

Oversight, Capacity, and Inequality

Tara Slough*

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Abstract

Oversight of bureaucratic service providers often relies upon information gleaned from citizen complaints. I argue that the use of complaints to direct oversight generates variation in a states capacity to implement public policies and shapes who accesses state services. I develop a model of service provision to understand the distributive implications of a politicians choice to use citizen complaints when monitoring a bureaucrat. Complaints generate information that directs a politicians remediation of bureaucratic decisions and may increase bureaucratic effort. However, when citizens vary in their propensity to complain, reliance on complaints generates inequality in citizen access to services, improving access of citizens that complain while reducing access of citizens that do not. Reliance on complaints therefore can increase or decrease a states capacity for accurate policy implementation depending on the share of citizens induced to complain. I show that bureaucratic oversight institutions shape implementation capacity and inequality in comparative perspective.

*Assistant Professor, New York University, tara.slough@nyu.edu. I thank Charles Angelucci, John Huber, Dimitri Landa, Macartan Humphreys, John Marshall, John Patty, Mike Ting, Ian Turner, Tinghua Yu, Congyi Zhou, seminar participants at NYU, and panel participants at APSA and MPSA for helpful comments. This project is supported in part by an NSF Graduate Research Fellowship, DGE-11-44155; NSF Doctoral Dissertation Research Improvement Grant 1729334; and grants from J-PAL, Evidence in Governance and Politics (EGAP), the Center for the Study of Development Strategies, and the Columbia Department of Political Science.

Citizen complaint systems facilitate regular citizen participation and engagement with governments. Broadly defined, these systems allow citizens to convey information about a failing of a bureaucrat or bureaucratic agency to a principal. Citizens routinely complain to communicate the location of potholes, missing social benefits, corruption by state agents, and violations of social or human rights, among other issues.

Despite their ubiquity, the adoption of citizen complaint systems varies across contexts and policy areas. Researchers increasingly employ data on citizen complaints from multiple contexts to study government responsiveness (Chen, Pan, and Xu, 2015; Christensen and Ejdemyr, 2020; Sjoberg, Mellon, and Peixoto, 2017; Dipoppa and Grossman, 2020) and the organization of autocratic regimes (Pan and Chen, 2018; Dimitrov, 2013). We know less, however, about when and how politicians (principals) design these complaint systems. By creating complaint systems, politicians provide citizens with incentives to report bureaucratic errors. In turn, citizens choose whether to report errors with an eye to how politicians will use this information for redress. Further, a bureaucrat's anticipation of possible complaint—and thus oversight by the politician—should also impact the service they provide to citizens in the first place. This paper examines how the design of these oversight institutions affects “who gets what” services from the state.

Specifically, I study politician's choice to use information generated by citizen complaints as part of a bureaucratic oversight strategy. In terms of classic oversight parlance, when do politicians commit to monitor bureaucrats via “fire alarms” versus “police patrols?” How does the choice of such monitoring propensities constrain the politician's ability to incentivize bureaucratic effort? Consistent with empirical observation, I allow citizens to vary in their ability/willingness to complain or “pull” a fire alarm by complaining. The observation that costs of complaint are often non-trivial and can vary substantially across a population echoes early warnings of McCubbins and Schwartz (1984). I show how the choice of oversight institutions shapes distributional outcomes.

To do so, I develop a model of service provision built upon a framework developed by Prendergast (2003). In the model, a bureaucrat chooses whether or not to exert effort to learn a citizen's eligibility for a service. The bureaucrat then determines whether or not to grant the service to the

citizen. The citizen, who knows their eligibility, observes whether she received the service, and decides whether or not to complain to the politician. Importantly, the cost of complaint varies across the population of citizens, so that citizens vary in their willingness to provide information about their own eligibility (Slough, 2021). The politician monitors the bureaucrat's service provision based on the allocation of the service and the presence of a complaint. If such auditing reveals that the bureaucrat made a mistake (i.e., by denying service to an eligible citizen), the citizen recovers the service and the bureaucrat is punished.

The politician designs oversight by committing to a contract *ex-ante* that specifies effort incentives for bureaucrats (the magnitude of punishment for errors) and monitoring rates as a function of observed allocation by the bureaucrat and the presence of a citizen complaint. I characterize four qualitatively distinct contracts that emerge in equilibrium, depending on: (i) the politician's targeting of services and (ii) the level of bureaucratic insulation, conceived as a limit on the size of effort incentives (punishments for mistakes by bureaucrats). These contracts vary along two dimensions. First, the politician's monitoring may or may not respond to information provided by citizen complaints. These monitoring strategies determine which citizens have an incentive to complain when wrongly denied the service. Second, contracts may or may not incentivize the bureaucrat to exert effort to more accurately ascertain a citizen's eligibility.

I use these contracts to derive implications for the state's capacity to implement policies for different citizens. The measure of implementation capacity developed in this paper formalizes Mann's (1984) concept of state capacity as "infrastructural power," or the "ability to . . . penetrate civil society, and to implement political decisions throughout the realm" (189).¹ By focusing on an informational problem underlying service provision, namely the need for a government to learn about citizens' eligibility, this paper draw parallels to discussion of the "legibility" of citizens to a government as a determinant of implementation capacity (Scott, 1998; Lee and Zhang, 2016).

I find that contracts that condition monitoring on information provided by citizens have an ambiguous effect on a state's capacity to match policies to intended recipients. This type of mon-

¹There are many definitions of state capacity. I use "implementation capacity" to refer to the concept used in this paper.

itoring improves the accuracy of targeting among “legible” citizens—those that choose to provide information when wrongly denied the service. However, it also promotes a form of capture by reducing the state’s accuracy in providing service to “illegible” citizens who would never complain. Which effect dominates depends on the share of legible citizens in a population.

In contrast to its ambiguous effect on implementation capacity, conditioning monitoring on citizen information transmission *always* increases inequality in the delivery of state services when citizens vary in their propensity to complain. When monitoring relies on citizen complaints, citizens who complain receive more accurate—and simply more—services, both from bureaucrats’ initial allocations and through redress of their complaints. Further, the capture mechanism implies that those who cannot complain are worse off (in absolute terms) than they would be in the absence of information transmission from aggrieved citizens to politicians.

As such, the use of citizen information in bureaucratic oversight presents a possible tradeoff between expanding the state’s capacity to accurately serve its citizens and entrenching inequality in access to state resources. The tradeoff emerges when oversight institutions induce a sufficiently large proportion of the population to provide information to the state. In contrast, when few citizens can be induced to provide information, the use of citizen information can reduce implementation capacity while simultaneously increasing inequality.

This paper analyzes a comparatively neglected tool used by politicians to influence the state’s capacity to implement policies: the use of information from citizens in bureaucratic oversight (Berwick and Christia, 2018). Existing work linking bureaucratic institutions to state outputs has focused on the adoption of personnel policy like civil service reforms (Geddes, 1994; Grindle, 2012; Huber and Ting, 2021). The present model captures public sector personnel systems with two exogenous parameters: bureaucratic quality and insulation. In so doing, it allows for consideration of how these oft-studied features of public sector personnel systems affect the oversight schemes adopted by politicians, as well as their distributional consequences. Whereas civil service reforms are often viewed as major, costly reforms across large portions of the bureaucracy (Rauch, 1995; Folke, Hirano, and Snyder, 2011; Ujhelyi, 2014), oversight practices can, in principle, be

deployed or manipulated more flexibly by politicians. Variation in oversight practices across policies or jurisdictions therefore may better explain variation in apparent implementation capacity across space, time, and policy design, in line with a growing literature on sub-national variation in capacity (Weber, 1976; Enriquez and Centeno, 2012; Soifer, 2015).

The model in this paper builds upon an emerging theoretical literature on state capacity (Huber and McCarty, 2004; Besley and Persson, 2010; Acemoglu, García-Jimeno, and Robinson, 2015; Gennaioli and Voth, 2015; Snowberg and Ting, 2019). As in the empirical literature, there is no apparent consensus on what state capacity means. I focus on one manifestation of state capacity distinct from the aforementioned literature: the congruence between policies and their realization. I refer to this as implementation capacity. This paper clarifies and formalizes the distinction between bureaucratic capacity and state implementation capacity by emphasizing the incorporation of bureaucrats into the state as an organization consisting of a government *and* citizens.

This primary contribution of this paper is its suggestion of a link between organization of bureaucratic oversight and the study of distributive politics. The study of “who gets what” from the state generally focuses on the allocation and policy decisions made by politicians by examining which individuals or groups are targeted as beneficiaries (Golden and Min, 2013). One interpretation of existing arguments of capacity and economic growth is that capacity scales the “size of the pie” that politicians have to distribute. This paper, instead, contends that building the capacity to implement policies redistributes the pie across different segments of a population. As I show, such distributional consequences of implementation can occur independently from the targeting of the actual policy. To the extent that politicians influence bureaucratic oversight institutions, I identify a novel strategy via which politicians influence “who gets what” beyond the policymaking process, complementing Williams’ (2017) seminal contribution on the distributive politics of policy implementation.

In recent years, scholars and practitioners have sought to learn “how to strengthen [state capacity]” (Berwick and Christia, 2018: p. 71). The bureaucratic oversight institutions I study provide a new framework through which to answer the “how.” However, the main findings on capacity

and distribution suggest that viewing capacity as an aggregate concept or measure can disguise stark distributional consequences of efforts to strengthen states' implementation capacity. In so doing, I provide one possible reconciliation of a longstanding disagreement about the welfare effects of state capacity (e.g., Scott, 1998; Acemoglu, García-Jimeno, and Robinson, 2015; Johnson and Koyama, 2017).

