Constitutions as Credible Constraints on Despots[*]

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Abstract

Powerful and unconstrained leaders often hinder the development of their nations. This phenomenon has often been linked to the commitment issues that result from the lack of constraints facing such leaders. Therefore, restricting the powers of such leaders through constitutions has been widely considered as a potential solution to these issues. Nonetheless, it remains unclear when the de jure stipulations of a constitution would translate into de facto constraints on a powerful leader, particularly when these constraints rely on enforcement by other self-interested actors who can be swayed through bribery or threats of violence. Through a theoretical model I investigate what characteristics ensure that constitutions provide credible constraints on a powerful leader. Specifically, I emphasize the role of constitutions in incentivizing opposition against a leader, and the challenge of designing them to fulfill two conflicting objectives. My investigation reveals why similar constitutions may not always be respected when implemented in different contexts. Moreover, it also reveals a link between majority decision rules and transparency, which helps explain the prevalence of these characteristics in modern constitutions.

Key words: Executive constraints, Constitutions, Commitment, Credibility, Taxes, Majority

JEL Classification: C73, D02, D72, H11, O12, O17, P48

1 Introduction

One of the oldest themes in economics is the incompatibility of despotism and development. Economies in which security of property is lacking - because of either the possibility of arrest, ruin, or execution at the command of the ruling prince or the possibility of ruinous taxation - should experience relative stagnation.

(De Long and Shleifer 1993)

The detrimental impact of powerful and unconstrained leaders on development has long been recognized by economists, as effectively conveyed by J. Bradford De Long and Andrei Shleifer in the preceding passage. A commonly accepted explanation among economists and political scientists for this phenomenon is the inability of such leaders to make credible commitments. Explicitly, these scholars have long acknowledged the potential benefits for despotic leaders in credibly committing to limited taxation and respecting the property rights of their citizens, as articulated by Niccolò Machiavelli in the following passage from *The Prince*

It makes him hated above all things, as I have said, to be rapacious, and to be a violator of the property and women of his subjects, from both of which he must

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abstain. And when neither their property nor their honor is touched, the majority of men live content, and he has only to contend with the ambition of a few, whom he can curb with ease in many ways.

(Machiavelli 1532/2006)

Nonetheless, due to their unconstrained authority, the decisions and policies of despotic leaders are often malleable and subject to change, making it difficult for them to credibly commit to future policies. In other words, their very power may prevent these leaders from credibly refraining from revising taxation and respecting their subjects' property. As a result, citizens may be reluctant to make costly investments, fearing potential changes in policy. Therefore, the vast powers of an unconstrained leader may prove to be a significant obstacle to maximizing tax revenues and promoting development in a nation.

Considering this particular problem, despotic leaders may be willing to limit the scope of their own powers in order to improve their ability to make credible commitments. One strategy for accomplishing this is by delegating some of their powers to other actors and codifying their respective roles within a constitution. This narrative helps explain why a Leviathan, as conceived in the Hobbesian sense, would willingly constrain itself. Nevertheless, a key issue persists with this narrative: how can despotic leaders credibly commit themselves to respecting such a constitution? Explicitly, it remains unclear how leaders powerful enough to violate the property rights of their subjects are somehow able to respect a constitution that essentially amounts to a piece of paper. Indeed, throughout history, numerous such leaders have consistently disregarded or outright nullified such agreements. Take, for example, the observation made in Okoth-Ogendo (1972), in which the author argues that the constitutions of former British colonies in Africa "have either ended up in military dustbins or have undergone change so profound and rapid as to alter their value content and significance beyond recognition".

In this paper, I explore the characteristics of a constitution that allow it to function as a credible commitment device for powerful leaders. I focus on a specific aspect of constitutional design: legislative rules and procedures. As such, I interpret a constitution as a document delineating the interactions between a powerful leader and members of a legislature. More importantly, I assume constitutions cannot outright prevent such leaders from ignoring legislative decisions, they can only influence the equilibrium incentives associated with doing so. More explicitly, a constitution creates the incentives for legislators to oppose and constrain a leader when necessary, making it costly for this leader to sidestep the legislature. Thus, constitutions in my model differ from the traditional concept of a constitution as "a set of rules that is agreed upon in advance and within which subsequent action will be conducted" (Buchanan and Tullock 1965), as found in influential works like Brennan and Buchanan (1980, 1985). This assumption is notably important when analyzing the role of constitutions in non-democracies or poorly institutionalized environments, where powerful leaders may circumvent their stipulations.

