

# 14.770: Introduction to Political Economy

## Lecture 10: Political Agency Gone Wrong

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# Introduction

- We have seen the use of clientelistic policies both in developing countries and the United States.
- But in extreme cases of patron-client relations, which happens in particular in weakly-institutionalized societies, it becomes blurred whether we can think of politicians as the agent.
- Put differently, who is the “agent” and who is the “principal”?
- “Politician capture” but by politicians...

## Issues in Weakly Institutionalized Societies

- In the context of African politics: issues of “Neo-Patrimonialism” or “Personal Rule.”
- Extreme personalization of politics where it is not the formal rules of the game that matters, but personalities, cliques, families, social networks which may function completely outside the formal rules.
- Jackson and Rosberg (1982, pp.17-19):

*“a system of relations linking rulers ... with patrons, clients, supporters, and rivals, who constitute the ‘system.’ If personal rulers are restrained, it is by the limits of their personal authority and power and by the authority and power of patrons, associates, clients, supporters, and—of course—rivals. The systems is ‘structured’ ... not by institutions, but by the politicians themselves.”*

## Issues in Weakly Institutionalized Societies (continued)

• Bratton and van der Walle (1997, p. 62):

*“the right to rule in neopatrimonial regimes is ascribed to a person rather than to an office, despite the official existence of a written constitution. One individual ... often a president for life, dominates the state apparatus and stands above its laws. Relationships of loyalty and dependence pervade a formal political and administrative system, and officials occupy bureaucratic positions less to perform public service ... than to acquire personal wealth and status. Although state functionaries receive an official salary, they also enjoy access to various forms of illicit rents, prebends, and petty corruption, which constitute ... an entitlement of office. The chief executive and his inner circle undermine the effectiveness of the nominally modern state administration by using it for systematic patronage and clientelist practices in order to maintain political order.”*

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## Issues in Weakly Institutionalized Societies (continued)

- Let us refer to societies in which politicians “can turn tables around” and exploit cleavages for their own advantage as “*weakly institutionalized polities*”.
- Examples of kleptocratic regimes emerging in weakly-institutionalized include the Democratic Republic of the Congo (Zaire) under Mobutu Sese Seko, the Dominican Republic under Rafael Trujillo, Haiti under the Duvaliers, Nicaragua under the Somozas, Uganda under Idi Amin, Liberia under Charles Taylor, and the Philippines under Ferdinand Marcos.
- In all cases, very bad economic outcomes.

## Issues in Weakly Institutionalized Societies (continued)

- How do we understand “weakly-institutionalized” politics?
- How could disastrous political leaders remain in power (rather than being subject to “electoral control” of one form or another)?
- In fact, the question is even deeper than this, since the models of failure of electoral control seen in the last two lectures imply that if politicians are not controlled well, they will get a lot of rents, but this may not translate into disastrous economic performance.

## A Model of Divide and Rule

- Basic idea: consider a dynamic game between the ruler and two producer groups.
- The kleptocratic ruler taxes production and uses the ensuing tax revenue, the rents from natural resources and potential foreign aid from outside donors for his own consumption.
- The two producer groups, if they can cooperate, can remove the ruler from power and establish democracy (a regime more favorable to their interests).
- However, weak institutions imply that the ruler can make a counteroffer to one of the groups and use a divide-and-rule strategy.
- The threat of such a counteroffer makes producers unwilling to start the process of replacing the ruler.
- So the kleptocrat is not only able to stay in power, but the threat of divide-and-rule implies that there will be no challenges to remove him from power along the equilibrium path.

# Model

- Consider a small open economy (alternatively, an economy with linear technology) producing three goods:
  - a natural resource,  $Z$ , and
  - two goods,  $q_1$  and  $q_2$ .
- Normalize the prices of all goods to 1, which is without loss of any generality (since differences in the linear technology of production are allowed).
- The production of the natural resource good  $Z_t$  is constant in all periods,

$$Z_t = Z.$$

- Natural resources create rents in this economy, which, in turn, affect political equilibria.
- Suppose that the natural resource rents accrue to the government, and can then be distributed to the producers or consumed by the ruler.



## Model (continued)

- There are two (large) groups of agents,  $n_1$  that produce  $q_1$  and  $n_2$  that produce  $q_2$ .
- Normalize  $n_1 = n_2 = 1$ .
- Both groups have utility at time  $t$  given by:

$$\sum_{s=t}^{\infty} \beta^s u_{is}(y_{is}, l_{is}) = \sum_{s=t}^{\infty} \beta^s \left( y_{is} - \frac{\eta}{1+\eta} l_{is}^{\frac{1+\eta}{\eta}} \right) \quad (1)$$

- Here  $\beta < 1$  is the discount factor,  $y_{it}$  denotes their after-tax income, and  $l_{it}$  is labor supply at time  $t$ .
- This specification implies that labor is supplied with elasticity  $\eta > 0$ .

## Model (continued)

- For each producer of group  $i$ , the production technology is:

$$q_{it} = \omega_i l_{it}, \quad (2)$$

where  $\omega_i$  is the productivity of group  $i = 1, 2$ .

- Without loss of generality, suppose that group 1 is more productive, i.e.,  $\omega_1 \geq \omega_2$ .
- Parametrize the degree of inequality between the two groups as

$$\omega_1 = \bar{\omega}(1 + x) \text{ and } \omega_2 = \bar{\omega}(1 - x). \quad (3)$$

- Here,  $\bar{\omega}$  is the average productivity of the economy and  $x \in [0, 1]$  corresponds to “inequality”.

## Model (continued)

- The only redistributive tools in the economy are a linear income tax that is potentially specific to each group, and group-specific lump-sum transfers.
- The option to use group-specific taxes and transfers are important for the results, and plausible in the context of African societies, where there are clear geographic and ethnic distinctions between producer groups.
  - Naturally, “weak institutions” important here as well.
- The post-tax income of the two groups are

$$y_{it} = (1 - \tau_{it}) \omega_i l_{it} + T_{it}. \quad (4)$$

- Here  $\tau_{it} \in [0, 1]$  is the income tax imposed on group  $i$  at time  $t$  and  $T_{it} \in [0, \infty)$  is a (non-negative) lump-sum transfer to group  $i$ .

