

Bureaucrats and Politicians:

How Does Electoral Competition Affect Bureaucratic Performance? *

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October 15, 2014

Abstract

This paper explores the relationship between electoral competition and the performance of bureaucrats in executing policies chosen by politicians. Conceptually, there are two offsetting forces: on one hand, due to re-election concerns, politicians in high competition constituencies have greater incentives to monitor the bureaucrat. On the other hand, incumbents in low competition areas have longer tenures and hence are *able* to provide better incentives to bureaucrats. In order to see which of these mechanisms drives the relationship, we construct a unique dataset from India by matching details of bureaucrat's background and past work histories with individual local public good projects under the MPLAD scheme for the period 1999-2009. This allows us to directly observe how long each bureaucrat takes to approve each project. Moreover, in India, administrative boundaries do not perfectly overlap with the electoral constituencies. We can therefore observe the performance of the same bureaucrat across multiple politicians. We exploit this fact to control for unobserved ability of bureaucrats. Our main results show that in constituencies with party strongholds, projects are sanctioned 11% faster. However, as the probability of winning goes to zero due to an exogenous information shock, the average sanctioning time increases by 13%. Taken together, these two results reject the hypothesis that re-election concern is the dominant channel through which competition affects bureaucratic performance. Instead, the results are consistent with the following mechanism: the politicians in low competition constituencies have longer tenures and therefore have access to dynamic contracts that provide better incentives to bureaucrats. This in turn improves bureaucratic performance. However, if probability of winning goes to zero, the promise of future rewards are no longer credible and hence bureaucrats shirk.

JEL Classification: D72, D73, H11, H41, H54, H70

*First Draft: Preliminary and incomplete. Please do not cite or quote. I am indebted to Dilip Mookherjee, Andrew Newman, Daniele Paserman and Claudia Olivetti for their constant guidance on this project. I would also like to thank Kevin Lang, Sam Bazzi, Ajayi Kehinde, Michael Manove, Anmol Bhandari and participants of the Development Reading Group and the Empirical Lunch Seminar at Boston University for helpful comments and suggestions. I am grateful to Weiss Family Program Fund for supporting this project. Yike Zhang, Whitney Dudley and Yuting Li provided excellent research assistance. All errors are mine.

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1 Introduction

Political competition is said to yield benefits to the citizens just as competition in economic markets yields benefits to consumers¹. There is a large theoretical literature and an increasing number of empirical studies that show that lack of political competition may lead to worse policy outcomes compared to competitive constituencies.² The underlying mechanism that drives these results is that due to re-election concerns, the voters gain influence in disciplining the politicians only when political competition is high.

When there are only two players, politicians and voters, then re-election concern is an important determinant of policy outcomes. In public goods provision, however, there are often three actors - politicians, voters and bureaucrats. While the politicians constitute the legislative arm of government that chooses policies, the bureaucrats comprise the executive arm that implements these policies. The role of bureaucrats becomes especially important when we want to study not only the choice of public goods but also the execution of the projects. Well meaning policies can fail to get the desired results for politicians if they are not implemented properly.

In the above context, the question we address in this paper is: how does political competition affect the performance of bureaucrats? The bureaucrats we have in mind are career civil servants who enter the bureaucracy through a meritorious entrance exam. Since they are non-elected government officials, the only way political competition can affect their performance is through the influence exerted by politicians.

Conceptually, there are two main mechanisms through which electoral competition can impact bureaucratic performance. The first channel has to do with how re-election concerns drive the incentives of the politician to monitor the bureaucrat.³ If an electoral constituency is highly competitive, then the marginal benefit of an additional public good project is high because it can increase the number of votes the politician gets. In this scenario, the politician has a higher incentive to monitor the bureaucrats compared to when there is very little

¹See Bardhan and Yang (2004) for a discussion on this.

²Besley et. al (2010) show that lack of political competition may lead to policies that hinder economic growth. Nath (2014a) shows that in absence of political competition, local elites exert disproportionate influence on the allocation of spending on local public goods. Brown and Hunter (1999, 2004); Lake and Baum (2001) and Hecock (2006) show that competition increases the level of spending.

³The effect of re-election concerns has been studied by Roggers (2014). Using data from Nigeria he shows that politicians in high competition constituencies are more likely to delegate public good projects to autonomous bureaucrats rather than governmental agencies. The autonomous agencies, on an average, perform better and hence he finds a positive relationship between competition and bureaucratic performance.

competitive pressure. Hence, we should observe better performance of bureaucrats in high competition areas.

However, re-election concerns are only a part of the story. The other important mechanism is related to the ability of the politicians to provide incentives to the bureaucrats. This channel gives us the opposite prediction. In low competition constituencies, the incumbents typically have a high probability of returning to office in the next term (assuming no term limits). This is not true of highly competitive areas. Now, since politicians in strongholds are likely to have longer tenures, they have another way of incentivizing bureaucrats that their counterparts in competitive constituencies do not have: promising future rewards. The access to dynamic contracts enables the incumbents in low competition areas to implement higher effort levels and hence we get a negative relationship between electoral competition and bureaucrat's performance.

In addition to the main mechanisms described above, there are two more channels through which electoral competition can affect bureaucratic effort. Both of these are related to ability to monitor but differ from the dynamic contract mechanism. The first one says that more powerful politicians can control the bureaucrats better and powerful politicians are more likely to be in strongholds. The other channel has to do with opportunity costs of monitoring. In closely contested constituencies, the politicians can target swing votes more easily by providing private transfers in exchange of votes.⁴ Since amount of resources that politicians can devote to either monitoring or 'campaigning', the opportunity cost of running after the bureaucrats is higher in competitive areas. We also address these alternative channels in this paper.

We begin our analysis by providing a unified theoretical framework to incorporate all these mechanisms. Extending a canonical efficiency wage model to include these feature, we derive predictions for how political competition affects bureaucratic effort. We then take these predictions to data collected from India and test which of these mechanisms is dominant.

The local public good projects we look at are obtained from Members of Parliament Local Area Development (MPLAD) scheme. Each member of parliament (MP) gets a fixed sum of money to spend on infrastructure projects within his constituency. The politician has full control over the type of project, the cost as well as the location. These projects, however, have to be approved by the bureaucrats in the administrative district where they are to be

⁴Weitz-Shapiro (2010) shows that as political competition increases, the extent of vote buying increases. Khemani (2014) provides evidence for substitution between vote-buying and provision of public goods by politicians in the Philippines.

constructed. We obtained data for bureaucrats from the Department of Personnel and Training (DoPT) in India. This provides us with information about their name, their cadre, their educational background as well as all the past assignments since they joined the civil services. We use the information about their work histories to match the bureaucrats with individual MPLAD projects. This allows us to directly observe the actions of the bureaucrats. We use the time taken by the bureaucrats to sanction the MPLAD projects as our measure of bureaucratic performance.

In order to identify which of the mechanisms is driving the effect of electoral competition on bureaucratic performance, we use two empirical models. The first model compares the sanctioning times of bureaucrats in constituencies that are a party stronghold with those that are not. The variable stronghold is a dummy which takes value 1 if the same party won all four elections prior to our period of study. This is our measure of competition - incumbents in strongholds have a high probability of winning again and hence face very little electoral pressures.

One of the concerns we need to address is that of selection: politicians in strongholds may be able to get better performing bureaucrats and that may drive the results rather than incentives/ability of politicians to monitor the bureaucrats. In order to control for selection, we take advantage of the fact that the administrative and electoral boundaries do not perfectly overlap in India. A single administrative district may have two or three electoral constituencies that overlap with it. Since the bureaucrat sits in an administrative district and the politician is the elected representative of the electoral constituencies, we have situations where one bureaucrat may deal with two or even three politicians. This allows us to use bureaucratic fixed effects to deal with the selection problem.

In addition to comparing performance across strongholds and non-strongholds, we use another econometric model that uses an exogenous variation in probability of winning to look at the effects of competition on bureaucrat's performance. The informational shock we take advantage of is the announcement of changes in reservation status of some of the constituencies in India as a result of the delimitation exercise. When the electoral boundaries were re-defined, the population shares of SC/STs changed as well, resulting in changes in the reservation status accordingly. The announcement of the changes was made in December 2007. The incumbents who were affected by this change knew that their probability of winning in 2009 was zero. The politicians in the control group were not affected by the news and hence their perceived probability of winning do not change. Hence, this event causes an exogenous change in the political competition in the treated group and there is no change in the competitive pressures for the control group. We compare the bureaucratic performance in the two groups before

and after this shock. The differences-in-difference (DID) strategy gives us a causal effect of change in political competition on the bureaucratic performance.

Our main results show that in constituencies with party strongholds, projects are sanctioned 11% faster. This means that bureaucrats perform better in constituencies where probability of winning for politicians is higher. On the other hand, as the probability of winning goes to zero due to the information shock, the average sanctioning time increases by 10%. Taken together, these two results reject the re-election concerns hypothesis, the cost of monitoring as well as the powerful politician mechanisms. However, they are consistent with the dynamic contracts mechanism: the politicians in low competition constituencies have longer tenures and therefore have access to dynamic contracts that provide better incentives to bureaucrats. This in turn improves bureaucratic performance. However, if probability of winning goes to zero, the promise of future rewards are no longer credible and hence bureaucrats shirk.

Is faster approval of project desirable? If bureaucrats are shirking and causing unnecessary delays, then providing incentives for them to speed up approvals may be desirable. However, if politicians in strongholds are causing the bureaucrats to take shortcuts and sanctioning projects without taking account of feasibility, environmental clearances etc. then getting things done faster may not be better. We examine this issue and find that the faster sanctioning times in strongholds are not driven by ‘rubber-stamping’ but by reduction in unnecessary delays.

Our results contribute not only to our understanding of how politician-bureaucrat interactions affect policy implementation but also to the very role of political competition. It is argued that in autocracies, the politicians are able to get things done because of centralized power. In democracies, on the other hand, there are too many political constraints and this slows thing down. Our results suggest that it is the inherent political instability in democracies that contributes to slower execution of policies. Higher political turnover takes away an additional channel that politicians in autocracies can use to control the bureaucrats: dynamic incentives.