My model formalizes the effects of a constitution on the incentives of political actors, allowing me to investigate when a constitution allows powerful leaders to make credible commitments. Within this framework, I show that a constitution serves as a credible commitment mechanism when it dissuades powerful leaders from both bribing or coercing legislators to advance their agenda. More explicitly, a constitution provides legislators with the incentives to oppose a leader, making it costlier for him to bribe or repress them. Therefore, the theory I develop here helps explain how a constitution is able to impose credible constraints on a powerful leader and in which contexts it succeeds in doing so.

Formally, my model presents a dynamic game describing the interactions between a powerful leader, a representative citizen and a number of legislators. A leader starts every period by choosing whether to summon a legislature under a constitution that delineates its size and decision rules, while also proposing an initial level of taxation. Explicitly, a constitution delineates the size of a legislature and the decision rules it follows. Having observed the leader's actions, the representative citizen makes a costly and irrevocable production choice for that period. Then, knowing the produced output, the leader has the opportunity to revise his initially proposed level of taxation. While a leader can freely implement revisions in the absence of a legislature, the presence of one forces the leader to either persuade enough legislators or override the legislative process by repressing any opposition in order to implement them. These actions are costly to a leader because legislators, despite their self-interest, are driven to oppose revisions to tax levels, as this presents an opportunity for one of them to supplant the leader and take over his revenue streams. The adopted constitution ultimately shapes the costs of both persuading or repressing legislators by determining coalition sizes for passing or blocking revision proposals. Consequently, the leader's ability to credibly commit to his initially proposed level of taxation hinges on the characteristics of this specific constitution. More precisely, a set of constitutions that establish large enough legislatures with particular decision rules make revising the initially proposed level of taxation too costly for a leader, allowing a leader to make a credible commitment. Using my model, I describe this set of constitutions, which I dub *credible constitutions*.

Describing the set of credible constitutions and their characteristics not only allows me to explore and clarify various issues surrounding the credibility and value of constitutions but also sheds light on additional aspects. For instance, I show how this set can include common legislative rules such as majority and supermajority decision rules, but should not include others such as unanimous or unilateral decision rules. Moreover, I show how context-specific characteristics such as low productivity and weak political classes can prevent the successful implementation of such constitutions. This helps explain key issues related to transplanting successful constitutions, echoing the empirical findings of Berkowitz et al. (2003) regarding the transplant of legal systems. Finally, I reveal important shortcomings of secret voting in legislatures by emphasizing the importance of the ability of citizens to monitor legislators. This final result helps shed light on why transparent legislative procedures are more commonly found in modern constitutions.

My findings suggest constitutions can help powerful leaders make credible commitments in two significant ways. First, they provide every legislator with the proper incentives to oppose rapacious leaders by offering the potential to replace them. In particular, this potential need not rely on explicit rules within the constitution but rather from the signal conveyed through active opposition in a legislature, which allows members of the opposition to escape the same punishments that befall such leaders and their allies. Second, they determine the minimum sizes of a coalition that can pass proposals in the legislature and of an effective blocking coalition. By determining the minimum sizes of these coalitions, constitutions can simultaneously make the costs of bribing passing coalitions and of repressing blocking coalitions high enough to deter a leader from pursuing either option. Notably, this task is complicated by the fact that the sizes of these coalitions are inversely proportional to each other, making it challenging to ensure that both coalitions are sufficiently large. In essence, a constitution in my model creates a proper incentive structure for a powerful leader by incentivizing a large enough group of self-interested political actors to oppose him when necessary and dissuading such a leader from attempting to persuade any of these actors.

