

## How does growth affect corruption?

### Exit, empowerment and voice in Indian public services

Amit Ahuja and Aashish Mehta

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#### Abstract:

Some scholars argue that economic growth in developing countries reduces corruption. And yet, the effects of growth on corruption can vary across public services in similar institutional environs. Why does growth reduce corruption related to some public services and not others? Drawing on India's experience during a period of high growth, we model the effects of rising incomes on the economic and political incentives facing a corrupt, rent-maximizing but consequence-averse government charged with delivering a public service. The economic incentive to seek bribes rises and falls with demand for the service. This economic incentive to demand bribes is counteracted by the political pressure exercised by concerned citizenry, which is in turn a function of the political voice of those citizens with a stake in the service. Rising incomes have ambiguous effects on this voice, because they induce higher income citizens to exit the public service, but empower those still reliant on it. It therefore follows that the effect of growth on corruption depends upon whether it increases or reduces demand for the service, increases or reduces voice, and which of these effects is more powerful.

Our general finding, across a range of public services in India, is that the actual trajectory of bribery is the opposite of what one would have expected based on demand trends alone. This implicates the dynamics of voice as the likely explanation. As a consequence, services that have seen massive exit of high-voice individuals to the private sector experienced increased corruption (e.g. subsidized food distribution and rural public education). Where exit of high-powered individuals was countered by income-driven empowerment effects, corruption did not increase (e.g. railways). Those services that did not or could not experience high-voice exit saw dramatic improvements (e.g. passport services).

We conclude that, unless growth is used to empower low-voice citizens or ways are found to limit high-voice exit, growth is likely to be a mixed blessing for tackling everyday corruption – while it shrinks the range of functions that are subject to corruption, it reinforces the tendency for corruption to act as a “tax on the poor”.

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## 1. Introduction

Perceptions and survey evidence indicate that corruption is rampant in the developing world and more prevalent in developing countries than in rich ones (Svensson 2005, Transparency International 2015). A long line of research has argued that corruption reduces economic growth (Knack and Keefer 1995, Mauro 1995, Wei 2000, Rose-Ackerman and Palifka 2016). But today, some of the fastest growing economies also happen to be poor and corrupt (Table 1).<sup>1</sup> While this does not imply that these studies are wrong about the deleterious effects of corruption on growth, it does underscore the importance of asking the converse question: How is economic growth likely to affect corruption?

**Table 1: Growth Rates and Corruption Perceptions Index Rankings in 2015**

|            | <u>Real GDP Growth Rate in 2015</u> | <u>CPI 2015 Rank (of 167)</u> |
|------------|-------------------------------------|-------------------------------|
| Myanmar    | 7.0%                                | 147                           |
| Bangladesh | 6.5%                                | 139                           |
| Vietnam    | 6.5%                                | 112                           |
| Ethiopia   | 10.2%                               | 103                           |
| China      | 6.9%                                | 83                            |
| Brazil     | [-3.8%]                             | 76                            |
| India      | 7.6%                                | 76                            |

Very few studies have looked at this question (Olken and Pande 2011). The few studies that have suggest that growth reduces corruption.<sup>2</sup> Several mechanisms are proposed. Growth is accompanied by more complex business relationships that may lead to demand for better government, and higher incomes may

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<sup>1</sup> While Brazil suffered a growth collapse in 2015, it had previously been one of the fastest growing economies in the world for approximately a decade.

<sup>2</sup> One exception occurs in the case of natural resources. So for example, one argument points out that certain types of growth-triggered income shocks, such as natural resource shocks, may lead to there being more rents to be expropriated and more corruption. For example, Caselli and Michaels (2009) present the case of oil revenues distributed to municipalities in Brazil as a result of the large increase in Brazil's off-shore oil production, and argue that this led to an increase in corruption. There is, however, some evidence that these rents dissipate in the medium-run possibly because voters become more aware of total resources (Monteiro and Ferraz 2010).

mean that countries have more resources to invest in cleaning up corruption (Treisman 2000). Growth may also expand the leverage of the firm, because firms in an expansionary mode can threaten to exit the corrupt jurisdictions (Bai, Jayachandran et al. 2013).

These explanations are incomplete in two respects. First, they focus mainly on business corruption and misappropriation of public funds, whereas ordinary citizens in developing countries are usually more concerned with corruption that directly limits their access to public services. We therefore focus on corruption that limits access to public services, to the exclusion of other widely studied forms of corruption, including business corruption, pilferage, money laundering, and the selling of contracts, influence and commercial rights in return for kickbacks. We are interested in citizens' access to public services because these are often at the heart of the citizen-state relationship. Citizens experience the state through public services. Corruption undermines this relationship and diminishes the trust citizens have in state institutions.

Second, these arguments rely primarily on an economic mechanism; but experiences of and responses to corruption are also political phenomena (Rose-Ackerman and Palifka 2016). A political mechanism that accounts for the relationship between economic growth and corruption is often missing in these explanations. The one political mechanism that is proposed in the broader literature on governance suggests that growth expands the middle class, a constituency that produces public pressure for corruption-free good governance (Birdsall 2010, Birdsall 2016). But as Gelbach and Pritchett (2002) have shown, in the context of budgetary decisions, the political interests of the middle class and poor citizens can diverge. Similarly, when middle class citizens no longer use the public services they may not be attentive to the quality of those services. So a larger middleclass will not necessarily pressurize the government for corruption-free public services.

These reflections call for what should perhaps be an obvious theoretical move – to extend Hirschman's (1970) canonical and widely accepted work on the operation of exit and voice, in order to model the effects of growth on corruption. This is precisely our approach in the first half of this paper. We create a formal model in which the bureaucracy determines the bribe level charged to access a government provided service by taking into account its effects on exit and voice, and then see what economic growth does to the equilibrium outcome. The results reveal an important tension between the economic and political effects of economic growth on corruption levels. With respect to the economic dynamics, growth

induces both entry (poorer citizens who previously did not use the service begin to demand it) and exit (richer citizens flee for private alternatives). When exit exceeds entry, demand falls, which would induce the bureaucracy to *decrease* the bribe level (and vice versa). Entry and exit have political consequences that run in the opposite direction: replacement of rich users with poor users reduces the political voice arrayed in defense of corruption, permitting it to *increase*. A further political effect of growth is to enhance the voice of those citizens who continue to use the service – a complication we consider later. It follows that the net effect of growth on public services corruption depends upon the balance of its effects via economic and political channels, and that a comparative analysis of multiple public services can be informative about the relative importance of the two channels.