1 Empirical Motivation

1.1 Describing Observed Complaints

The most frequently documented citizen complaints come from 311-type hotlines or online platforms that allow for reporting about a variety of service provision issues. In Figure 1, I examine per-capita utilization of complaint hotlines in New York City, United States and Bogotá, Colombia. Similar to many other cities and countries with 311-type systems, both cities release anonymized complaint-level records. The left panel of Figure 1 suggests a consistent stream of complaints in both cities between January 2017 and June 2018. Rates of complaint are substantially higher in New York, averaging 616 per million residents per day versus 15 in Bogotá. Variation in the services covered by complaint systems, modes of complaint, and potentially responsiveness render the comparison of complaints in both cities a challenging endeavor. Nevertheless, the non-trivial rates of complaint in both cities suggest that responding to and remedying complaints occupies one source of oversight effort.

The right panel of Figure 1 examines rates of complaint across smaller geographic units. The data is compiled at different levels of spatial aggregation. In Bogotá, I examine the city's 20 localities; in New York, I examine 2164 census tracts. In both cities, there exists substantial variation in the per-capita rates of complaint across these geographic units. In Bogotá, moving from the first to the third quartile locality in rates of complaints represents a 232% increase in the per-capita rate of complaint; in New York, the analogous shift represents a 47% increase in the per-capita rate of complaint. Existing studies that seek to identify differential *responses* to complaints as a function of election timing (Dipoppa and Grossman, 2020), politician re-election incentives (Christensen

and Ejdemyr, 2020), or neighborhood characteristics (Hamel and Holliday, 2019) generally find measurable differences in the speed with which complaints are remedied, but effect sizes are arguably quite small, ranging from a few hours to 2 days. Combined, substantial differences in the rate of complaint-making and small (if precisely estimated) differences in response to complaints suggest that selection into complaining may be particularly important for understanding the distributive consequences of these types of complaint systems.

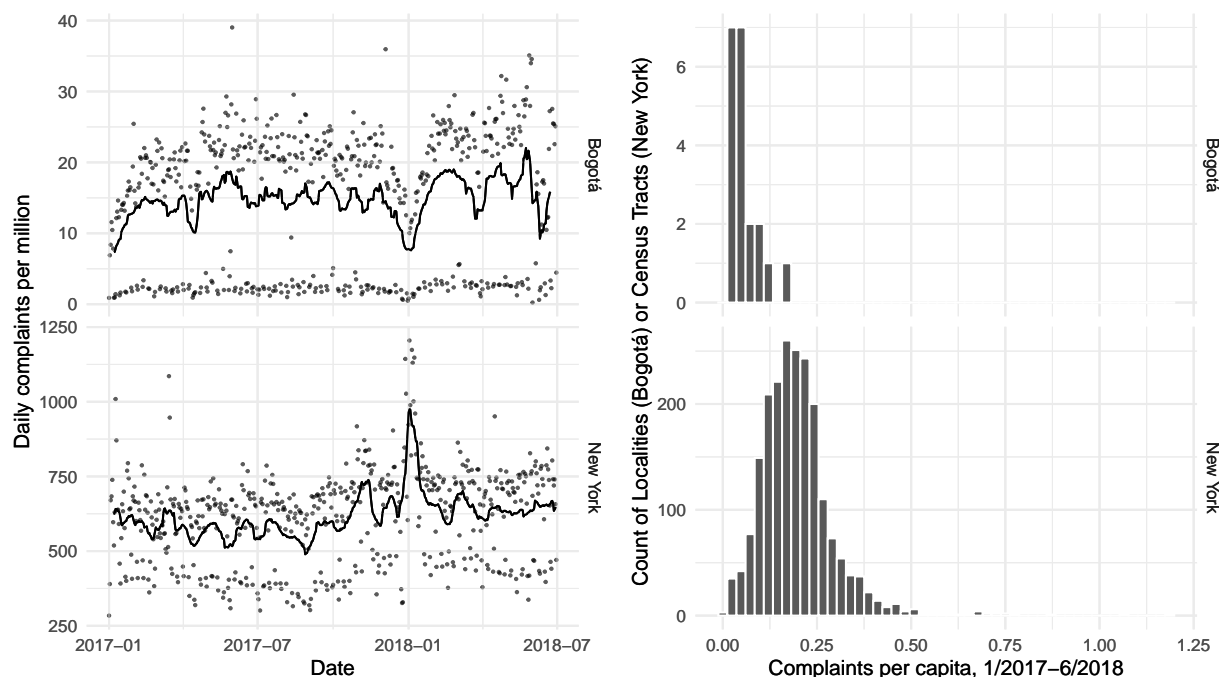


Figure 1: Rates of 311-type complaints in Bogotá and New York. The left panel depicts the number of daily complaints per million over an 18-month period with the 7-day moving average. The right panel plots cross-sectional variation in complaints per capita. Data sources: NYC Open Data’s 311 Service Requests (New York data) and the Veeduría Distrital (Bogotá data).

Certainly, rates of complaint may differ across a population for multiple reasons. If different sub-populations rely more or less on specific public services, their demand for recourse via complaint may vary. With high levels of residential segregation in both cities, these differences may manifest across jurisdictions. Further, even among widely-used services, if the quality or level of service provision is uneven across jurisdictions, worse service provision may yield more complaints. On the other hand, if some citizens may face fewer costs or barriers to complaint they may be more likely to communicate grievances that do occur (Ba, 2020; Rizzo, 2019). In the model, I

consider a population that is differentially willing (or able) to engage the state via complaint. Using the complaint data, I provide suggestive evidence in favor of the plausibility of this argument in Appendix A5.

1.2 The Design of Oversight

The design of bureaucratic oversight institutions varies substantially across contexts and policy areas. I consider two sources of this variation. First, I consider the extent to which bureaucrats are punished if complaints are filed and errors are detected. In most contexts, complaints about a pothole may help to redress the issue but are unlikely to result in a substantial punishment of a bureaucrat with responsibility for roads. In contrast, bureaucrats' efforts to hide corruption complaints in China suggest a widespread perception that these complaints are detrimental to career advancement (Pan and Chen, 2018). We can conceptualize the distinction between these cases in terms of the sanctions applied to bureaucrats when errors are detected by principals.

Of course, politicians (principals) operate within the constraints of public sector personnel institutions when determining what bureaucratic sanctions are legal or feasible to implement. In some civil service systems, bureaucrats are highly insulated from politicians. This insulation can be captured as a *maximum* sanction for bureaucratic errors. The possibility of costly sanctions is important for understanding bureaucratic effort and service provision behaviors more generally.

Second, bureaucratic oversight institutions vary in whether politicians use information generated by citizen complaints when monitoring bureaucrats. Following a classic analogy by McCubbins and Schwartz (1984), politicians can monitor bureaucrats through “police patrols” or “fire alarms.” A “police patrol” strategy involves auditing a subset of all bureaucratic decisions in search of mistakes by the bureaucrat. A “fire alarm” strategy uses complaints or requests for redress to target likely mistakes. In service provision settings, complaint systems—from 311 systems, complaint boxes, to more formal forms of legal recourse—serve as one common source of “fire alarms.” In practice, oversight can include some combination of both oversight strategies.²

²This characterization of citizen complaints connects to accounts about the strategic use of appeals (analogous to complaints in the service-provision setting) in hierarchical courts in the United States (Cameron and Kornhauser, 2005; Hübert, 2021). While models of appellate review (oversight) exogenously fix the institutional structure of these

Given some initial service allocation/provision by the bureaucrat, citizens complain to increase the likelihood that the bureaucrat’s errors are rectified. Indeed, recent work documents that citizens do indeed complain at (slightly) higher rates when they anticipate greater government responsiveness to their complaints (Sjoberg, Mellon, and Peixoto, 2017; Dipoppa and Grossman, 2020).

I now introduce a model to study the design of bureaucratic oversight institutions in a service provision setting. These institutions are formalized as a contract that consists of (i) the sanction for bureaucratic errors; and (ii) monitoring rates as a function of received complaints. After characterizing equilibrium contracts, I examine the distributional outcomes of these institutions in societies with different distributions of citizen costs of complaint.

2 Model

The model examines the choice of bureaucratic oversight institutions in a service provision setting. The model of service provision builds upon Prendergast (2003), with two central departures discussed at length in the model exposition.

There are three classes of actors: a continuum of citizens, a bureaucrat (B), and a politician (P). Each citizen is eligible for a service, $\omega = 1$ with probability $\frac{1}{2}$, and ineligible for the service, $\omega = 0$ with complementary probability. Eligibility is associated with a specific service, not a fixed characteristic of the citizen. In various service provision settings, this eligibility indicator could refer to sick or healthy; guilty or innocent; or qualified or unqualified. Eligibility is private information to the citizen.

