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ONLINE APPENDIX: Why Do Voters Dismantle Checks and Balances? Extensions and Robustness

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Why Do Voters Dismantle Checks and Balances? Extensions and Robustness

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Abstract

In this online appendix we extend the basic model in the paper in several directions, discuss the robustness of the results, and moreover what new mechanisms our extensions implies as compared to the ones in the basic model.

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1 Introduction

The main insight in the paper is that checks and balances may be costly for the poor majority because, by reducing the president's rents, they make him more amenable to lobbying and bribery by an organized rich lobby. In this online appendix, we show that this main insight is robust under a variety of different modeling assumptions. We first consider another model of separation of powers, along the lines of Diermeier and Myerson (1999) and Tsebelis (2002), where checks and balances give the legislature veto power over all dimensions of policy. We next show that if instead of our simple model of separation of powers, we adopt the Persson, Roland and Tabellini (1997, 2000) approach of assuming that, under separation of powers, the president decides the tax rate and the legislature makes the spending decisions, all of our results generalize. We next use this framework to discuss how including political minorities (representatives of the rich elite) in the legislature affects the results. Finally, we also show that the same results apply when we relax the quasi-linearity of the utility of politicians.

2 Extensions to the Basic Model

In this section, we extend the basic model in the paper. Some of the more technical parts are collected in the appendix.

2.1 Checks and Balances as Veto Powers

In Section 2 in the paper, we modeled checks and balances as corresponding to a separation of policy decisions between the president and the legislature. A complimentary view of checks and balances relates it to the existence and power of "veto players", for example as in Diermeier and Myerson (1999) and Tsebelis (2002). We now show that the general insights presented so far continue to hold with this alternative but complementary view of checks and balances.

More specifically, we start, again, with the legislature consisting of a single chamber and a single legislator, who again represents the poor (all of these features will be relaxed below). We then adopt the following stylized game as a representation of the process of bargaining and political interactions between the president and the legislature in the presence of checks and balances:

1. The president proposes a tax rate τ. If the legislator agrees, the tax rate is implemented. If the legislator vetoes the tax rate, then the legislator proposes a new tax rate. If the president agrees, the tax rate is implemented. If the president vetoes the tax rate, the status quo tax rate $\widetilde{\tau} \leq \bar{\tau}$ is implemented.

2. The president proposes transfers to the poor T^p (limited by the total budget $\tau\bar{y}$). If the legislator agrees, then the transfer is implemented. If the legislator vetoes the transfer, the legislator proposes a new transfer. If the president agrees the transfer is implemented. If the president vetoes the transfer, the status quo transfer $\widetilde{T^p}$ is implemented.

3. The president proposes transfers to the rich T^r (limited by the total budget $\tau\bar{y}-(1-\delta)T^p$). If the legislator agrees, then the transfer is implemented. If the legislator vetoes the transfer, the legislator proposes a new transfer. If the president agrees the transfer is implemented. If the president vetoes the transfer, the status quo transfer $\widetilde{T^r}$ is implemented.

4. The president proposes rents R^P to himself (limited by the available budget $\tau\bar{y} - (1 - \delta)T^p - \delta T^r$). If the legislator agrees the rents are implemented. If the legislator vetoes the rents, the legislator proposes a new rent allocation to the president. If the president agrees, the rents are implemented. If the president vetoes the rents, then the status quo rents $\widetilde{R^P}$ is implemented.

5. The president proposes rents R^L to the legislator (limited by the available budget $\tau\bar{y} - (1-\delta)T^p - \delta T^r - R^P$). If the legislator agrees, the rents are implemented. If the legislator vetoes, the legislator proposes a new rent allocation. If the president agrees the rents are implemented. If the president vetoes, the status quo rents $\widetilde{R^L}$ is implemented.

6. Any remaining funds on the budget; $\tau\bar{y} - (1 - \delta)T^p - \delta T^r - R^P - R^L$ are distributed lump-sum to citizens.

There are two special features of this game that are worth noting. First, rather than the entire vector of policies and rents being agreed at once, they are being negotiated component by component. Second, the last player to make proposals before the status quo is implemented is always the legislator. Both of these features are adopted to simplify the analysis. Moreover, it will be clear from our analysis that the exact sequencing of policy decisions has no bearing on the results. Finally, let us also simplify the algebra by setting $\widetilde{R^P} = \widetilde{R^L} = 0$. Clearly, greater values of $\widetilde{R^P}$ and $\widetilde{R^L}$ make checks and balances less attractive to voters. Thus the simplifying assumption makes checks and balances more attractive to voters (and so our results that they may elect to remove checks and balances more striking).

As usual we proceed with backwards induction. Consider first the case where $\kappa = 0$ so that the rich are not able to solve their collective action problem and will not make a bribe offer. The president will veto any rents to the legislator, since transferring funds to citizens will provide him with higher utility. Realizing this, the legislator will accept zero rents. Then in equilibrium the president will indeed propose zero rents. In the same way the legislator will veto rents to the president, and realizing this the president proposes zero rents which the legislator accepts. Since there will be no rents in this case, the president proposes to use the whole budget as transfers to the poor, and the legislator will accept this. Realizing that all funds will be used as transfers to the poor, a president from the poor group will then propose the maximum tax rate $\bar{\tau}$, and the legislator will accept this. Thus when $\kappa = 0$ the solution is exactly the same as in the basic model in the paper.

Consider next the case where $\kappa = 1$ so that the rich can influence policy through bribing. The rich will now need to bribe both the president and the legislator. Thus, for exactly the same reason as in the model with a judiciary that can be bribed, α^* from the basic model needs to be replaced by α^{**}, and b^* by b^{**}, and we have the following proposition.

Proposition B-1 *All of the results in Proposition 3 in the paper and the subsequent corollaries hold in the current model (with α^{**} replacing α^* and b^{**} replacing b^*).*

Multicameral Legislature

In line with Diermeier and Myerson (1999), we now allow the legislature to consist of multiple chambers, each consisting of a single legislator. Each chamber has veto and proposal powers. To highlight the implications of multiple chambers, we continue to assume that all legislators are from the poor group (this will be relaxed in subsection 2.3). In this case the voters elect a president and $h \geq 1$ chambers of the legislature. Each chamber consists of one legislator. Thus when $h = 1$ we have a unicameral legislature as above, when $h = 2$ we have a bicameral legislature, and so on. Note that h in our setting closely maps to the "hurdle factor" in Diermeier and Myerson (1999), which captures, the number of veto players that have to be bribed if policy is to be changed compared to a situation without bribing. As in Diermeier and Myerson (1999) the multicameral legislature is serial. Thus the timing is exactly as above, except that now a policy proposal has to pass through multiple chambers and can be vetoed by each of them in turn.

Consider first the case where $\kappa = 0$ so that the rich are not able to solve their collective action problem. By exactly the same logic as above it is easy to see that policy is still the same as in the basic model in Section 2 of the paper.

Consider next the case where $\kappa = 1$ so that the rich can influence policy through bribing. Compared to the situation with a unicameral legislature the rich now have to bribe the president and h chambers. The maximization problem is analogous to the case with a unicameral legislature, except that now there are $1 + h$ politicians' participation constraints that have to be satisfied. Going through the same maximization as above we find that the president and all of the legislators receive the same bribe, and that $\hat{T}^p = 0$ and $\hat{\tau} = \bar{\tau}$ if

$$\frac{\alpha}{1-\alpha} v'\left(\hat{b}^P\right) > \frac{1+h}{1-\delta},$$

where $\hat{b}^P$ is the solution to the maximization problem in (11) in the text (see the proof of Proposition 2). This in turn implies that, similar to b^* in the text, the critical value of α for $\hat{T}^p = 0$ and $\hat{\tau} = \bar{\tau}$ is given by

$$\frac{\alpha^{***}}{1-\alpha^{***}} v'\left(\hat{b}^P(\alpha^{***})\right) = \frac{1+h}{1-\delta}.$$

This equation implies that α^{***} is increasing in the hurdle factor h. Intuitively, when there are more chambers with veto power, there will be more legislators to bribe, and this makes it more likely that the bribing proposal will include some income redistribution (since this enables lower bribes for each legislator). Also, note that except for this modification, the analysis in Section 2 of the paper still carries over to the present case with α^* replaced by α^{***} and $b^{***} < b^*$replaced by b^{***}, where b^{***} is given by $v'(b^{**}) = (1+h)(1-\alpha)/\alpha\,(1-\delta)$. Thus we have the following proposition:

Proposition B-2 *Consider the case with a serial multicameral legislature with veto powers. Then all of the results in Proposition 3 and the subsequent corollaries still hold (with α^{***} replacing α^* and b^{***} replacing b^*).*

Thus the model with checks and balances as veto powers leads to similar insights as our basic model presented in Section 2 of the paper. However, the multicameral extension discussed here also implies that a greater h may make checks and balances more likely to emerge in equilibrium. This result, however, depends on the assumption that all chambers contain legislators from the poor income group. In subsection 2.3, we will see that legislative structures that also empower political minorities (here the rich minority) may paradoxically make checks and balances less likely in equilibrium because they may reduce the rents of the president even further and make him even cheaper to buy/influence.