## Model (continued)

- Utility maximization implies

$$l_{it}(\tau_{it}) = [(1 - \tau_{it}) \omega_i]^\eta. \quad (5)$$

- Usual result: greater taxes reduce labor supply and output.
- Using (5), the instantaneous indirect utility of a representative agent in group  $i$  is found to be:

$$U_i(\tau_{it}, T_{it}) = \frac{1}{1 + \eta} [\omega_i (1 - \tau_{it})]^{1+\eta} + T_{it} \quad (6)$$

- Tax revenues are:

$$\begin{aligned} R(\tau_{1t}, \tau_{2t}) &= \tau_{1t} q_{1t} + \tau_{2t} q_{2t} \quad (7) \\ &= \tau_{1t} (1 - \tau_{1t})^\eta \omega_1^{1+\eta} + \tau_{2t} (1 - \tau_{2t})^\eta \omega_2^{1+\eta}. \end{aligned}$$

## Model (continued)

- The government budget constraint is

$$T_{1t} + T_{2t} + C_{Kt} \leq R(\tau_{1t}, \tau_{2t}) + Z + F_t. \quad (8)$$

- Here  $C_{Kt} \in [0, \infty)$  is the consumption of the (kleptocratic) ruler,  $R(\tau_{1t}, \tau_{2t})$  is tax revenue given by (7), and  $F_t \in [0, \infty)$  is foreign aid, if any.
- The ruler is assumed to have the utility function at time  $t$ :

$$\sum_{s=t}^{\infty} \beta_K^s C_{Ks}$$

- $\beta_K < 1$  is the discount factor of the ruler, which could differ from those of the citizens.

## Model (continued)

- The political system is either “dictatorship” (controlled by the ruler),  $K$ , or democracy,  $D$ .
- Key question: whether dictatorship can survive and to what extent it will be “kleptocratic” (i.e., to what extent the ruler will be able to tax producers for his own consumption, while ensuring the survival of the dictatorship).
- In democracy, the two producer groups are in power jointly, thus they set zero taxes, and share the natural resource rents and foreign aid equally (and therefore, set  $C_{Kt} = 0$ ).
  - Naturally, more interesting modeling of democracy possible...

## Model (continued)

- Suppose only the ruler receives foreign aid (i.e., there is no foreign aid in democracy).
- Alternatively,  $F$  can be interpreted as the fungible part of foreign aid.
- Then, the instantaneous utilities of the two groups in democracy are:

$$U_i^D = \frac{\omega_i^{1+\eta}}{1+\eta} + \frac{Z}{2}. \quad (9)$$

- In contrast, in kleptocracy, the ruler will maximize his consumption, subject to the constraint that he keeps power (alternatively, he can be removed from power, and in this case, democracy will result, and  $C_{Kt} = 0$  for all future periods).

## Model (continued)

- Before describing the constraints facing the ruler in detail, let us write the “unconstrained” solution.
- This is given by maximizing  $R(\tau_{1t}, \tau_{2t})$ , which is achieved at the tax rates:

$$\tau_{1t}^* = \tau_{2t}^* = \tau^* \equiv \frac{1}{1 + \eta}, \quad (10)$$

and paying 0 transfers, i.e.,  $T_{it}^* = 0$ , thus setting  $C_{Kt} = R(\tau^*, \tau^*) + Z + F$ .

- The instantaneous utilities of the two groups under these tax rates are given by:

$$U_i^* = U_i(\tau_{it} = \tau^*, T_{it} = 0) = \frac{\omega_i^{1+\eta}}{1 + \eta} \left( \frac{\eta}{1 + \eta} \right)^{1+\eta}. \quad (11)$$



# Political Game

- In each period,  $t$ , society inherits a political state, either  $S_{t-1} = D$  or  $S_{t-1} = K$ .  $S_{t-1} = D$  is an absorbing state, so if the economy ever becomes a democracy, it remains so forever. If  $S_{t-1} = D$ , then play game  $\Gamma_t(D)$  (set the taxes and share the natural resources rents equally).
- If society is a dictatorship, i.e.,  $S_{t-1} = K$ , then the following game,  $\Gamma_t(K)$ , is played:

# The Dictatorship Game

- The ruler announces tax rates  $(\tau_{1t}, \tau_{2t})$  and transfers  $(T_{1t}, T_{2t})$ .
- Each group  $i$  decides whether to make a proposal to remove the ruler.
- If no proposal, then  $(\tau_{1t}, \tau_{2t}, T_{1t}, T_{2t})$  is implemented and the political system remains at  $S_t = K$ .
- If a proposal by one of the groups  $j$ , then: the ruler makes a new offer of taxes and transfers,  $(\tau_{1t}^r, \tau_{2t}^r, T_{1t}^r, T_{2t}^r)$  such that this policy vector satisfies the government budget constraint, (8). Group  $i \neq j$  then responds to the proposals of group  $j$  and the ruler.
- If the “proposed”, group  $i$ , chooses  $d_{it} = 1$ , the ruler is replaced and there is a switch to democracy, i.e.,  $S_t = D$ . If  $d_{it} = 0$ , the political system remains at  $S_t = K$ , and  $(\tau_{1t}^r, \tau_{2t}^r, T_{1t}^r, T_{2t}^r)$  is implemented.
- Given the policy vector, either  $(\tau_{1t}, \tau_{2t}, T_{1t}, T_{2t})$  or  $(\tau_{1t}^r, \tau_{2t}^r, T_{1t}^r, T_{2t}^r)$ , individuals in both groups choose labor supply.
- Output is produced and consumption takes place.
- If there is a proposal and it is accepted, then in the next period the stage game switches to  $\Gamma_{t+1}(D)$ . Otherwise  $\Gamma_{t+1}(K)$ .

## Political Game (continued)

- Note all individuals within a producer group act in cohesion in the political game—again no political conflict among members of the group.
- The specific political structure related to “weak institutions”
- Focus on (pure strategy) Markov Perfect Equilibria (MPE).

# Analysis

- The MPE will be characterized by backward induction.
- When  $S_{t-1} = D$ , there are no interesting actions, and the ruler receives zero utility, while the two groups receive lifetime utilities of:

$$V_i^D = \frac{U_i^D}{1 - \beta}, \quad (12)$$

with  $U_i^D$  given by (9).

- Note also that  $V_i^D$  given by (12) is what the proposed group will receive if it chooses  $d_{it} = 1$  and removes the ruler from power.