In this model, implementation capacity refers to the congruence between the ultimate service outcome, $a^\dagger \in \{0, 1\}$ and a citizen’s eligibility. As such, $a^\dagger = 1$ indicates that the citizen ultimately receives the service and $a^\dagger = 0$ indicates that the citizen does not receive the service. I denote this congruence as Y in (1). In existing work including Prendergast (2003), congruence is often assumed to generate a social surplus. I abstract from the assumption that accurate targeting of a service (higher congruence) leads to “better” outcomes. Consistent with the definition of implementation capacity that I advance, congruence measures accuracy in the implementation of a processes, I present a model in which oversight institutions are adopted endogenously.

policy (or service), not the normative merits of that underlying policy.

$$Y = \begin{cases} 1 & \text{if } \omega = a^\dagger \\ 0 & \text{else} \end{cases} \quad (1)$$

The bureaucrat is tasked with determining whether or not to provide a citizen with a service, denoted $a \in \{0, 1\}$. They choose whether to exert effort, $e \in \{0, 1\}$, to try to more accurately ascertain the citizen's eligibility ω . Exerting effort ($e = 1$) incurs cost $d \in \mathbb{R}_+$. The bureaucrat correctly assesses the citizen's eligibility with probability $q + pe$ where $q \in [\frac{1}{2}, 1]$ and $p \in [0, 1 - q]$. With probability $1 - q - pe$, the bureaucrat errs and makes the wrong assessment of eligibility. The parameter q should be interpreted as a measure of bureaucratic quality and $q + p$ can be interpreted as the measure of bureaucratic capacity that incorporates both quality and effort.

Upon observation of their allocation, a citizen determines whether to complain ($c = 1$) or not ($c = 0$) to the politician about their allocation, at cost θ . The continuum of citizens is characterized with respect to the costs of complaint, $\theta \sim f(\cdot)$ and its cdf $F(\cdot)$. I assume that $F(0) = 0$ which implies that all citizens pay a non-zero cost of complaint, though these costs may be arbitrarily small. θ can be thought of as an individual citizen's type and is common knowledge.³

The politician observes the bureaucrat's allocation and the citizen's complaint (resp. non-complaint) and monitors the bureaucrat's decision according to a pre-specified contract that stipulates the rate of auditing as a function of a and c . Denote this rate $\rho(a, c) \in [0, 1]$. If audited, the politician pays a cost, $\frac{\rho(a, c)^2}{2}$, to learn ω . If the politician monitors and observes that $a = \omega$, she will not change the allocation. If $\omega \neq a$, the citizen's ultimate allocation is $1 - a$. Thus, the ultimate allocation of the service, a^\dagger is given by:

$$a^\dagger = \begin{cases} 1 - a & \text{if politician monitors and } \omega \neq a \\ a & \text{else} \end{cases} \quad (2)$$

³Importantly, the assumption that $\Pr(\omega = 1) = \frac{1}{2}$ for each citizen implies that a citizen eligibility (ω) is independent of type (θ).

When the politician reverses a bureaucrat's allocation, the bureaucrat is sanctioned with a penalty of $\Delta \in [0, \bar{\Delta}]$. $\bar{\Delta}$ is an exogenous upper bound on permissible penalties. This parameter can be interpreted as a measure of bureaucratic *non*-insulation. Lower values of $\bar{\Delta}$ constrain the punishment that the politician can impose, insulating the bureaucrat. Canonical descriptions of public-sector personnel systems suggest a lower $\bar{\Delta}$ under civil service systems than under patronage-based systems.

The citizen's decision about whether to complain depends on the prospect of recovering services through a politician's intervention. I assume that citizens value receiving the service, regardless of eligibility, i.e., citizens prefer to receive benefits ($a^\dagger = 1$), even when they are not eligible. Citizens gain utility normalized to 1 if they ultimately receive the service and 0 otherwise. The citizen's utility is therefore:

$$U_C(c) = a^\dagger - \theta c \quad (3)$$

The bureaucrat exerts effort to reduce their likelihood of being punished. Their utility, net of some wage that satisfies a participation constraint, is given by (4), where r is an indicator function that takes the value of 1 if the politician monitors and reverses the bureaucrat's allocation.

$$U_B(e) = -de - \Delta r \quad (4)$$

The politician contracts the bureaucrat, specifying the probabilities of audit, $\rho(a, c)$, and sanction for errors, Δ . Note that because $a \in \{0, 1\}$ and $c \in \{0, 1\}$, $\rho(a, c)$ is a four-dimensional vector that specifies the probabilities of audit under each allocation-complaint pair. In the baseline model, I will assume that the politician seeks to optimize the accuracy of service provision to the median citizen, net the costs of monitoring. This serves as a reduced-form representation of standard median-voter arguments that are often applied in democracies. Because the continuum of citizens is defined with respect to the distribution of costs of complaint, the median citizen's type is $\theta_M = F^{-1}(0.5)$.

The politician gains utility normalized to 1 when the ultimate service allocated to the median citizen matches that citizen's eligibility ($a^\dagger = \omega$), while also assuming the costs of monitoring (i.e., time and effort). The politician's expected utility, given the bureaucrat's allocation, a , and citizen's complaint, c , is characterized in (5). In the first case, the bureaucrat's allocation is correct ($a = \omega$) and the politician earns utility normalized to 1 for the correct allocation, but pays for any monitoring they conduct. In the second case, the bureaucrat has erred ($a \neq \omega$) and the politician recovers the service with probability equivalent to the monitoring rate $\rho(a, c)$, but pays the costs of monitoring:

$$E[U_P|a, c] = \begin{cases} 1 - \frac{\rho(a, c)^2}{2} & \text{if } \omega = a \\ \rho(a, c) - \frac{\rho(a, c)^2}{2} & \text{if } \omega \neq a \end{cases} \quad (5)$$

Recall, however, that the politician commits to a contract *ex-ante*. Calculation of the politician's *ex-ante* expected utility incorporates three components. First, recall that a citizen is eligible for the service with probability $\frac{1}{2}$. Second, the bureaucrat is correct in allocating $\omega = a$ with probability $q + pe$. By providing effort incentives (Δ), the politician may be able to induce the bureaucrat to exert effort ($e = 1$), thereby increasing the bureaucrat's accuracy. Finally, the anticipated complaint-making behavior of the median citizen ($\theta = \theta_M$) will determine the relevant monitoring probabilities under each possible eligibility-allocation pair. Thus, while θ_M does not appear explicitly on the right-hand-side of (6), it is internalized through the citizen's equilibrium complaint-making strategy, c . As such, the politician's expected utility is given by:

$$\begin{aligned}
E[U_P(\boldsymbol{\rho}(a, c), \Delta; \theta_M)] = & \underbrace{\frac{1}{2}}_{\omega=1} \left[\underbrace{(q + pe)\left(1 - \frac{\rho(1, c)^2}{2}\right)}_{a=1} + \underbrace{(1 - q - pe)\left(\rho(0, c) - \frac{\rho(0, c)^2}{2}\right)}_{a=0} \right] + \\
& \underbrace{\frac{1}{2}}_{\omega=0} \left[\underbrace{(q + pe)\left(1 - \frac{\rho(0, c)^2}{2}\right)}_{a=0} + \underbrace{(1 - q - pe)\left(\rho(1, c) - \frac{\rho(1, c)^2}{2}\right)}_{a=1} \right]
\end{aligned} \tag{6}$$

2.1 Sequence, Assumption, Equilibrium Concept

The model proceeds as follows:

1. The politician chooses a contract specifying $\boldsymbol{\rho}(a, c)$ and Δ .
2. The citizen's eligibility, ω , is realized and revealed to only the citizen.
3. The bureaucrat chooses effort level, e , allocating the service, a , to the citizen.
4. The citizen observes a and decides whether or not to complain, c .
5. The politician monitors according to the contract. When monitoring reveals bureaucratic errors, the allocation is reversed and the bureaucrat is punished.
6. Utilities are realized.

I impose one assumption on $\bar{\Delta}$ in order to eliminate corner solutions. Note, however, that admission of a continuous $\bar{\Delta}$ does not change the qualitative findings of the model.

Assumption 1. $\bar{\Delta} \in \{\bar{\Delta}_L, \bar{\Delta}_M, \bar{\Delta}_H\}$, where $\bar{\Delta}_L < \frac{d}{p}$, $\bar{\Delta}_M = \frac{2d(p+q+(1-q-p)^2)}{p}$, and $\bar{\Delta}_H \geq \frac{d}{p(1-q-p)}$.

I characterize a Bayesian Nash equilibrium. The politician's contract is given by $\Delta \in [0, \bar{\Delta}]$ and $\boldsymbol{\rho}(a, c) \in [0, 1]^4$ for $a \in \{0, 1\}$ and $c \in \{0, 1\}$. The bureaucrat's effort is given by $e :$

$[0, \bar{\Delta}] \times [0, 1]^4 \rightarrow \{0, 1\}$, and their allocation is given by $a : [0, \bar{\Delta}] \times [0, 1]^4 \times \{0, 1\} \rightarrow \{0, 1\}$. The citizen's complaint strategy is given by the mapping: $c : [0, \bar{\Delta}] \times [0, 1]^4 \times \{0, 1\} \times \{0, 1\} \rightarrow \{0, 1\}$.

2.2 Comments on the Model

Before proceeding to the characterization of equilibrium contracts, I emphasize several features of the model.

Departures from Prendergast (2003): This model makes two important departures from Prendergast (2003) that deliver new results. First, the characterization of citizen costs of complaint indicates that (i) complaints are costly and (ii) these costs vary across the population. A direct implication of the Prendergast's (2003) assumption of costless complaint is that, after conditioning on a citizen's eligibility and allocation they receive, we should not observe variation in citizen complaint-making. This is inconsistent with empirical descriptions of citizen complaint-making (Bussell, 2019; Krus-Wisner, 2018) and variation in legibility before the state (Lee and Zhang, 2016; Scott, 1998). By incorporating a continuum of costs of complaint across the population of citizens, this model more accurately represents citizens who are not equal in their ability (or propensity) to generate information about bureaucratic errors.