This is the objective of the second half of the paper, in which we apply a mixed methods, comparative case-study approach. By characterizing trends in exit, entry and bribe levels in each of four (a fifth will be added soon) public services in twenty-first century India, we can learn about which channel growth works most strongly through in each. By picking services with varying propensities for exit, we can gain an appreciation for the ways in which exit operates and its effects on voice. Moreover, thinking about these dynamics through a comparative lens yields the following insight into the class dynamics of corruption in a fast-growing economy. If the political channel dominates, growth makes corruption more regressive, because growth, through its effects on voice, will tend to reduce corruption in those services on which the rich continue to rely more than in those that the rich exit. Conversely, if the economic channel dominates, growth makes corruption more progressive, because demand falls in those services that the rich exit, which reduces the rent maximizing bribe level.

Our general finding, across a range of public services in India, is that the actual trajectory of bribery is the opposite of what one would have expected based on economic trends. This implicates the political dynamics of voice as the dominant force. As a consequence, services that have seen massive exit of high-voice individuals to the private sector (e.g. subsidized food distribution and rural public schools) did not experience obvious declines in corruption, and in some cases bribery increased. Those public services that did not or could not experience high-voice exit saw dramatic improvements (e.g. passport services). And those that saw limited exit and widespread empowerment also saw improvements (e.g. railway reservations).

Corruption, particularly everyday corruption, is often described as a “tax on the poor”. Our model and case studies suggest that growth is helpful for reducing everyday corruption, but that it does so starting

at the top, and often exacerbating the experience of corruption for relatively less empowered members of society. In this way, growth can render corruption more of a tax on the poor, even intensifying corruption while confining it to fewer pockets of public life.

The remainder of this paper is structured as follows. Section 2 motivates our model empirically. Section 3 lays out the main model, showing how growth, through its effects on exit, entry and empowerment alter the balance between the various economic and political incentives that fix the level of bribery. Section 4 presents case studies of four public services in India and interprets them through the lens of the model. Section 5 concludes.

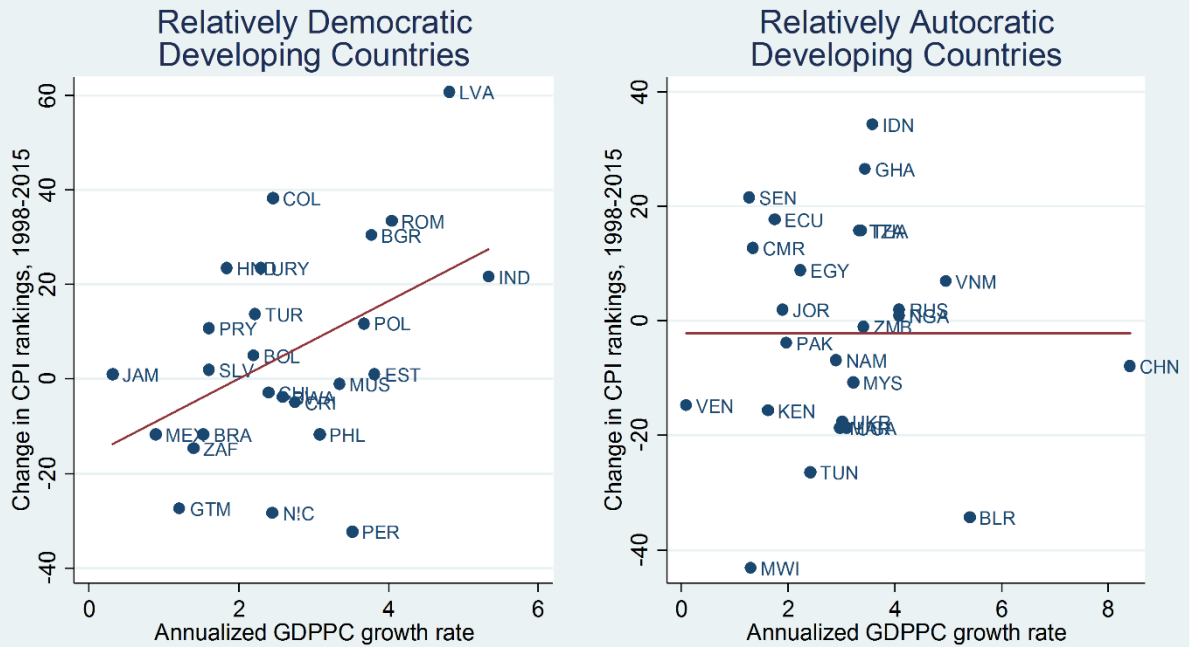
## **2. Empirical Motivation**

The arguments presented in this paper are motivated by three assertions. First, growth is unlikely to reduce corruption in the absence of political accountability. Second, public service corruption in India is serious, politically salient, varies across services and is more of a problem for the poor. Third, there is a steep gradient to political voice across India's income distribution. We substantiate each of these in turn, so that we may tie them together theoretically in the following section.

Figure 1 depicts the relationship between economic growth (rates of increase in per capita GDP corrected for purchasing power parity) and changes in the relative rankings of 50 less rich countries in Transparency International's Corruption Perceptions Index (CPI) between 1995 and 2008. We categorized the countries as democratic and autocratic using the average value of their Polity IV index during this time interval (Marshall, Gurr et al. 2010). The figure clearly indicates a positive relationship between growth and reductions in corruption amongst democratic nations, and the absence of this relationship amongst autocratic nations. The usual cautionary notes apply – correlation is not causation, reductions in corruption might be causing growth in democracies, and the relationship could reflect the role of omitted variables. It is immediately obvious, for example, that with the exception of India, the positive relationship amongst democracies is driven by those Eastern European democracies that grew rapidly while combatting corruption as they emerged from communism. Nonetheless, three of the highest-growth autocracies (China, Vietnam and Belarus) were also emerging from communism, but have failed to reduce corruption. This suggests that even when growth does create demand for greater control of corruption, the ability to hold governments to account is important for this demand to have an institutional impact.

**Growth is unlikely to reduce corruption without political accountability.**

**Figure 1: Growth and changes in corruption rankings, by regime type**



Note: CPI is Transparency International's Corruption Perceptions Index. Vertical axis reflects the change in the rankings amongst the 50 larger developing countries included here.

This underscores the importance of an assumption underlying all of the arguments to follow - the presence of democratic accountability.

These results raise the next question of whether these corruption reducing effects in high-growth, poor democracies are experienced across all, or only some of the public services.<sup>3</sup> And indeed, if growth-triggered reduction in corruption varies across public services, what accounts for this variation? To answer this question we draw on India's experience with public service-related corruption.

**Public Service Corruption in India**

We turn to India's experience to model the effect of growth on corruption because India has undergone rapid growth over the past two and half decades while grappling with poverty and corruption (Drèze and

<sup>3</sup> Scholars have shown that corruption-related outcomes vary within democracies and are contingent (Bussell 2012, Johnston 2014, You 2015).

Sen 2013). India has grown at an average annual rate of 6 percent since 1991, while Gini coefficients have remained fairly stable. Thus, absolute inequality has increased rapidly - the incomes and expenditure levels of the rich rose much more in absolute terms than those of the poor.