2.2 Separation of Taxation and Spending Decisions

In this subsection, we show that our main insights are also robust to another popular way of modeling checks and balances. In particular, we follow Persson, Roland and Tabellini (1997, 2000) and assume that the presence of checks and balances corresponds to the separation of taxation and spending decisions. More specifically, the president sets the tax rate and the legislator makes all the spending decisions. Recall that the budget constraint is

$$(1-\delta)\,T^p + \delta T^r + R^L + R^P \leq \tau \bar{y}. \tag{B-1}$$

Recall also that without checks and balances the rents to the president are determined as $R^P = R^*$, where R^* satisfies

$$\alpha v'\left(R^*\right) = \frac{1-\alpha}{1-\delta}. \tag{B-2}$$

The transfer to the poor is given by $T^p = \left(\bar{\tau}\bar{y} - R^*\right)/\left(1-\delta\right)$. The utility of poor agents is given by

$$U^p\left[\gamma = 0, \kappa = 0\right] = \frac{\left(\bar{\tau}\theta + 1 - \theta\right)\bar{y} - R^*}{1-\delta}. \tag{B-3}$$

Next, suppose that $\kappa = 1$. In this case, the rich lobby can make a bribe offer, $\left\{\hat{b}^P, \hat{\tau}, \hat{T}^p, \hat{T}^r, \hat{R}^L, \hat{R}^P\right\}$. However, for the same reason as in Section 2 in the paper we can also see that in this case the rich lobby can never get strictly higher utility by offering a bribe. There would be no offer that the rich lobby can make that would be acceptable to the politician and at the same time increase their own utility.

The following proposition summarizes the case without checks and balances:

Proposition B-3 *Suppose the constitution involves no checks and balances (i.e., $\gamma = 0$). Then the equilibrium policy involves $\tau = \bar{\tau}$, $R^P = R^*$ (as given by (B-2)), $R^L = 0$, $b^P = 0$, $b^L = 0$, $T^r = 0$, and $T^p = (\bar{\tau}\bar{y} - R^*) / (1-\delta)$. The utility of poor agents in this case is given by (B-3).*

Next, suppose that there is separation of powers ($\gamma = 1$) and again start with $\kappa = 0$, so that the rich are not able to solve their collective action problem and will not make a bribe offer. In the policy-making subgame, the legislator will make the spending decisions and will solve the program

$$V^{L,p}[\tau, \gamma = 1, \kappa = 0] \equiv \max_{\{T^p, T^r, R^L, R^P\}} \alpha v\left(R^L\right) + (1-\alpha)\left((1-\tau)y^p + T^p\right),$$

subject to the government budget constraint (B-1) and the tax rate τ decided by the president. The solution in this case is $T^r = R^P = 0$, and

$$R^L = \min\{R^*, \tau\bar{y}\}. \tag{B-4}$$

and

$$T^p = \frac{\tau\bar{y} - R^L}{1-\delta}, \tag{B-5}$$

Given this the president sets the tax rate so as to maximize

$$V^{P,p}[\gamma = 1, \kappa = 0] \equiv \max_{\tau} \alpha v\left(R^P\right) + (1-\alpha)\left((1-\tau)y^p + T^p\right),$$

subject to the best response spending policy of the legislator, i.e., subject to

$$\{T^p, T^r, R^L, R^P\} \in \arg\max V^{L,p}[\tau, \gamma = 1, \kappa = 0].$$

Since separation of powers gives $R^P = 0$, we have that

$$\tau = \arg\max_{\tau'} \left[\alpha v(0) + (1-\alpha)\left((1-\tau')y^p + T^p\right)\right] = \arg\max_{\tau'} U^p.$$

Therefore, in this case the president will set the tax rate so as to maximize utility of the poor.

The president realizes that tax income in excess of R^* will be transferred to the poor while none of the tax income will end up as rents for the president. Thus compared to the case without checks and balances it is now less tempting for the president to tax. The income of the poor if the tax rate is set to zero is $(1-\theta)\bar{y}/(1-\delta)$, while the income of the poor if the tax rate is set so as to maximize the income transfers to the poor is given by (B-3). The president sets the tax rate to zero or $\bar{\tau}$ depending on what maximizes the income of the poor. If R^* is greater than $\theta\bar{\tau}\bar{y}$, then the tax rate is set to zero, while if R^* is less than $\theta\bar{\tau}\bar{y}$ the tax rate is set to $\bar{\tau}$.

Note from (B-2) that $R^* = R^*(\alpha)$ and let α^H be defined by

$$R^*(\alpha^H) = \theta\bar{\tau}\bar{y},$$

which inserting for $R^*(\alpha^H)$ in (B-2) yields

$$\alpha^H = \frac{1}{1 + (1-\delta)v'(\theta\bar{\tau}\bar{y})}. \tag{B-6}$$

Then when $\alpha < \alpha^H$ the weight the legislator puts on his own utility is sufficiently small that the president still adopts the maximum tax rate $\tau = \bar{\tau}$, while when $\alpha > \alpha^H$ the income of the poor is maximized by setting $\tau = 0$. In this latter case when $\tau = 0$ it follows from the government budget constraint (B-1) that under checks and balances then when $\kappa = 0$ policy is $T^p = T^r = R^P = R^L = 0$.

The situation when there are checks and balances and the rich lobby is organized (i.e., $\gamma = 1$ and $\kappa = 1$) is a little more involved. In this case, the rich lobby will make bribe offers $\left\{\hat{b}^L, \hat{T}^p, \hat{T}^r, \hat{R}^L, \hat{R}^P\right\}$ and $\left\{\hat{b}^P, \hat{\tau}\right\}$ to the legislator and the president, respectively. For the politicians to accept these bribe offers they must satisfy the participation constraints

$$V^{L,p}\left(\hat{b}^L, \hat{\tau}, \hat{T}^p, \hat{T}^r, \hat{R}^L, \hat{R}^P\right) \geq V^{L,p}\left[\gamma = 1, \kappa = 0\right],$$

and

$$V^{P,p}\left(\hat{b}^P, \hat{\tau}, \hat{T}^p, \hat{T}^r, \hat{R}^L, \hat{R}^P\right) \geq V^{P,p}\left[\gamma = 1, \kappa = 0\right].$$

Consider first the case where $\alpha < \alpha^H$. Here the tax rate without bribing is set at its maximum $\tau = \bar{\tau}$, and the legislator obtains his bliss point policy with positive rents and transfers to the poor. Thus the rich lobby has nothing to offer him that they find it worth paying for. However, in this case the president can be bribed. Since checks and balances means no rents for the president, he becomes cheap to buy for the rich lobby. The rich lobby can offer him rents in exchange for a lower tax rate, taking into account that the legislator will set policy according to (B-5) and (B-4). Since when $R^P = 0$ the marginal utility of bribes is higher than the president's marginal utility of transfers the poor, it will be beneficial for the rich lobby to bribe and induce the president to set a tax rate lower than $\tau = \bar{\tau}$. But for this reason of course, it is already clear that a constitution with checks and balances can never be an equilibrium when $\alpha < \alpha^H$; in this case the poor prefer $\tau = \bar{\tau}$ which they will always get when the constitution does not involve checks and balances. Thus in this case, checks and balances simply make the president too cheap to buy for the rich lobby, in turn limiting redistribution to the poor. Since they are straightforward, we do not provide details of this case.

When $\alpha > \alpha^H$ the tax rate without bribing is set to zero. This leaves both the president and the legislator with zero rents, making both of them cheap to buy for the rich lobby. The rich lobby can then bribe politicians into redistributing income to themselves. The only remaining question is to determine the cheapest way for the rich lobby to capture the politicians. As should now be clear from the paper, since we have direct income transfers there are many bribing proposals that will be payoff equivalent to all agents. Without loss of any generality we focus here on the case where the tax rate is set at its maximum, and all redistribution to different gropus is undertaken by targeted transfers.