Importantly, citizen type (θ)—which measures costs of complaint—is observed. The bureaucrat is able to condition service on the observed θ , potentially treating a prospective complainant differently than a citizen who would not complain. Substantively, conditioning service on θ corresponds to the idea that a bureaucrat may receive a complaint (or credible threat thereof) in advance of allocating the service. Indeed, the promise to “ask for a manager” is familiar to service providers in multiple contexts (Slough, 2021). In popular culture, recently-developed slurs deriding individuals who are too quick to call the police or appeal to authority suggest that complaint-making behavior might be seen as an inherent, observable personality trait (Goldblatt, 2020). These observations are consistent with this modeling of observable costs of complaint. Note that the politician's monitoring of the bureaucrat is conditioned on θ , but only indirectly through the realized complaints. I allow for direct conditioning of monitoring on citizen type in one of the extensions in Section 6.

Second, this specification of the politician's preferences represents the second major departure from Prendergast (2003). In a population in which citizens may be differentiated in their propensity to complain, an additional assumption is needed to justify which citizens a politician seeks to serve. Consistent with much of the political economy literature, I do not assume that the politician seeks to maximize welfare across the population. When all citizens prefer to receive the service, why might a politician seek to maximize the accuracy of service provision to the median citizen? Politicians often pursue policies like education, health, and security to achieve policy goals, like a more educated population, better health, or less crime, for reasons beyond targeting specific voters or groups. Indeed, the underlying service (policy) is not targeted on the basis of citizen type, only on their eligibility. Yet, politicians presumably still care about how voters experience service provision, and may overweight the policy outcomes of a specific citizen or group of citizens relative to others. The targeting of the median citizen in the baseline model is consistent with standard median voter results in democracies. Importantly, targeting of the median voter, θ_M , is without loss of generality. In non-democratic settings, for example, an autocrat might seek to target the marginal member of a (smaller) winning coalition. The analysis carries through if one substitutes a different θ for θ_M .

Three tensions: The model features three tensions. First, there exists a standard moral hazard problem: the politician would like the bureaucrat to exert costly effort to improve the accuracy of the allocation, but effort is unobserved to the politician. Second, the citizen always prefers to receive the service, whereas the policy goal is to match the service to the citizen's eligibility. This implies a tension between individual preferences and the objectives of the policy. This feature is common to many (but not all) services. Services may be targeted to eligible individuals instead of the entire population due to scarcity (i.e., limited doses available) or specific policy objectives (i.e., means-tested services). Finally, the politician's objective is particularistic: she seeks to optimize service for the median citizen. I explore how the latter two tensions contribute to the distributive outcomes of bureaucratic oversight through two model extensions.

3 Equilibrium Analysis

Because the politician pre-commits to the monitoring contract, consider first the citizen's decision to complain. Recall that if a politician monitors, she will observe the citizen's eligibility with certainty. As such, if a citizen was ineligible ($\omega = 0$), no citizen would complain. Even if the citizen was (correctly) denied the service, they would not recover the service via an audit, and complaining is costly. In contrast, when the citizen is eligible ($\omega = 1$) and the citizen is wrongly denied the service, they will complain if it increases sufficiently the probability of recovering the service relative to the cost of complaint, θ :

$$\rho(0, 1) - \rho(0, 0) \geq \theta \quad (7)$$

This implies that there exists some threshold, $\tilde{\theta} \equiv \rho(0, 1) - \rho(0, 0)$, above which citizens do not provide information to the politician via complaints. I refer to citizens for whom $\theta \leq \tilde{\theta}$ as “legible” to the state. Building off of Scott (1998) and Lee and Zhang (2016), “legible” here refers to a citizen that could be induced to share private information about their eligibility via a complaint to the politician. The informativeness of a complaint to the politician depends on both the citizen's type and the allocation. Citizen complaints and non-complaints are informative only if the citizen is legible and the bureaucrat allocates $a = 0$. If $a = 1$, the citizen has no incentive to complain regardless of their eligibility.

Lemma 1. Informational value of citizen (non-)complaints:

(i) If $\theta > \tilde{\theta}$, the citizen never complains ($c = 0$). As such, in the absence of complaint, the probability of non-congruence is: $Pr(a \neq \omega) = 1 - q - pe$ for any a .

(ii) If $\theta \leq \tilde{\theta}$, the citizen complains if and only if $\omega = 1$ and $a = 0$. As such, the probability of

non-congruence between ω and a is:

$$Pr(a \neq \omega) = \begin{cases} 1 & \text{if } a = 0, c = 1 \\ 0 & \text{if } a = 0, c = 0 \\ 1 - q - pe & \text{if } a = 1 \end{cases}$$

Now, consider the bureaucrat's decision to exert effort. The bureaucrat will exert effort ($e = 1$) to reduce their propensity to make mistakes when allocating the service. The probability of such mistakes is $1 - q - pe$. The bureaucrat will exert effort if the penalty is sufficiently large and monitoring is sufficiently likely relative to the marginal cost of effort, as given by:

$$\begin{aligned} -\frac{1 - q - p}{2}[\rho(1, 0) + \rho(0, 0)]\Delta - d &\geq -\frac{1 - q}{2}[\rho(1, 0) + \rho(0, 0)]\Delta \\ \Delta &\geq \frac{2d}{p[\rho(1, c) + \rho(0, c)]} \end{aligned} \tag{8}$$

In considering the bureaucrat's behavior, one further consideration is warranted: is it always incentive compatible for the bureaucrat to follow their investigation? Given that the effort incentive, Δ , is the same for any bureaucratic error, any incentive for the bureaucrat to allocate the service to the contrary of their investigation must be driven by different monitoring rates. Suppose first that the bureaucrat's research suggests a citizen is ineligible ($\omega = 0$). If they deny the citizen the service, but are wrong (with probability $1 - q - pe$), they draw a monitoring rate of $\rho(0, c)$, where c , the citizen's complaint strategy, depends on citizen type (θ). In contrast, if the bureaucrat goes against their research by granting the service, they are more likely to be wrong (with probability $q + ep$) but will not draw a complaint. Thus, if the monitoring rate $\rho(1, c)$ is sufficiently low relative to $\rho(0, c)$, the bureaucrat may simply grant the service (accede) to a legible citizen regardless of

their investigation. This incentive compatibility constraint is given by:

$$\begin{aligned} -(1 - q - pe)\rho(0, c)\Delta &\geq -(q + pe)\rho(1, c)\Delta \\ \frac{\rho(1, c)}{\rho(0, c)} &\geq \frac{1 - q - pe}{q + pe} \end{aligned} \tag{9}$$

The right hand side of the inequality in (9) is bounded between 0 and 1. Therefore, if $\rho(1, c) \geq \rho(0, c)$, this condition is always satisfied and the bureaucrat will always follow an investigation that suggests that $\omega = 0$. When this inequality does not hold, the bureaucrat will give $a = 1$ to a legible citizen, even when their research suggests that $\omega = 0$ to reduce the likelihood of oversight. Consider now the case in which the bureaucrat's research suggests that $\omega = 1$. By a similar logic, in order for the bureaucrat to allocate $a = 1$, the following inequality must hold:

$$\begin{aligned} -(1 - q - pe)\rho(1, c)\Delta &\geq -(q + pe)\rho(0, c)\Delta \\ \frac{\rho(0, c)}{\rho(1, c)} &\geq \frac{1 - q - pe}{q + pe} \end{aligned} \tag{10}$$

Comparing (9) and (10), it is clear that if all relevant monitoring rates are equivalent, the bureaucrat will always follow their investigation. One final observation is warranted: if $\Delta = 0$, the bureaucrat will be indifferent between ignoring and following their investigation in all cases. As in Prendergast (2003), I assume that bureaucrat's breaks their indifference by following their investigation.

Finally, consider the politician's determination of the bureaucrat's contract. Recall that the politician is trying to maximize the probability that the median citizen receives the "correct" service while limiting monitoring costs. As is clear from (7), the determination of the marginal legible citizen, $\tilde{\theta}$, will depend on the monitoring rates specified in the contract.

Consider first the case when the median citizen cannot be incentivized to complain, when $\theta_M > 1$. This means that even if the politician were to remedy citizen complaints with probability 1, the act of complaining is still too costly for the median citizen. Substituting the relevant monitoring rates, $\rho(1, 0)$ and $\rho(0, 0)$, into the politician's objective and maximizing yields monitoring

rates of $\rho(1, 0)^* = \rho(0, 0)^* = 1 - q - pe$ in the absence of complaint, and monitoring rates of $\rho(1, 1)^* = \rho(0, 1)^* = 0$ if a citizen were to complain. Substituting these monitoring rates into (8), the politician must set $\Delta \geq \frac{d}{p(1-p-q)}$ to incentive the bureaucrat to exert effort. This is only possible when the bureaucrat has very little insulation from the politician, which corresponds to $\bar{\Delta} = \bar{\Delta}_H$.