2 Institutional Background

2.1 The Bureaucrats

The bureaucrats I study in this paper are the ones that belong to the Indian Administrative Service (IAS). These IAS officers are federal government employees and are recruited through a nationwide competitive examination conducted by the independent Union Public Service

Commission. A few IAS officers within each state may be recruited through the State Civil Services. The latter ones are posted only within the state and typically do not hold positions in the ministries or departments in New Delhi. ⁵

Once the direct recruits are chosen, they all undergo training together. Thereafter, they are assigned to one of the states in a quasi-random manner and this assigned state is known as their Cadre. They then go to their Cadre and train under superiors for about four to five years in different districts. They are then assigned to district as the head administrator. This post is known as Collector or District Magistrate. The Promotees typically become IAS officers pretty late in their careers.

As collectors, the bureaucrats are responsible for law and order, collection of land revenue and various taxes, land acquisition and land assessment, crisis administrator, and as the development officer. The main role of the Collector we are interested in is that he is Ex-officio Chairman of District Rural Development Authority Agency which carries out the various developmental activities. Any development project that has to be executed in the district *has* to be approved by the collector.

The IAS officers are Civil Servants and as per the directives of the Constitution of India, they cannot be hired or fired by the politicians. The bureaucrats are assigned to various posts in each state by the corresponding Department of Personnel and Training. The executive order of each assignment is signed by the top bureaucrat of each state known as the Chief Secretary. There is some evidence, however, that politicians may influence the assignments of the bureaucrats. Iyer and Mani (2012) show that when the leader of the party in power in a state changes, the probability of reassignments of bureaucrats goes up. Hence, politicians may use the treat of reassigning the bureaucrats to different posts as a control mechanism. We later explore how political competition affects the ability of the politicians to use these threats as a control mechanism.

2.2 The Politicians

India has a federal parliamentary system of democracy. The parliament is the supreme legislative body. There are two houses in the parliament - the lower house is called the Lok Sabha (House of the People) and members of this house are directly elected by the citizens of India. The upper house is called the Rajya Sabha (Council of States) and the members of

⁵The officers that enter the IAS through the UPSC exam are referred to as ‘Direct Recruits’ and the ones that come from the State Civil Services are called ‘Promotees’.

this house are elected by the state legislative assemblies.

Our analysis will focus on the members of parliament (MPs) in the Lok Sabha. There are 543 Lok Sabha constituencies. In accordance with the Constitution, elections are held every five years where candidates are selected through universal suffrage. India has a plurality system where the candidate with the highest vote share wins (also called "first-past-the-post"). There is a multi-party system and candidates are allowed to contest independently as well.

The counterparts of MPs in the state are the Members of Legislative seemly (MLAs). They are representatives of assembly constituencies within a state. Geographically, each assembly constituency is a subset of parliamentary constituency. On an average, for every Lok Sabha constituency, there are eleven assembly constituencies. The leader of the party that wins the most number of seats in the legislative assembly is called the Chief Minister. An MP who belongs to the same party as the chief minister is likely to have a higher bargaining power vis-a-vis the other politicians. We will elaborate this point when we discuss our identification strategy.

2.3 The MPLAD Scheme

The local public goods projects that we consider are the ones provided under the Scheme MPLAD (Member of Parliament Local Area Development Scheme) in India. Under this scheme, each MP is given a fixed budget of Rs. 20 million (0.5 million USD) per year to spend anywhere within his constituency. The money can only be spent in asset building projects. This means that politicians cannot hire employees, give grants and loans, or purchase inventory or stock with this money. Moreover, the guidelines say that acquisition of land, building assets for individual benefits and building religious structures is not permissible. In short, most of the permissible works are construction-based and are for infrastructure development within the constituency.

One of the features of these projects that is particularly relevant for this study is that these projects are highly visible. According to the guidelines, when the projects are completed, the MP who funded the project has to visit the work site and unveil a plaque that gives details of the project. The name of the MP is written on the plaque along with how much money was spent on the project and how long it took for the project to be completed. The fact that the public knows the details and the name of the MP, the politicians have an incentive to make sure the projects are completed in a timely manner. This provides us a very nice set up as we can test which politicians care more about their image. Since the projects are executed

by the bureaucrats, we exploit this feature to see whether political competition affects the performance of bureaucrats in executing these visible projects.

2.4 The Bureaucrat-Politician Interaction

MPLAD is a unique scheme where we observe the decision of each politician separately and can also observe the performance of bureaucrats. When the money from the fund is allocated to the politicians, they send a recommendation letter to the Collector. This recommendation letter details the following: [1] the type of projects the politician wants (roads, drinking water, education etc) [2] the cost of each project and [3] the location of each project. The total cost of various projects recommended by the MP has to be within the fixed budget of Rs. 20 million. Hence, the politician has complete control of what to choose, where to build and how much to spend on each project.

Once the bureaucrat receives the recommendations for the project, the project goes through a sanctioning process. The collector chooses the implementing agency and sends the proposal to the chief engineer. The chief engineers sends the junior engineers to go and inspect the proposed project site and give a technical feasibility report. The chief engineer then prepares the budget and a financial feasibility report and sends it back to the bureaucrat. The collector review the structural and financial report and then approves the project if everything is sound. The time between receiving the recommendation and approving the project will be henceforth referred to as the time taken to sanction the project.

The collector has the full authority over the sanctioning of the project and the politician has no say in it. Over the period of our study, the official guidelines suggest that the number of days taken to sanction should not exceed 45 days. Once project is sanctioned, the engineers and lower level bureaucrats execute the project with the Collector having full control over the implementation process.

The bottom-line is that the members of parliament depend completely on the bureaucrat to carry out the projects that will ultimately have the politician's name on it. This provides incentives to the politician to monitor the bureaucrat as his image is at stake.

2.5 Administrative and Electoral boundaries

The electoral boundaries in India are drawn on the basis of population. The idea is that each politician should represent the same number of citizens in the parliament. The Delimitation

Commission of India is responsible for drawing the electoral boundaries and the demarcation is based on the population figures from Census of India. Before our period of study, the Delimitation Commission was set up in 1952, 1963 and 1973. In a constitutional amendment, the government had suspended delimitation in 1976 until after the 2001 census so that states' family planning programs would not affect their political representation in the Lok Sabha. The report of census 2001 came in 2003 and the new boundaries were applicable only in 2009. Hence, during the entire period of our study, 1999-2009, the electoral boundaries were not altered.

Figure 1 depicts the boundaries of the electoral boundaries. As we can see, the size of the constituencies are not uniform, some are large and some are small. The smaller constituencies are in areas where the density of population is higher. This is especially true for Uttar Pradesh in the north and West Bengal in the west.

In contrast to electoral boundaries, the administrative boundaries are drawn based on land area. The idea behind this is that each district collector should be responsible for land revenue, law and order and development works for the same area of land. Unlike electoral boundaries, district boundaries do not change over time. There are cases where district boundaries are redrawn and this happens when the states split into two. In 1998, three of the largest states in India split and due to this districts also split into smaller sizes. However, this happened before our period of study and does not affect our analysis.

Since the electoral boundaries and administrative boundaries are drawn according to different dimensions, these boundaries do not perfectly coincide. One electoral constituency may overlap between two administrative district and vice versa. Figure 2 illustrates a possible district-constituency overlap situation where one bureaucrat works with three politicians at any given point in time. We exploit this feature to control for unobserved ability of bureaucrats. We provide more details of this once when we discuss the empirical identification strategy.

3 Theoretical Framework

3.1 The Environment

Consider a politician who has a public good project that has to be executed by a bureaucrat. The bureaucrat has to exert an effort to implement the project. Let $e \in [0, 1]$ denote the effort level chosen by the bureaucrat. The output takes values $\pi \in \{0, 1\}$. Putting in higher effort

increases the probability of successfully implementing the project such that $Prob(\pi = 1) = e$.

Each politician has a fixed reward that he gives out to bureaucrats if they put non-zero effort. The bureaucrats are career civil servants and are paid wages exogenously. The politicians cannot hire or fire the bureaucrats. The only way to control the bureaucrat is to influence their re-assignments to different administrative districts (Iyer and Mani (2012)). If the bureaucrats perform well, politicians can reward them by sending them to more prestigious districts.

Let the gross payoff of the bureaucrat be $r(\phi) \in [0, 1]$ where ϕ denotes the extent of electoral competition in the constituency politician represents. We can think of $r(\cdot)$ as the proportion of influential leaders the politician is connected to and can potentially contact in order to get the bureaucrat a plum job. Now, in low electoral competition constituencies, politicians are more likely to have long tenures and develop strong networks. This gives them a higher ability to influence the re-assignment of bureaucrats $\Rightarrow r'(\phi) < 0$.

Putting in effort is costly and the cost is e . The Bureaucrat is monitored by politician with probability $q \in [0, 1]$. Let $l(\phi) \in [0, 1]$ denote the probability bureaucrat assigns to the event that the politician wins in the next election. As the extent of competition is increases, the expected probability of win assigned by the bureaucrat is lower. Hence, $l'(\phi) < 0$.

If the politician sets the bureaucrat's effort to e , then any deviation from this effort level gives a payoff of zero to the bureaucrat. This is because the only profitable deviation from e is no effort since effort is costly and reward is given only if $e' = e$. We normalize the payoff from the outside option to zero. The bureaucrat's payoffs are therefore given by:

$$U^b = \begin{cases} (1 - q)[r(\phi) + l(\phi)r(\phi)] & e' = e \\ r(\phi) + l(\phi)r(\phi) - e & e' \neq e \end{cases}$$

Note that the access to dynamic contract mechanism is captured by the expected future rewards $l(\phi)r(\phi)$. Given that $l'(\phi) < 0$ and $r'(\phi) < 0$, the expected future rewards are higher for bureaucrats in low competition constituencies.

Let $R(e, \phi) > 0$ denote the present value of gross payoffs the politician gets when the project is implemented. If the project is not implemented, he gets a zero payoff. To ensure a unique solution, the payoff function is assumed to be concave in effort: $R_e(e, \phi) > 0$ and $R_{ee}(e, \phi) < 0$. The electoral motives are captured in this gross payoff function: when

$R_{e\phi}(e, \phi) > 0$, it means that the marginal increase payoff when the project is implemented increases as the extent of competition increases. This is exactly what the reelection concern motive would suggest.