Intuitively, when there is no bribing and rents are zero, the marginal utility of rents for politicians is relatively high. As a consequence, bribing politicians will always imply positive direct bribes. Moreover, if politicians put sufficiently high weight, $1 - \alpha$, on the utility of the members of their group and if income distribution is not too unequal, then the bribing proposal will also contain direct income transfers to the poor. In the converse case where α is high and income distribution is relatively unequal, it is more efficient for the rich lobby to capture politicians by offering direct bribes rather than income transfers to the poor. This latter result is particularly interesting because it implies that when inequality is high, which is when we would typically expect greater redistribution, the poor may in fact receive no redistribution. Intuitively, this is because greater inequality also increases the willingness of the rich to use bribes to reduce redistribution. The details of the analysis of this case, which underlies Part 1.(b) of Proposition B-4, is provided in Section 2.2 below.

The next proposition summarizes these results.

Proposition B-4 *Suppose $\gamma = 1$. Let α^H be given as in (B-6).*

1. *Suppose that $\alpha > \alpha^H$.*

   (a) *When $\kappa = 0$ so that there is no bribing, the equilibrium involves $\tau = 0$, $R^P = 0$, $R^L = 0$, $T^p = 0$, and $T^r = 0$.*

   (b) *When $\kappa = 1$, there exist θ^* and α_L such that:*

      i. *If $\theta > \theta^*$ or $\alpha > \alpha_L$, then $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, $b^P = b^L > 0$, $T^p = 0$, and $T^r > 0$.*

      ii. *If $\theta < \theta^*$ and $\alpha < \alpha_L$, then $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, $b^P = b^L = b^*$, with b^* determined by $v'(b^*) = 2(1-\alpha)/\alpha(1-\delta)$, $T^p > 0$, and $T^r > 0$.*

   Taking into account that the probability the rich can solve their collective action problem and bribe politicians is q, we have that:

   If $\theta > \theta^*$ or $\alpha > \alpha_L$, then the expected utility of poor agents is

$$U^p[\gamma = 1] = \frac{(1-\theta)(1-q\bar{\tau})}{1-\delta}\bar{y}. \tag{B-7}$$

   If $\theta < \theta^*$ and $\alpha < \alpha_L$, then the expected utility of poor agents is

$$U^p[\gamma = 1] = \frac{1-\theta}{1-\delta}\bar{y} - \frac{q}{1-\delta}\left(\frac{2v(b^*)}{v'(b^*)}\right). \tag{B-8}$$

2. *Suppose that $\alpha < \alpha^H$.*

   (a) *When $\kappa = 0$, the equilibrium involves $\tau = \bar{\tau}$, $R^P = 0$, $R^L = R^*$, $T^p = (\bar{\tau}\bar{y} - R^*)/(1-\delta)$, and $T^r = 0$.*

   (b) *When $\kappa = 1$, the equilibrium involves $\tau < \bar{\tau}$, $R^P = 0$, $R^L \leq R^*$, $b^P > 0$, $b^L = 0$, $T^p = (\tau\bar{y} - R^L)/(1-\delta)$, and $T^r = 0$.*

Taking into account that $q \geq 0$ we have that when $\alpha < \alpha^H$ then $U^p[\gamma = 1] \leq U^p[\gamma = 0]$.

When politicians put sufficiently high weight on rents, i.e., when $\alpha > \alpha^H$, checks and balances, in the absence of bribery, lead to an equilibrium in which they obtain zero rents. This makes them relatively cheap to bribe and influence. Given the above characterization, the outcome in the referendum on checks and balances is straightforward to determine.

Proposition B-5 *Let α^H be as in (B-6) and θ^* and α_L as in Proposition B-4.*

1. *Suppose that $\alpha > \alpha^H$.*

   (a) *When $\theta > \theta^*$ or $\alpha \geq \alpha_L$, the constitution will involve no checks and balances provided that*
   $$q > \frac{R^* - \bar{\tau}\theta\bar{y}}{(1-\theta)\bar{\tau}\bar{y}}, \tag{B-9}$$
   and it will involve checks and balances if the converse inequality holds.

   (b) *When $\theta < \theta^*$ and $\alpha < \alpha_L$, the constitution will involve no checks and balances provided that*
   $$q > \frac{(R^* - \bar{\tau}\theta\bar{y})v'(b^*)}{2v(b^*)}, \tag{B-10}$$
   and it will involve checks and balances if the converse inequality holds.

2. *Suppose that $\alpha < \alpha^H$. Then the constitution will never involve checks and balances.*

Proof. To see part 1, note that an individual from the poor income group prefers a constitution without checks and balances when $U^p[\gamma = 0] > U^p[\gamma = 1]$. When $\theta > \theta^*$ or $\alpha \geq \alpha_L$ part 1.(a) follows from (B-3) and (B-7). When $\theta < \theta^*$ and $\alpha < \alpha_L$ part 1.(b) follows from (B-3) and (B-8). Part 2 follows since in this case poor voters prefer the president to set $\tau = \bar{\tau}$ in order to get income redistribution. In the case without checks and balances the president always sets $\tau = \bar{\tau}$, while with checks and balances with probability q the rich lobby bribe him into setting a lower tax rate. ■

This proposition shows that when checks and balances take the form of the separation of taxation and spending, if politicians sufficiently high weight on the utility of their group ($\alpha < \alpha^H$), poor voters always prefer a constitution without checks and balances. The intuition is again similar: with concentrated power the president becomes too expensive to buy for the rich lobby, which is good for the poor provided that the president puts a sufficiently high weight on their utility relative to his own rents. In contrast, when the constitution includes checks and balances, the president is weaker, and this allows the rich lobby to bribe and obtain policies in their favor. By inspection of (B-6), we see that the condition $\alpha < \alpha^H$ is more likely to be satisfied when income distribution is unequal (θ high) and economic activity is easily taxable ($\bar{\tau}$ high). This implies that in more unequal societies and in societies where income is easier to tax, poor voters are more likely to opt for a constitution without checks and balances, even when politicians put more weight on their own rents.

The next two corollaries are again straightforward implications of our main result:

Corollary 1 *Suppose that $\alpha > \alpha^H$. When $q = 0$, so that the rich are never able to bribe politicians, then the constitution will always include checks and balances.*

Proof. This immediately follows by noting that the when $q = 0$ the inequalities in (B-9) and (B-10) reduce to $\alpha < \alpha^H$, which is a contradiction. ■

When politicians can never be captured because the lobby are not able to solve the collective action problem, the constitution will always involve checks and balances. This highlights again that the reason why the majority may prefer a constitution without checks and balances is because of the interaction between politician behavior and bribing by the rich lobby.

Similarly, a second corollary to Proposition B-5 is that:

Corollary 2 *Suppose that $\alpha > \alpha^H$ and $q > 0$. The comparative statics with respect to q and $\bar{\tau}$ from the basic model continue to hold in the model with separation of taxing and spending. Thus a constitution without checks and balances is more likely when q is greater and when $\bar{\tau}$ is higher.*

Proof. The comparative statics with respect to q follow as the left-hand sides of both (B-9) and (B-10) are increasing in q while the right-hand sides are independent of q. The comparative statics with respect to $\bar{\tau}$ follow as the left-hand sides of (B-9) and (B-10) are independent of $\bar{\tau}$ while the right-hand sides are decreasing in $\bar{\tau}$. ■

But the likelihood of a constitution without checks and balances is now also affected by income inequality:

Corollary 3 *Suppose that $\alpha > \alpha^H$ and $q > 0$. Then a constitution without checks and balances is more likely when θ is higher, that is when income inequality is higher.*

Proof. This follows as the left-hand sides of (B-9) and (B-10) are independent of θ while the right-hand sides are decreasing in θ. ■

Moreover, since in this case a greater q may tilt the equilibrium constitution from one that features checks and balances to one that does not, we again have that the political power and utility of the rich may in fact become lower if the rich become better at solving the collective action problem (in the sense that q increases).