Second, consider the case when the median citizen can be induced to complain if wrongly denied the service. Such a citizen will complain when they are eligible for the service but denied by the bureaucrat. Substituting the relevant monitoring rates into the politician's objective and optimizing yields $\rho(0, 1)^* = 1$, $\rho(1, 0)^* = 1 - q - pe$, and $\rho(0, 0)^* = \rho(1, 1)^* = 0$. However, per the bureaucrat's incentive compatibility constraint in (9), if the politician sets these monitoring rates, any bureaucrat of quality $q < 1$ will always accede to a citizen of type $\theta \leq 1$, by allocating $a = 1$ regardless of their investigation because $1 - q - pe < \frac{1-q-pe}{q+ep}$. This is a manifestation of the "truth-telling" problem identified by Prendergast (2003). However, the problem also manifests in a second form with a heterogeneous population of citizens. When serving an illegible citizen, a bureaucrat will only face the prospect of monitoring when she allocates $a = 1$, since $\rho^*(0, 0) = 0$. As such, when any non-zero effort incentives are provided, the bureaucrat is better off always denying an illegible citizen. Since the politician values accurately serving the median citizen, the capacity loss from the former problem (acquiescence to a prospective complainant) is of concern, but the latter (denial of an illegible citizen) is not.

The politician can do better than allowing the bureaucrat to accede to every prospective complainant by employing one of two strategies. First, they can eliminate incentives by setting $\Delta = 0$. This allows the politician to monitor at these optimal rates. If the bureaucrat does not fear punishment, they will always allocate the service in line with their investigation. However, when $\Delta = 0$, the bureaucrat will not exert effort ($e = 0$), which reduces the accuracy of the initial service allocation.

Alternatively, the politician can change their monitoring rates, while maintaining effort incentives, to prevent the bureaucrat from acceding to a prospective complainant. Maximizing the

politician's objective subject to the incentive compatibility constraint in (9) reduces monitoring rates when a subject is denied the service to $\rho(0, 1)^* = \frac{q+p}{q+p+(1-q-p)^2}$, and increases monitoring rates when the service is granted to $\rho(1, 0)^* = \frac{1-q-p}{q+p+(1-q-p)^2}$. This second strategy is only available when a politician can impose sufficient effort incentives, when $\bar{\Delta} \geq \bar{\Delta}_M$.

Relative to the incentive-free contract, the politician therefore faces a trade-off between less efficient monitoring and inducing bureaucratic effort. If bureaucratic effort increases accuracy enough—when p is sufficiently high—the politician prefers to provide incentives. Denote $\hat{p}(q)$ as the solution to:

$$E[U_P(\rho(0, 0) = 0, \rho(0, 1) = 1, \rho(1, 0) = 1 - q, \rho(1, 1) = 0, \Delta = 0)] = E[U_P(\rho(0, 0) = 0, \rho(0, 1) = \frac{q+p}{q+p+(1-q-p)^2}, \rho(1, 0) = \frac{1-q-p}{q+p+(1-q-p)^2}, \rho(1, 1) = 0, \Delta \geq \Delta_M)],$$

expressed as a function of q . When $p \geq \hat{p}(q)$ the politician prefers the contract with effort incentives even though she must monitor at a higher intensity. When $p < \hat{p}(q)$, the politician prefers the effort incentive-free contract. Inspection of the optimal monitoring rates in response to citizen complaints ($\rho(0, 1)$) shows that with bureaucratic effort incentives, fewer types of citizens are legible, since $\frac{q+p}{q+p+(1-q-p)^2} \leq 1$.

Finally, consider the case in which $\theta_M \in (\frac{q+p}{q+p+(1-q-p)^2}, 1]$. In order to incentivize both bureaucratic effort and citizen complaint, the politician must increase the monitoring rate to induce the median citizen to complain when wrongly denied the service. But to prevent the bureaucrat from acceding to the citizen, they must simultaneously increase the rate at which they monitor cases when the service is granted and the citizen does not complain, to satisfy (9). Incrementing the rate of monitoring is costly to the politician and can only be sustained when the returns to bureaucratic effort are sufficiently high. I denote the threshold at which a politician in this interval is indifferent to providing effort incentives as $\bar{p}(q)$, as in the previous case. When $p \geq \bar{p}(q)$, the politician opts for a contract with information and incentives; when $p < \bar{p}(q)$, the politician adopts the contract with information but no incentives ($\Delta = 0$). Note that because inducing effort requires even higher rates of monitoring by a politician of this type, $\bar{p}(q) \geq \hat{p}(q) \forall q$.

In describing equilibrium contracts throughout this paper, I emphasize two qualitative features

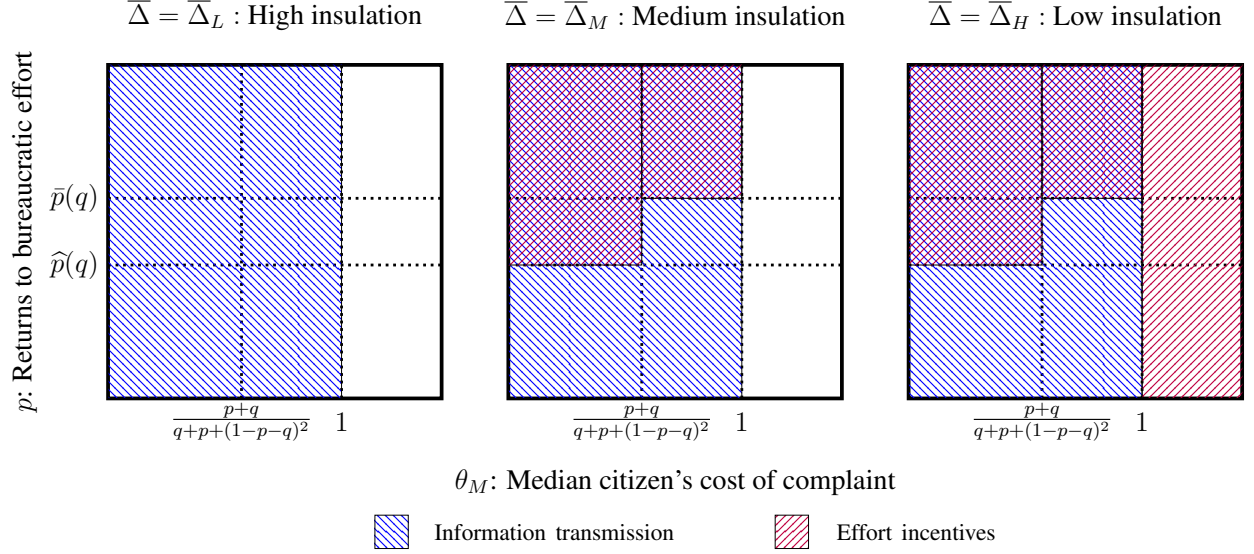


Figure 2: Equilibrium contracts. The blue regions show that when $\theta_M \leq 1$ all contracts incentivize information transmission by monitoring at higher rates in response to complaints. In the purple regions, politicians incentivize bureaucratic effort by setting Δ sufficiently high. These effort incentives are possible only when bureaucrats lack sufficient insulation.

of contracts. First, a contract incentivizes information transmission if politicians audit at higher rates in the presence of a complaint than they do without a citizen complaint. Formally, this occurs when $\rho(0, 1) > \rho(0, 0)$. Second, the politician provides effort incentives for the bureaucrat whenever $\Delta > 0$. Proposition 1 characterizes the equilibrium contracts.

Proposition 1. *Equilibrium contracts:*

(i) When $\theta_M > 1$ the politician implements a contract that does not incentivize information transmission. The contract provides effort incentives if and only if $\bar{\Delta} = \bar{\Delta}_H$.

(ii) When $\theta_M \in (\frac{p+q}{q+p+(1-p-q)^2}, 1]$ the politician implements a contract that incentivizes information transmission. The contract provides effort incentives if and only if $p > \bar{p}(q)$ and $\bar{\Delta} \in \{\bar{\Delta}_M, \bar{\Delta}_H\}$.

(iii) When $\theta_M \leq \frac{p+q}{q+p+(1-p-q)^2}$ implements a contract that incentivizes information transmission. The contract provides effort incentives if and only if $p > \hat{p}(q)$ and $\bar{\Delta} \in \{\bar{\Delta}_M, \bar{\Delta}_H\}$.

(All proofs in appendix.)

Figure 2 depicts the qualitative features of the contracts in Proposition 1 graphically across

the parameter space. Each panel shows the contracts that emerge at a given level of bureaucratic insulation (high, medium, or low). Recall that bureaucratic insulation constrains the magnitude of effort incentives that can be imposed on bureaucrats, $\bar{\Delta}$. The x -axis is the median citizen's cost of complaint and the y -axis plots the returns to bureaucratic effort in terms of improved accuracy in service allocation, p . Three findings are of note. First, there exist contracts with information transmission incentives, bureaucratic effort incentives, both incentives, or neither incentive. Second, the use of citizen information can support bureaucratic effort incentives at higher levels of bureaucratic insulation. Finally, effort is not uniformly preferred in the presence of information transmission. This is because politicians have to monitor at higher rates—with higher cost—to prevent the bureaucrat from acceding to a prospective complainant.

4 Oversight and Implementation Capacity

I proceed by formalizing the definition of implementation capacity. Specifically, implementation capacity is a measure of the state's ultimate ability to match service outputs to the unknown eligibility of each citizen in a population. Given the definition of Y as an indicator for the match between an allocation and the service provided, capacity is given by $E[Y]$, where the expectation is evaluated over both a citizen's eligibility ω , and their type θ .