At the same time, the incidence of corruption, especially related to public services has also been high. In 62 one-on-one interviews conducted Uttar Pradesh in March 2016, we asked subjects if they or someone in their immediate family had paid a bribe to a public official in the last one year. A majority, 53%, said yes.<sup>4</sup> Government reports and academic studies document this corruption. Courts have lamented the extent of corruption in the public services. In 2010, for example, Supreme Court Justices Katju and Thakur, commented that the citizen got no service without paying a bribe. They went further to say that one might as well fix "rates" (bribe) for public services (Rao 2013). Citizen frustrations related to corruption also get expressed through protest movements. One such popular movement crystalized in 2011 under the leadership of the social activist Anna Hazare. The movement increased the political salience of corruption which featured prominently in subsequent assembly elections and in the national election of 2014.

This overall picture of high corruption in India masks three distinct patterns related to its political resonance, trajectory and the distribution of its impacts. First, although corruption in India takes a variety of forms, only large-scale scandals related to government corruption tend to capture the headlines. And yet, scholars find that citizens are not well-informed about these large corruption scandals. Instead citizens are more concerned about public service-related corruption that they encounter in their daily lives.<sup>5</sup>

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<sup>4</sup> The interviews were conducted in rural and urban areas. 35 poor and 27 middle class individuals were interviewed. Each interview lasted between 45 minutes and an hour. Interview subjects were drawn using a random sampling method from the voter lists compiled by the Election Commission of India.

<sup>5</sup> Chhibber, Shah, and Varma (2013) report that In July 2013 (tracker I poll), Lokniti-CSDS contacted more than 18,000 citizens and found that awareness among the general public on popular corruption scandals that were in the headlines was quite low. Only one scandal had registered with half of the respondents, another with 40 percent, and all others had registered with a third or lesser percentage of respondents. Not surprisingly, the awareness of all of these scams is much lower among women, the poor and respondents residing in rural areas. They found that there was no statistically significant influence of the knowledge of scams on the respondent's preference for the two main parties — the Congress and the BJP. In the State of the Nation survey conducted in January 2009, respondents were asked if it was possible to get work done in a government office if the work was legitimate and if one had all the documents. Only one in every five respondents said yes. The others said that despite having all the documents, even for legitimate work one needed to either know someone important, pay a bribe, or both. Similarly, data from the State of the Nation survey (2011) show that people are much more concerned with the everyday corruption they face while interacting with local-level state institutions

Second, the record on corruption varies across public services: Whereas corruption related to services like the Public Distribution System (PDS) and public education has increased, it is widely understood to have gone down in the case of other services, including issuance of passports and railway reservations (Rao 2013).<sup>6</sup>

Third, everyday corruption directly impacts the poor in larger numbers than members of middle and upper income groups (Dreze and Sen 2013). Among our interview subjects, for example, we found that 63% among the poor and 41% among the middle and upper income groups had paid a bribe to a public official. Next, we document the voice differential that likely drives this, and discuss how growth is empowering the poor.

### ***Voice Differential***

Research on citizen-state relations in India points to a clear variation in voice across income strata (Alam 2004, Corbridge 2005, Krishna 2008, Ahuja and Chhibber 2012). Ahuja and Chhibber (2012) draw on surveys that register difference in voice between the poor and those in the higher income strata. The 2009 State of Nation Survey asked respondents if they or anyone in their family knew a politician or a bureaucrat who could help them out. Only 11 % of poor respondents to the 2009 survey knew a politician, compared to 22 % of the respondents belonging to middle- and upper-income group. The poor were far less likely to know a bureaucrat (8 %), compared to the middle- and upper-income group (23 %).<sup>7</sup> Not only do the poor have fewer contacts within the state, survey evidence also shows that poor respondents who contact the state are less likely to report that their concerns have been addressed. For 53 % of the poor, the problem that had prompted the visit to a government office was not resolved, whereas only 41 % of respondents in the middle- and upper-income group reported similar dissatisfaction.<sup>8</sup>

Drawing on focus group discussions and detailed one-on-one interviews, Ahuja and Chhibber (2012) also find the poor citizens systematically report an experience of the state that was different from the experience of better-off citizens. Most of the poor subjects in the one-to-one interviews and most of the poor participants in the focus groups reported frequently being treated with disrespect and being

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<sup>6</sup> Rao's assessment is based on the Center for Media Studies surveys conducted between 2002 and 2010.

<sup>7</sup> Importantly, these differences across the groups hold up even when factors like the respondent's gender, caste, age, place of residence are controlled for.

<sup>8</sup> See Ahuja and Chhibber (2012)



summarily dismissed when they interacted with public officials. One poor citizen, capturing the reality of the link between social status and treatment by the state, said, "When big people enter a government office, the official stands up. When poor people go in, no one even asks them to sit." *Gareeb aadmi ki kaun parva kartha hai?* Who cares about the poor man?" In some focus group discussions, these participants were very forthright in expressing their dissatisfaction: "The government is shameless"; "We are the forgotten people." Following extensive ethnographic work, Corbridge et al. (2005) confirm this finding succinctly, arguing that the poor see the state when the state wants to see them.

Non-poor citizens are better connected to the state. Some of them do not possess the resources to opt out of the system of state-supplied goods and services. The government may intimidate them, but they are networked within it. Another segment of the non-poor has a different relationship with the state. These citizens have the resources to opt out of state goods and services. They are also directly or indirectly networked with the upper echelons of the state. The press and media services give wide coverage to this group's concerns, and people in this group utilize the court system. This group is critical of the state but not intimidated by it. Members of this group turn to the state when they need to, but otherwise they can do without the state.

The voice gap between the poor and the higher income strata notwithstanding, recent research on the poor has begun to show that growth has had an empowerment effect. Kapur et al (2010) find that, economic growth has taken landless rural Dalits (former untouchable castes) to cities, increased incomes, and altered their social relations with upper caste members on whom they had been traditionally dependent. Besides migration, higher incomes have also enabled poor households to access cell phones that have improved awareness levels among the poor (Doron 2013). This has been accompanied by the emergence of lower-caste-based political parties across Indian States. These parties mobilize the poorest sections of Indian Society (Varshney 2000).

All of this suggests that voice varies significantly with income, and is growing with incomes, implying some empowerment at the bottom, and greater empowerment at the top. Further evidence of these claims continues to appear in interviews we are currently conducting to deepen our case studies.

### 3. The Model

The model centers around a rent-maximizing government, which sets the bribe that citizens must pay to access a government service. They do so cognizant of both economic considerations – a higher bribe level reduces demand for the service, and political considerations – raising the bribe level causes losses of utility among would-be buyers of it, who in turn voice their displeasure, bringing costs to the government, particularly if the citizens annoyed have a strong voice. We begin by modeling the effects of bribe levels on citizens of different income levels, characterize the static equilibrium and then show the effects of income growth on the bribe level. Mathematical proofs of our results are available on request. Here we state the assumptions and explain the results intuitively.