2.3 Political Minorities

In the model presented in the previous subsection, checks and balances is a way of sharing political power between the president and the legislature. However, as the poor citizens constitute a majority and select both the legislator and the president, such checks and balances do not transfer political power from the majority group to the minority group. In many political systems even minority groups get some political power in the legislature. We now briefly consider an extension to allow for this possibility. The main result is the following paradoxical finding: greater power sharing in the legislature can backfire and lead to an equilibrium with fewer checks on the president (which is thus worse for the political minority, the rich in this case).

To capture the effect of the political power of the minority, we now assume that the legislature consists of two (or many) elected politicians where one (group) represents the poor voters and the other represents the rich.[1] We assume that there is a probability $1-\eta$ that a legislator from the poor is selected to decide spending and a probability η that a legislator from the rich is selected. The timing of events is the same as above, except that now at stage 3 where uncertainty is revealed not only whether or not the rich can bribe becomes common knowledge, but also the identity of the spending legislator (which was not uncertain in the model above).

It is straightforward to see that parts 1.(a) and 2 of Proposition B-5 are unaffected. Thus the only situation where the extension of the model into a multi-member legislature modifies the analysis and the results is when $\theta < \theta^*$ and $\alpha < \alpha_L$ and we are in part 1.(b) of Proposition B-5. This is the case we focus on in this subsection, thus assuming throughout that $\theta < \theta^*$ and $\alpha < \alpha_L$, which implies that under checks and balances the bribing equilibrium with a legislator and a president from the poor involves positive income transfers to the poor.

Now consider the situation with a legislator from the rich. In this case, when $\kappa = 1$ (i.e., when it is able to offer bribes), the rich lobby will prefer to include no or less income transfers to the poor in the bribing proposal than in the case where it was facing a legislator from the poor. Intuitively, this is because transferring resources to the poor is now less attractive for the rich lobby as these transfers only benefit one of the politicians it is bribing. In Section 2.3 below, we characterize the optimal bribing proposal for the rich in this case and the expected utility of the poor from a constitution with and without checks and balances (and checks and balances corresponding to a multi-member legislature). This characterization immediately implies:

Proposition B-6 *Suppose there is a multi-member legislature, $\gamma = 1$, $\theta < \theta^*$ and $\alpha < \alpha_L$. Then there exists $\alpha_M < \alpha_L$ such that:*

1. *when $\alpha > \alpha_M$, the constitution will involve no checks and balances provided that*

$$q > \frac{R^* - \bar{\tau}\theta\bar{y}}{\left((1-\eta)\frac{2v(b^*)}{v'(b^*)} + \eta(1-\theta)\bar{\tau}\bar{y}\right)}, \tag{B-11}$$

   and it will involve checks and balances if the converse inequality holds;

2. *when $\alpha < \alpha_M$, the constitution will involve no checks and balances provided that*

$$q > \frac{R^* - \bar{\tau}\theta\bar{y}}{\left((1-\eta)\frac{2v(b^*)}{v'(b^*)} + \eta\frac{v(R^{**})}{v'(R^{**})}\right)}, \tag{B-12}$$

   and it will involve checks and balances if the converse inequality holds.

Proof. See the Appendix. ■

[1] The implications of providing greater power/voice to political minorities can also be studied, with similar results, using a structure similar to Diermeier and Myerson (1999) or equivalently in the context of the veto player model introduced in subsection 2.1.

Naturally, when $\eta = 0$, (B-11) and (B-12) both reduce to (B-10), and we obtain the same results as in the previous subsection.

In addition, when $q = 0$ so that the rich are never able to bribe politicians, Proposition B-6 implies that the constitution will always include checks and balances. Moreover, it is straightforward to verify that all the comparative statics with respect to q, θ and $\bar{\tau}$ from the single-member legislature case continue to apply in the case with a multi-member legislature.

The more interesting result from Proposition B-6 concerns the comparative statics with respect to η, which are provided in the next corollary.

Corollary 4 *A greater η, i.e., granting greater power to the political minority in the legislature, makes checks and balances less likely.*

Proof. This follows as the left-hand sides of (B-11) and (B-12) are independent of η, while the denominators on the right-hand sides of (B-11) and (B-12) are increasing in η (because as can be verified in the Appendix in (B-11), $(1-\theta)\bar{\tau}\bar{y}v'(b^*) > 2v(b^*)$, and in (B-12), $v(R^*)\,v'(b^*) > 2v(b^*)v'(R^*)$). ■

This corollary thus implies that efforts to protect the rights of the rich elite by giving them greater representation in the legislature, a strategy often adopted by many newly independent countries, may actually backfire and lead to lower checks and balances in equilibrium. This is because increasing the representation of the rich under checks and balances makes political corruption even more costly for the poor and discourages them from choosing checks and balances in the first place. When this is the case granting more political power to the minority makes them less powerful and results in policies providing them with lower utility.

2.4 Relaxing Quasi-Linearity

We now explore the solution of the model in Section 2 in the paper when the utility function of politicians is no longer quasi-linear. In particular, suppose that the utility function of a politician j from income group $i \in \{p, r\}$ is given by

$$V^{j,i} = \left(R^j + b^j + r\right)^{\beta} \left(U^i\right)^{1-\beta}, \tag{B-13}$$

where $\beta \in (0,1)$, and $r > 0$ denotes the ego rents of becoming an elected politician. These ego rents may also be interpreted as the wage of a politician. With $r > 0$ the utility function is defined and well behaved also in cases where $R^j + b^j = 0$.

To facilitate comparison with the model in Section 2 in the paper that does not include ego rents, in the text we simplify by focusing on the case where $r \to 0$, so that for simplicity the ego rent term vanishes. Nevertheless, the presence of this vanishing term implies that even when $R^j = b^j = 0$ the utility function has standard properties. We show the solution in the slightly more complicated case when r can take any value in Section 2.4.

We first investigate the case where the constitution does not involve checks and balances, i.e. $\gamma = 0$.

Consider first the case in which $\kappa = 0$ so that the rich are not able to solve their collective action problem and will not make a bribe offer. Then, in the policy-making subgame, the president will solve the program

$$V^{P,p}[\gamma = 0, \kappa = 0] \equiv \max_{\{\tau, T^p, T^r, R^L, R^P\}} \left(R^P + r\right)^{\beta} \left((1-\tau)y^p + T^p\right)^{1-\beta}, \tag{B-14}$$

subject to the government budget constraint. This problem has a unique solution where incomes are taxed at the maximum rate, with all the proceeds spent on rents to the president and transfers to the poor (so that government budget constraint holds as equality).

Next, suppose that $\kappa = 1$. Again the rich lobby can never strictly increase its utility by offering a bribe that the president will accept. Any such offer is payoff equivalent for all parties and without loss of any generality we set $\hat{b}^P = 0$. The following proposition summarizes the case where the constitution does not have checks and balances:

Proposition B-7 *Suppose $\gamma = 0$. Let $r \to 0$ and*

$$\beta^H = \frac{\bar{\tau}}{1 - \theta + \bar{\tau}\theta}. \tag{B-15}$$

Then the equilibrium policy always has $\tau = \bar{\tau}$. Moreover:

1. *if $\beta > \beta^H$, then $T^p = 0$. The utility of poor agents in this case is $U^p[\gamma = 0] = (1-\theta)(1-\bar{\tau})\bar{y}/(1-\delta)$;*
2. *if $\beta < \beta^H$, then transfers are given by*

$$T^p = (\bar{\tau} - \beta(1 - \theta + \bar{\tau}\theta)) \frac{\bar{y}}{1-\delta}.$$

The utility of poor agents in this case is

$$U^p[\gamma = 0] = \frac{1-\beta}{1-\delta}(1 - \theta + \bar{\tau}\theta)\,\bar{y}. \tag{B-16}$$

Proof. This proposition follows by letting $r \to 0$ in the general case where r can take any value shown in Proposition B-11 in Section 2.4. ■

Consider next the case where the constitution involves checks and balances, i.e. $\gamma = 1$. When $\kappa = 0$ then for the same reason as in Section 2 in the paper the legislator will ensure there are no rents to the president, which in turn has the implication that the president decides policy so as to maximize the utility of the poor, i.e. the maximum tax rate is imposed, $T^p = \bar{\tau}\bar{y}/(1-\delta)$, and the utility of the poor is given by

$$U^p[\gamma = 1, \kappa = 0] = \frac{(1 - \theta + \bar{\tau}\theta)\bar{y}}{1-\delta}.$$

On the other hand when $\kappa = 1$ the rich lobby can successfully bribe the president. In particular as $r \to 0$, the rich lobby induce the president to set the tax rate to zero, which in turn implies that the poor will get no redistribution. In this case we have:

Proposition B-8 *Suppose $\gamma = 1$ and let $r \to 0$.*

1. *When $\kappa = 0$ so that the rich lobby is not organized and there is no bribing, the equilibrium involves $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, and $T^p = \bar{\tau}\bar{y}/(1-\delta)$.*

2. *When $\kappa = 1$ so that the rich lobby is organized and there is bribing, then $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, $b^P > 0$, $b^L = 0$, and $T^p = 0$.*

The expected utility of poor agents is given by

$$U^p[\gamma = 1] = \frac{(1-\theta+\bar{\tau}\theta)\,\bar{y}}{1-\delta} - q\frac{\bar{\tau}\bar{y}}{1-\delta}. \tag{B-17}$$

Proof. This result follows by letting $r \to 0$ in the general case where r can take any value shown in Proposition B-12 in the Appendix. ■

When poor voters vote to decide if the constitution should involve checks and balances or not we then have the proposition stated in the main paper:

Proposition B-9 *Let $r \to 0$.*

1. *When $\beta > \beta^H$ the constitution will always involve checks and balances.*

2. *When $\beta < \beta^H$ then the constitution will involve no checks and balances if*

$$q > \frac{\beta(1-\theta+\bar{\tau}\theta)}{\bar{\tau}}, \tag{B-18}$$

   and it will involve checks and balances if the converse inequality holds.

   A greater q (a higher likelihood of the rich lobby being organized) makes a constitution without checks and balances more likely.

Proof. Part 1 follows as in this case under no checks and balances the poor pay maximum taxes but get no transfers, while under checks and balances there is a positive probability they will receive transfers. Part 2 follows after simple calculation by comparing (B-16) with (B-17). The effect of q in part 2 follows as the left-hand side of (B-18) is increasing in q while the right-hand side of this equation is independent of q. ■

It is easy to verify that also in this case the constitution will always involve checks and balances when $q = 0$, and that all the comparative statics with respect to q and $\bar{\tau}$ from the basic model is still valid. More interesting, as discussed in the main paper now income distribution also matters for the choice of constitution. A more unequal income distribution, that is a higher θ, makes a constitution without checks and balances more likely.

Further Proofs

Proof of Part 1.(b) of Proposition B-4 in Section 2.2

In this Appendix we provide analytical details behind Part 1.(b) in Proposition B-4. Recall that the rich lobby now can propose a bribe for policy in all policy dimensions and $\alpha > \alpha_H$. To simplify the exposition, note also that for any combination of rents R^j and bribes b^j, both politicians and all other agents just care about sum of these two, and thus without loss of generality we can set $R^P = R^L = 0$, so that all payments to politicians are in the form of bribes. Furthermore, without loss of any generality we set $\tau = \bar{\tau}$ so that if an income group is proposed to get higher income this is through targeted transfers. Again, note that the budget constraint will be satisfied with equality as the rich lobby can always increase their utility by proposing unused funds as transfers to themselves. Inserting from the budget constraint in the utility of the rich that $\hat{T}^r = (\bar{\tau}\bar{y} - (1-\delta)\hat{T}^p)/\delta$, the rich lobby then solves the program

$$\max_{\{\hat{b}^L, \hat{b}^P, \hat{T}^p\}} (1-\bar{\tau})\, y^r - \frac{\hat{b}^L + \hat{b}^P}{\delta} + \frac{\bar{\tau}\bar{y} - (1-\delta)\,\hat{T}^p}{\delta} \text{ subject to} \tag{B-19}$$
$$\alpha v\left(\hat{b}^L\right) + (1-\alpha)\left((1-\bar{\tau})y^p + \hat{T}^p\right) \geq (1-\alpha)\, y^p$$
$$\alpha v\left(\hat{b}^P\right) + (1-\alpha)\left((1-\bar{\tau})y^p + \hat{T}^p\right) \geq (1-\alpha)\, y^p$$
$$\hat{b}^L \geq 0$$
$$\hat{b}^P \geq 0$$
$$\hat{T}^p \geq 0,$$

Denoting the multipliers on the five constraints in (B-19) by λ_1, λ_2, λ_3, λ_4 and λ_5, the first-order conditions are:

$$-\frac{1}{\delta} + \lambda_1 \alpha v'\left(\hat{b}^L\right) + \lambda_3 = 0 \tag{B-20}$$
$$-\frac{1}{\delta} + \lambda_2 \alpha v'\left(\hat{b}^P\right) + \lambda_4 = 0 \tag{B-21}$$
$$-\frac{(1-\delta)}{\delta} + \lambda_1(1-\alpha) + \lambda_2(1-\alpha) + \lambda_5 = 0. \tag{B-22}$$

From the participation constraints of the politicians it follows immediately that the non-negative constraints on bribes and transfers to the poor can not all be binding at once. Thus, we have three possible cases.

Case (1). If $\lambda_3, \lambda_4 > 0$ then $\hat{b}^L = \hat{b}^P = 0$, in which case $\lambda_5 = 0$ so that $\hat{T}^p > 0$. Thus in this case, there are no bribes.

Case (2). If $\lambda_5 > 0$ then $\hat{T}^p = 0$, in which case $\lambda_3 = \lambda_4 = 0$ so $\hat{b}^L, \hat{b}^P > 0$. We note from (B-20) and (B-21) that λ_1 and λ_2 are both positive, implying that the participation constraints of both politicians are satisfied with equality. Furthermore, both participation constraints satisfied with equality implies that $\hat{b}^L = \hat{b}^P$, and thus that $\lambda_1 = \lambda_2$. From (B-20) we find

$$\lambda_1 = \frac{1}{\delta \alpha v'\left(\hat{b}^L\right)}.$$

Combining this with (B-22), we obtain

$$\lambda_5 = \frac{1-\delta}{\delta} - \frac{2(1-\alpha)}{\delta\alpha v'\left(\hat{b}^L\right)}.$$

Thus the condition for $\lambda_5 > 0$ reduces to

$$v'\left(\hat{b}^L\right) > \frac{2(1-\alpha)}{\alpha\,(1-\delta)}. \tag{B-23}$$

From the participation constraint of the legislator holding with equality, $\hat{b}^L$ is obtained as

$$\alpha v\left(\hat{b}^L\right) + (1-\alpha)\,(1-\bar{\tau})y^p = (1-\alpha)\,y^p,$$

which is equivalent to

$$\alpha v\left(\hat{b}^L\right) = \frac{(1-\alpha)\,(1-\theta)\bar{\tau}\bar{y}}{1-\delta}. \tag{B-24}$$

Since in this case $\hat{b}^L$ is decreasing in α we have that $\hat{b}^L = \hat{b}^L(\alpha)$ with $\hat{b}^{L\prime}(\alpha) < 0$. Combining (B-23) and (B-24), the condition for $\lambda_5 > 0$ reduces to

$$\frac{v'\left(\hat{b}^L(\alpha)\right)}{v\left(\hat{b}^L(\alpha)\right)} > \frac{2}{(1-\theta)\bar{\tau}\bar{y}}. \tag{B-25}$$

The left-hand side of this condition is increasing in α, while the right-hand side is independent of α. The following equation thus implicitly defines a critical value of α, denoted by α_L:

$$\frac{v'\left(\hat{b}^L(\alpha_L)\right)}{v\left(\hat{b}^L(\alpha_L)\right)} = \frac{2}{(1-\theta)\bar{\tau}\bar{y}}. \tag{B-26}$$

Substituting for $v\left(\hat{b}^L(\alpha_L)\right)$ from (B-24) we find

$$\alpha_L = \frac{1}{1+\frac{1}{2}(1-\delta)v'\left(\hat{b}^L(\alpha_L)\right)}. \tag{B-27}$$

Note from (B-24) that $\hat{b}^L(\alpha_L)$ is decreasing in θ and that as θ approaches one the bribe approaches zero. Thus from (B-27) α_L is decreasing in θ and approaches zero as θ approaches one.