Definition 1. *State Implementation Capacity:* State implementation capacity is the rate at which the ultimate service provided is matched to each citizen's eligibility across the population, formally $E[Y]$.

As is clear from Definition 1, implementation capacity is not explicitly defined in terms of the amount of services given to a population or their distribution across the population, only the match between the allocation and a citizen's eligibility. Because capacity is defined in terms of the ultimate service provided, the measure combines both the bureaucrat's allocation and the politician's monitoring strategy. As such, capacity incorporates bureaucratic effort, the bureaucrat's determination of whether to follow their investigation, the information received from citizen complaints, and the rate at which the politician recovers the correct allocation via monitoring.

The contracts characterized in Proposition 1 also provide implications for the distribution of state services across the population. To this end, it is also useful to examine $E[a^\dagger]$, the expectation of the ultimate allocation received by a citizen, as a measure of distributional outcomes.

Table A1 reports conditional conditional expectations measuring implementation capacity and distribution by citizen type (θ). By conditioning on citizen type, the calculations in this table clarify several insights. First, the mapping between institutions (oversight contracts) and the outcomes of interest—capacity and distribution—depends critically on societal composition. In particular, any of the contracts that incentivize citizens to provide information lead to different levels of implementation capacity and service provision across different segments of the population, when some citizens become (endogenously) illegible. Additionally, these calculations show that implementation capacity can only be achieved when bureaucrats can perfectly allocate the service. This observation speaks to the importance of the agency problem that I characterize.

Remark 1. *Bureaucratic quality and implementation capacity: Perfect bureaucratic quality, $q = 1$, is a sufficient condition to achieve complete implementation capacity, $E[Y] = 1$. Complete implementation capacity cannot be achieved under any contract if bureaucratic capacity is incomplete, $q + p < 1$.*

When bureaucratic quality is perfect, $q = 1$, it is impossible (and unnecessary) to provide the bureaucrat with effort incentives. Contracts with or without information transmission can be implemented in equilibrium and both yield observationally equivalent behavior since the bureaucrat never wrongly denies the benefit and, as a result, the citizen never complains. It is also possible to achieve perfect implementation capacity if: $q + p = 1$, the whole population could be induced to complain, and it were feasible to provide effort incentives to the bureaucrat. The remainder of the paper considers the remaining cases—those consistent with empirical observation—in which bureaucratic capacity is limited ($q + p < 1$).

Consider the relationship between oversight institutions and implementation capacity. Figure 3 provides a visualization of state implementation capacity under the contracts characterized in Proposition 1. The y -axis, $E[Y|\theta]$ measures the probability that the ultimate (post-monitoring)

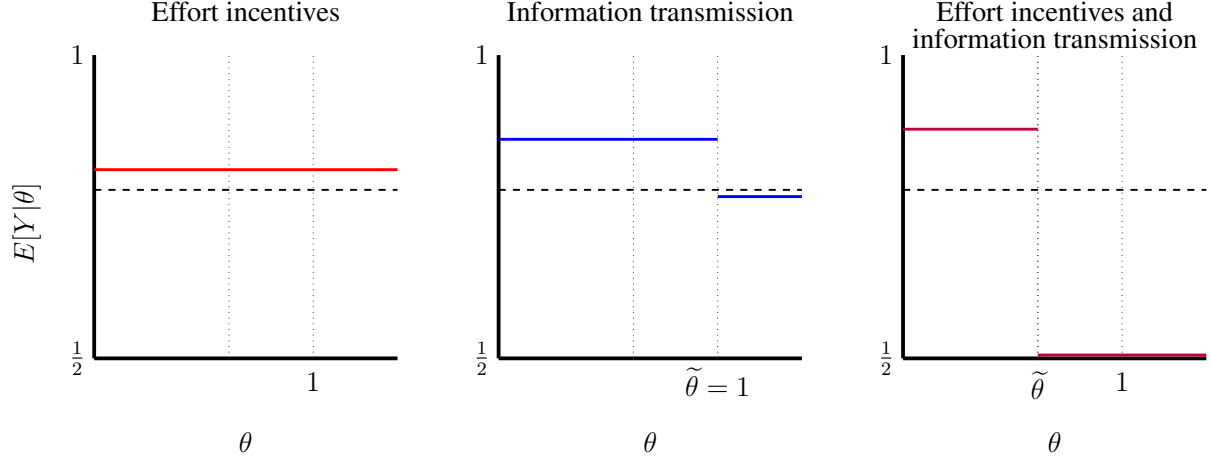


Figure 3: State implementation capacity conditional on citizen type, θ . The black dashed horizontal line measures capacity under contract without information transmission or effort incentives, and serves as a benchmark. The marginal legible citizen in the contracts with information transmission is given by $\tilde{\theta}$.

allocation matches the citizen's eligibility under each contract. The horizontal dashed line serves as a benchmark and depicts the level of implementation capacity under the contract without information transmission or bureaucratic effort incentives. Each panel of the graph plots $E[Y|\theta]$ for a different contract. Three findings are of note. First, in the absence of information transmission, effort incentives uniformly increase capacity. Second, information transmission increases the state's capacity to serve those that can complain, while decreasing its capacity to serve those that cannot. Third, the combination of both incentives magnifies the consequences of information alone: it yields higher capacity for all citizens that are induced to complain while minimizing the state's capacity to serve citizens who will not complain.

As is evident from Figure 3, state implementation capacity, $E[Y]$, can be expressed as the weighted average of $E[Y|\theta]$ over the distribution of θ . One immediate implication is that increases in capacity for legible populations generated by monitoring on the basis of complaints *reduce* the state's capacity to accurately serve the population that cannot complain. As such, the use of citizen complaints has an ambiguous effect on capacity, depending on the proportion of citizens that can complain. Proposition 2 shows that using information volunteered by citizens can only increase capacity when a sufficient share of the population can be induced to complain when wrongly denied

the service.

Proposition 2. *Information transmission and capacity:* *There exists a threshold, $\lambda \in [0, 1]$, for which $F(\tilde{\theta}) \geq \lambda$ implies that monitoring on the basis of citizen complaints weakly increases state capacity. If $F(\tilde{\theta}) < \lambda$, monitoring on the basis of complaints decreases state capacity.*

It is important to note that when the politician targets the median citizen—as assumed in the baseline model—a contract with information transmission but no incentives will increase implementation capacity. This is because the politician would only incentivize complaints (information) if the median citizen could be induced to complain (which implies that $F(\tilde{\theta}) \geq \frac{1}{2}$ and $\frac{1}{2} \geq \lambda$).⁴ In contrast, the contract with information transmission and effort incentives could increase or decrease capacity even when the politician targets the median citizen.

The relationship between information transmission on implementation capacity is ambiguous because incentivizing information leads to less accurate policy implementation for illegible populations who cannot be induced to complain. While capture of the state by individuals or groups has been forwarded as corrosive to state capacity in different domains (Bardhan, 2002; Suryanarayan, 2020), Figure 3 suggests a novel mechanism underlying state capture. By incentivizing some citizens to provide information to the state, endogenously legible citizens procure more accurate service provision at the expense of the accuracy of services rendered to their illegible counterparts. The tradeoff between the informational benefits of citizen complaints and capture generates the ambiguous result in Proposition 2.

How do bureaucratic effort incentives influence capacity? From Figure 3, it is clear that in the absence of information transmission, effort incentives increase capacity by increasing bureaucratic effort and accuracy. Specifically, the inclusion of bureaucratic effort incentives alone yields weakly higher capacity for all citizens, and thus the population as a whole. However, the effect of incentives is ambiguous in the presence of information transmission. Relative to a contract with only information transmission incentives, a contract with both incentives introduces two counter-

⁴However, if a politician who was targeting a smaller subset of the population chose to incentivize information transmission (without effort incentives), this contract could increase or decrease implementation capacity.

vailing effects. Most obviously, effort incentives can increase the accuracy of targeting for legible citizens. Less obviously, adding effort incentives reduces the share of legible citizens from $F(1)$ to $F(\tilde{\theta})$, where $\tilde{\theta} \leq 1$. This occurs because the contract addresses the bureaucrat’s incentive compatibility problem in (9) by reducing the rate at which complaints are monitored and redressed. This reduction in monitoring rates (weakly) shrinks the share of legible citizens in the population. Thus, while capacity is higher for these legible citizens with bureaucratic effort incentives, these gains come at a cost of creating more illegible citizens and minimizing the state’s ability to deliver services to this share of the population.

This analysis suggests that the use of citizen information and effort incentives in bureaucratic oversight is apt to have effects that are *heterogeneous* in sign and magnitude on state implementation capacity in different contexts. Figure A2a depicts this heterogeneity in the effect of information transmission across the parameter space. It suggests that policy interventions like information and communications technology (ICT) platforms that refocus oversight effort toward “fire alarms” should have different effects in places where the underlying potential legibility of the population is different. Where many citizens could be induced to complain, these programs will *increase* implementation capacity; where too few citizens could be induced to complain, these programs will *decrease* implementation capacity. The use of effort incentives for bureaucrats alongside such information transmission can compound these harms and is particularly detrimental to state capacity in settings where few citizens are legible.