## Analysis (continued)

- If, in response to the reaction of the ruler  $(\tau_{it}^r, T_{it}^r)$ , the proposed group chooses  $d_{it} = 0$ , its members will receive

$$V_i^C(\tau_{it}^r, T_{it}^r | \tau_i^e, T_i^e) = U_i(\tau_{it}^r, T_{it}^r) + \frac{\beta U_i(\tau_i^e, T_i^e)}{1 - \beta}, \quad (13)$$

where  $U_i$  is given by (6) and  $(\tau_i^e, T_i^e)$  is the MPE tax transfer combination that applies to this group.

- Intuitively, the proposed group receives  $(\tau_{it}^r, T_{it}^r)$ , and the kleptocrat remains in power, so in the future, the play goes back to the equilibrium policy of  $(\tau_i^e, T_i^e)$ .

## Analysis (continued)

- In addition, the response of the ruler must satisfy the government budget constraint:

$$T_{1t}^r + T_{2t}^r \leq R(\tau_{1t}^r, \tau_{2t}^r) + Z + F. \quad (14)$$

- The “divide-and-rule” strategy will be successful and the ruler will keep power only if

$$V_i^C(\tau_{it}^r, T_{it}^r \mid \tau_i^e, T_i^e) \geq V_i^D. \quad (15)$$

## Analysis (continued)

- Two cases:
- ① The ruler will be able to maintain power, with the equilibrium strategy of  $\tau_{it}^e = \tau^* \equiv 1/(1 + \eta)$  as given by (10) and  $T_{it}^e = 0$  for  $i = 1, 2$  and for all  $t$ . Denote the set of parameters such that this happens by  $\Sigma^*$ , i.e., if  $\sigma' = (\eta, \beta, Z, F, \bar{\omega}, x) \in \Sigma^*$ , then  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^*, \tau^*, 0, 0)$ .
- ② The ruler will not be able to maintain power if he sets  $(\tau^*, \tau^*, 0, 0)$ , thus  $\sigma' \notin \Sigma^*$ . As we will see below, in this case,  $(\tau_1^e, \tau_2^e) < (\tau^*, \tau^*)$ , that is, the ruler will necessarily be forced to reduce taxes, and policy will be less distortionary.

## Analysis (continued)

- To characterize  $\Sigma^*$ , let us start with the subgame in which group  $j$  has proposed to replace the ruler, and denote the policies initially chosen by the ruler by  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e)$ .
- If the ruler responds with  $(\tau_{it}^r, T_{it}^r)$  for  $i \neq j$  such that  $V_i^C(\tau_{it}^r, T_{it}^r \mid \tau_i^e, T_i^e) < V_i^D$ , then he will be replaced.
- This shows that the ruler must ensure (15).
- To analyze how, and when, the ruler can do so, let us first define

$$V_i^C[\tau_i^e, T_i^e] = \max_{\tau_{1t}^r, \tau_{2t}^r, T_{1t}^r, T_{2t}^r} V_i^C(\tau_{it}^r, T_{it}^r \mid \tau_i^e, T_i^e) \quad (16)$$

subject to (14).

- If  $V_i^C[\tau_i^e, T_i^e] < V_i^D$  for  $i = 1$  or  $2$ , then group  $j \neq i$ , anticipating that its proposal will be accepted, will propose to replace the ruler, and the ruler will be deposed.
- Therefore, the ruler must guarantee that  $V_i^C[\tau_i^e, T_i^e] \geq V_i^D$  for  $i = 1$  and  $2$  to remain in power.



## Analysis (continued)

- First, characterize  $V_i^C [\tau_i^e, T_i^e]$ , the maximum utility that the ruler can give to the proposed group off the equilibrium path.
- To do this, we need to maximize (16) subject (14), which use

$$\tau_i^r = 0 \text{ and } \tau_j^r = \frac{1}{1 + \eta}.$$

- Therefore, in fighting off a challenge from group  $j$ , the ruler will set the revenue-maximizing tax rate on this group, and set zero taxes on the proposed group  $i$ .
- In addition, the ruler will clearly give the minimum possible amount to the proposer group, thus  $T_j^r = 0$ .
- Then the government budget constraint, (8), implies:

$$T_i^r = R(\tau_i^r, \tau_j^r) + Z + F.$$

## Analysis (continued)

- Using the previous expressions, the maximum off-the-equilibrium-path payoff of the proposed group, as a function of the MPE policy vector  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e)$ , is

$$V_i^C [\tau_i^e, T_i^e] = \frac{\omega_i^{1+\eta}}{1+\eta} + \frac{\omega_j^{1+\eta}}{1+\eta} \left( \frac{\eta}{1+\eta} \right)^\eta + Z + F + \frac{\beta U_i(\tau_i^e, T_i^e)}{1-\beta}. \quad (17)$$

- This expression is the maximum utility that the ruler can give to group  $i$ , following a proposal by group  $j$ , as a function of the equilibrium tax and transfer rates on group  $i$ .

## Analysis (continued)

- The MPE can thus be characterized as a solution to the following maximization problem of the ruler:

$$\max_{\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e} \frac{1}{1 - \beta_K} [R(\tau_1^e, \tau_2^e) + Z + F] \quad (18)$$

subject the constraint set:

$$V_i^C [\tau_i^e, T_i^e] \geq V_i^D \text{ for } i = 1, 2. \quad (19)$$

# Equilibrium Characterization

- Combining (11), (12) and (17), the constraint set, (19), can be rewritten as:

$$\begin{aligned} & \frac{\omega_i^{1+\eta}}{1+\eta} + \frac{\omega_j^{1+\eta}}{1+\eta} \left( \frac{\eta}{1+\eta} \right)^\eta + Z + F \\ & + \frac{\beta}{1-\beta} \left( \frac{1}{1+\eta} [\omega_i (1-\tau_i)]^{1+\eta} + T_i \right) \\ \geq & \frac{1}{1-\beta} \left( \frac{\omega_i^{1+\eta}}{1+\eta} + \frac{Z}{2} \right), \end{aligned} \quad (20)$$

for  $i = 1, 2$  and  $j \neq i$ .