Recall that we are focusing on the case where $\alpha > \alpha^H$. Thus if $\alpha^H > \alpha_L$ then the condition for $\lambda_5 > 0$ is always satisfied. From (B-6) and (B-27), $\alpha^H > \alpha_L$ is equivalent to

$$v'\left(\hat{b}^L(\alpha_L)\right) > 2v'(\theta\bar{\tau}\bar{y}),$$

which is always satisfied provided that θ is sufficiently high, i.e., provided that the distribution of income is sufficiently unequal (this follows since the right-hand side is decreasing in θ while the left-hand side is increasing in θ and approaches infinity as θ approaches zero). Let θ^* be defined by

$$v'\left(\hat{b}^L(\alpha_L)\right) = 2v'(\theta^* \bar{\tau}\bar{y}).$$

Thus when $\theta > \theta^*$ then $\lambda_5 > 0$ and $\hat{T}^p = 0$. When $\theta < \theta^*$ then $\lambda_5 > 0$ and $\hat{T}^p = 0$ only when $\alpha > \alpha_L$. In these cases the bribing proposal contains no income transfers to the poor, only bribes to the politicians.

Finally in this case, it can be verified that the participation constraint of the rich is satisfied with strict inequality. To see this, observe that the rich are strictly better off when $(1-\bar{\tau})\, y^r - 2\hat{b}^L/\delta + \bar{\tau}\bar{y}/\delta > y^r$, which is equivalent to $(1-\theta)\bar{\tau}\bar{y} > 2\hat{b}^L$. At the same time we know from (B-25) that

$$(1-\theta)\bar{\tau}\bar{y} > \frac{2v\left(\hat{b}^L\right)}{v'\left(\hat{b}^L\right)}.$$

Thus the participation constraint must hold provided that

$$v\left(\hat{b}^L\right) > \hat{b}^L v'\left(\hat{b}^L\right), \tag{B-28}$$

which is always satisfied in light of the strict concavity of the v function.

Case (3). If $\lambda_3 = \lambda_4 = \lambda_5 = 0$, then $\hat{b}^L, \hat{b}^P, \hat{T}^p > 0$. From (B-20), (B-21) and (B-22) we then find

$$v'\left(\hat{b}^L\right) = \frac{2(1-\alpha)}{\alpha\,(1-\delta)}, \tag{B-29}$$

which determines $\hat{b}^L = \hat{b}^L(\alpha) \equiv b^*$ with $\hat{b}^{L\prime}(\alpha) > 0$. Thus note that in this case $\hat{b}^L$ is increasing in α.

From the participation constraint of the legislator satisfied with equality, $\hat{T}^p$ is given by

$$\alpha v\left(\hat{b}^L\right) + (1-\alpha)\left((1-\bar{\tau})y^p + \hat{T}^p\right) = (1-\alpha)\, y^p.$$

This implies

$$\hat{T}^p = \frac{(1-\theta)\bar{\tau}\bar{y}}{1-\delta} - \frac{\alpha v\left(\hat{b}^L\right)}{1-\alpha}. \tag{B-30}$$

Combining this with (B-29), we obtain

$$\hat{T}^p = \frac{1}{1-\delta}\left((1-\theta)\bar{\tau}\bar{y} - \frac{2v\left(\hat{b}^L(\alpha)\right)}{v'\left(\hat{b}^L(\alpha)\right)}\right), \tag{B-31}$$

which is positive if and only if $\alpha < \alpha_L$ (which can be verified from (B-26) and taking into account that in this case $\hat{b}^{L\prime}(\alpha) > 0$).

It now only remains to show that the participation constraint of the rich is satisfied also in this case. To see this, note that the participation constraint in this case is $(1-\bar{\tau})\, y^r - 2\hat{b}^L/\delta + (\bar{\tau}\bar{y} - (1-\delta)\,\hat{T}^p)/\delta > y^r$, which is equivalent to $(1-\theta)\bar{\tau}\bar{y} > 2\hat{b}^L + (1-\delta)\,\hat{T}^p$. Inserting from (B-31) we again get (B-28), which is always satisfied.

To summarize, when $\alpha > \alpha^H$, there are two possible scenarios, corresponding to parts (i) and (ii) in part 1.(b) of Proposition B-4, respectively:

i. If $\theta > \theta^*$ or $\alpha > \alpha_L$, then there will be bribing with positive bribes and no transfers to the poor.

ii. If $\theta < \theta^*$ and $\alpha < \alpha_L$, then there will be bribing with positive bribes and positive transfers to the poor.

Analysis of Multi-Member Legislatures from Section 2.3

In this appendix, we characterize the equilibrium under checks and balances with a multi-member legislatures, focusing on the case where $\theta < \theta^*$ and $\alpha < \alpha_L$.

The utility of the poor voters when the constitution does not include checks and balances is given by (B-3). However, now under checks and balances, with probability η the legislator making the spending decisions represents the rich. Policy in the case without bribery is not affected, as the tax rate in this case is still zero. But when politicians can be bribed and when the legislator is from the rich, then the equilibrium is different than in the case with a legislator from the poor. This is because, as we now show, making an offer including transfers to the poor becomes less valuable to the rich, as now this only increases the utility of the president and not of the legislator.

Let us focus on the case where the legislator originates from the rich (while the president originates from the poor). The rich lobby can again propose a bribe, and again without loss of generality, we can set $R^P = R^L = 0$, and $\tau = \bar{\tau}$. Furthermore, if the rich make a bribing proposal (that gives themselves greater utility), they can always get the legislator from the rich to accept this as the participation constraint of the rich legislator is given by

$$\alpha v\left(\hat{b}^L\right) + (1-\alpha)\left((1-\bar{\tau})\,y^r - \frac{\hat{b}^L + \hat{b}^P}{\delta} + \frac{\bar{\tau}\bar{y} - (1-\delta)\,\hat{T}^p}{\delta}\right) \geq (1-\alpha)\,y^r,$$

which holds with strict inequality even when $\hat{b}^L = 0$ as long as the rich are obtaining greater utility with this proposal than without. Thus $\hat{b}^L = 0$ and the rich lobby solves the program

$$\max_{\{\hat{b}^P,\hat{T}^p\}} (1-\bar{\tau})\,y^r - \frac{\hat{b}^P}{\delta} + \frac{\bar{\tau}\bar{y} - (1-\delta)\,\hat{T}^p}{\delta} \text{ subject to} \tag{B-32}$$
$$\alpha v\left(\hat{b}^P\right) + (1-\alpha)\left((1-\bar{\tau})y^p + \hat{T}^p\right) \geq (1-\alpha)\,y^p$$
$$\hat{T}^p \geq 0,$$

Denoting the multipliers on the two constraints in (B-32) by $\lambda_1$and λ_2, the first-order conditions are that $\hat{b}^P$ and $\hat{T}^p$ satisfies:

$$-\frac{1}{\delta} + \lambda_1 \alpha v'\left(\hat{b}^P\right) = 0 \tag{B-33}$$

$$-\frac{1-\delta}{\delta} + \lambda_1(1-\alpha) + \lambda_2 = 0. \tag{B-34}$$

From (B-33) it follows that $\lambda_1 > 0$, implying that the participation constraint of the president binds. Now solving for λ_1 from (B-33) in (B-34), we find that $\lambda_2 > 0$ and thus $\hat{T}^p = 0$ if

$$\frac{\alpha}{1-\alpha} v'\left(\hat{b}^P\right) > \frac{1}{1-\delta}. \tag{B-35}$$

From the participation constraint of the president satisfied with equality, it follows that $\hat{b}^P$ is again determined by

$$\alpha v\left(\hat{b}^P\right) = \frac{(1-\alpha)(1-\theta)\bar{\tau}\bar{y}}{1-\delta}. \tag{B-36}$$

Since $\hat{b}^P$ is decreasing in α in this case, we have that $\hat{b}^L = \hat{b}^L(\alpha)$ with $\hat{b}^{L\prime}(\alpha) < 0$. Combining (B-35) and (B-36) the condition for $\lambda_2 > 0$ reduces to

$$\frac{v'\left(\hat{b}^L(\alpha)\right)}{v\left(\hat{b}^L(\alpha)\right)} > \frac{1}{(1-\theta)\bar{\tau}\bar{y}}.$$

The left-hand side of this condition is increasing in α, while the right-hand side is independent of α. The following equation thus implicitly defines a critical value of α, which we denote by α_M:

$$\frac{v'\left(\hat{b}^L(\alpha_M)\right)}{v\left(\hat{b}^L(\alpha_M)\right)} = \frac{1}{(1-\theta)\bar{\tau}\bar{y}}.$$

From (B-24), evaluated at α_M, we have

$$v\left(\hat{b}^L(\alpha_M)\right) = \frac{(1-\alpha_M)(1-\theta)\bar{\tau}\bar{y}}{\alpha_M(1-\delta)}.$$

Substituting this in the previous expression, we obtain

$$\alpha_M = \frac{1}{1+(1-\delta)v'\left(\hat{b}^L(\alpha_M)\right)} < \alpha_L.$$

This implies that, compared with the case where the legislator is poor, the parameter space where $\hat{T}^p = 0$ is now larger (i.e., includes smaller values of α) when the legislator selected to decide spending is from the rich.