5 Inequality

While oversight institutions have implications for capacity, they also influence the distribution of the service across a population. To this end, I proceed by considering the relationship between the types in a population—in terms of costs of complaint—and the distribution of state services. The service in question, a^\dagger , would be given to half the population if capacity were complete because $\Pr(\omega = 1) = \frac{1}{2}$.⁵ However, because ω is independent of θ , when the service is “perfectly” allocated, there are no differences in likelihood of receiving the service as a function of θ . The

⁵It is straightforward to see that the Gini coefficient on an accurately-allocated service is equal to $\frac{1}{2}$.

focus here is how inequality can emerge as a function of citizen type (cost of complaint), θ , under the contracts enumerated in Proposition 1. As such, I develop a metric of inequality that abstracts from inequality generated by the variation in eligibility, ω .

The metric of inequality used to measure inequality as a function of θ is depicted geometrically in Figure 4. Specifically, I examine the share of total services received by each type of citizen. Note that under each of the contracts, there are at most two levels of ultimate service provision $E[a^\dagger|\theta]$. Moreover, under any contract, moving from a citizen of type $\theta = \theta'$ to a citizen of type $\theta = \theta''$ where $\theta' < \theta''$ implies that $E[a^\dagger|\theta'] \geq E[a^\dagger|\theta'']$. On the graph, the x -axis is the CDF of θ , $F(\cdot)$ and the y -axis is the cumulative share of service (a^\dagger) delivered to citizens with lower θ 's. The area of the shaded triangles thus represents the proposed metric of inequality, type-attributable inequality (TAI), defined formally in Definition 2. I double this area so that the measure ranges from 0 to 1.

Definition 2. Type-attributable inequality (TAI) measures inequality in the expectation of services provided as a function of citizen cost of complaint, θ . It is given by the formula:

$$TAI = 2\mu_2 \left((0, 0), (F(\tilde{\theta}), \frac{F(\tilde{\theta})E[a^\dagger|\theta \leq \tilde{\theta}]}{F(\tilde{\theta})E[a^\dagger|\theta \leq \tilde{\theta}] + (1 - F(\tilde{\theta}))E[a^\dagger|\theta > \tilde{\theta}]}, (1, 1) \right)$$

where $\mu_2(\cdot)$ represents the area of the triangle defined by the three coordinates. $TAI \in [0, 1]$, and higher values of TAI indicate higher levels of inequality.

Proposition 3 describes the consequences of conditioning oversight on citizen complaints for inequality in access to services. As is evident from Table A1, when a contract precludes responsiveness to complaints, citizens do not complain, even when wrongly denied the service. All citizens then receive the same allocation in expectation. This results in no type-attributable inequality, as is evident in the left panel of Figure 4. In contrast, when politicians adopt monitoring systems that responds to citizen complaints, inequality in the expectation of service allocation emerges. Comparing the information-only contract to any contract with information and effort incentives, the combination of effort incentives and information generates weakly higher levels of inequality than information transmission alone, as is clear from comparison of the center and right panels of

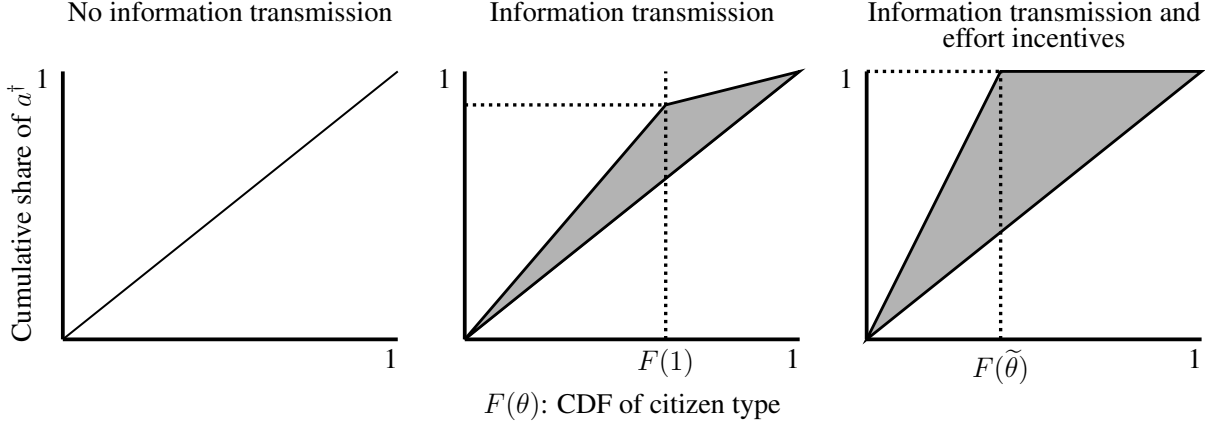


Figure 4: Geometric representation of inequality measure under each contract. The inequality measure, type-attributable quality (TAI), is equivalent to twice the area of the shaded region.

Figure 4.

Proposition 3. Oversight and inequality. *For any $q + p < 1$ and $F(1) \in (0, 1)$, conditioning oversight on citizen complaints introduces inequality in the allocation of the service, a^\dagger , across the population, implying $TAI > 0$. TAI is weakly greater under a contract with information transmission and effort incentives than under the contract with information transmission alone.*

Is inequality in service provision necessarily an undesirable outcome? It need not be. Combining Propositions 2 and 3, there exist regions of the parameter space where the use of information (and possibly effort incentives) could substantially increase capacity, as depicted in Figure A2. These benefits may well outweigh concerns about increased inequality. However, these findings also suggest that there are regions of the parameter space where the use of information can decrease capacity while increasing inequality. Here, the adoption of information transmission incentives seems undesirable. A discussion of the parameters that influence these outcomes is informative.

The canonical outcomes of civil service systems, captured here by higher bureaucratic quality (higher q) and higher bureaucratic insulation (lower $\bar{\Delta}$), reduce the magnitude of the inequalities that are generated by reliance on citizen complaints, as shown in Figure A2b. However, this presents a paradox. States where bureaucratic quality is low or insulation is absent are low are precisely those places where use of citizen information in oversight can deliver the largest gains in

capacity to (endogenously) legible citizens. As such, the distributional considerations highlighted here may be most salient in states with canonically weaker, or lower quality bureaucracies.

6 Extensions and Robustness

I now describe three extensions to better understand how various modelling assumptions drive results about the distributional consequences of oversight. I first relax the assumption of a particularistic politician by considering a politician that maximizes implementation capacity across the population of citizens. Second, I consider the implications of relaxing the assumption that the politician commits to the contract. Finally, I relax the assumption that the citizen values receiving the service regardless of their eligibility by considering a citizen who instead values congruence between the policy and their eligibility.

Politician’s objective. To this point, I have considered a setting in which a particularistic politician maximizes the state’s accuracy to serve the median citizen, net the costs of monitoring. Here I consider the oversight strategies adopted by a politician that instead maximize implementation capacity across the population. To do so, I depart from the assumption that monitoring rates are fixed across the population.⁶ In this extension, I model service provision to a heterogeneous population of citizens by considering an infinite number of politician-bureaucrat-citizen interactions across the population of citizens, for which politicians maximize service provision (net the costs of monitoring) to each citizen’s type in each interaction. I assume that the bureaucratic quality and capacity are fixed across all interactions.

Following Proposition 1, thus, it is clear that for any $F(1) \in (0, 1)$ and $q < 1$, different monitoring rates will be adopted for different citizens. This is evident from inspection of any panel in Figure 2, for a fixed $\bar{\Delta}$ and p . The politician adopts different contracts—here different monitoring rates—for different citizen types in the population. Importantly, this capacity-maximizing contract incentivizes information transmission from some citizens by setting $\rho(0, 1) > \rho(0, 0)$ whenever

⁶Note that if one were to allow a particularistic politician to directly condition monitoring rates on citizen type, the politician would set all monitoring rates to 0 for any citizen for whom $\theta \neq \theta_M$. As a result, bureaucrats would not exert effort for any citizen of type $\theta \neq \theta_M$ and implementation capacity would fall to $E[Y] = q$ for any continuous density f .

any citizen can be incentivized to complain (when $F(1) > 0$).

When there is variation in the legibility of a population, a capacity-maximizing contract necessarily generates type-attributable inequality in the allocation of the service across the population. This is clear from the variation in the levels of $E[a^\dagger|\theta]$, reported in Table A1. Thus, while information transmission from some citizens is necessary to maximize implementation capacity across the population, when not all citizens can be induced to complain, capacity is necessarily uneven.

Proposition 4. *For any $F(1) \in (0, 1)$ and $q < 1$, any capacity-maximizing contract incentivizes information transmission from some citizen types. For any such contract, there exists inequality in expected allocations across the population ($TAI > 0$). However, relative to a uniform application of the most unequal “constituent” contract, conditioning the contract on citizen type reduces inequality (TAI).*

Proposition 4 further finds that the levels of inequality generated by the capacity-maximizing contract are *lower* than those generated by any of the constituent contracts with information transfer when applied uniformly. This occurs because the use of type-specific monitoring rates breaks the capture mechanism. The service provided to illegible citizens is no longer compromised due to oversight institutions that are optimized for legible citizens. This implies that contracts that mandate unequal treatment of citizens by bureaucrats or their principals can *reduce* inequality in outputs. This finding has implications for a burgeoning literature on bureaucratic bias or discrimination. Studies that measure such biases often assert perverse implications (immediate or downstream) of differential treatment of citizens by bureaucrats (e.g., White, Nathan, and Faller, 2015). The present result suggests that with a heterogeneous population of citizens, differential responses by bureaucrats to citizens of different types can actually reduce inequality in outcomes if politicians seek to maximize welfare.