Cost of monitoring bureaucrat is $C(q, \phi)$ with the $C_q > 0$, $C_{qq} > 0$. How does marginal cost of monitoring change with extent of political competition? Each politician has some resources that he can use for either monitoring bureaucrats or campaigning for office. Think of campaigning as a composite good- it includes delivering speeches, lobbying, or buying votes (i.e. engaging in clientelistic practices). The resources that politician has to allocate could be his time or also the political workers that help him. Now, if the politician wants to increase the level of monitoring, he has to take away resources from campaigning. Thus, resources on campaigning constitute opportunity cost for the politicians. Which type of politician has a higher opportunity of monitoring? The answer is: the ones that are in highly competitive constituencies.⁶ Hence, $C_{q\phi} > 0$.

The politician's payoffs are: $U^p = R(e, \phi) - C(q, \phi)$.

3.2 The Maximization Problem

The politician chooses e and q to maximize his net payoffs. The politician's problem can be written as:

$$\max_{e,q} R(e, \phi) - C(q, \phi) \tag{1}$$

subject to:

$$\text{IC:} \quad (1 + l(\phi))r(\phi) - e \geq (1 - q)(1 + l(\phi))r(\phi) \tag{2}$$

$$\text{PC:} \quad (1 + l(\phi))r(\phi) - e \geq 0 \tag{3}$$

IC represents the incentive compatibility constraint which says that the payoff the bureaucrat gets from putting in effort $e' = e$ is at least as much as the payoff from shirking and

⁶Weitz-Shapiro (2007) shows that when voters are predominantly poor, as level of competition increases, the extent of clientelism increases. Using data from the Philippines, Khemani (2012) shows that politicians substitute between the level of clientelism and public goods provision.

putting zero effort. The participation constraint (PC) ensures that the payoff from putting in effort is at least as much as what the bureaucrat gets when he does not work on executing the politician's project.

In the first best scenario, the effort is observable.⁷ There is zero monitoring and the effort level chosen by the politician is a solution to the above problem without the IC constraint and without q . In this scenario, the participation constraint binds at optimum. Suppose it is slack at the optimum; then the politician can raise e and increase his payoffs without violating the (PC) constraint, a contradiction. Hence, $e^{FB} = \min\left\{1, \left(1 + l(\phi)\right)r(\phi)\right\}$. Note that in the first best, an increase in electoral competition decreases the optimal level of effort chosen by the politician. Also, re-election concerns do not affect the optimal level of effort.

Let us now turn to the second-best problem defined by equations (1)-(3). Since $q \in [0, 1]$, from (1) and (2) we get that $IC \Rightarrow PC$. Moreover, at optimum, the IC binds. If not, then the politician can reduce the level monitoring by a very small amount and increase his net payoffs, a contradiction. Hence, the maximization problem in the second best case reduces to:

$$\begin{aligned} \max_{e,q} \quad & R(e, \phi) - C(q, \phi) \\ \text{subject to:} \quad & q = \frac{e}{\left(1+l(\phi)\right)r(\phi)} \end{aligned} \tag{4}$$

The solution to the above problem can be summarized in the following proposition:

Proposition 1: *The unique optimal contract solving the second best problem implements e^{SB} , characterized by*

$$R_e(e^{SB}, \phi) - \frac{1}{\Gamma(\phi)} C_q\left(\frac{e^{SB}}{\Gamma(\phi)}, \phi\right) = 0 \tag{5}$$

The optimal level of monitoring is given by

$$q^{SB} = \frac{e^{SB}}{\Gamma(\phi)} \tag{6}$$

⁷The first best here refers to the situation when effort is observable. This is different from the social planner's problem where the planner equates the marginal benefit of effort in the society to the marginal cost. In this scenario, the effort level solves $R_e(e^{SP}, \phi) = 1$. However, the socially optimal effort level may give the bureaucrat a negative utility. Hence, the (PC) constraint needs to be operative.

where, $\Gamma(\phi) = (1 + l(\phi))r(\phi)$.

Proof: See Appendix. ■

3.3 Comparative Statics

We not examine how the optimal level of effort implemented by the politician changes as level of competition changes. Since the optimal level of monitoring is linear in the e^{SB} and $(1 + l(\phi))r(\phi) > 0$, the level of monitoring moves in the same direction. For brevity, we drop ϕ from the arguments in the following proposition:

Proposition 2: *The effect of a marginal increase in electoral competition on the optimal effort level of the bureaucrat is given by:*

$$\frac{de^{SB}}{d\phi} = \frac{R_{e\phi} - \left\{ \frac{C_{q\phi}}{r(1+l)} - \frac{C_{qr\phi}}{r^2(1+l)} - \frac{C_{ql\phi}}{(1+l)^2r} \right\}}{-R_{ee} + \frac{C_{qq}}{r(1+l)}} \quad (7)$$

Proof: Equation (7) is obtained by implicitly differentiating equation (5) w.r.t. ϕ . ■

Note that the denominator is positive since $R_{ee} < 0$ and $C_{qq} > 0$. The sign of the derivate then depend on the relative strengths of the four different mechanisms. Let us now look at what each of these four mechanisms predict, *ceteris paribus*.

Case I: Pure Re-election Concerns

In this case, only the gross payoffs of the politician depends on the level of electoral competition. Hence, $R_{e\phi} > 0$; $C_{q\phi} = 0$; $r_\phi = 0$ and $l_\phi = 0$. Equation (7) then reduces to:

$$\frac{de^{SB}}{d\phi} = \frac{R_{e\phi}}{-R_{ee} + \frac{C_{qq}}{r(1+l)}} > 0 \quad (8)$$

This says that if as the electoral competition becomes more intense, the re-election concerns of politicians lead to higher implementation of bureaucratic effort. Starting from the optimal level of effort, what happens if probability of winning goes to zero? Since probability of winning being zero means lack of re-election concerns similar to that of low ϕ , (8) tells us

that the level of effort implemented should fall.

Case II: Pure Effect of Having Access to Dynamic Contracts

This case corresponds to $R_{e\phi} = 0$; $C_{q\phi} = 0$; $r_\phi = 0$ and $l_\phi < 0$. This reduces (7) to the following expression:

$$\frac{de^{SB}}{d\phi} = \frac{\frac{C_q l_\phi}{(1+l)^2 r}}{-R_{ee} + \frac{C_{qq}}{r(1+l)}} < 0 \quad (9)$$

As the level of competition decreases, the probability that the politician is going to win again is high. This enables the politician to use credible promises of future rewards to incentivize the bureaucrat to put in a higher effort level today. Since in high competition constituencies, the probability of winning again is low, these politicians cannot use dynamic contracts to incentivize the bureaucrat. Now, if there is an exogenous shock that takes the probability of winning to zero, then optimal level of effort implemented will fall.

Case III: Pure Effect of Being a Powerful Politician

This case corresponds to $R_{e\phi} = 0$; $C_{q\phi} = 0$; $r_\phi < 0$ and $l_\phi = 0$. This reduces (7) to the following expression:

$$\frac{de^{SB}}{d\phi} = \frac{\frac{C_q r_\phi}{(1+l)r^2}}{-R_{ee} + \frac{C_{qq}}{r(1+l)}} < 0 \quad (10)$$

In districts with low competition, the politicians typically have longer tenures and hence are able to build strong political networks. This makes them more powerful and allows them to control the bureaucrat better (throughout higher $r(\cdot)$). Hence, as the extent of competition falls, the effort level the politician is able to implement increases. Now, for an incumbent who is sitting in office, if there is an exogenous shock that takes his probability of winning to zero, how should we expect the optimal e to change? The answer is that the changes in probability of winning do not change the fact that the politician is powerful. He can therefore implement the same effort level as before.

Case IV: Pure Effect of Cost of Monitoring

This case corresponds to $R_{e\phi} = 0$; $C_{q\phi} > 0$; $r_\phi = 0$ and $l_\phi = 0$. This reduces (7) to the

following expression:

$$\frac{de^{SB}}{d\phi} = \frac{-\frac{C_{q\phi}}{r(1+l)}}{-R_{ee} + \frac{C_{qq}}{r(1+l)}} < 0 \quad (11)$$

As the level of competition increases, the opportunity cost of monitoring rises. This makes it costly to implement a higher effort level and hence the optimum effort level falls. Moreover, given the initial conditions, if probability of winning goes to zero, then opportunity costs of monitoring will weakly increase. Hence, the effort level will rise.

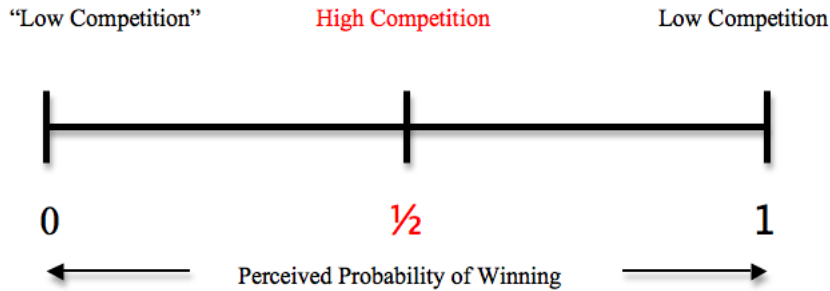
We can summarize the theoretical predictions in the following table:

Table 1: Predictions for the Potential Mechanisms

Mechanism	$\frac{\delta e}{\delta \phi}$	Δe as Prob(win) $\rightarrow 0$
1 Re-election Concerns	(+)	(-)
2 Access to Dynamic Contracts	(-)	(-)
3 Powerful Politician	(-)	no effect
4 Cost of Monitoring	(-)	(+)

Now, how do we interpret the two columns of table 1? The first thing to note is that extent of electoral competition is non-monotonic in the probability of winning as shown in the figure below. When the probability of winning is close to one, the incumbent does not face any competition. When the probability of winning is close to zero, the politician does not face any re-election concerns. Hence the lack of electoral pressures in this extreme is similar to what he would have when probability of winning is close to one. Now, when the probability of winning is close to half, the pressure of electoral competition is the highest.⁸

⁸Strictly speaking, the probability of winning is half if there is a contest between two candidates. In India, there is a multi party system. However, in many cases there are two strong players and several smaller ones. Even if there are three strong players, for the incumbent, what matters is how far he is from the next best candidate.



The predictions in column (1) of table 1 look at what the mechanisms have to say about change in optimal level of effort when we move away from probability of winning at half. It does not matter if we are moving towards zero or towards one. In both cases the competitive pressure decreases. In column (2) however, we are looking at what the mechanisms have to say when we move towards probability of winning being zero. Carrying out both the exercises can help us identify which of the mechanisms is dominant.

