. What makes this interesting is that a variety of arguments might have predicted that this relationship would have been positive rather than negative.

Newspaper circulation has a significant negative impact on transfer frequency. This is in accordance with Besley and Burgess' (2002) argument that a well developed media tends to make government more responsive to its citizens. Thus, officials may be less likely to attempt to extract bribes from more informed citizens, and informed citizens are also more likely to punish politicians who carry out transfers to raise money in the hope of "buying" votes.

The impact of inequality on transfer frequency, like that of social integration, might be either positive or negative, depending on *why* it matters; for example, inequality might impede collective action, thereby increasing corruption but reducing transfer frequency. Or, inequality might increase political instability, thereby increasing both corruption and transfer frequency. So, although the effect of inequality on transfer frequency appears somewhat ambiguous, this does not imply that inequality has no effect on the level of corruption.

What accounts for the negative cross-sectional relationship between riots and transfer frequency? This paper has argued that a relatively slow-changing underlying variable, social integration, affects both riots (negatively) and transfer frequency (positively). This would not lead us to expect any contemporaneous relationship between riots and transfers, but only a negative correlation in the long-run average levels of each.

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KERALA

PUNJAB

Transfer Frequency (left scale)
Riots per 100,000 population (right scale)

Riots per 100,000 population (right scale)
Transfer Frequency (left scale)

Yet, in fact, for some states, there does appear to be a positive contemporaneous relationship between riots and transfer frequency, as illustrated above. In some states, notably Punjab, the relationship appears strong. In others, such as Kerala, it appears weak or nonexistent. The most likely explanation for this covariation between riots and transfers within states is that both can reflect political instability (Hypothesis 3). For example, Kohli (1990) describes the political violence which followed the elections of 1980 and 1985 in Gujarat (see figure), while Singh (1988) vividly describes an "avalanche" of transfers following an election in Madhya Pradesh.

This positive short-run correlation between riots and transfer frequency within some states suggests that there is some truth to Hypothesis 3. Our regression results therefore suggest that in states with a higher level of social integration, any reduction in transfer frequency due to reduced political instability or any of the other factors underlying Hypotheses 1, 2 and 3, is *more than outweighed* by the increase in transfer frequency due to the increased potential for collective action as predicted by Hypothesis 4.

Further Evidence: Corruption Cases and Arrests

We have argued that the high transfer frequency observed in the least riotous states reflects a capacity for collective action which can lead to corrupt officials being transferred (and have traced this capacity for collective action to an integrated social structure). Is this interpretation of the results corroborated by other evidence?

Consider Punjab and Haryana, the two least riotous states. We have interpreted their lack of riotousness as evidence of social "integration". The qualitative evidence also tends to support this view. The egalitarian doctrines of the dominant Sikh religion (which in theory admits no caste system), and the historically cordial Hindu-Sikh ties in Punjab, help to blur group boundaries. Thus, in her study of the Sikh Jats (most Punjabis are Sikh, and most Sikhs are Jats), Pettigrew described a "network of links that seemed to connect all Jats if not on one basis, then on another, and if not at one time, then at another" while "social networks include multiple ties with men of different types"(1975:xvi,45).[22]

According to Proposition 3, this kind of social integration ought to reduce corruption by facilitating collective action against corrupt officials. Can we find evidence that this occurs?

Each year, *Crime in India* records the number of cases reported and the number of arrests made under the Prevention of Corruption Act. These data are somewhat erratic, but one fact which stands out is that between 1976 and 1985, over a third of the cases reported and *more than half* of all the arrests made under the Prevention of Corruption Act occurred in Haryana and Punjab, which together contained less than 5% of the Indian population.

The fact that many arrests for corruption occurred in these states is consistent with this paper's argument: it suggests that in a comparatively more integrated state, such as Punjab and Haryana, "mistakes" by officials on the path of play are more likely to result in concerted political pressure leading to their transfer, or in extreme cases, to prosecution. Indeed, during 1976-85 transfer frequency in Haryana was higher than in any other state, whilst according to a survey published in *India Today* (November 24 1997), the least corrupt state government, as perceived by inhabitants of the state, was in Punjab. Thus, paradoxically, the high number of corruption cases and arrests (and the relatively high transfer frequency) in Punjab and Haryana probably reflects a *lower* level of corruption in these states than elsewhere.

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[22]See also, for example, Brass (1994:152); Mandelbaum (1970:539ff.) Although an armed insurrection began during the 1980s in Punjab, this was directed primarily against the federal government.

8   Conclusion

In India, corruption is widely considered to be an important explanation for the disappointing record of numerous government programs. Many commentators have blamed these problems on a "culture" of corruption reflecting Indian traditions and beliefs. However, in order to persist, such cultural attitudes must reflect some kind of underlying social equilibria. Why then are corrupt equilibria observed in some places but not in others?

This paper has explored how officials' incentives to engage in corruption can depend on the social structure in which those affected by their decisions are embedded. The main theoretical hypothesis is that, because they can sanction each other in other games, the clients of a bureaucracy in an "integrated" society can more easily escape from "briber's dilemmas". This makes it less likely that officials in such a society can successfully extract bribes from all the clients, or collude with one group against the others, and therefore more likely that they will impartially implement formal government policies.

This hypothesis is supported by evidence that social integration (proxied by a low level of riots) in Indian states is *positively* related to the frequency with which government officials are transferred between posts. The explanation offered is that in integrated social environments, officials who seek bribes are more likely to face collective action leading to their transfer.

Because social structure, like culture and "social capital", is probably exogenous at least in the short run, the implications for policy may at first glance appear discouraging. However, it should be possible to design formal rules to take account of social structure. For example, India has recently undertaken decentralizing reforms. The model suggests that besides the usual tradeoffs,[23] it may be desirable to decentralize to a level at which an official's clients share social or economic ties, so that they can more easily trust each other not to pay bribes when they find themselves in "briber's dilemmas".[24]

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[23]For example, local flexibility and the benefits of interjurisdictional competition versus economies of scale and interjurisdictional coordination.

[24]We should note a caveat, however: if the functions decentralized in this manner are too valuable, cooperation may break down. For example, Bandyopadhyay and von Eschen (1995:317) found that decentralization of substantial power to local

The model shows how informal interactions among citizens in a "civil society" can provide the strategic foundation for a non-corrupt state. However, what matters is not just the *volume* of these interactions, but the *pattern* of interaction: who interacts with whom. In terms of the social capital literature, Proposition 2 suggests that "bridging" social capital (which links members of different groups) is more important than "bonding" social capital within groups.

Although many developing countries have inherited or adopted formal legal, political and administrative systems similar to those in the West, the behavior induced by these rules has often been substantially different. In particular, some of the observed behavior is viewed as "corruption". Why do transplanted formal rules often give rise to different behavior in different societies? This paper has shown that even in countries with similar formal rules, differences in observed behavior and outcomes could result in part from differences in social structure.

The paper also suggests a possible answer to the related puzzle of why the level of corruption is lower in the West than in developing countries, despite the fact that government expenditure in the West is generally considerably *higher* (as a percentage of GDP), so that in cross-country comparisons, larger governments are generally *less* corrupt (eg., La Porta et al 1999:239). Part of the explanation may lie in the contrast between the integrated social structure of the developed world and the comparatively more segmented social structures associated with lower levels of development.

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panchayats (elected councils) in West Bengal "threw the villagers into competition with each other", eroding already fragile ties of mutual aid among them. See also Wade (1988), chapter 7.

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