If $\alpha > \alpha_M$, then we have $\hat{T}^p = 0$. (Note also that the participation constraint for the rich lobby in this case is simply $\bar{\tau}\bar{y} > \hat{b}^P$, which is satisfied with strict inequality as $\hat{b}^P < R^* < \bar{\tau}\bar{y}$).

If, on the other hand, $\alpha < \alpha_M$, then we have $\hat{T}^p > 0$. From (B-33) and (B-34) we then find that $\hat{b}^P$ is determined by

$$v'\left(\hat{b}^P\right) = \frac{1-\alpha}{\alpha(1-\delta)}, \tag{B-37}$$

which implies that now $\hat{b}^P = R^*$ is greater than in the case where the legislator originates from the poor, i.e., $R^* > b^*$, since now it is more efficient to use bribes rather than income transfers to the poor in capturing the president. Moreover, as a consequence, the participation constraint of the president implies that the transfer to the poor is now lower compared to the case where the legislator is poor. In particular, from the participation constraint of the president, we have

$$\hat{T}^p = \frac{\bar{\tau}(1-\theta)\bar{y}}{1-\delta} - \frac{\alpha v\left(R^*\right)}{1-\alpha},$$

which is identical to (B-30) except that now $\hat{b}^P = R^*$ is greater and thus $\hat{T}^p$ is lower. Combining this with (B-37), we obtain

$$\hat{T}^p = \frac{1}{1-\delta}\left(\bar{\tau}(1-\theta)\bar{y} - \frac{v\left(R^*\right)}{v'\left(R^*\right)}\right).$$

Finally, it can be verified in a similar manner that in this case too the participation constraint of the rich is satisfied with strict inequality (given that $v\left(R^*\right) > R^* v'\left(R^*\right)$).

Summing up, recalling that the probability the spending legislator originates from the rich is given by η, we have:

Proposition B-10 *Suppose that $\theta < \theta^*$ and $\alpha < \alpha_L$, and that under checks and balances, there is a multi-member legislature.*

1. *Consider first the case where there is checks and balances and the legislator selected to decide spending is from the rich. Then:*

   (a) *When $\kappa = 0$ so that there is no bribing, the equilibrium involves $\tau = 0$, $R^P = 0$, $R^L = 0$, $T^p = 0$, and $T^r = 0$, and the utility of poor agents is given by $(1-\theta)\bar{y}/\left(1-\delta\right)$;*

   (b) *When $\kappa = 1$, there exists an $\alpha_M < \alpha_L$ such that:*

      i. *If $\alpha > \alpha_M$, then $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, $b^P > 0$, $b^L = 0$, $T^p = 0$, and $T^r > 0$.*

      ii. *If $\alpha < \alpha_M$, then $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, $b^P = R^*$, $b^L = 0$, $T^p > 0$, and $T^r > 0$.*

2. *Now taking into account that the probability the rich can solve their collective action problem and bribe politicians is q and the probability that the legislator selected to decide spending will be from the rich with probability η, we have that:*

   (a) *If $\alpha > \alpha_M$, then the expected utility of poor agents is*

   $$U^p\left[\gamma = 1\right] = \frac{1}{1-\delta}\left((1-\theta)\bar{y} - q\eta(1-\theta)\bar{\tau}\bar{y} - q\left(1-\eta\right)\frac{2v(b^*)}{v'\left(b^*\right)}\right); \tag{B-38}$$

   (b) *If $\alpha < \alpha_M$, then the expected utility of poor agents is*

   $$U^p\left[\gamma = 1\right] = \frac{1}{1-\delta}\left((1-\theta)\bar{y} - q\eta\frac{v\left(R^*\right)}{v'\left(R^*\right)} - q\left(1-\eta\right)\frac{2v(b^*)}{v'\left(b^*\right)}\right). \tag{B-39}$$

Proposition B-6 then follows by comparing the utility of the poor from (B-3) with (B-38) and (B-39), respectively.

Analysis of $r > 0$ from Section 2.4

We here look at the case where the ego rents r can take any value. Let us focus on a constitution not involving checks and balances, i.e., $\gamma = 0$. Consider first the case where $\kappa = 0$ so that the rich can not bribe the president. The balance between direct transfers to the poor and rents to the president depends on how much the president values own rents relative to how he values utility of the poor. Define

$$\beta_S \equiv \frac{\frac{r}{\bar{y}}}{1 - \theta + \bar{\tau}\theta + \frac{r}{\bar{y}}}$$

and

$$\beta^H \equiv \frac{\bar{\tau} + \frac{r}{\bar{y}}}{1 - \theta + \bar{\tau}\theta + \frac{r}{\bar{y}}}.$$

The balance between direct transfers to the poor and rents to the president is then given by the solution to the maximization problem in (B-14):

If $\beta > \beta^H$, $T^p = 0$, and $R^P = \bar{\tau}\bar{y}$.

If $\beta_S \leq \beta \leq \beta^H$,

$$T^p = (\bar{\tau} - \beta(1 - \theta + \bar{\tau}\theta)) \frac{\bar{y}}{1 - \delta} + \frac{1 - \beta}{1 - \delta} r, \tag{B-40}$$

and

$$R^P = \beta(1 - \theta + \bar{\tau}\theta)\bar{y} - (1 - \beta)r. \tag{B-41}$$

If $\beta < \beta_S$, $T^p = \bar{\tau}\bar{y}/(1 - \delta)$, and $R^P = 0$.

Next, suppose that $\kappa = 1$. Again the rich lobby can never strictly increase its utility by offering a bribe that the president will accept. Any such offer is payoff equivalent for all parties and without loss of any generality we set $\hat{b}^P = 0$. The following proposition summarizes the case where the constitution does not have checks and balances:

Proposition B-11 *Suppose $\gamma = 0$. Then the equilibrium policy always has $\tau = \bar{\tau}$, and:*

1. *If $\beta > \beta^H$, $T^p = 0$. The utility of poor agents in this case is $U^p[\gamma = 0] = (1 - \theta)(1 - \bar{\tau})\bar{y}/(1 - \delta)$.*

2. *If $\beta_S \leq \beta \leq \beta^H$, transfers are given by (B-40). The utility of poor agents in this case is*

$$U^p[\gamma = 0] = \frac{1 - \beta}{1 - \delta} \left(1 - \theta + \bar{\tau}\theta + \frac{r}{\bar{y}}\right) \bar{y}. \tag{B-42}$$

3. *If $\beta < \beta_S$, $T^p = \bar{\tau}\bar{y}/(1 - \delta)$. The utility of poor agents in this case is $U^p[\gamma = 0] = (1 - \theta + \bar{\tau}\theta)\bar{y}/(1 - \delta)$.*

The case where the constitution involves checks and balances, i.e. $\gamma = 1$, and there is not bribing, i.e. $\kappa = 0$, is as discussed in the main text.

Next consider the case where there is bribing, i.e. $\kappa = 1$, and consider first the case where $\beta < \beta_S$. Then also with checks and balances in the constitution the president gets his preferred policy where all public income is used as transfers to the poor. If the rich lobby tries to bribe the president into setting a lower tax rate or to give the rich transfers they cannot get strictly higher utility. Thus $\hat{b}^P = 0$.