4 Data

4.1 Data Sources

The main source of data on local public goods comes from the MPLAD database. We have data for each project that was recommended and sanctioned across all 543 constituencies in India. We have information about these public goods over the period 1999-2009. This covers two Lok Sabha election terms: 1999-2004 and 2004-4009. The details of the projects available to us include the type of the project (whether its a road project, drinking water project etc.); the cost incurred; the location; the day on which the project was recommended and the day on which it was sanctioned by the collector. For a subset of projects, we also know the time lag between the day the project was sanctioned and the day on which the project actually got completed. We also know which implementing agency executed the project.

In the MPLAD data, even though we know which village the project was recommended in, we do not know the identity of the administrative district the village belongs to. We only know which constituency it belongs to. Knowing the identity of the districts is important for us to know which bureaucrat interacted with which politician. In order to find out which district the project was implemented in, we match village and block names from the MPLAD database to the village names in Census data. Our first iteration used a string matching algorithm and in cases where we did not find unique matches, we manually matched the village

names.

Once we matched the village names across MPLAD data and Census data, it provided us with both district and constituency names for each village. In order to test whether the matching algorithm gave us correct matching, we use shape file data for villages from Census of India and shape files for constituency boundaries obtained from the Election Commission of India. Shapefiles contain the information on the boundaries of districts, constituencies and villages. The observations appear as points on polygons. Points are the GPS co-ordinates and the polygons they form are the boundaries of the geographical unit under study. The following steps are followed in mapping projects from MPLAD data to districts: for each village, we find the centroid using the ArcGIS. We then take the centroid and figure out which polygon it belongs to in the district shape files and which polygon it belongs to in the electoral constituency shape files. This provides us with district-constituency pair for each project. Using geospatial overlaps, we also obtain the extent to which the administrative and electoral boundaries overlap.

Once we obtain the district name for each project in the MPLAD database, we then identify which bureaucrat served as the collector in that particular district in that particular month and year. This allows us to see the identity of the bureaucrat who approved each project.

The information on bureaucrats is obtained from the Department of Personnel and Training (DoPT) in India. The DoPT keeps the records of all IAS officers in form of Executive Record sheets. There is one ER sheet per bureaucrat. This provides us with information about their name, their cadre, their educational background as well as all the past assignments since the day they joined the civil services. We digitized these ERs in form of a database and used it to figure out which bureaucrat was assigned as collector to which district over the 1999-2009 period. In any given district, over a ten year period, on an average, we can expect five to six bureaucrats to serve as collectors. So, knowing just the district is not enough. We need to know exactly which bureaucrat served in any given month. Only then can we know which bureaucrat sanctioned which project. This piece of information is essential for our identification strategy.

The election data for is obtained from the Election Commission of India. We obtain data for all parliamentary elections from 1989-2009. The main variable of interest for us is the extent of political competition. We look various measures of competition. The first one is victory margin which uses information on vote shares of the winner and runner up. The second measure is whether a constituency is a party stronghold or not. This measure looks

at identity of the party that won previous consecutive elections.

This data also provides us with the names of the winning candidate and their party affiliation. We can map the names across different electoral terms to see whether these politicians are rookies or have been serving for a long time. This allows us to control for politician's experiences. We also use the party information to see if the MPs are from the same party as the party in power at the center. This proxies for political connection of the politicians.

4.2 Measuring Bureaucrat's Performance

In this paper, we propose a new way of measuring a bureaucrat's performance. The proposed measure uses the information from MPLAD data on details of the sanctioning process. We define bureaucrats' performance as the time taken to sanction the projects. This is equal to the number of days between the date on which the politician recommended the project and the date on which the bureaucrat gave his stamp of approval.

In most of the literature that looks at service delivery, people use the time taken to complete projects as a measure of governance. While this measure is a good indicator of bureaucratic performance, we cannot use this to identify which bureaucrat is at fault if delays occur. Completing a project involves several individuals and in infrastructure projects, the weather can be a big factor in delays. Since the execution process is more complex and has many more unobservables compared to the sanctioning time, we prefer to use the later measure. If approvals take a long time, then we know that it is because the bureaucrat is not putting the effort to get things done. Being able to directly observe the actions of the bureaucrat gives us an advantage over other measures.

Given that our measure is directly related to the decisions of a single individual, it is comforting to know that it is positively correlated to completion times. For a small subset of projects in our database, we have information on the date at which the project construction began and the date at which the project construction ended. We use this additional information to construct a measure of delay in completion - this is the time between the date of sanctioning by the bureaucrat and the date at which the project construction was completed. Note that this measure of delay does not include time taken to sanction - it only looks at how long a project took to complete *after* it was sanctioned.

Table 3 explores the relationship between time taken to sanction projects and time taken to complete projects. As we can see, there is a significant positive correlation between com-

mencement and sanctioning time. This suggests that if bureaucrats perform better according to our measure, then the projects get started faster. In column 2, we see that if bureaucrat gets project sanctioned within 10 days, then the delay in commencement of projects reduces by more than 3 months! This is a very large magnitude. Moreover, if projects take more than 90 days to sanction, then the project construction is delayed by about 7 months. Hence, the speed of sanctioning and speed of project construction move in the same direction. ⁹

5 Empirical Identification Strategy

Consider the following model:

$$y = \mu_0 + \mu_1 * Competition + \epsilon \quad (12)$$

where y denotes the time taken to sanction a project. We are interested in establishing the causal effect of competition on time taken to sanction the project. Identifying the parameter μ_1 requires two things: [1] there should be no reverse causality and [2] there should not be any other unobservables that affects our measure of competition.

In the literature lagged victory margins are often used as measures of competition. This measure assumes that future victory margin depends on the past victory margin in the following way:

$$VM_t = VM_{t-1} + \eta$$

where η is random and does not depend on the outcome variable of interest. Now, in our setup, this assumption is violated if we believe that the bureaucrat's performance between the two elections can affect the future victory margin. Moreover, Ravishankar (2009) shows that there is a strong anti-incumbency effect in Indian elections. Hence, past victory margins may not fully capture the re-election concerns faced by the incumbent.

In order to address these concerns, we use an alternative measure of extent of electoral pressures: whether a constituency is a party stronghold or not. We define stronghold as a dummy variable that takes value one if the same party won over all four elections between

⁹Although time taken to sanction projects is a more direct way of measuring bureaucratic performance, it would be nice to replicate the tables with an additional measure. However, we have very little data on time taken to complete the projects, hence cannot carry out the analysis using time taken to complete projects.

1989-1998. Table 5 shows that the probability of a stronghold party winning again in 1999 is 65% and winning in 2004 is about 70%. These probabilities are significantly higher compared to non-stronghold constituencies. Note that our measure of stronghold compares those constituencies where parties have survived the anti-incumbency effect in the past with ones that did not survive it. Hence, the incumbents of stronghold constituencies face less electoral pressures compared to the non-strongholds.

Now, there might be concerns that some unobserved constituency characteristics may affect the probability of being a stronghold. However, only if these characteristics also affect bureaucrat's performance, will they pose a problem. The average tenure of bureaucrats is about 2.5 years. The bureaucrats are assigned to various districts within the state and do not stay in one place for long. The stronghold variable on the other hand takes value one if the same party won over all elections in over a decade prior to our period of study. Given that bureaucrats move around within the state, any unobserved characteristics of the constituency that affects the probability of being a stronghold is unlikely to also affect the performance of a "traveling agent".

5.1 Addressing the Selection Problem

How long bureaucrats take to sanction projects depends on their ability. If higher ability bureaucrats are assigned to strongholds, then the error term is correlated to the main regressor of interest. This gives rise to the following identification problem: if we observe a negative relationship between our competition measure and time taken to sanction, it could very well be driven by bureaucrat's ability. Hence, we need to worry about the unobserved bureaucratic characteristics.

To solve this problem, we exploit two features of our data: [a] panel structure and [b] boundary overlaps. The latter refers to the fact that the administrative and electoral boundaries do not perfectly overlap in India. A single district may have two or three Lok Sabha constituencies that overlap with it. Since the Collector is the head bureaucrat in a district and the politician is the elected representative of the electoral constituencies, we have situations where one bureaucrat may deal with two or even three politicians.

Figure 2 illustrates such a possibility of overlaps. In this example, the district overlaps with three constituencies: 1, 2, and 3. Each of these politicians face different levels of political competition in their constituencies. However, all three politicians have to depend on this bureaucrat for execution of projects within the district boundary depicted in black color. We

can compare the average time taken by this bureaucrat for each of the three politicians. Since we keep the bureaucrat fixed, this controls for the unobserved ability. If we observe that the bureaucrat sanctions projects faster for the politician in the stronghold, then we can attribute the difference in performance to the difference in level of competition.

Hence, we deal with the selection problem by including bureaucratic fixed effects in our specification.

5.2 Obtaining Exogenous Variation in Electoral Competition

Although using strongholds and fixed effects minimizes the endogeneity concerns, our ideal experiment would be to have a truly exogenous source of variation in political competition. In order to get such a variation, we take advantage of an information shock that occurred in the middle of the 2004-2009 period. This shock exogenously changed some incumbent's perceived probability of winning in the next elections to zero while not affecting other incumbents. The politicians who were affected by the shock are the treated group while those who are not affected by this shock are the control group. We can then compare the sanctioning times of the treated and control groups before and after this shock. Since this event essentially causes an exogenous change in the electoral competition, the differences-in-difference strategy will give us a causal effect of change in political competition on the performance of the bureaucrat.

The informational shock we take advantage of is an outcome of the redistricting process that took place in India from 2002-2007. The Government of India froze the changing of electoral boundaries in 1976 and the freeze was supposed to be lifted after 2001 census was carried out. A delimitation commission was set up in 2002 with the objective of redrawing the electoral boundaries such that the population shares across constituencies is equalized. The total number of constituencies were to remain unchanged. In addition to the equalization of population, the commission re-demarcated the SC/ST constituencies. The SC/ST constituencies are 'reserved' in the sense that only candidates who belong to the Scheduled Caste (SC) or Scheduled Tribe (ST) are allowed to contest. Those constituencies that are not reserved, allows any citizen to contest as a candidate.