We assume that each citizen wishes to purchase at most one unit of the service – for example: obtaining a passport, obtaining medical care, enrolling a child in school, etc. The citizen has income  $w > 0$ .

Generically, they must choose between buying the service from the government ( $G$ ), buying it on the private market ( $P$ ), or going without it ( $N$ , for none). Obviously, for some services, such as passports, there is no private alternative – a fact we will exploit later. The quality ( $q$ ) of the government service is lower than that of the private service ( $q_G < q_P$ ).<sup>9</sup> Both qualities are exogenously determined, and are measured in utils. The price of the private service ( $\rho$  rupees) is also exogenously determined.

Obviously, going without yields no utility and costs nothing. The bureaucracy is supposed to give the government good away for a price that is lower than the private. The bureaucracy will, instead, charge citizens  $\lambda$  rupees in order to access the government service. To reduce notational clutter, we will assume that the official price is zero, so that  $\lambda$  is the bribe level. The bureaucracy will set the bribe level to maximize the difference between the bribe revenue they earn,  $R(\lambda)$ , and the (money-metric) political cost of blowback from citizens angered by corruption. This cost is simply the political pressure exerted by citizens  $V(\lambda)$ , multiplied by a constant,  $k$ , that specifies the rupee value of a unit of

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<sup>9</sup> It is commonly understood that the quality of services varies widely, with richer consumers relying on a set of high quality private services, public services being of a generally lower quality, and with less empowered citizens unable to access the public option simply going without (or opting for a less desirable private option - a possibility we neglect for simplicity). For example, see Balakrishnan and Ramaswami (1997), Alderman and Lindert (1998) and World Bank (2001) on public food distribution systems; Chaudhury et al. (2006), Chudgar & Quin (2012) and reports by the PROBE Team (1999) and Pratham (e.g., 2014) on education; Das & Hammer (2007) and Das et al, (2008) on Healthcare; and World Bank (2004) on public services in general.

pressure to the bureaucracy.<sup>110</sup> Reinikka & Svensson (2004) and Mehta & Jha (2014) both write models of this form, capturing a long accepted logic in the literature - see footnote 12.

### *Consumer choice*

Every citizen has the same utility function, which is additive in the quality of the service they obtain and the utility from all other consumption expenditure ( $c$ ):  $U = q + u(c)$ . Utility from consumption,  $u(c)$ , is defined only when  $c$  is strictly positive. It has the usual properties:  $u'(c) > 0$ ,  $u''(c) < 0$ ,  $\lim_{c \rightarrow 0} u'(c) = -\infty$ ,  $\lim_{c \rightarrow \infty} u'(c) = 0$ . Whatever a citizen does not spend on the service goes into consumption. From this, we can work out the utilities available to a citizen with income  $w$ , depending on which of the three options they pick:  $U_N = u(w)$ ,  $U_G = q_G + u(w - \lambda)$  and  $U_P = q_P + u(w - \rho)$ . The citizen takes  $\lambda$  as a given and picks the outcome yielding the highest utility:  $U^* = \max(U_N, U_G, U_P)$

Figure 2 depicts the resulting equilibrium in  $(\lambda, w)$  space. The function  $w_G(\lambda)$  traces the incomes of those citizens who would be indifferent between purchasing the government service and going without at each bribe level.<sup>11</sup> Citizens above the line are more willing to trade off consumption for the service and so choose the government good. Those below choose to go without. It is defined by  $q_G + u(w_G(\lambda) - \lambda) \equiv u(w)$ . It slopes upwards, reflecting the fact that at higher bribe levels, it takes higher incomes to consume enough to be indifferent. Similarly,  $w_P$ , defined by  $q_P + u(w_P - \rho) \equiv u(w)$  captures the income level at which a citizen would be indifferent between purchasing the private option and going without. Obviously, this break even income level does not depend upon  $\lambda$ , and richer citizens select the private service, while poorer citizens go without. Finally, when the bribe level is  $\lambda$ , indifference between the private and government option is achieved at income level  $\tilde{w}(\lambda)$ , defined by  $q_G + u(\tilde{w}(\lambda) - \lambda) \equiv q_P + u(\tilde{w}(\lambda) - \rho)$ . Those above line prefer the private to the government option, and vice versa. This line slopes down – at higher bribe levels (lower cost differences) one would reject the government service in favor of the private service at lower income levels. Clearly, if  $\lambda > \rho$  citizens of all income levels would prefer the private to the government service.

<sup>10</sup> Reinikka & Svensson (2004) and Mehta & Jha (2014) both write models of this form, capturing a long accepted logic in the literature - see footnote 12.

<sup>11</sup> Obviously, each of these loci of indifference are functions of  $q_G$ ,  $q_P$  and  $\rho$  as well, but those dependencies will not matter for our results, so notation suppresses them to save space.