This paper's model belongs to a class of theoretical models describing politics in nondemo-

cratic regimes or weakly institutionalized environments, where institutional rules can be circumvented and the credibility of commitments cannot be assumed.[1] Commitment issues relating to property rights and their pervasiveness in weakly institutionalized or despotic environments have long been recognized by authors within this literature.[2] One potential solution to these issues is to increase the security and time horizons of leaders, as discussed in Grossman and Noh (1990, 1994), Levi (1988), Olson (1991, 1993). In contrast, I explore constitutional constraints as an alternative solution to a leader's commitment issues, regardless of his time preferences. Thus, my analysis also differs from Acemoglu et al.'s (2012) characterization of stable constitutions, which relies on agents' time preferences. More formally, while Acemoglu et al.'s (2012) findings rely on agents having high discount factors, I demonstrate conditions where constitutions remain credible despite agents having lower discount factors.

The role of a constitution in my model, serving as a self-enforcing mechanism to properly incentivize a leader, shares parallels with the theories proposed in Barzel (2000), Boix and Svolik (2013), Fearon (2011), Gehlbach and Keefer (2011), Greif et al. (1994), Myerson (2008), North and Weingast (1989), and Weingast (1997). These works emphasize the role of institutions in coordinating collective action against a leader as punishment for transgressions, primarily by addressing information asymmetries and clarifying when such transgressions occur. Alternatively, my approach avoids coordination issues and collective action entirely, instead highlighting the impact specific legislative rules and procedures have on the costs incurred by a leader when transgressing.

Explicitly, my approach accomplishes this in two fundamental ways. Firstly, I assume away the collective action problem facing citizens when coordinating on punishments against grasping leaders following a transgression, and show that such punishments are insufficient to effectively incentivize powerful leaders. Specifically, I highlight the limitations of reactive punishments and emphasize the necessity of proactive opposition to effectively incentivize powerful leaders. Secondly, and crucially, I demonstrate how constitutions can motivate self-interested political actors to actively prevent a leader from transgressing. Significantly, this remains true despite the absence of a motivation among these political actors to oppose the leader without a constitution. Thus, in my model, a constitution does not help agents coordinate against a leader, instead, it incentivizes certain political actors to oppose the leader when necessary. This interpretation of a constitution helps explain why specific design choices matter and why transplanting them is so challenging, issues largely overlooked in the aforementioned papers.

In examining the interactions between a leader and legislators, my model shares similarities with the selectorate theory of Bueno de Mesquita et al. (2003), but takes a different approach by treating the presence of institutions as an equilibrium outcome rather than assuming them as given. Additionally, my focus on legislative rules and procedures bears resemblance to works discussing legislative bargaining and committee decision making.[3] Contrasting with these works, legislative decisions in my model can be circumvented through costly repression and need to be self-enforcing. Finally, my model contributes to the constitutional economics literature by describing the effectiveness of specific constitutional designs under different contexts.[4] In particular, this paper contributes to the growing body of work investigating the violation of constitutional rules, i.e., the de jure/de facto gap as defined in Voigt (2021).

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[1]For a detailed review of a particular segment of this literature providing formal models of nondemocratic politics, consult Gehlbach et al. (2016).

[2]For further information on this topic, Besley and Ghatak (2010) provide an informative analysis and survey of these issues in the literature.

[3]For a survey of the literature on legislative bargaining, consult Eraslan and Evdokimov (2019), and for one regarding the literature on committee decision-making consult Li and Suen (2009).

[4]For a thorough review and description of the constitutional economics literature, consult Voigt (2020).

The rest of this paper is organized as follows. Section 2 describes the model and results, while section 3 concludes with a discussion of the results found in the paper. All proofs can be found in the Appendix.

2 Analysis

2.1 Model

I consider a model of repeated interactions between a leader K, a representative citizen C, and a number of legislators, over an infinite number of discrete periods $t = 0; 1; \dots$. Additionally, every agent has a discount factor of $\delta \in (0, 1)$.[5]

At the beginning of each period t, K may summon a legislature and design a constitution (α_t, L_t), where $\alpha \in [0, 1]$ represents a legislative decision rule and $L \in \mathbb{N}$ the size of a legislature. In case K does not summon a legislature at time t, $(\alpha_t, L_t) = (0, 0)$. Otherwise, K draws L_t agents from a large pool of identical agents, indexed by $\ell \in \mathbb{N}$, to form a legislature. More precisely, this legislature comprises legislators $\ell \in \{1; 2; \dots; L_t\}$. Moreover, K announces a level of taxation $\bar{T}_t$ whenever a legislature is present.