Article 330 of the Constitution of India says that the number of constituencies (or 'seats') reserved in any state should be proportional to the number of total seats within a state. Which seat is reserved depends on the relative population of SC/ST across constituencies. So, when the constituency borders are being redrawn, the politicians cannot predict whether their own constituency will be reserved or not because the reservation status depends on how boundaries

of *other* constituencies were re-drawn. This fact is important for the identification strategy. This is because politicians may attempt to influence the re-districting process in order to benefit from it. If the influence in re-districting is a function of political competition, then the concern is that this event may not be truly exogenous. But, since there is no threshold rule but reservation is based on relative population shares, the announcement of the *reservation status* acts as an exogenous information shock to the incumbents, even if the redistricting may have been endogenous. ¹⁰

The report of the delimitation commission of 2002 came in December 2007. This information shock is in the middle of the term 2004-2009. The Figure 3 depicts the timing of the announcement. It shows that conditions for using difference-in-difference (DID) strategy are ripe. We now need to do the following: [1] clearly define the treatment group and [2] show how this exogenous information shock changed the perceived probability of winning for the treated group.

A constituency can be of three types: [1] reserved for only candidates who belong to SC category, [2] reserved for ST category candidates and [3] GEN (General) category where any citizen can contest (including SC/ST candidates). Under 1972 delimitation, certain constituencies were reserved for SC or ST categories. The incumbents who took office in May 2004 were elected according to the reservation scheme as under 1972 directives. In 2007, the incumbents got to know the reservation status of their constituency in the next election of 2009. All those constituencies where there was no change in the reservation status, are in the control group. The electoral districts where there were changes in the reservation status can be classified into two types of treatment groups: [1] REStoGEN - where the constituency was reserved under the 1972 delimitation but all types of candidates were allowed to contest under the 2002 delimitation. [2] GENtoRES - in this case the constituencies were open to all before and in 2007 it was announced that they will be reserved only for SC/ST candidates from 2009 elections.

For incumbents who don't belong to the SC/ST category in the GENtoRES constituencies (which is 87% of all candidates), the change in the reservation status means that they will not be allowed to contest again. Hence, their probability of winning in 2009 is deterministically zero. For the incumbents in REStoGEN, the probability of winning is not conceptually zero because they are, in principle, allowed to contest again. However, as we will show now, the *perceived* probability of winning for these incumbents would have been very close to zero.

¹⁰A paper by Iyer and Reddy (2013) provides further support for our identification strategy. They study the redistricting process in India and find that "the redistricting process does not appear to have been influenced by incumbent politicians to a great extent."

In table 7, consider the group "Gen to Gen." There are 342 constituencies where all candidates could contest in 2004 as well as in 2009 elections. This group is a subset of the control group. Column (2) shows that out of all contestants in these constituencies, only 16% were SC/ST candidates. This means out of 4477 candidates in these constituencies, only 716 were from reserved category. All these constituencies had at least one candidate who was from reserved category. Column (4) shows that out of these 342 constituencies, only 6 constituency had a winner who came from the reserved category. So, less than 2% of the constituencies open to all had a SC/ST leader.

What do these statistics tell us? Consider an incumbent in the REStoGEN treatment group. In the middle of the term, he gets to know that the constituency he represents will be open to competition from other general category candidates. These are career politicians that have a fair amount of idea about what the chances of an SC/ST candidates are in winning an election in GEN category constituency. The above calculations tell us that in 2004, the only 2% of the reserved candidates are successful in winning a seat - this is a fairly low number. Hence, the increase in competition from general candidates is likely to take the perceived probability of winning for incumbents in REStoGEN category is close to zero.

Moreover, there is another source of competition faced by these incumbents: intra-party competition. An incumbent of party A may be getting the party ticket to contest in the reserved category constituencies because he may be the best SC/ST candidate. But when the constituency gets de-reserved, this incumbent is up against the general category candidates to get the party ticket to contest in the first place. There are two facts that confirm this: [1] None of the incumbents in the REStoGEN treatment group got a ticket to contest again in 2009 and [2] ALL 2009 candidates in REStoGEN group belonged to the GEN category - none of the candidates were from SC/ST category!

Hence once the information shock came in 2007, it is reasonable to assume that due to increase in both intra-party competition and competition from other contestants, the SC/ST incumbents' perceived probability of winning in 2009 jumped very close to zero within the REStoGEN.

5.3 Isolating the Mechanisms

Our discussion so far provides us with two models that we can use to study the effect of political competition on bureaucratic performance:

$$y_{ibpc} = \beta_0 + \beta_1 * Party_Stronghold_c + \epsilon_{ibpc} \quad (13)$$

$$y_{ibpc} = \gamma_0 + \gamma_1 * (Prob(win) = 0)_c * Post + \gamma_2 * (Prob(win) = 0)_c + \gamma_3 * Post + \epsilon_{ibpc} \quad (14)$$

where, y_{ibpc} denotes the time taken to sanction project i by bureaucrat b when paired with politician p in constituency c . The variable *stronghold* means that the same party had won all four elections prior to 1999 elections.

Now, how do we interpret β_1 and γ_1 ? When the party of an incumbent has a stronghold over the constituency then it means that the probability he will win again is very high (close to 1). Hence, we can think of β_1 as the effect on approval speed as probability of winning goes to 1. On the other hand, our exogenous shock works as a term limit on the incumbents. Therefore, γ_1 looks at the effect on bureaucrat's performance as the probability of winning goes to zero.

As discussed under the theoretical framework, different mechanisms predict different signs on β_1 and γ_1 . The following table provides the predictions of the alternative channels:

Table 2: Predictions for the Potential Mechanisms

Mechanism	β	γ
1 Re-election Concerns	(+)	(+)
2 Access to Dynamic Contracts	(-)	(+)
3 Powerful Politician	(-)	no effect
4 Cost of Monitoring	(-)	(-)

Note that our measure of bureaucratic performance is time taken to sanction a project which can be thought of as negative of e in the model. Hence, in column 2 of table 2, the signs are flipped compared to table 1, column 2. Moreover, since *stronghold* is negatively correlated to ϕ (the extent of competition), the signs in column 1 are the same in both tables.

6 Empirical Results

We begin by providing the OLS estimates for the effect of electoral competition on time taken to sanction the projects when the measure of competition is victory margin in the previous election. Table 6 gives the results of this specification. Column 1 shows that as margin of victory increases by 1%, the time taken to sanction the projects reduces by about a day. Now, the 10th percentile victory margin distribution is at 1.8% while the 90th percentile is at 22.6%. Back of the envelope calculations suggest that moving from one end of the distribution to the other, a fall in electoral competition reduces the number of days to sanction by about 16 days.

¹¹ Hence, bureaucrats perform better when electoral competition is low.

As we discussed before, past victory margin may not be a good predictor the extent of competition faced by the politician in the next election. Moreover, there are concerns about reverse causality when one uses this measure. We now present results from the specifications that use strongholds to capture the extent of electoral pressures the politicians face.

6.1 Effect of Strongholds on Bureaucratic Performance

We now estimate the following model:

$$y_{ibpct} = \beta_0 + \beta_1 * Stronghold_c + \pi_p + \phi_b + \tau_t + \psi + \epsilon_{ibpct} \quad (15)$$

where stronghold is a dummy variable that takes value one if the same party won over all four elections between 1989-1999. π_p and ϕ_b are politician and bureaucratic effects respectively. τ_t corresponds to year fixed effects and ψ denotes project type fixed effects.

Column (1) of Table 7 provides the estimates of equation 15. The average time taken to sanction a project is significantly lower by a magnitude of about nine days if a constituency is a party stronghold compared to when its not. Comparing this to the mean of the dependent variable, we find that this constitutes about an 11% decrease in approval speed. In column 2, we add the size of the project which is meant to capture how big the project is. Column (3) controls for politicians experience and shows that more experienced the politician is, the faster the projects are sanctioned. This does not change the effect of being a stronghold on the speed of approval. Column (4) controls for whether the incumbent is from the same party as the leader of the state and (5) includes party fixed effects. The results remain the

¹¹ Assuming a linear relationship between victory margin and time taken to sanction.

same: when competitive pressures are very low, the projects are sanctioned significantly faster.

What does this tell us about the potential mechanisms? From table 2 we see, that we can reject the hypothesis that pure re-election concerns are driving the results. Let us now look at the results from the difference-in-differences strategy to see which of the hypothesis hold up.

6.2 Results from Difference-in-Differences Strategy

Consider the following model:

$$\begin{aligned}
 y_{ibpct} &= \gamma_0 + \gamma_1 * Treatment_c * Post + \gamma_2 * Treatment_c + \gamma_3 * Post & (16) \\
 &+ \pi_p + \phi_b + \tau_t + \psi + \epsilon_{ibpct}
 \end{aligned}$$

where, y_{ibpct} denotes the time taken to sanction project i by bureaucrat b when paired with politician p in constituency c in year t . π_p , ϕ_b , τ_t and ψ are fixed effects as defined before. The variable ‘Treatment’ takes value one if the announcement of delimitation affected the particular constituency while ‘post’ is a dummy variable denoting the period after the delimitation (2008-2009).

Table 8 gives the results for specification 6.3. The difference-in-differences estimate γ_1 is positive and statistically significant at 10% l.o.s. It shows that as the probability of winning goes to zero, the average time taken to sanction a project increase by about 10 days. Given that the mean of the dependent variable is 73 days, it means that sanctioning time increases by approximately 13%. In column 2, we use the cost of project as a measure of the size of project. The results remain unchanged.

Now, since $\gamma_1 > 0$, this rejects the cost of monitoring and powerful politician mechanisms. The only mechanism that is consistent with the results of both the stronghold and DID models is the ‘access to dynamic contract’ hypothesis. How do we interpret the results? As we mentioned earlier, the politicians cannot affect the wages of the bureaucrats and neither can they fire him. One way they can control the bureaucrats is to monitor them. The other way is to promise them future rewards (or threats of re-assignment). These future rewards can enable the politician to implement a higher effort. When the probability of winning is high, the politicians can credibly use such dynamic contracts to incentivize the bureaucrat.

In competitive areas, on the other hand, promise of future rewards are less credible. Hence, we observe that bureaucrats perform better in strongholds.