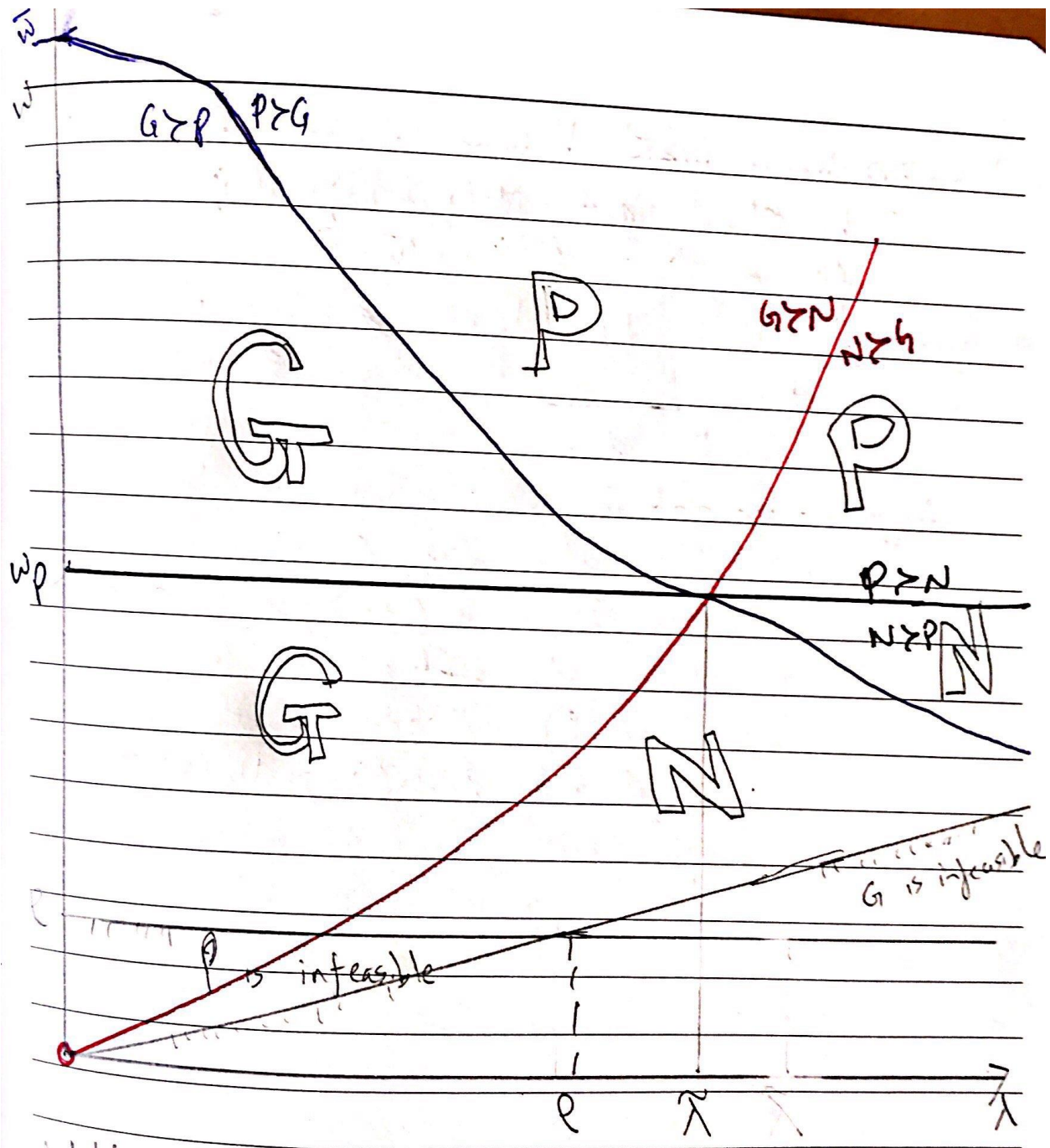


Figure 2: Preferences over N, G and P.

Demand for the government good is derived from figure 2 and knowledge of the cumulative distribution of  $w$ ,  $F(w)$ . Figure 2 defines  $\bar{\lambda}$  as the bribe level at which the three loci cross. Whenever  $\lambda > \bar{\lambda}$ , nobody buys the government service – those with  $w \geq w_p$  buy private, and the rest go without. At lower, but non-zero bribe levels, the fraction of the population demanding the government good is given by:

$$(1) \quad Q_D(\lambda) \equiv F(\tilde{w}(\lambda)) - F(w_G(\lambda)).$$

It is obvious that demand slopes down:  $Q_D'(\lambda) \leq 0$ .

#### *Welfare losses due to corruption*

Figure 2 also defines that income level  $\bar{w}$ , defined by  $q_G + u(w) \equiv q_P + u(\bar{w})$ , above which citizens would prefer the private to the government service, even with zero bribes. The remaining population, with  $w < \bar{w}$ , is our set of *potential public service users*.

The utility a citizen of income  $w$  loses to corruption at bribe level  $\lambda$  is the difference between the utility they would have earned from their optimal choice at a zero bribe level (call this  $U_0$ ), and the analogous figure at the actual bribe level ( $U^*$ ). These losses are clearly zero for any citizen with  $w \geq \bar{w}$ , because these citizens opt for the private service regardless of the bribe level, and so their utility is unaffected by it  $U_0 = U^*$ . All potential public service users obtain utility of  $U^* = q_G + u(w)$  when  $\lambda = 0$ . It follows that utility losses among potential users making each of our three choices at bribe levels between zero and  $\bar{\lambda}$  experience utility respectively, are:

- $l_N = q_G$ . Those going without spend  $w$  on consumption, but forfeit the benefit of the service itself.
- $l_G(w, \lambda) = u(w) - u(w - \lambda)$ . Those who pay the bribe for the government service lose utility because their consumption falls by  $\lambda$ .
- $l_P(w) = u(w) - u(w - \rho) - (q_P - q_G)$ : Those pushed into the private sector by corruption must spend  $\rho$  to pay for the private good, but this is partially compensated by utility from the higher quality of the service they obtain.

It is straightforward to show that holding the bribe level constant,  $l_N \geq l_G \geq l_P \geq 0$ . Because the sets of people making these choices are arranged in ascending income order, and because  $l_G$  and  $l_P$  are decreasing functions of  $w$ , the utility losses due to corruption are monotonically higher for poorer citizens. This is our first result regarding the welfare effects of public services corruption: *Corruption is a tax on the poor.*

### *Political cost*

We assume that the political pressure faced by the bureaucracy is simply the sum of the pressure coming from each citizen. While this obviously assumes away important collective action problems, it allows us to focus on the immediate task at hand, which is to clarify how growth, through exit, voice and empowerment, changes the corruption levels bureaucracies choose to maintain. Rather than modeling consumers decisions to exert this pressure,<sup>12</sup> we simply assume that each citizen uses their voice to exert an amount of pressure  $v(w, l)$  that depends on both their income and the utility losses they experience. The more utility they lose, the more pressure they exert:  $v_2(w, l) > 0$ . We assume that they are selfish, in that when they experience no losses, they exert no pressure:  $v(w, 0) = 0, \forall w$ .<sup>13</sup>

In keeping with the empirical literature discussed in section 2, voice rises with income, so that both the absolute pressure a citizen exerts and its responsiveness to bribe levels rise with income:

$$v_1(w, l) > 0, v_{12}(w, l) > 0 .$$

With these assumptions in hand, the total pressure exerted in response to a given bribe level is given by the sum of the pressures exerted by each of our three groups of potential users ( $N, G, P$ ). Recalling our characterization of the utility losses of each group above, and that those who are not potential users exert no pressure, yields:

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<sup>12</sup> Blackboxing this decision allows us to focus on the problem at hand. A model like that used in Mehta and Jha (2014) would yield the behavior we assume here.

<sup>13</sup> This is obviously not entirely true and obscures the work of anti. However, it seems fair to assert that the vast majority of people who would never use a particular service seldom sink

$$(2) \quad V(\lambda) = \int_0^{w_G(\lambda)} v(w, q_G) f(w) dw + \int_{w_G(\lambda)}^{\tilde{w}(\lambda)} v(w, l_G(w, \lambda)) f(w) dw + \int_{\tilde{w}(\lambda)}^{\bar{w}} v(w, l_P(w)) f(w) dw$$

Taking the derivative of this expression, and noting that the definitions of  $w_G(\lambda)$  and  $\tilde{w}(\lambda)$  imply that

$l_G(w_G(\lambda), \lambda) = q_G$  and  $l_G(w_G(\lambda), \lambda) = l_P(\tilde{w}(\lambda), \lambda)$ , we find:

$$(3) \quad V'(\lambda) = \int_{w_G(\lambda)}^{\tilde{w}(\lambda)} v_2(w, l_G(w, \lambda)) \frac{\partial l_G(w, \lambda)}{\partial \lambda} f(w) dw > 0.$$

This tells us three interesting things about the effects of marginal changes in bribe levels.