Afterwards, C chooses an amount Y_t of taxable output to produce at a cost $c(Y_t/\lambda)$, where $c' > 0$, $c'' > 0$, and λ is an exogenous productivity parameter. Given C's choice of production, K may then propose a revised level of taxation $\hat{T}_t$, which may then be accepted or rejected by the legislative branch. If no legislature was summoned, this revised level of taxation will be the effective level of taxation T_t. K also has an opportunity to bribe members of the legislature before their votes are cast. In particular, a leader is capable of offering one-time payments to members of the legislature in exchange for a favorable vote. The amount offered by a leader to each legislator is represented by $b_t^\ell \in \mathbb{R}_+$.

The legislature's decision is made according to a voting process, in which every agent l makes a binary vote $v_t^\ell \in \{0, 1\}$. Throughout this paper, I shall consider a specific form of legislative decision rules, one where a proposed level of taxation is accepted if a share $\alpha_t \in \{\frac{1}{L}; \frac{2}{L}; \dots; 1\}$ of the legislators votes in favor of it, i.e., chooses $v_t^\ell = 1$. Since all legislators are identical, it is possible to make this assumption without any loss of generality.

If the leader's taxation proposal is accepted, he is able to implement a tax level of $T_t = \hat{T}_t$. If the proposed taxation level is rejected by the legislature, the leader faces two options. Firstly, they may acquiesce and implement the originally proposed taxation level, i.e., $T_t = \bar{T}_t$. Alternatively, the leader may choose to simply ignore the legislature's decision altogether and tax $T_t = \hat{T}_t$, incurring a cost r to repress any opposition to his rule. This choice is represented by a binary variable R_t. Moreover, when $R_t = 1$, each legislator in that opposition is immediately removed from the economy.

The cost r can be represented by a non-decreasing function $r_L(n)$, where n represents the size of an opposition, i.e., the number of legislators who voted against the leader's proposal.[6] I assume that $\{r_L(n)\}_{L=0}^\infty$ is a non-decreasing sequence $\forall n$, and $\lim\limits_{L \to \infty} r_L(n) = r(n) < \infty$ $\forall n$. Explicitly, these assumptions guarantee that the cost of repression cannot be lower for

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[5] The assumption of a homogeneous discount factor among agents is not essential, and the model could be adapted to accommodate heterogeneous discount factors without meaningfully impacting the results presented in this paper.

[6] Assuming that an opposition consists of every single legislator who voted against a leader's proposal is not crucial to this paper's main results. In fact, this particular arrangement can be shown to emerge endogenously from the decisions of individual legislators. This particular result is revealed in the appendix through a variation of my main model.

larger legislatures, and that the cost of repressing oppositions in increasingly large legislatures remains finite.

At the end of every period, the leader and all legislators who were not part of an opposition are permanently removed from the economy whenever the revised level of taxation $\hat{T}$ is higher than the tax level $\bar{T}$ proposed initially. Afterwards, a new leader is drawn from among the remaining legislators or from a large pool of identical agents if no legislators remain. Furthermore, any remaining legislators will be part of a legislature if one is summoned in the following period. [7]

Fundamentally, these assumptions about the succession process capture two important features of my model. Firstly, they represent the possibility of punishments against transgressions by a leader, as recognized in previous research. Specifically, they represent the ability of citizens to coordinate on punishments against transgressing leaders and their allies. Secondly, they highlight the ability of opposition legislators to replace an exploitative leader. Put together, these two features are crucial in shaping the incentives of legislators in my model.

2.2 Payoffs, timing of events and equilibrium concept

Each type of player's flow payoffs can be described as follows:

$$u_t^C = Y_t - c\left(\frac{Y_t}{\lambda}\right) - T_t,$$ (1)

$$u_t^K = T_t - \sum_{l=1}^{L} b_t^l + R_t r_L(n),$$ (2)

$$u_t^\ell = v_t^\ell b_t^\ell.$$ (3)

where $S_t = 1$ if a legislature was summoned and $S_t = 0$ otherwise.