## Equilibrium Characterization (continued)

- Then exploiting the fact that  $\omega_1 = \bar{\omega}(1+x)$  and  $\omega_2 = \bar{\omega}(1-x)$ , we can write the constraint set as

$$\Psi(\tau_1, T_1, x) \geq Z \left( \beta - \frac{1}{2} \right) - (1 - \beta) F, \text{ and} \quad (21)$$

$$\Psi(\tau_2, T_2, -x) \geq Z \left( \beta - \frac{1}{2} \right) - (1 - \beta) F, \quad (22)$$

where

$$\begin{aligned} & \Psi(\tau, T, x) \\ \equiv & \frac{(1 - \beta) \bar{\omega}^{1+\eta} (1 - x)^{1+\eta}}{1 + \eta} \left( \frac{\eta}{1 + \eta} \right)^\eta \\ & - \frac{\beta \bar{\omega}^{1+\eta} (1 + x)^{1+\eta}}{1 + \eta} \left( 1 - (1 - \tau)^{1+\eta} \right) + \beta T. \end{aligned}$$

# Interpretation

- Intuitively, the divide-and-rule strategy can arise in equilibrium because the ruler can shift enough resources to the proposed group.
- In other words, a very inefficient set of policies can be supported when each group knows that if it proposes to replace the ruler, the ruler will bribe the other group successfully and remain in power.
- Recognizing this off-the-equilibrium path threat, no group will challenge the ruler, who will then be able to pursue kleptocratic policies along the equilibrium path.

## Equilibrium Without Inequality

- Let us start with the case in which  $x = 0$  and there is no inequality between the two groups.
- In this case, the constraint set (19) is simply:

$$\Psi(\tau_i, T_i) \equiv \Psi(\tau_i, T_i, x = 0) \geq Z \left( \beta - \frac{1}{2} \right) - (1 - \beta) F. \quad (23)$$

- Note that whenever he can, the ruler would like to set the tax rates that maximize (18), i.e.,  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^*, \tau^*, 0, 0)$ .
- Using (23) and substituting  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^*, \tau^*, 0, 0)$ , the set  $\Sigma^*$  is given by the set of parameters such that

$$\Psi \left( \frac{1}{1 + \eta}, 0 \right) \geq Z \left( \beta - \frac{1}{2} \right) - (1 - \beta) F.$$

# Equilibrium Without Inequality (continued)

- More explicitly:

$$\Sigma^* = \left\{ \begin{array}{l} \sigma = (\eta, \beta, Z, F, \bar{\omega}) : \frac{\bar{\omega}^{1+\eta}}{1+\eta} \left( \frac{\eta}{1+\eta} \right)^\eta - \frac{\beta \bar{\omega}^{1+\eta}}{1+\eta} \\ \geq Z \left( \beta - \frac{1}{2} \right) - (1 - \beta) F \end{array} \right\}. \quad (24)$$

- If  $\sigma = (\eta, \beta, Z, F, \bar{\omega}) \in \Sigma^*$ , then the MPE involves  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^*, \tau^*, 0, 0)$ .



## Equilibrium Without Inequality (continued)

- What happens if  $\sigma \notin \Sigma^*$ .
- Then,  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^e, \tau^e, T^e, T^e)$  will be chosen such that  $\Psi(\tau^e, T^e) = Z(\beta - \frac{1}{2}) - (1 - \beta)F$  (given the symmetry between the two groups, the ruler will choose the same taxes and transfers for both groups).
- Moreover, inspection of the expression for  $\Psi(\tau, T, x)$  establishes that as long as  $\Psi(\hat{\tau}, T = 0) = Z(\beta - \frac{1}{2}) - (1 - \beta)F$  for some  $\hat{\tau} \in [0, \tau^*]$ , the ruler will reduce taxes to  $\hat{\tau}$  and sets 0 lump-sum transfers (this is intuitive, since taxes are distortionary).
- The important point to note is that the ruler can always satisfy (24), and therefore remain in power.
- This highlights the importance of the underlying political institutions: by allowing the ruler to use divide-and-rule, the current set of political institutions make sure that he always remains in power, though the rents that he can capture himself will vary.

# Equilibrium Without Inequality (continued)

## Theorem

Let  $\Sigma^*$  be given by (24). Then we have:

- 1 When  $\sigma \in \Sigma^*$ , then the unique MPE is an unconstrained kleptocratic regime where  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\tau^*, \tau^*, 0, 0)$  for all  $t$  and  $i = 1, 2$ .
- 2 When  $\sigma \notin \Sigma^*$ , then the unique MPE is a constrained kleptocratic regime where the equilibrium policies are  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (\hat{\tau}, \hat{\tau}, 0, 0)$  if  $\Psi(\hat{\tau}, T = 0) = Z(\beta - \frac{1}{2}) - (1 - \beta)F$  for some  $\hat{\tau} \in [0, \tau^*]$ , and  $(\tau_{1t}^e, \tau_{2t}^e, T_{1t}^e, T_{2t}^e) = (0, 0, \hat{T}, \hat{T})$  where  $\Psi(\tau = 0, \hat{T}) = Z(\beta - \frac{1}{2}) - (1 - \beta)F$  otherwise.

In both cases, a challenge from group  $j$ , i.e.,  $p_{jt} = 1$ , is met by  $(\tau_{jt}^r, T_{jt}^r) = (\tau^*, 0)$  and  $(\tau_{it}^r, T_{it}^r)$  for  $i \neq j$ .

## Equilibrium Without Inequality (continued)

- To see the uniqueness of equilibrium, recall that if group  $j$  makes a proposal to remove the ruler from power, the ruler will respond with  $\tau_{jt}^r = \tau^*$ , and when  $\sigma \in \Sigma^*$ , we also have  $\tau_{jt}^e = \tau^*$ .
- It may therefore appear that we can construct equilibria where there are challenges along the equilibrium path when  $\sigma \in \Sigma^*$ , and thus the equilibrium described in part 1 of Proposition 1 is not unique.
- This is not the case, however.
- Any combination of strategies where  $p_{jt} = 1$  cannot be an equilibrium.
- If it were, a deviation to  $(\tau_{jt}^e, T_{jt}^e) = (\tau^*, \varepsilon)$  for  $\varepsilon > 0$  would be a best response for the ruler, and the strategy of  $p_{jt} = 1$  would then cost group  $j$  an amount  $\varepsilon > 0$ .
- Since a smaller  $\varepsilon$  is always preferred by the ruler, the only combination of best response strategies is when  $\varepsilon \rightarrow 0$ , which is the one described in the proposition.