(i) They increase pressure on the bureaucracy.

(ii) They increase this pressure more if the affected citizens are rich.

(iii) Small changes to bribe levels increase pressure only because they increase losses to those citizens who actually use the service.<sup>14</sup>

### *Bribe Determination*

The government sets the bribe level to maximize  $R(\lambda) - kV(\lambda)$ , the difference between their financial benefit – the revenues they collect, and the political penalties they pay for demanding bribes. Bribe revenues are simply the product of the bribe per unit of government service provided and the number of units provided:  $R(\lambda) \equiv \lambda Q_D(\lambda)$ . Figure 3 depicts the solution,  $R'(\lambda^*) = kV'(\lambda^*)$ .

### *Effects of growth*

We model growth as a first order dominant rightwards shift in the distribution of incomes (i.e.  $F(w)$  declines for all  $w$ ). In other words, growth changes nothing in Figure 2, but it does shift distribution of citizens over it in a vertical direction. This will shift the curves in Figure 3. We refer to shifts in  $R'(\lambda)$  as the economic channel, and shifts in  $kV'(\lambda)$  as the political channel

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<sup>14</sup> Of course, larger increases in bribe levels shift citizens who from the G to the N and P groups, causing them to lose utility and exert pressure, but these terms vanish for small changes in  $\lambda$ .

It is obvious from (1) that this results in some richer users of the government service exiting to the private sector, and others who formerly did not use it, entering. Thus the effects of growth on demand for the public service depend on whether entry exceeds exit. This in turn depends, inter alia, upon how income growth is distributed. Under the usual regularity conditions, increases in demand shift  $R'(\lambda)$  to the right (in Figure 3), and vice versa.

Examination of equation (3) in conjunction with Figure 2 shows that growth changes the cost to the bureaucracy of raising the bribe level in four ways:

- a. Exit: Richer citizens leave the government service for the private sector (the share of the population below  $\tilde{w}(\lambda)$  falls). This reduces pressure to reduce bribes.
- b. Entry: Poorer citizens enter the pool of government service users (the share of the population above  $w_G(\lambda)$  rises). This increases pressure to reduce bribes.
- c. Empowerment: The additional pressure that the population of users applies in response to an increase in the bribe level is increased ( $v_2(w, l_G)$  rises on average, because  $w$  rises on average). This increases pressure to reduce bribes.
- d. Apathy: The average utility losses associated with increases in the bribe level fall, due to utility from consumption the diminishes on the margin ( $\partial l_G / \partial \lambda$  declines on average, because  $w$  rises on average). This reduces pressure to reduce bribes.

Thus the effects of economic growth on pressure depend on the balance of these four forces. When exit and apathy dominate, pressure is reduced. When entry and empowerment dominate, it is increased.

It follows that the political and economic channels can each work in either direction, and can therefore reinforce or work against each other. These results are summarized in the four scenarios of Table 2.

Scenarios A and D are theoretically more likely. In Scenario A rapid exit and limited entry reduce demand for the government service, while rapid exit, increased apathy, and limited entry and empowerment reduce the voice that can be mustered to fight corruption. Thus, we have the standard situation in which economic growth leads to upper/middle class flight, and a shrinking segment of working class citizens incentivized to push back on corruption. This decline in demand reduces the revenue maximizing level of bribery, while the loss of high-voice citizens gives the bureaucracy greater political latitude to increase corruption. Empirically observing declines in the utilization of a government



service and an increase in corruption levels identifies a case as belonging to Scenario A, and also tells us that corruption-enhancing effects of growth through the political channel trump the corruption reducing effects of growth through the economic channel.

| <b>Table 2: Effects of growth through Economic and Political Channels</b> |  |   |  |
|---|--|---|--|
|   |  | Effect of growth through political channels   |  |
|   |  | Exit & Apathy trump Entry and Empowerment → Total voice decreases.  | Entry and Empowerment trump Exit and Apathy → Total voice increases.   |
| Effect of growth through economic channels                                | Economic exit > entry.<br>→ Demand for government service decreases. | <u>Scenario A</u> <ul style="list-style-type: none"> <li>• Effects of growth on the bribe level are ambiguous.</li> <li>• Rising bribe levels indicate that political channels dominate.</li> </ul> | <u>Scenario B</u><br>Growth reduces bribery.   |
|   | Entry > economic exit.<br>→ Demand for government service increases. | <u>Scenario C</u><br>Growth increases bribery.  | <u>Scenario D</u> <ul style="list-style-type: none"> <li>• Effects of growth on the bribe level are ambiguous.</li> <li>• Falling bribe levels indicate that political channels dominate.</li> </ul> |

Scenario D, conversely, corresponds to the situation in which growth leads to limited exit. Thus, the political pressure arrayed in defense of the service may rise. Limited exit and entry together would lead to growing demand for the public service, pushing bribe levels up through the economic channel. Seeing corruption decline while utilization of a service expands therefore identifies the case as belonging to Scenario D, and indicates that the effects of growth acting through political channels dominate those operating through economic channels. This corresponds to what is likely to happen in public services for which no private alternative exists and for which demand among higher income citizens grows as they

become richer. This may include, for example, services involving the issuance of passports, business licenses and tax documents.

#### **4. Case Studies**

This section documents trends in corruption in four different public services in India. All four appear to belong to scenarios A and D, and trends in all four indicate that the effects of growth on corruption are primarily political. We begin with two services in which political corruption increased, and then proceed to two in which it decreased. In the discussions that follow, we take the fraction of service users that paid bribes, and the ubiquity of chokepoints geared to bribe extraction as our proxy indicators of the severity of bribery.<sup>15</sup>

##### Rural Schools

Trends in entry, exit and corruption in the case of rural schools can be illustrated with the help of three sources. Pratham's Annual Status of Education Reports (ASERs) present the results of surveys of approximately 130,000 households and 15,000 villages and schools each year from 2006 until 2014. The ASER teams also tested the reading and arithmetic skills of around 300,000 children in those households each year. The National Sample Survey Organization's Key Indicators of Social Consumption-Education report (NSSO, 2014) provides detailed tables based on nationally representative household surveys focused on students conducted in 2014. The third source is the Center for Media Studies (2010) report on surveys from 2005 and 2010 detailing utilization and corruption levels in four public services in rural areas from eleven large states.