Relaxing commitment by the politician: The baseline model assumes that the politician can commit to monitoring the bureaucrat according to a pre-specified contract. This choice is consistent with the conceptualization bureaucratic oversight as an institutional choice. However, it is worthwhile to ask whether the distributional implications of oversight change if we were to relax

this assumption. Using the same objective as in the previous extension, the analysis in Appendix A3 shows that when politicians can choose their monitoring strategy *after* both service provision and complaint are realized, similar dynamics obtain. As in Proposition 4, all contracts generate inequality in service allocations across the population ($TAI > 0$) when the population varies in its willingness to complain (when $F(1) \in (0, 1)$).

In contrast to Proposition 4, the use of information—in the absence of commitment—can increase or decrease implementation capacity. When bureaucratic quality is sufficiently low, the politician may not be able to prevent the bureaucrat from acceding to a prospective complainant when the politician chooses monitoring rates and penalties *ex-post*. When the bureaucrat always accedes by granting the service to legible citizens (ignoring any investigation that suggests ineligibility), implementation is *less accurate* among legible than among non-legible citizens. This finding contrasts directly with all of the above findings that suggest that legible citizens are more accurately served than illegible citizens. With sufficiently high bureaucratic quality, the use of citizen complaints to remedy service provision increases implementation capacity. These results vary subtly from the baseline results and those in Proposition 4, but show that these distributional outcomes do not depend entirely on the assumption of commitment by the politician.

Citizen’s preferences: I relax the tension between the citizen’s preference to receive the service (regardless of their eligibility) and the policy objective which seeks to match the service allocation to the citizen’s eligibility. To do so, in an extension in Appendix A3, I assume that the citizen instead values congruence between their eligibility and their ultimate service allocation, maintaining the assumption of a particularistic politician as in the main model. The obvious first-order consequence of this re-specification of the citizen’s preferences is that a citizen with sufficiently low cost of complaint will complain about either type of bureaucratic error: receiving the service when ineligible or being denied the service when eligible. In the main model, the citizen only complains about being wrongly denied the service when eligible (when $\omega = 1$). When legible citizens report any error, they reveal their eligibility to the politician through complaint.

When citizens will reliably report errors regardless of their eligibility for the service, a politi-

cian will use only “fire alarms” to monitor. This stands in direct contrast to the contracts that incentivize information transmission in Proposition 1, which use both “fire alarms” (monitoring based on complaints) and “police patrols” (monitoring in the absence of complaints). The citizen’s willingness to complain in both states means that the bureaucrat cannot hide from oversight by acceding to a (legible) citizen. This means that there is no longer a tradeoff between optimal monitoring propensities and effort incentives, so the politician will offer effort incentives if bureaucratic insulation is sufficiently low (when $\bar{\Delta}$ is sufficiently high).

Proposition A2 summarizes the distributional consequences of equilibrium contracts in this setting. Consistent the result in Proposition 2, information transmission has an ambiguous effect on state implementation capacity. Reliance on monitoring by fire alarms increases capacity to serve endogenously legible citizens while reducing capacity to serve illegible citizens. In contrast to Proposition 3, however, when citizens’ prefer to receive the service only when eligible, monitoring by fire alarms does *not* increase TAI. When citizens value accurate allocation of the service, complaints increase the accuracy of the allocation from q to 1, but not the share of the service received by legible citizens is equivalent to their share in the population (i.e., $F(\tilde{\theta})$). In this sense, legible citizens’ *ex-ante* expected utility is higher than that of illegible citizens whenever politicians monitor on the basis of complaints.

7 Implications for the Comparative Study of Bureaucracies

This model provides three novel implications for the empirical study of bureaucratic politics. First, the model shows that personnel institutions (e.g., civil service systems) interact with social structure to produce distributive outcomes. Second, I show that recent initiatives to *exogenously* increase responsiveness to citizen complaints may facilitate or hinder service provision. Third, my results show that better state information does not necessarily facilitate better governance or service delivery.

Personnel institutions interact with social structure: The model suggests three important variables that produce different distributional outcomes: bureaucratic (non)-insulation ($\bar{\Delta}$ in the

model), bureaucratic quality/capacity ($q + p$ in the model), and the distribution of costs of complaint in a population of citizens ($F(\cdot)$ in the model). The first two variables are closely associated with effective civil service systems (Grindle, 2012; Huber and Ting, 2021). Specifically, tenure protections of civil service systems insulate bureaucrats from politicians and merit exams increase bureaucratic quality. Recent empirical work uses careful analysis of single cases to connect institutional variation in personnel policy—patronage versus civil service systems—to service outputs (Aktari, Moreira, and Trucco, 2020; Toral, 2021; Colonnelli, Prem, and Teso, 2020).

This paper suggests that the institutional variation in personnel systems *interacts* with the social structure of a society to affect “who gets what” state services.⁷ Here, social structure is represented by the distribution of costs of complaint. Specifically, I argue that institutional constraints and social structure determine politicians’ choice of bureaucratic oversight institutions (contracts). This helps to articulate the scope conditions of findings from single-context studies.⁸ This model suggests that the adoption of distinct bureaucratic oversight institutions mediates the relationship between better-studied personnel systems and service provision. Oversight institutions, in turn, influence bureaucratic effort, citizen participation (via complaint), and thereby service provision outcomes.

Exogenous interventions to bureaucratic oversight: In the model, politicians design bureaucratic oversight systems—the equilibrium contracts—in order to optimize accurate service provision for the median citizen (or all citizens in the extension). In Propositions 2-3, I show that some contracts can reduce aggregate service provision accuracy and that the use of citizen information generates inequality in access to services when costs of complaint are uneven across the population. In light of poor service delivery, recent interventions by aid donors, NGOs, and academics have sought to increase citizen participation in complaint-making using a variety of interventions and technologies (Grossman, Platas, and Rodden, 2018; Buntaine, Hunnicutt, and Komakech, 2021; Golden and Sonnet, 2021). When implemented in randomized experiments, these interventions

⁷This implication complements recent arguments by Pierskalla et al. (2021) on civil service systems and representation of social groups within the bureaucracy, though the mechanisms are distinct.

⁸For example, the above-cited studies documenting a causal link between patronage hires and public goods provision are concentrated in Brazil, a highly unequal context.

should be viewed as *exogenous* changes in the design of oversight.

My analysis suggests that changing the design of bureaucratic oversight can have varied—and even perverse—consequences for service provision. Consider, for example, a context in which the median citizen faces prohibitively high costs of complaint. Per Proposition 1, in equilibrium, a politician would choose a contract with no information transmission by choosing not to respond to citizen complaints. If an outside party intervened and induced the politician to instead respond to complaints about bureaucrats, the overall accuracy of service provision could *decrease* and inequality would *increase*.⁹ These are, of course, not the only objectives that an outside party or experimenter may have. But they are possible consequences that are worthwhile to think through when planning this form of participatory intervention.

State information: States collect information in order to govern their populations (Scott, 1998). Much literature equates more information with higher state capacity (Lee and Zhang, 2016; Garfias and Sellars, 2021). This paper shows that the relationship between the information that a state collects (here, in the form of citizen complaints) and its capacity for implementation of public services are conceptually distinct. Proposition 3 indicates that collecting more information can *worsen* implementation capacity. This occurs because not all citizens can be compelled to provide information. When this is the case, oversight institutions that incentivize information transmission lead bureaucrats and politicians to neglect illegible citizens, worsening service provision. This result suggests that state capacity is multidimensional. More importantly, different dimensions of capacity—e.g., informational capacity and implementation capacity—may be in tension.

8 Conclusion

This paper makes a new connection between the design of bureaucratic oversight and the distribution of state services. Specifically, I examine how oversight institutions affect a states capacity to accurately match a service to eligible recipients. When principals use information from citizens to monitor bureaucrats via “fire alarms,” they make some citizens legible by giving them incentives

⁹Relatively low levels of complaint-making in some experiments are consistent with a small legible population, even when costs of complaint are low, as in most ICT interventions.

to complain. However, some citizens may remain illegible—and thereby unwilling to complain—when complaint is costly. The use of information about citizens gleaned from complaints improves capacity of the state to accurately serve legible citizens, but limits its capacity to accurately serve illegible citizens. These dynamics generate inequality in the distribution of services across the population.

This theory speaks to many potential empirical applications. It emphasizes a broader role for the study of implementation in distributive politics. Recall that in the model, the service is *not* targeted to citizens on the basis of observable characteristics (i.e., costs of complaint). Despite this lack of targeting, the politician’s choice of contract generates substantial variation in “who gets what” as a result of varying citizen complaint-making behaviors. This means that in the large body of work that measures the distribution of state resources through budgetary appropriations, the inequalities in service provision that I document would generally be undetectable in the data. As such, these results suggest that measuring only targeting in appropriations stage can yield misleading inferences about distributional outcomes. Further empirical research can strengthen our ability to measure the implementation process that I describe by developing measures of (i) regulation and use of citizen complaints and (ii) latent costs of complaint.

This article views implementation capacity as the outcome of an interaction between a government and its subjects. By considering heterogeneity among citizens in terms of willingness to provide information, I provide a novel institutional foundation for observed unevenness in implementation capacity across the population or territory (e.g., Scott, 1998; Soifer, 2015). The model proceeds to link this unevenness to the co-occurrence of inequality in the distribution of state services. In so doing, it suggests novel limits on states’ ability to develop greater capacity for policy implementation without generating disparities in the distribution public goods and services.

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