# Interpretation

- This analysis therefore formalizes how the ruler remains in power and is able to transfer resources to himself thanks to the divide-and-rule strategy.
- He achieves this as follows: when threatened by the “proposer” group, he can always gain the allegiance of the other, “proposed” group, by shifting resources to them.
- Because the proposed group is pivotal, the ruler can remain in power if he can successfully buy off the proposed group.
- If this is the case, anticipating this outcome, neither group will attempt to remove the ruler from power, and he will be able to establish a kleptocratic regime transferring resources to himself at the expense of the productive groups in society.

## Interpretation (continued)

- Also possible: “constrained kleptocratic regime,” where the ruler is able to pursue kleptocratic policies transferring resources to himself, but in this endeavor he is constrained by the threat that the two groups will coordinate and remove him from power.
- To avoid this possibility, the ruler reduces the equilibrium taxes (or sometimes sets 0 taxes and makes positive transfers) to the two groups.

## Comparative Statics

- Greater  $F$  makes  $\sigma \in \Sigma^*$  more likely, and when  $\sigma \notin \Sigma^*$ , greater  $F$  increases taxes: Greater  $F$  relaxes the budget constraint of the ruler and provides him with more resources to buy off the pivotal group off the equilibrium path. Possible that foreign aid given to many African regimes during the Cold War may have had the unforeseen consequence of consolidating kleptocratic regimes.
- Greater  $\beta$  makes  $\sigma \in \Sigma^*$  less likely, and when  $\sigma \notin \Sigma^*$ , greater  $\beta$  reduces taxes.
- If  $\beta < 1/2$ , then greater  $Z$  makes  $\sigma \in \Sigma^*$  more likely, and when  $\sigma \notin \Sigma^*$ , it increases taxes. If  $\beta > 1/2$ , the opposite comparative statics apply. Two conflicting effects of  $Z$ . First, like foreign aid, greater  $Z$  relaxes the budget constraint of the ruler. Second, greater  $Z$  increases the value of democracy.
- If  $\beta > (\eta / (1 + \eta))^\eta$ , then greater  $\bar{\omega}$  makes  $\sigma \in \Sigma^*$  less likely, and when  $\sigma \notin \Sigma^*$ , it reduces taxes. If  $\beta < (\eta / (1 + \eta))^\eta$ , the opposite comparative statics apply.

## Equilibrium With Inequality

- When there is inequality between the two groups, the equilibrium is similar, though its characterization is more involved.
- The comparative static results discussed previously continue to apply with inequality, but there is also a new comparative static with respect to inequality,  $x$ .
- A greater  $x$ —greater inequality between the producer groups—makes the unconstrained kleptocratic regime less likely.
- Intuitively, the more binding constraint from the point of view of the ruler is to satisfy the more productive group: when this group becomes even more productive, democracy becomes more attractive for the producers in this group, and therefore, it becomes more difficult for the ruler to buy them off when challenged.
- Possible interpretation: an economically powerful interest group might be a good counterweight to kleptocratic rulers.

# Politics of Fear

- A related model is developed by Padro-i-Miquel (2008).
- Starting point: weakly-institutionalized polities in ethnically-divided societies lead to three peculiar features:
  - 1 Differential taxes on different ethnic groups
  - 2 Support from own ethnic group sufficient to remain in power with high probability
  - 3 Replacing rulers leads to uncertainty.
- Idea: this is because each ethnic group is afraid of the rule of the other.



# Model of Politics of Fear

- An infinitely repeated economy populated by a continuum of citizens of mass 1.
- Citizens belong to one of two ethnic groups,  $A$  and  $B$ .
- The size of group  $A$  is  $n^A$ .
- A group is defined by two distinct sets of characteristics.
  - 1 there are some ascriptive characteristics like language or skin color (maybe geographical distribution) that are identifiable and not easily changeable;
  - 2 different groups obtain wealth from different portfolios of economic activities. These portfolios generate  $w^A$  and  $w^B$  per period, respectively.

## A Model of Politics of Fear (continued)

- Economic activity is assumed to be the only characteristic that a group can change.
- Members of a group may decide to switch to the activity portfolio of the other group, but in the process they will lose a fraction of its wealth.
- Hence if group  $A$  switches to  $B$ 's activity, it obtains  $w^A(1 - \phi^A)$  instead of  $w^A$ .
- $\phi^i$  thus captures the extent to which a group's wealth is specific to a particular activity.
- Let  $\omega_t^i = 1$  if group  $i$  switches activities in period  $t$ . Otherwise  $\omega_t^i = 0$ .

## A Model of Politics of Fear (continued)

- The state performs two functions:
  - 1 taxation of activities
  - 2 provision of group-specific public goods
- As in the previous model, activity-specific taxes and group-specific public goods important and a feature of “weak institutions” .
- In particular, patronage can be perfectly targeted to specific (ethnic) groups

## A Model of Politics of Fear (continued)

- Both groups have identical preferences represented by

$$\mathbb{E} \sum_{t=0}^{\infty} \delta^t C_t^j$$

- At any point in time, one ethnic group has control of the government in power is delegated to a leader  $L^i$
- Problem: how a group controls its own leader?

## A Model of Politics of Fear (continued)

- Denote  $\tau^{ij}$  the tax level that a leader of group  $i$  levies on (the activities of) group  $j$ .
- Similarly, let  $Z^{ij}$  be the amount that leader of group  $i$  spends on patronage for group  $j$ .
- Obviously  $i, j \in \{A, B\}$ .
- The amount  $Z^{ij}$  provides utility  $R(Z^{ij})$  to group  $j$  with standard assumptions

$$R' > 0, R'(0) > 1, R'' < 0 \text{ and } R(0) = 0.$$

- Group  $-j$  receives no utility from  $Z^{ij}$ .
- The economy has two states,  $S_t \in \{A, B\}$ , denoting whether power is in the hands of group  $A$  or group  $B$  in period  $t$ .