The ASER reports document a substantial and apparently growing difference in the quality of government and private schools. To illustrate, consider the initial conditions. In 2006, a 5<sup>th</sup> grader was 18% more likely to be able to read at a 2<sup>nd</sup> grade level if they attended a private school than if they attended a government school. They were also 20% more likely to be able to divide a 3-digit number by a single-digit number in 2007, when the series begins. Qualitatively similar, and sometimes substantially larger differences between private and government schools are reported on similar tests at the 3<sup>rd</sup> and 7<sup>th</sup> grade levels.

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<sup>15</sup> This choice reveals the simplifications required to model the effects of growth on bribery. In reality, not all citizens are required to bribe, and the amount paid out for the same service does vary across citizens. These variables are not all measured. Our intent in this paper is to focus broadly on the effects of growth on citizens' experiences of the state, for which tracking the fraction forced to pay up and the conduciveness of procedures to bribe extraction are an adequate proxy.

Careful studies caution against interpreting these differences literally, noting that they reflect strong selection biases and that the treatment effect of private schooling varies across environments. Nevertheless, they typically estimate large treatment effects of private relative to public education, both on educator effort levels and learning outcomes, and especially once they control for the resources expended per student (Muralidharan and Sundararaman 2013, Azam, Kingdon et al. 2015).

These quality differences appear to have driven exit, with the share of children aged 6-14 enrolled in private schools rising each year, going from 18.7% in 2006 to 23.7% in 2010 to 30.8% by 2014. While we have been unable to obtain the results from multi-period surveys that would permit us to track the incomes of exiting households, static findings from previous studies overwhelmingly suggest that they are likely higher than those of households whose children continue to attend government schools. Specifically, Härmä (Härmä 2011) finds that rural parents in Uttar Pradesh have a near-universal preference for private over government schools, but that most children are nevertheless in government schools, and that the higher cost of private education is the likely culprit. NSS (2014) confirms that rural households with children in private schools spend at least 6 times as much per primary student than those with children in government schools, and at least 1.75 times as much per upper-secondary student (p. 22, Statement 3.16). The conventional wisdom that exit from government schools begins with richer households therefore seems all but assured to be empirically correct.

The effects of this exit appear to operate through voice. Declines in the share of the population relying on government schools would drive down revenue-maximizing levels of bribery. Yet, results from CMS (2010) indicate that amongst 12 states covered in both 2005 and 2010, the fraction of those households who actually interacted with the public K-12 education system that were asked to pay bribes rose from 13% to 15%. Through the lens of our model, this indicates that the exit of higher-income households must have reduced the total voice that could be mustered in defense of corruption-free government schools.

In sum, the fact that bribe levels did not fall despite rapid declines in demand indicates that the political mechanism supersedes the economic mechanism. Moreover, for the political mechanism to be sufficiently forceful to do this, income growth must have had weak empowerment effects and strong political exit effects. It is worth noting that the ASER data on rural learning outcomes are at least consistent with this exit-driven story. Learning outcomes in government schools crashed relative to those

in private schools – as would be expected if the voice of those invested in demanding high-quality public instruction declined as their relatively powerful neighbors exited for private alternatives.<sup>16</sup>

### Public Distribution System

India's Public Distribution System (PDS) is a joint undertaking of the central government and state governments that, in some form, is as old as the Republic itself. The central government Ministry of Consumer Affairs, Food and Public Distribution works with the Food Corporation of India to make key commodities (most importantly, rice, wheat, sugar, and kerosene) available to state governments, which in turn are responsible for selling them to eligible consumers at below market prices through fair prices (or "ration") shops. The rules and modalities for distribution vary across states, and have shifted over time. However, notwithstanding these changes, the program's objectives (equitable access to essential supplies and food price stability) and core operational problems (diversion of subsidized merchandise to black markets and to untargeted consumers, as well as quality control) have remained constant features. The program was reformed in 1997, with the introduction of a Targeted PDS that classified citizens according to poverty status, lifting the prices and reducing the quantities that wealthier households would have to pay. The changes were introduced to reduce the system's fiscal cost (Planning Commission 2005).

We are careful to distinguish here between two specific forms of corruption involving the public distribution system. The first is the rate of diversion (sometimes referred to as leakage or pilferage). This is a form of corruption visited upon the exchequer, and while it may be reduced by a vigilant citizenry, citizens are less likely to be motivated to combat it unless it results in their own rations becoming unavailable. Our model therefore does not adequately address this type of corruption.<sup>17</sup> The second form of corruption consists of citizens being forced to pay for access to rations or ration cards. This type of

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<sup>16</sup> ASER data indicate that the share of government-school 5<sup>th</sup> graders who could read at a 2<sup>nd</sup> grade level text fell from 51.4% in 2006 to 42.2% in 2014, while amongst private-school 5<sup>th</sup> graders it rose marginally from 60.8% to 62.5%. Meanwhile, the share of 3<sup>rd</sup> graders who could read at a 1<sup>st</sup> grade level collapsed from 45.8% to 31.8% in public schools, but held at around 59% in private schools. Math scores declined worryingly in both private and government schools, but the decline has been vertiginous in government schools. Given that student learning outcomes are conditioned by socioeconomic variables whose distribution across government and private schools changes with exit, these trends in learning outcomes are only consistent with a decline in school quality and do not suffice to conclude that quality in fact declined.

<sup>17</sup> More precisely, when allocations to citizens are opaque, theory suggests that pilferage rates will be determined principally by the quantity of foodgrains allocated to beneficiaries who have no clue about their allotments (Mehta and Jha 2014). Indeed, the best available evidence in the Indian context suggests that the bulk of pilfered rations are those allotted to Above the Poverty Line families who are kept in the dark regarding of frequent adjustments to their entitlements (Dreze and Khera 2015).

harassment is experienced personally by citizens, and corresponds to the form of corruption we do model in this paper.

Trends in entry, exit and corruption run as follows: In the eleven states they surveyed in both 2005 and 2010, CMS (2010) estimates that the percentage of rural citizens interacting with the PDS fell from around 60% to 50%, while the share of those citizens interacting with the PDS who report being asked for bribes rose from 8% to 22%.

Our model offers an interpretation of these trends. A set of users who could already move to higher quality, higher priced food grains earlier, move further away from the poverty line, and are even more unlikely to use the PDS. This group has no vested interest in the functioning of the PDS system any more. They politically exit the PDS system. Since this group is the one that is most empowered, public pressure on officials diminishes. Indeed, news reports of bribery related to the PDS services are few and far between. The poor who remain have less voice in the system and are more fearful of the state, are less likely to complain about the irregularities in the PDS, including the demand for bribes. Exit trumps empowerment, so that officials find it easier to demand bribes even as the number of PDS users falls. These political trends trump the economic incentive to reduce bribery as demand for PDS outputs falls.