Consider next the case where $\beta > \beta_S$. The rich lobby then solves the program

$$\max_{\{\hat{b}^P, \hat{T}^p\}} \frac{(1-\bar{\tau})\,\theta\bar{y}}{\delta} - \frac{\hat{b}^P}{\delta} + \frac{\bar{\tau}\bar{y} - (1-\delta)\,\hat{T}^p}{\delta} \text{ subject to}$$

$$\left(\hat{b}^P + r\right)^\beta \left(\frac{(1-\theta)(1-\bar{\tau})\bar{y}}{1-\delta} + \hat{T}^p\right)^{1-\beta} \geq r^\beta \left(\frac{(1-\theta+\bar{\tau}\theta)\bar{y}}{1-\delta}\right)^{1-\beta}$$

$$\hat{T}^p \geq 0.$$

Denoting the multipliers on the two constraints by μ_1 and μ_2, the first-order conditions are that the derivatives of the maximization problem with respect to $\hat{b}^P$ and $\hat{T}^p$ satisfy:

$$-\frac{1}{\delta} + \mu_1\beta \left(\hat{b}^P + r\right)^{\beta-1} \left(\frac{(1-\theta)(1-\bar{\tau})\bar{y}}{1-\delta} + \hat{T}^p\right)^{1-\beta} = 0, \tag{B-43}$$

and

$$-\frac{1-\delta}{\delta} + \mu_1 (1-\beta) \left(\hat{b}^P + r\right)^{\beta} \left(\frac{(1-\theta)(1-\bar{\tau})\bar{y}}{1-\delta} + \hat{T}^p\right)^{-\beta} + \mu_2 = 0. \tag{B-44}$$

From (B-43) it follows that $\mu_1 > 0$, implying that the participation constraint of the president binds. Now solving for μ_1 from (B-43) and inserting in (B-44), we find that $\mu_2 > 0$ and thus $\hat{T}^p = 0$ if

$$\beta(1-\theta)(1-\bar{\tau})\bar{y} > (1-\beta)\left(\hat{b}^P + r\right).$$

Using the participation constraint of the president with $\hat{T}^p = 0$ this can be reformulated as

$$\beta > \frac{\frac{r}{\bar{y}}\left(\frac{1-\theta+\bar{\tau}\theta}{1-\theta+\bar{\tau}\theta-\bar{\tau}}\right)^{\frac{1-\beta}{\beta}}}{(1-\theta)(1-\bar{\tau}) + \frac{r}{\bar{y}}\left(\frac{1-\theta+\bar{\tau}\theta}{1-\theta+\bar{\tau}\theta-\bar{\tau}}\right)^{\frac{1-\beta}{\beta}}}$$

where the left-hand side is increasing in β while the right-hand side is decreasing in β. The following equation thus implicitly defines a unique value of β, β^*, such that

$$\beta^* = \frac{\frac{r}{\bar{y}}\left(\frac{1-\theta+\bar{\tau}\theta}{1-\theta+\bar{\tau}\theta-\bar{\tau}}\right)^{\frac{1-\beta^*}{\beta^*}}}{(1-\theta)(1-\bar{\tau}) + \frac{r}{\bar{y}}\left(\frac{1-\theta+\bar{\tau}\theta}{1-\theta+\bar{\tau}\theta-\bar{\tau}}\right)^{\frac{1-\beta^*}{\beta^*}}}.$$

If $\beta > \beta^*$ then we have $\hat{T}^p = 0$. The utility of poor agents in this case is given by

$$U^p\left[\gamma = 1, \kappa = 1\right] = \frac{(1-\theta)\,(1-\bar{\tau})\bar{y}}{1-\delta}.$$

In contrast, if $\beta < \beta^*$, then $\mu_2 = 0$ and $\hat{T}^p > 0$. In this case, we have:

$$\beta(1-\delta)\left(\frac{(1-\theta)(1-\bar{\tau})\bar{y}}{1-\delta} + \hat{T}^p\right) = (1-\beta)\left(\hat{b}^P + r\right).$$

Using the participation constraint for the president to substitute for $\hat{b}^P + r$ we find

$$\frac{(1-\theta)(1-\bar{\tau})\bar{y}}{1-\delta} + \hat{T}^p = \left(\frac{1-\beta}{\beta(1-\delta)}\right)^{\beta} \left(\frac{r}{\bar{y}}\right)^{\beta} \left(\frac{1-\theta+\bar{\tau}\theta}{1-\delta}\right)^{1-\beta} \bar{y},$$

which determines $\hat{T}^p$ and it also follows that the utility of poor agents in this case is given by

$$\begin{aligned} U^p\left[\gamma=1,\kappa=1\right] &= \left(\frac{1-\beta}{\beta}\right)^{\beta} \left(\frac{r}{\bar{y}}\right)^{\beta} (1-\theta+\bar{\tau}\theta)^{1-\beta} \frac{\bar{y}}{1-\delta} \\ &< U^p\left[\gamma=1,\kappa=0\right]. \end{aligned}$$

It is then straightforward to show that, similarly to before, the rich get a strictly higher utility by the bribe for policy proposal than without, and we proceed without repeating the proof for this.

The preceding analysis has established (proof in text):

Proposition B-12 *Suppose that the constitution involves checks and balances (i.e., $\gamma = 1$).*

1. *When $\kappa = 0$ so that the rich lobby is not organized and there is no bribing, the equilibrium involves $\tau = \bar{\tau}$, $R^P = 0$, $R^L = 0$, and $T^p = \bar{\tau}\bar{y}/(1-\delta)$.*

2. *When $\kappa = 1$ so that the rich lobby is organized and there is bribing, then the equilibrium is as follows:*

   (a) *If $\beta > \beta_S$, then:*

      i. *If $\beta > \beta^*$, then $\tau = \bar{\tau}$, and $R^P = 0$, $R^L = 0$, $b^P > 0$, $b^L = 0$, and $T^p = 0$.*

      ii. *If $\beta < \beta^*$, then $R^P = 0$, $R^L = 0$, $b^P > 0$, $b^L = 0$, $\tau = \bar{\tau}$, and $T^p > 0$.*

      Taking into account that the probability the rich can solve their collective action problem and bribe politicians is q, we have that:

      If $\beta > \beta^*$ the expected utility of poor agents is given by

$$U^p\left[\gamma=1\right] = \frac{(1-\theta+\bar{\tau}\theta)\,\bar{y}}{1-\delta} - q\frac{\bar{\tau}\bar{y}}{1-\delta}. \tag{B-45}$$

      If $\beta < \beta^*$ the expected utility of poor agents is given by

$$\begin{aligned} U^p\left[\gamma=1\right] &= (1-q)\frac{(1-\theta+\bar{\tau}\theta)\,\bar{y}}{1-\delta} \\ &\quad + q\left(\frac{1-\beta}{\beta}\right)^{\beta} \left(\frac{r}{\bar{y}}\right)^{\beta} (1-\theta+\bar{\tau}\theta)^{1-\beta} \frac{\bar{y}}{1-\delta}. \end{aligned} \tag{B-46}$$

   (b) *If $\beta < \beta_S$, then there is no bribing and the expected utility of poor agents is given by $(1-\theta+\bar{\tau}\theta)\bar{y}/(1-\delta)$.*

Finally, in the referendum on checks and balances we then have:

Proposition B-13 1. *When $\beta > \beta^H$ the constitution will involve checks and balances.*

2. *When $\beta_S \leq \beta \leq \beta^H$ then*

   (a) *When $\beta > \beta^*$ the constitution will involve no checks and balances if*

$$q > \frac{\beta\left(1-\theta+\bar{\tau}\theta\right)-\left(1-\beta\right)\frac{r}{\bar{y}}}{\bar{\tau}}, \tag{B-47}$$

   and it will involve checks and balances if the converse inequality holds.

   (b) *When $\beta < \beta^*$ the constitution will involve no checks and balances if*

$$q - q\left(\frac{1-\beta}{\beta}\right)^{\beta}\left(\frac{r}{\bar{y}}\right)^{\beta}\left(1-\theta+\bar{\tau}\theta\right)^{-\beta} > \beta - \frac{\left(1-\beta\right)\frac{r}{\bar{y}}}{1-\theta+\bar{\tau}\theta}, \tag{B-48}$$

   and it will involve checks and balances if the converse inequality holds.

   In both cases, a greater q (a higher likelihood of the rich lobby being organized) makes a constitution without checks and balances more likely.

3. *When $\beta < \beta_S$ voters are indifferent between a constitution with and without checks and balances.*

Proof. Part 1 follows as in this case under no checks and balances the poor pay maximum taxes but get no transfers, while under checks and balances there is a positive probability they will get transfers. Parts 2.(a) and 2.(b) follow after simple calculation by comparing (B-42) with (B-45) and (B-46), respectively. The effect of q in part 2 follows as the left-hand sides of (B-47) and (B-48) are both increasing in q while the left-hand sides of (B-47) and (B-48) are independent of q. (To see that the left-hand side of (B-48) is increasing in q note that this reduces to the condition $U^p\left[\gamma=1,\kappa=1\right] < U^p\left[\gamma=1,\kappa=0\right]$ which is always satisfied). Part 3 follows as in this case policy is the same whether the constitution involves checks and balances or not. ■

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