## A Model of Politics of Fear (continued)

- The instantaneous utility of a citizen of group  $j$  in state  $S$  is thus:

$$C(S, \omega^j) = (1 - \omega^j)(w^j - \tau^{Sj}) + \omega^j((1 - \phi^j)w^j - \tau^{S-j}) + R(Z^{Sj})$$

- The leader wants to maximize the funds that she can divert for her own use.
- A leader of group  $A$  obtains instantaneous utility (the expression for  $B$  is just symmetric) as long as she is in power:

$$U^A = n^A(\tau^{AA} - Z^{AA}) + (1 - n^A)(\tau^{AB} - Z^{AB})$$

and discounts future payoffs by  $\delta$ .

- When a leader is not in power, she obtains 0 utility per period.

## Interpretation

- Weakness of institutions is central.
- First, as long as the incumbent leader retains the support of her kin group, she maintains her position.
- The unique credible source of support is given by the ruler's ethnic linkage with her own group. In particular, the “excluded” group has no chance of recovering power if the incumbent leader keeps the support from her group.
- Second, if the supporters of an incumbent leader decide to subvert the authority of their leader and want to oust her from power, they succeed automatically, but when a leader is ousted from power, the state does not perform its functions for that period.
- Moreover, during this phase of transition, the excluded group can use this opportunity to grab power.
- The status of the group in power will change with probability  $1 - \gamma^S$ .
- Thus  $\gamma^S$  captures the degree to which the grip on power of group  $S$  is solid in the presence of upheaval from its own members.

# Timing of Events

- The timing of each stage game, given state  $S_t$ , is:
  - ① Leader  $L^S$  announces the policy vector  $P_t = \{\tau_t^{SA}, \tau_t^{SB}, Z_t^{SA}, Z_t^{SB}\}$
  - ② The citizens of group  $S_t$  decide to “subvert”  $s_t = 1$  or not  $s_t = 0$
  - ③ If  $s_t = 0$ , the citizens decide  $\omega_t^A$  and  $\omega_t^B$  and afterwards the policy vector is implemented, payoffs are realized and the next period starts with  $S_{t+1} = S_t$
  - ④ If  $s_t = 1$ , the leader is ousted immediately and the “revolt” vector  $P_r = \{0, 0, 0, 0\}$  is implemented. With probability  $1 - \gamma^{S_t}$ ,  $S_t$  loses power and the next period starts with  $S_{t+1} = -S_t$ . Otherwise, the next period starts with  $S_{t+1} = S_t$



# Fear without Repression

- Note that as in the previous model, no repression instrument for the elite:
  - if she loses the support of her group, she is replaced at no explicit cost.
- Also for simplicity: taxes entail no efficiency costs.

## Definition of Equilibrium

- Focus on (pure strategy) Markov Perfect Equilibrium (MPE).
- The state space of this economy includes only two elements,  $\Theta = \{A, B\}$ , designating which group is in power.
- Denote the state at each period by  $S_t$ , where obviously  $S_t \in \Theta$ ,  $\forall t = 0, 1, 2, \dots$
- Assume that each group has a set of potential leaders from which replacements will be drawn randomly.
- Call these two sets of leaders  $\Delta^A$  and  $\Delta^B$ .
- At any point in time, the leader in power is denoted by  $L^A$  or  $L^B$  depending on the group she was drawn from.
- Denote by  $\tilde{L}^A$  the potential leaders that belong to  $\Delta^A$  but are not in power currently.  $\tilde{L}^B$  is defined symmetrically.
- The strategy of the current leader  $L^A$  is denoted by  $P^A$  and it is a four-tuple  $\{\tau^{AA}, \tau^{AB}, Z^{AA}, Z^{AB}\} \in \mathbb{R}_+^4$  when  $S_t = A$ .
- When either  $S_t = B$  or  $S_t = A$  but a leader belongs to  $\tilde{L}^A$ , her set of strategies is empty.

# Strategies

- The strategy of group  $A$  is denoted  $\sigma^A(S, P^S)$  and depends on both the state of political capture and the policy vector proposed by the leader.
- It determines two actions,  $\{s^A, \omega^A\}$  that have been defined above as the decision to subvert and the decision to switch economic activities.
- If  $S_t = A$ ,  $s^A \in \{0, 1\}$ , that is, if the leader is from group  $A$ , this group can decide to give her support or to subvert her authority.
- On the other hand, if  $S_t = B$ ,  $s^A = \emptyset$ .  $\omega^A \in \{0, 1\}$  independently of the state.
- The symmetric definition holds for the strategy space of citizens of group  $B$ .

# Transitions

- State transitions work as follows.
- $S_{t+1} = S_t$  whenever  $s_t^S = 0$ . If  $s_t^S = 1$ , that is, if there is subversion,  $S_{t+1} = -S_t$  with probability  $1 - \gamma^{S_t}$ .
- Denote this transition function  $T(\sigma^S, S)$ .
- Hence, power only changes hands with positive probability when the supporter group subverts.
- Otherwise the state remains the same.
- Since in equilibrium I will show that there is never subversion, the unique equilibrium is stationary.

# MPE

- A MPE is a combination of strategies  $\{\tilde{P}^A, \tilde{P}^B, \tilde{\sigma}^A, \tilde{\sigma}^B\}$  that are best responses to each other in all states.
- In particular, consider the following set of Bellman equations:

$$V^A(S) = \max_{\sigma^A} \{C^A(S, \tilde{P}^S, \sigma^A(S, P^S), \tilde{\sigma}^B) + \delta \sum_{S' \in \Theta} V^A(S') T(\sigma^S, S)\}$$

$$V^B(S) = \max_{\sigma^B} \{C^B(S, \tilde{P}^S, \sigma^B(S, P^S), \tilde{\sigma}^A) + \delta \sum_{S' \in \Theta} V^B(S') T(\sigma^S, S)\}$$

$$W_{L^A}^A(A) = \max_{P^A} \{U^A(P^A, \tilde{\sigma}^A, \tilde{\sigma}^B) + \delta \sum_{S' \in \Theta} W_{\Delta}^A(S') T(\tilde{\sigma}^A(A, P^A), A)\}$$

$$W_{L^B}^B(B) = \max_{P^B} \{U^B(P^B, \tilde{\sigma}^B, \tilde{\sigma}^A) + \delta \sum_{S' \in \Theta} W_{\Delta}^B(S') T(\tilde{\sigma}^B(B, P^B), B)\}$$

## MPE (continued)

- Here  $C^j$  denotes the consumption of citizen  $j$  as a function of the state  $S$  and the strategies of the leader in power and both sets of citizens.
- $V^j(S)$  denotes the value function for citizen  $j$  in state  $S$ .
- $W_{L^S}^i(S)$  denotes the value function for leader from group  $i$  in state  $S$ , when she is the current leader  $L^S$ .
- To complete the definition, note that  $W_{\Delta}^A(B)$ ,  $W_{\sim L^A}^A(A)$ ,  $W_{\Delta}^B(A)$  and  $W_{\sim L^B}^B(B)$  are independent of any decision that the particular leader could take.
- They only depend on the probability that, in equilibrium, a particular leader will be in power in the future.