6.3 Falsification Tests for DID Strategy

One key assumption of DID estimation is that the trends in outcomes of interest would be the same in both the groups in absence of the shock, and it is the new information that induced a deviation from the common trend. One way to check this is to compare the trends before the shock took place. This can be carried out formally by creating a fake shock prior to the actual shock and estimating model with the same treatment and control groups. If pre-trends in time taken to sanction are the same, then the difference-in-differences estimates with the ‘fake’ shock should be zero.

We create such a fake shock occurring in December of 2005, two years prior to the actual shock. The treated and control groups remain the same. Table 9 provides the results of this specification. As we can see, the magnitudes of the difference-in-differences estimator has gone down substantially. Moreover, the coefficient is insignificant. This is comforting and suggests that we can assume that pre-shock trends in times taken to sanction were same across the control and treated groups.

6.4 Robustness Checks

We now examine additional pieces of evidence that support our claim that re-election concerns are not the main channel through which political competition affects bureaucratic performance. We begin by analyzing the bureaucratic performance across time within a legislative term. In India, each term spans five years. If re-election concerns determine bureaucratic performance, we should see a political cycle in time taken to sanction projects: as elections get closer, the time taken to sanction the projects falls. ¹²

If, on the other hand, it is dynamic incentives drives the relationship, then, we should see the opposite trend for non-stronghold constituencies. In the beginning of the term, the projects should be sanctioned faster than later periods because the elections are far away and the politicians can promise rewards over the period of the term. As the elections approach, the politicians in the competitive districts can no longer credibly promise future rewards since

¹²Ferraz (2009) finds evidence of political cycles in approval of environmental licenses: in years of elections, more environmental licenses are approved.

their probability of winning again is low. Hence, in this case, we would expect that in non-strongholds, the time taken to sanction should *increases* as we get closer to the elections.

What should we expect for stronghold constituencies? Since the politicians in the strongholds have a high probability of winning again, they can use dynamic incentives throughout their tenure. Hence, the time taken to sanction projects should remain the same throughout the legislative term. Note, however, that the time taken should be *lower* compared to non-strongholds in each period.

Figure 4 depicts these predictions. Our hypothesis is that if it is the dynamic incentives that drive the relationship, then we should see a divergence between the time taken to sanction across strongholds vs. non-strongholds. On the other hand, if it is re-election concerns, then there should be a convergence in speed of approval over time.

To test this hypothesis, we now estimate the following model:

$$y_{ibpct} = \mu_0 + \sum_{j=1}^4 \mu_j * j\text{Yrs to Elections} + \sum_{j=1}^4 \theta_j * j\text{Yrs to Elections} * \text{Strongholds} + \epsilon_{ibpct} \quad (17)$$

where j years to elections capture how many years away the elections are. The specifications include bureaucratic, year, and project type fixed effects. Table 10 presents the estimates for equation 17 and figure 5 plots the coefficients in column (6). As we can see, starting from when the incumbents assume office, the time taken to sanction increases for non-strongholds. There is a divergence between speed of approval across strongholds vs non-strongholds, as predicted by dynamic contract hypothesis. However, in pre-election year, there is a convergence! This means that electoral pressures become important for the high competition politicians just before elections and they respond by monitoring the bureaucrats more. These results, taken together with other results, suggest that re-election concerns do have a role to play in affecting incentives of the politicians to monitor. However, the dynamic incentives are the dominant channel through which electoral competition affects bureaucratic performance.

6.5 Extension: Role of Number of Bureaucrats per Politician

As we mentioned before, the administrative boundaries do not perfectly overlap with the electoral boundaries. This creates a situation where at any given time, one bureaucrat can be working with multiple bureaucrats. In our dat set, there are 386 constituencies and 694

district-constituency pairs. Out of the 386 constituencies, 136 overlap with two districts and 80 constituencies overlap with three or more districts. The rest have only one bureaucrat per politician.

We interact the stronghold dummy with number of bureaucrats per politician. The hypothesis is that more the number of bureaucrats, the worse the performance should be. To see why this is so, let us go back to our main mechanism. The politicians use current and future rewards to incentivize bureaucrats to put in higher effort levels. We can think of number of rewards as being fixed. This is a valid assumption in our institutional setup since the contracts are implicit in nature are based on relationship between the politician and bureaucrats. These relational contracts require repeated interactions between the politicians and bureaucrats. When there are multiple bureaucrats per politician, it becomes costlier for the politician to implement a high effort level from all bureaucrats. In such a case, since the rewards per bureaucrat reduces, the incentives of bureaucrat to perform get diluted. Hence, we should see that projects take longer to get approved as the number of bureaucrats increase.

We now estimate the following model:

$$y_{ibpct} = \theta_0 + \theta_1 * Stronghold_c + \sum_{j=2}^3 \theta_j * Stronghold_c * jBureaucrats_c + \epsilon_{ibpct} \quad (18)$$

where j refers to the number of bureaucrats. The hypothesis is that $\theta_1 < 0$ and $\theta_1 < \theta_2 < \theta_3$.

Table 13 presents the results of the above specification. As we can see, when there is one bureaucrat per politician, the projects are sanctioned 15 days faster in strongholds than non-strongholds. However, when we compare the performance of bureaucrats in strongholds with one bureaucrat per politician with strongholds with multiple bureaucrats, the performance is worse when there are multiple bureaucrats. This is especially true when there are three or more bureaucrats. hence we cannot reject the hypothesis that $\theta_1 < \theta_2 < \theta_3$.

6.6 Interpreting Speed of Approvals: Is faster Better?

The results so far suggest that in low competition areas, on an average, the projects are sanctioned much faster. If this decrease in time taken to sanction is coming from reduction in delays, then speedier approvals are desirable. However, if the lower average time taken is

due to the fact that bureaucrats rubber-stamp the projects recommended by the politicians without following proper procedure, then speedier approvals may not be desirable.

What should be the optimal time taken? The Ministry of Statistics and Programme Implementation overlooks the implementation of the MPLAD projects recommended that the decision to approve the project must be completed within 45 days. This guideline is supposed to be an upper bound to how long sanctions can take and is applicable to all types of projects. However, as we see in our data, the average time taken is around 78 days while the median is 38.

In order to get a better understanding of the implementation process, we visited 17 districts in India and talked to 63 engineers. We asked the engineers the exact steps that are involved in the sanctioning process and how many days it generally takes. Based on the interviews, we find that the sanctioning process entails the following steps:

Step 1: Politician sends project recommendation to bureaucrat

Step 2: Bureaucrat chooses implementing agency and sends proposal to chief engineer

Step 3: Chief engineer assigns a junior engineer to go and inspect the site.

Step 4: Junior engineer inspects and submits a feasibility report

Step 5: Chief engineer prepares budget estimate and technical feasibility report and sends it back to bureaucrat

Step 6: Bureaucrat reviews structural and financial feasibility and approves the projects

According to the engineer's responses, all the above steps can be followed within around 35 days.¹³ Hence, the upper bound from the engineer's responses is 10 days lower than the official guideline of 45 days. Given these benchmarks, we can assume that if a project is sanctioned within 5-10 days it is likely to be "rubber-stamped." In our dataset, 10% of the projects are sanctioned within 10 days.

We now examine how being a stronghold affects the probability that projects are rubber-stamped. Table 11 reports the results. We find that the probability that the projects are sanctioned within 15-30 days is 5% higher in strongholds. This is statistically significant at 5%. Note that probability that projects take more than 90 days to sanction is 4% less in strongholds. The coefficient is not precisely estimated however the negative sign suggests that

¹³The median number of days for the entire sanctioning process as reported by the engineers is 30 days while the average is 38 days.

delays are less likely to occur in strongholds.

In order to examine more closely the above results, table 12 refines the thresholds. The results suggest that most of the effect is coming from 15 to 35 days. In fact the probability that time taken to sanction is between 35-40 days is significantly lower in strongholds. Taken together, these results suggest that there is no rubber stamping and that there are fewer delays in stronghold constituencies.

7 Concluding Remarks

In the existing empirical literature, the politician-bureaucratic interactions have mostly been analyzed with respect to re-election concerns. In this paper, we provide a framework to analyze alternative mechanisms through which electoral competition can affect bureaucratic performance. Our results suggest that it is the inherent political instability in democracies that contributes to slower execution of policies. Since the bureaucrats have career concerns, they respond to politicians who can affect their future payoffs. The politicians in the low competition constituencies have longer tenures and this enables them to use future rewards to provide better incentives to bureaucrats. Hence, they get things done faster.

While this paper focuses on how competition affects implementation of public goods, an equally important issue is how electoral pressures affect the allocation of public goods. In a related paper, Nath (2014a), we examine this allocation problem. Using a household survey data from India, we first analyze how differences in wealth affect the type of projects demanded by the households. Then we use the dataset on MPLAD local public goods to show that in absence of re-election concerns, politicians are more likely to spend on projects that are desired by the rich.

These results contribute not only to our understanding of how politician-bureaucrat interactions affect policy implementation but also to the very role of political competition. On one hand, it is argued that in autocracies, the politicians are able to get things done because of centralized power while in democracies, there are too many political constraints which slows thing down. On the other hand, it is argued that democracies are more redistributive. The results of this paper taken together with insights from Nath (2014a) highlight this tradeoff: *democratic pressures lead to higher redistribution but also more delays in service delivery.*

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Figure 1: Electoral Constituency Boundaries and Victory Margins for 1999 Elections