Our model is also consistent with the literature on the effects of the post-1997 switch to targeting on PDS management. In terms our model, the switch to a targeted PDS can be seen as an exogenous shock mandating the exit of richer consumers from the program, which should increase corruption. Indeed, other authors have linked this policy shift to deterioration in the governance of the system (Himanshu and Sen 2011), and have noted that the few states which switched back to a universal PDS saw dramatic improvements in governance (Dreze and Khera 2010, Dreze and Khera 2015).

### Railways

Railways are the most widely used mode of long-distance travel in India. In 2014-15 alone, 8.2 billion passengers boarded Indian trains. Economic growth since 1991 has increased domestic travel within India as more people have begun to travel inside their own states as well as to other states in search of work and better livelihoods. Travel related to leisure and pilgrimages has also increased. By 2003-2004, Indian Railways' passenger traffic that had previously been growing 3% per annum began to grow at 6% per annum (Srivastava, Mathur et al. 2007). The number of passengers rose from 6 billion passengers in 2005-6 to 8.2 billion by 2014-15. Simultaneously, economic growth made air travel more accessible to the members of the growing Indian middle class. As a result, a segment of higher income railway passengers

exited to airlines. The number of domestic airline passengers stood at 42.3 million in 2009-10 and had increased to 66.4 million by 2014-15 – a number that is obviously tiny relative to the number of rail travelers, but yet this competition was felt to be significant, presumably because of the social standing of these lost consumers. Another competitor for the upper income segment of railway travelers were quality highways built by the government. They have eased road travel. Nevertheless, the large majority of the railway travelers are from the lower income segment. In 2013-14, 91.5% of railway passengers traveled 2<sup>nd</sup> class, which is the lowest tier accommodation on the train.

Corruption related to railway travel used to be rampant. One ubiquitous form of everyday corruption was bribery related to reservation of seats on trains. Annually, over 500 million passengers reserve seats before travelling on trains. In a period of increasing demand, we would expect railway officials to demand more bribes. Instead, corruption in the railways, especially related to railway travel has decreased. Indian Railways rapidly computerized its reservation system in the 1990s. A decade later, it began to upgrade the reservation system to provide more functionality and allow passengers to book their travel online. One explicit purpose of this change was to make the process more transparent and reduce the discretion of railway officials. Importantly, these steps were taken during a period of high demand and partial exit of the politically important upper middle class to airline travel. This deliberate reduction in the opportunity for bribe extraction runs contrary to the expectation on corruption derived from our proposed economic mechanism – higher demand for railways should have motivated officials to increase opportunities for bribe extraction.

To understand the decrease in corruption, we need to turn our attention to the empowerment effect of growth. Growth induced more entry than exit in railways. Rising incomes empowered passengers, putting political pressure on the government to improve the quality of their travel experience. Since corruption in seat reservation was a significant problem, the government moved swiftly to provide relief on this front. The per capita empowerment effect may be small. However, since the actual size of the user population is so high, the aggregate political effect was substantial. As a result, this empowerment effect was able to overpower the economic effect of increased demand and the political effect of partial elite exit.

### Passport Issuance<sup>18</sup>

The acquisition of an Indian passport has traditionally been a cumbersome process that typically took around 45 days during which applicants were often harassed for bribes, in particular during the mandatory police verification process. The original procedure required police to visit applicants' homes in order to verify their identity. Applicants routinely reported being extorted for bribes by the police, failing which, this verification would not be completed. The period of growth over the past two and half decades has increased travel out of India for both work as well as leisure among the middle classes. A passport is also required as an identification document for many students who take international exams like the SAT, GRE, etc. in India. According to the Controller and Auditor General's report of 2015, the number of passports issued every year has risen sharply over the past decade. Between 2010- 2014, the number of passports issued annually by the government increased by 37%. The expansion in the demand for passports should provide the government with incentives to increase bribes, and yet, the passport procurement process has become shorter and less cumbersome.

The government has speeded up the process by streamlining the requirements. A 2007 law delegated the task of receiving documents from applicants, passing them on to the police and issuing passports to 77 offices around the country. In 2010 it introduced an online portal to automate this process and schedule appointments at the issuing office, thereby reducing discretion and the leverage associated with indeterminate waiting times. It began by improving the monitoring of the police verification process. In January 2016, it removed police verification as a prerequisite for issuing a passport. The government now allows for the verification to be conducted after the passport has been issued. The time taken to process a passport application has now decreased to two weeks, and in many instances less than that duration. Meanwhile, procedures for emergency (*Tatkaal*) passport issuance have been introduced, initially with a waiting period of 7-14 days, subsequently reduced to 1-3 days – provided an applicant is willing to pay an additional fee of Rs. 3,500-4,000. While there appears to be no systematic evidence on levels of bribery related to passport issuance over time, anecdotal evidence all indicates that bribery has fallen as systems improved and discretion was reduced.

Why, despite increasing demand for passports, have bribery and opportunities for bribe extraction related to the passport issuance process been reduced? Why has the government been proactive in streamlining

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<sup>18</sup> Information in this section draws on the following reports: Janaagraha (2016); Indian Express (2016); Bharadwaj (2016); Kannan (2016); Passport Seva (2016); and Passport Seva Kendra (2016)

the process and reducing bureaucratic discretion in this case? The government holds a monopoly over the granting of a passport. This rules out political exit for the middle and upper classes. Growth has increased the size of the upper-middle class as well as the demand for foreign travel among this group. Discontent over corruption related to passport acquisition has apparently pressured the government to reduce the discretion of officials in the process and increased the use of technology. Newspapers have covered concerns related to bribe demands during the police verification process and passport-related complaints have featured prominently on anticorruption online platforms. Less discretion and greater transparency has reduced the incidence of bribery in this realm. Again the political mechanism of voice has dominated over the economic mechanism and instead of increasing in the wake of higher demand, bribery has actually decreased in response to empowerment.

## **5. Conclusion**

In this paper we model how, in a democratic environment, growth conditions the economic incentives to demand bribes and the political constraints against demanding bribes. We explain the variation in corruption-related outcomes across four Indian public services - rural public schooling, and public distribution system for food, railway reservations, and passport issuance - in a period of rapid growth. We outline growth-induced dynamics that affect the trajectory of bribery across these public services. Our general finding, across a range of public services in India, is that the actual trajectory of bribery is the opposite of what one would have expected based on demand trends alone. This implicates the dynamics of voice as the likely explanation.

It is often said that poverty is a tax on the poor. Our paper highlights the corruption-related disadvantages that may be imposed on the poor even during a period of high growth. When growth enables the middle classes and the most empowered among the poor to exit the use of public services, those left behind become even more vulnerable to demands of venal public officials. And yet, when growth empowers the users of a public service and the empowered do not exit, it can produce political pressure against corruption. Corruption can therefore become more of a tax on the poor as growth proceeds, unless governments actively seek to give more empowered citizens a stake in the public service.



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