## Strategies (continued)

- Since it will be shown that there is no revolt in equilibrium, whether the opposite group is in power or whether another leader from her own group is in power, the continuation value of an out-of-power leader is 0.
- As a consequence, these are not interesting strategic objects in this game.
- A Markov Perfect Equilibrium is thus a combination of strategies  $\{\tilde{P}^A, \tilde{P}^B, \tilde{\sigma}^A, \tilde{\sigma}^B\}$  that solved the above Bellman equations.

# Characterization

- Assume without loss of generality that  $S_t = A$ .
- The equilibrium is characterized by backwards induction within each stage game.
- Examine first the decision to switch the sector of production by  $B$  producers.
- After observing the policy vector  $P_t$ , they will switch sector only if the loss in wealth is smaller than the difference in taxation.
- Formally,

$$\omega_t^B = 1 \text{ iff } w^B - \tau^{AB} < (1 - \phi^B)w^B - \tau^{AA}$$

- Since it is in the interest of the ruler not to allow this switch, which is wasteful, this ability to switch provides an upper bound on the differential taxation that the ruler can levy on group  $B$ .



## Characterization (continued)

- The effective constraint on the ruler will thus be

$$\tau^{AB} \leq \phi^B w^B + \tau^{AA} \quad (25)$$

- The equivalent restriction for group  $A$  is then

$$\tau^{AA} \leq \phi^A w^A + \tau^{AB} \quad (26)$$

- Obviously, both restrictions cannot be binding at the same time.

## Characterization (continued)

- Let us examine now the decision to “subvert” (replaced the leader) by  $A$  supporters.
- The leader is the first player to act in the stage game.
- As a consequence, since strategies can only be conditional on the state of the economy, a leader  $L^A$  always proposes the same policy vector  $P^A$ .
- Upon observing  $P^A$ , if there is no subversion ( $s_t = 0$ ),  $A$  supporters obtain:

$$w^A - \tau^{AA} + R(Z^{AA}) + \delta V^A(A)$$

- Alternatively, if they subvert,  $s_t = 1$ , they expect:

$$w^A + \delta \gamma^A V^A(A) + \delta(1 - \gamma^A) V^A(B)$$

- Hence the *non-subversion condition* is

$$\tau^{AA} - R(Z^{AA}) \leq \delta(1 - \gamma^A)(V^A(A) - V^A(B)) \quad (27)$$

## Characterization (continued)

- Note that the ruler will always satisfy this constraint.
- Hence in any MPE there will never be any ousting of a ruler.
- Since no change of ruler implies no change of state, any MPE of this game will be stationary, with the ruler proposing always the same  $P^A$  which will be accepted every time.
- After imposing stationarity, this constraint can be written as

$$\tau^{AA} - R(Z^{AA}) \leq \frac{\delta}{1 - \delta} (1 - \gamma^A) [\tilde{\tau}^{BA} - R(\tilde{Z}^{BA}) - \tilde{\tau}^{AA} + R(\tilde{Z}^{AA})]$$

- Here the  $\sim$  denotes equilibrium values. Note that the right hand side of the inequality contains all expected future terms.

# Characterization (continued)

- Define

$$\Phi^A \equiv \frac{\delta}{1-\delta} (1-\gamma^A) [\tilde{\tau}^{BA} - R(\tilde{Z}^{BA}) - \tilde{\tau}^{AA} + R(\tilde{Z}^{AA})].$$

- This term summarizes the way in which future expected equilibrium play affects present decisions.
- With these ingredients, now we are able to posit the problem of ruler  $L^A$ .

# The Ruler's Problem

- The ruler's problem can be written as

$$\max_{\{\tau^{AA}, \tau^{AB}, Z^{AA}, Z^{AB}\}} n^A(\tau_t^{AA} - Z_t^{AA}) + (1 - n^A)(\tau_t^{AB} - Z_t^{AB}) + \delta W_{L^A}^A(A)$$

subject to

$$\begin{aligned} \tau^{AB} &\leq \phi^B w^B + \tau^{AA} && [\lambda] \\ \tau^{AA} &\leq \phi^A w^A + \tau^{AB} && [\nu] \\ \tau^{AA} - R(Z^{AA}) &\leq \Phi^A && [\mu] \\ 0 &\leq Z^{AB} && [\rho] \end{aligned}$$

# Equilibrium

- The first order conditions of this program yield:

$$n^A + \lambda - \nu - \mu = 0 \quad (28)$$

$$1 - n^A - \lambda + \nu = 0 \quad (29)$$

$$-n^A + \mu R'(Z^{AA}) = 0 \quad (30)$$

$$-(1 - n^A) + \rho = 0 \quad (31)$$

## Equilibrium (continued)

- From (31),  $Z^{AB} = 0$ .
- The reason is that providing patronage good to the excluded group is costly and yields no benefit, since the supporter group is enough to maintain power.
- From (28) and (29) and the fact that  $\lambda$  and  $\nu$  cannot both be strictly positive at the same time,

$$\nu = 0, \lambda = 1 - n^A \text{ and } \mu = 1.$$

- $\nu = 0$  implies that the ruler endogenously chooses to discriminate against the “excluded” group.
- The reason is that she only needs the support of her own group to remain in power and therefore will tax the excluded group as much as she can, that is, to the point in which the first constraint is binding.

## Equilibrium (continued)

- Note that every dollar that the ruler is able to tax her own supporters is worth more than one for her, because it allows her to tax an extra dollar on the excluded group.
- In (30)  $\mu$  multiplies the return from the last unit of patronage given to group  $A$ . The cost of this last unit is only  $n^A$ , but its return is increased taxation from the whole population (because  $\mu = 1$ ).
- This disparity is the reason for inefficient patronage provision.
- Intuitively, the non-subversion constraint is binding and hence an increase in  $R(Z^{AA})$  allows the ruler to increase taxation on her supporters and on the other group.
- Hence, patronage good for  $A$  is overprovided in equilibrium: the ruler considers the benefits from increasing taxation from the whole population, while a social planner would only consider the group that receives utility from it.
- This distortion is worse the narrower the basis of support of the ruler (the smaller  $n^A$ ).