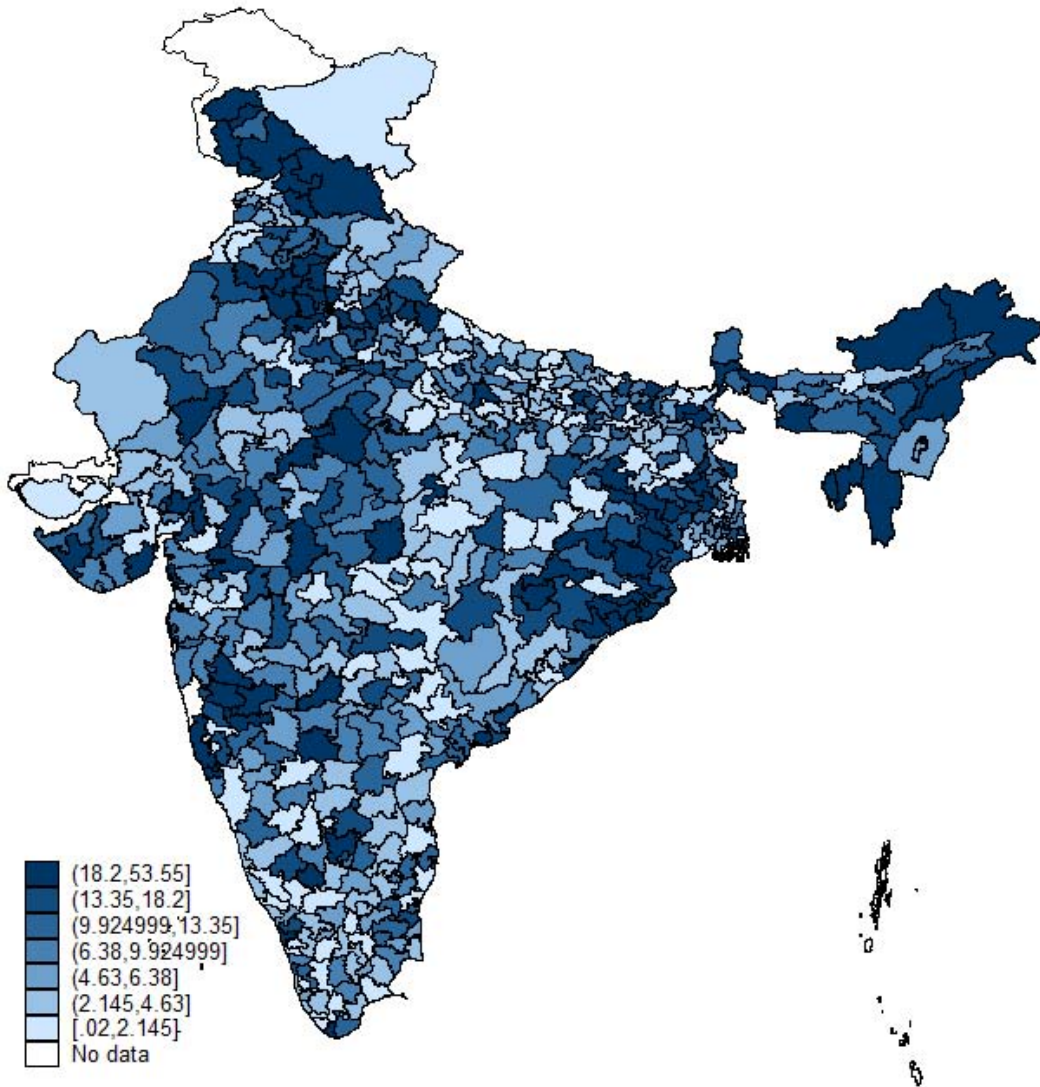


Figure 2: Illustration of a Possible District-Constituency Overlap

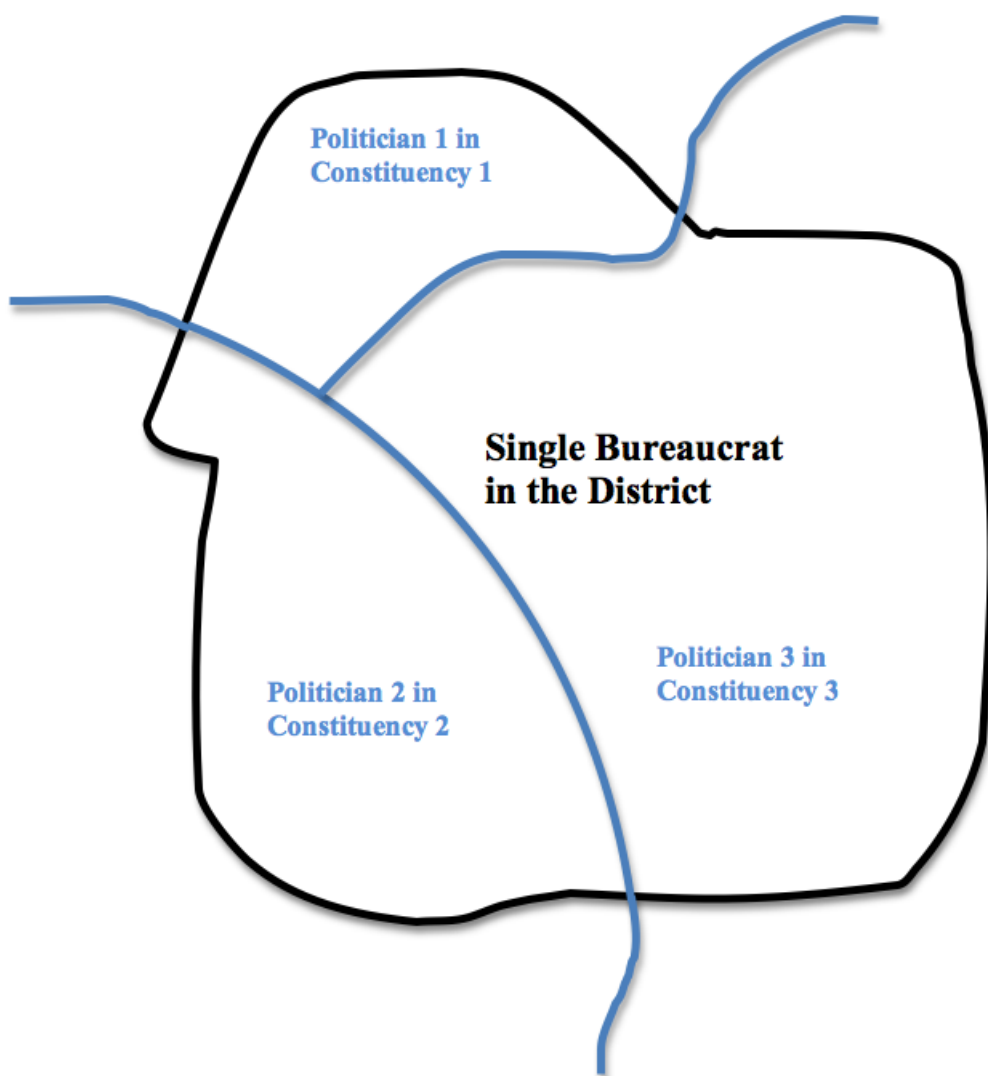


Table 3: Correlation Between Time Taken to Sanction and Delay in Project Implementation

	(1)	(2)	(3)
	Execution Time	Execution Time	Execution Time
Number of Days to Sanction	1.49*** (0.44)		
Sanctioned within 10 Days		-161.43* (87.13)	
Sanctioned greater than 90 days			220.86*** (42.09)
Cost Sanctioned for the project	9.77*** (3.09)	12.77** (6.21)	13.42** (5.57)
Constant	-448.98 (352.31)	374.70** (168.99)	398.13*** (22.03)
Observations	426	426	426
Adjusted R^2	0.777	0.749	0.753
Project Fixed Effects	YES	YES	YES
Constituency Fixed Effects	YES	YES	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at Constituency level.

Figure 3: Outline of the Difference-in-Differences Strategy

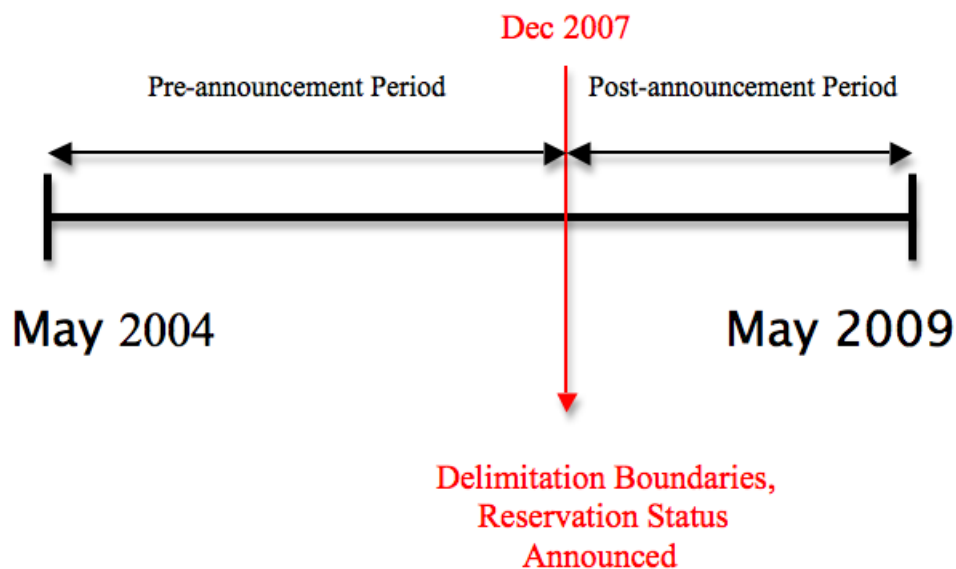


Table 4: Summary Statistics for Change in Perceived Probability of Winning

Group	Number of Constituencies (1)	Average Proportion of Candidates belonging to SC/ST Category		Number of Constituencies with SC/ST Winners	
		2004 (2)	2009 (3)	2004 (4)	2009 (5)
Res to Gen	37	100	17.6 (14.22)	37	0
Gen to Res	52	24.76 (27.04)	100 -	7	52
Gen to Gen/ Res to Res	444	31.17 (34.74)	29.5 (34.77)	80	78
Gen to Gen	342	16.45 (15.23)	14.04 (11.92)	6	3

Table 5: Stronghold- Predicting Probability of Same Party Winning Again

	(1)	(2)	(3)	(4)
	Won 1999	Won 2004	Won 1999	Won 2004
Stronghold	0.18*** (0.06)	0.29*** (0.06)	0.18* (0.10)	0.29** (0.10)
Constant	0.47*** (0.03)	0.39*** (0.03)	0.47*** (0.04)	0.39*** (0.05)
Observations	374	374	374	374
R^2	0.021	0.058	0.021	0.058

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at state level in (3) and (4).

Table 6: Effect of Competition on Time taken to Sanction

	(1)	(2)	(3)	(4)	(5)
Dependent Variable: Time Taken to Sanction Projects					
Victory Margin	-0.75** (0.30)	-0.74** (0.30)	-0.77** (0.30)	-0.75** (0.30)	-0.58* (0.35)
Cost of Project		0.64 (0.47)	0.68 (0.44)	0.72 (0.44)	0.11 (0.27)
Observations	220360	220358	220358	220358	220358
R^2	0.003	0.004	0.017	0.027	0.262
Mean Dependent Variable	78.63	78.63	78.63	78.63	78.63
Project Type Fixed Effects	NO	NO	YES	YES	YES
Year Fixed Effects	NO	NO	NO	YES	YES
Constituency Fixed Effects	NO	NO	NO	NO	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.

Table 7: Effect of Competition on Time taken to Sanction

	Dependent Variable: Time Taken to Sanction Projects				
	(1)	(2)	(3)	(4)	(5)
Stronghold	-8.84*	-8.78*	-8.70*	-8.76*	-11.31**
	(4.82)	(4.81)	(4.54)	(4.87)	(5.11)
Cost of Project		-0.61**			
		(0.31)			
Politician Experience			-0.06		
			(0.48)		
Winner from CM Party				1.83	
				(4.85)	
Observations	165276	165274	165276	165276	165276
R^2	0.332	0.332	0.332	0.332	0.337
Mean Dependent Variable	76.98	76.98	76.98	76.98	76.98
Bureaucrat Fixed Effects	YES	YES	YES	YES	YES
Project Type Fixed Effects	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES
Party Fixed Effects	NO	NO	NO	NO	YES

* p<0.10, ** p<0.05, *** p<0.01 Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.

Table 8: Results from Difference-inDifferences Strategy

	(1)	(2)
Treated*Post	10.61** (4.49)	10.45** (4.42)
Treatment - Delimitation Shock	-279.65*** (6.08)	-17.98 (22.70)
Post 2007	-20.63*** (3.69)	-20.69*** (3.66)
Cost of Project		0.58 (0.42)
Observations	30393	30392
R^2	0.350	0.350
Mean Dependent Variable	73.23	73.23
Bureaucrat Fixed Effects	YES	YES
Politician Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Project Fixed Effects	YES	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at state level.

Dependent variable is time taken by the bureaucrat to complete a project.

Table 9: DID Flasiification Test - Fake Shock

	(1)	(2)
Treated*Post2005	4.06 (14.17)	4.06 (14.18)
Treatment - Fake Shock	107.43*** (8.37)	107.27*** (8.38)
Post 2005	14.16** (5.90)	14.14** (5.90)
Cost of Project		0.26 (0.45)
Observations	36372	36371
R^2	0.334	0.335
Mean Dependent Variable	75.97	75.97
Bureaucrat Fixed Effects	YES	YES
Politician Fixed Effects	YES	YES
Year Fixed Effects	YES	YES
Project Fixed Effects	YES	YES

* p<0.10, ** p<0.05, *** p<0.01 Robust standard errors in parentheses, clustered at state level.

Dependent variable is time taken by the bureaucrat to complete a project.

Table 10: Is There a Political Cycle in Bureaucratic Performance?

	(1)	(2)	(3)	(4)	(5)	(6)
	1999 Term	2004 Term	Both Terms	1999 Term	2004 Term	Both Terms
Four Years to Election	-2.48 (12.83)	-3.80 (4.18)	-3.53 (4.84)	6.69 (13.12)	-11.16** (5.02)	-2.37 (5.21)
Three Years to Election	11.84 (11.10)	8.55 (6.39)	8.49 (5.39)	21.67 (13.16)	3.42 (8.17)	11.20* (6.60)
Two Years to Election	11.26 (10.33)	12.04* (6.37)	10.09** (4.94)	22.23** (10.71)	12.79** (6.34)	16.14*** (5.04)
Pre-election Year	5.37 (9.64)	-6.14 (6.37)	-1.47 (4.79)	10.51 (10.09)	0.10 (7.12)	1.72 (4.94)
Four Years*Stronghold				-4.07 (11.15)	0.16 (5.34)	0.68 (5.20)
Three Years*Stronghold				-18.95 (12.58)	-5.95 (7.98)	-10.56 (6.95)
Two Years*Stronghold				-18.55** (9.28)	-4.53 (7.64)	-9.26 (5.85)
Pre-election Year*Stronghold				-9.78 (11.35)	4.65 (10.33)	0.67 (7.39)
Observations	73681	91593	165274	73681	91593	165274
R^2	0.458	0.384	0.403	0.406	0.315	0.332
Mean Dependent Variable	77.92	76.22	76.98	77.92	76.22	76.98
Bureaucrat Fixed Effects	YES	YES	YES	YES	YES	YES
Politician Fixed Effects	YES	YES	YES	NO	NO	NO
Project Type Fixed Effects	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.

Figure 4: Hypothesis for Political Cycle

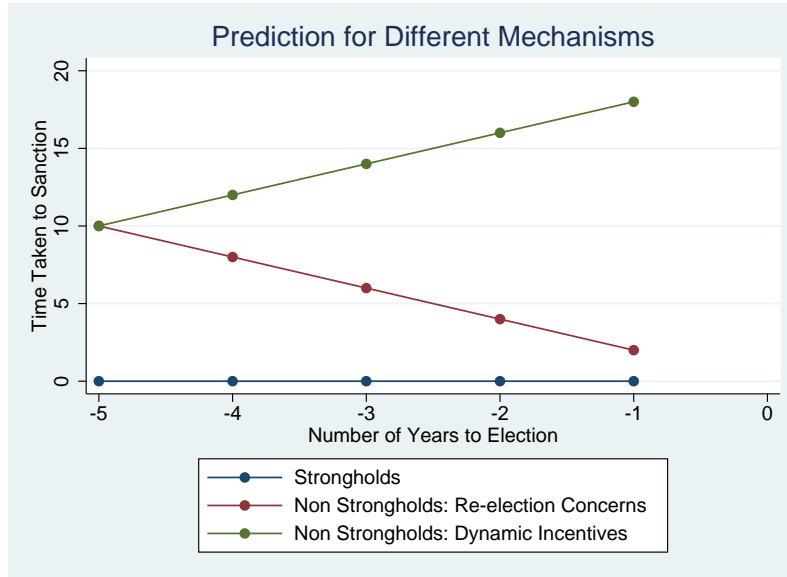


Figure 5: Coefficients of Political Cycle Regression

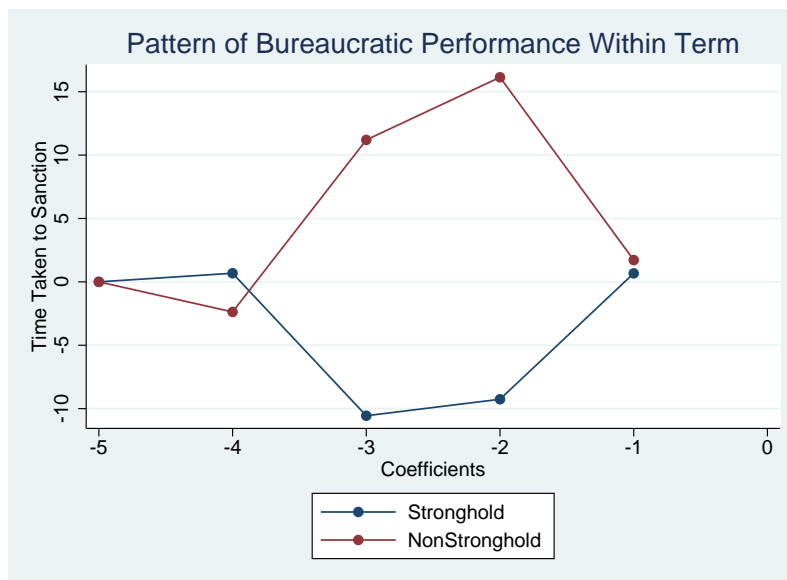


Table 11: Is There any Evidence of Rubber-stamping?

	P(<10)	P(15-30)	P(30-45)	P(45-60)	P(60-90)	P(>90)
Stronghold	0.01 (0.01)	0.05** (0.02)	-0.01 (0.02)	-0.01 (0.01)	-0.00 (0.01)	-0.04 (0.03)
Constant	0.03 (0.04)	-0.04 (0.03)	-0.04 (0.03)	0.48*** (0.03)	0.16** (0.07)	0.45*** (0.08)
Observations	181370	181370	181370	181370	181370	181370
R^2	0.361	0.185	0.242	0.113	0.159	0.323
Mean Dependent Variable	0.13	0.15	0.14	0.08	0.10	0.32
Bureaucrat Fixed Effects	YES	YES	YES	YES	YES	YES
Project Type Fixed Effects	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.

Table 12: Robustness Check - Reduction in Delays

	P(10-15)	P(15-20)	P(20-25)	P(25-30)	P(30-35)	P(35-40)
Stronghold	0.01	0.03**	0.02	0.01	0.02**	-0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-0.04**	-0.04	0.01	-0.01	-0.07***	0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Observations	181370	181370	181370	181370	181370	181370
R^2	0.176	0.188	0.104	0.119	0.337	0.091
Mean Dependent Variable	0.07	0.06	0.05	0.05	0.07	0.04
Bureaucrat Fixed Effects	YES	YES	YES	YES	YES	YES
Project Type Fixed Effects	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.

Table 13: Effect of Competition on Time Taken to Sanction: Role of Number of Bureaucrats

	(1)	(2)	(3)	(4)	(5)
Stronghold	-15.58** (7.36)	-15.36** (7.35)	-15.55** (7.39)	-15.71** (7.37)	-21.07*** (8.01)
Stronghold* Two Bur	3.16 (7.35)	2.93 (7.35)	3.14 (7.37)	3.42 (7.42)	6.17 (7.85)
Stronghold*Three Bur	20.80** (9.73)	20.58** (9.74)	20.53** (9.66)	21.34** (9.84)	28.29*** (10.49)
Cost of Project		-0.60* (0.31)			
Politician Experience			-0.00 (0.01)		
Winner from CM Party				2.78 (4.84)	
Constant	128.76*** (20.90)	131.59*** (21.11)	128.78*** (20.87)	125.76*** (22.07)	119.15*** (25.91)
Observations	165276	165274	165276	165276	165276
R^2	0.333	0.333	0.333	0.333	0.337
Mean Dependent Variable	76.98	76.98	76.98	76.98	76.98
Bureaucrat Fixed Effects	YES	YES	YES	YES	YES
Project Type Fixed Effects	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES
Project Fixed Effects	NO	NO	NO	NO	YES

* p<0.10, ** p<0.05, *** p<0.01 Robust standard errors in parentheses, clustered at constituency-term level.

Dependent variable is time taken by the bureaucrat to complete projects in a district-constituency.