# Equilibrium (continued)

- In summary, the equilibrium is given by the solution to the following four equations:

$$Z^{AB} = 0 \quad (32)$$

$$R'(Z^{AA}) = n^A \quad (33)$$

$$\tau^{AA} = \Phi^A + R(Z^{AA}) \quad (34)$$

$$\tau^{AB} = \phi^B w^B + \Phi^A + R(Z^{AA}) \quad (35)$$

## Equilibrium (continued)

- The solution for patronage public goods (32) and (33) is thus independent of expectations of future play, but this is not the case for the amount of resources that the leader can extract from both groups.
- In fact, the solution above presents a mapping between future equilibrium play and current taxation.
- The problem of leader  $L^B$  is symmetric and thus

$$\begin{aligned} Z^{BA} &= 0 \\ R'(Z^{BB}) &= 1 - n^A \\ \tau^{BB} &= \Phi^B + R(Z^{BB}) \end{aligned} \tag{36}$$

$$\tau^{BA} = \phi^A w^A + \Phi^B + R(Z^{BB}) \tag{37}$$

## Equilibrium (continued)

- Denote the mapping from expectations to current play  
 $\Gamma(\Phi^A, \Phi^B) = (\tau^{AA}, \tau^{AB}, \tau^{BA}, \tau^{BB})$ , given by (34), (35), (36) and (37).
- Moreover, the definition of  $\Phi^A$  (and the symmetric definition of  $\Phi^B$ ) provides a mapping from actual play to consistent expectations  
 $\Psi(\tau^{AA}, \tau^{AB}, \tau^{BA}, \tau^{BB}) = (\Phi^{CA}, \Phi^{CB})$ .
- The equilibrium posits the requirement that these expectations be consistent with future play.
- In this context this reduces to finding a fixed point of the mapping that relates expectations into themselves:  
 $\Psi(\Gamma(\Phi^A, \Phi^B)) = (\Phi^{CA}, \Phi^{CB})$ .

## Equilibrium (continued)

- To characterize the solution, let

$$\zeta^i = \frac{\delta}{1 - \delta}(1 - \gamma^i).$$

- Solving this system for the fixed point  $(\Phi^A, \Phi^B) = (\Phi^{CA}, \Phi^{CB})$  then yields:

$$\Phi^A = \frac{\zeta^A(1 + \zeta^B)(\phi^A w^A + R(Z^{BB})) + \zeta^A \zeta^B (\phi^B w^B + R(Z^{AA}))}{1 + \zeta^A + \zeta^B}$$

$$\Phi^B = \frac{\zeta^B(1 + \zeta^A)(\phi^B w^B + R(Z^{AA})) + \zeta^A \zeta^B (\phi^A w^A + R(Z^{BB}))}{1 + \zeta^A + \zeta^B}$$

- There is a unique fixed point and thus a unique MPE.

# Equilibrium (continued)

## Theorem

$L^A$  proposes the following policy vector:

$$\begin{aligned} Z^{AA} &\equiv Z_*^A \text{ such that } R'(Z_*^A) = n^A \\ Z^{AB} &= 0 \\ \tau^{AA} &< \tau^{AB} \end{aligned}$$

The citizens of group A accept this policy vector:  $s^A = 0$ . No activity switch occurs:  $\omega^A = \omega^B = 0$ . If group B starts in control, the equilibrium is symmetric.

# Interpretation

- Endogenous inefficient policies for the group to remain in power.
  - In particular, excessive provision of group-specific public goods for own group and under provision for the other group
  - Consistent with Bates's interpretation of agricultural policies in tropical Africa.
  - The reason is that the ruler needs to buy support from her own group while, at the same time, wants to extract a lot of resources from the economy.
- Taxation is also differential across groups
  - However, own group is also exploited
- Why do members of the group in power put up with exploitation by leaders?
  - Politics of fear: they will do even worse under the rule of the other group.

# Amplification of Inefficiency

- Exploitation activities are “strategic complements”
- If group  $B$  will exploit group  $A$  more, then the leader of group  $A$  can exploit her own members more and thus exploit group  $B$  members even more.

# Conclusion

- A set of different issues arise politician-citizen interactions in weakly-institutionalized polities
- The principal-agent paradigm may not be useful.
- Instead, politicians may structure incentives for citizens via patronage or fear in order to remain in power and exploit the population.



# Evidence

- Interesting evidence that these types of considerations are important is provided by Anderson and François (2017).
- They show that reserving political office for members of a particular, disadvantaged group, can improve or deteriorate political equilibrium, depending on whether there is enough competition.
- If there is enough competition, then “politics of fear” was pernicious, and reservations improve things.
- If there isn't enough competition, then such reservations can make things worse.
- In their settings, the reservations are for the position of Pradhan in the panchayats in Maharashtra. These are powerful positions in this state.
- They measure the degree of competition by the ethnic composition of the sub-caste or jati.

## Evidence (continued)

Table 1 - Baseline Estimations of GP Measures

Variable	$25\% \leq \text{Jati Pradhan} \leq 50\%$ <i>RESERVED<sub>k</sub></i>	Jati Pradhan < 25% / Jati Pradhan > 50% <i>RESERVED<sub>k</sub></i>
All programs	2.01 (0.90)**	-0.55 (0.39)
BPL programs	0.81 (0.30)***	-0.16 (0.14)
Income programs	1.81 (0.82)**	-0.54 (0.36)
Employment Guarantee Scheme	0.13 (0.07)**	-0.02 (0.04)
Revenue/capita	793.9 (246.1)***	51.9 (89.3)
Taxes/capita	459.4 (192.3)**	21.8 (47.7)
Funds/capita	298.5 (128.8)**	30.2 (44.4)
Expenses/capita	706.6 (386.8)**	95.5 (87.9)
Number of Committees	1.56 (0.71)**	-0.05 (0.25)
Observations	65	179

Courtesy of Siwan Anderson and Patrick Francois. Used with permission.

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