The timing of events during each period can be summarized as follows:

- K makes a choice of (α_t, L_t) and $\bar{T}_t$,

- C makes his production choice Y_t,

- If $(\alpha_t, L_t) \neq (0, 0)$, K proposes tax level $\hat{T}_t$ and decides on a bribery schedule, otherwise K chooses T_t

- If $\hat{T}_t \neq \bar{T}_t$, agents ℓ vote on whether or not to accept $\hat{T}_t$,

- If proposal the $\hat{T}_t$ is rejected by the legislature, K chooses R_t,

- Payoffs are realized,

- Next period players are determined.

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[7]Although these assumptions about the succession process may initially seem arbitrary, it can be demonstrated that this process can be replicated in equilibrium by a simple set of strategies. Explicitly, this process can be replicated by an equilibrium where citizens punish transgressing leaders and their allies with a grim trigger style strategy. Moreover, such an equilibrium is weakly preferred by the leader since it makes the exercise of designing credible constitutions easier. These results can be readily shown through a slight variation of the main model. For clarity, I have moved these results to the appendix while maintaining the aforementioned assumptions in the main model.

I consider the concept of Stationary Equilibrium, defined as a strategy profile that constitutes a Nash Equilibrium in all subgames and yields a time-invariant outcome each period. Throughout the paper, I shall refer to these simply as equilibria.

In general terms, each period the representative citizen must choose a production level based on the leader's decisions of calling a legislature and making an initial tax proposal. Meanwhile, the leader's choice every period consists of first designing a constitution and proposing a tax level, then choosing a revised tax level and bribery schedule based on the representative citizen's decision, and finally deciding on whether to accept the decision of the legislature. Additionally, agents ℓ have to decide whether to vote for or against the leader's tax proposal whenever a legislature is called into place, taking into account the chosen bribery schedule and the representative citizen's production choice.

2.3 Despots and the absence of oversight

I start by considering a baseline model where the leader is unable to summon a legislature of any size, i.e., $L = 0$. I use this baseline model to highlight both the leader's commitment problem concerning taxation and the potential benefits of summoning a legislature. In particular, analyzing this baseline model suggests that summoning a legislature might serve as a solution to this commitment issue. Under this baseline model, the timing of events within each period can be simplified as follows

- C makes his production choice Y,

- K chooses an effective tax level of T,

- Payoffs are realized.

The representative citizen can always choose to produce nothing and receive a payoff of zero. As such, equilibrium taxes T must allow the representative citizen to receive a non-negative payoff, resulting in the following participation constraint for the representative citizen

$$T \leq Y - c\left(\frac{Y}{\lambda}\right). \tag{4}$$

Notice that without a legislature, the leader can freely revise the initially proposed tax level at no additional cost. In this case, the only downside a leader faces for revising his initial tax proposal is forfeiting his continuation payoff. Essentially, in the absence of a legislature, a leader would adhere to a particular tax level only if the payoff of staying in power were greater than those of expropriating all the output and leaving power at the end of the period. As such, equilibrium taxes must satisfy the following incentive compatibility constraint

$$T \geq (1 - \delta)Y. \tag{5}$$

Combining (4) and (5), it is possible to find that in order for a combination of Y and T to be supported in some equilibrium, the following condition must hold

$$(1 - \delta)Y \leq T \leq Y - c\left(\frac{Y}{\lambda}\right). \tag{6}$$

Now, it is possible to define Y^D as the output level associated with the highest possible surplus that satisfies condition (6), i.e., $Y^D \equiv \arg\max_Y \quad Y - c(Y/\lambda) \text{ s.t. } \delta Y - c\left(\frac{Y}{\lambda}\right) \geq 0$

.Notice that (6) may not be satisfied when the societal surplus is maximized, i.e., when $Y = Y^* \equiv \arg\max_Y \quad Y - c(Y/\lambda)$, and it is possible that $Y^D < Y^*$. The following proposition describes when that occurs.

Proposition 1. *If $\delta Y^* - c(Y^*/\lambda) < 0$, there is no equilibrium with $L = 0$ where output is Y^*. Moreover, a leader is unable to extract higher taxes than $Y^D - c(Y^D/\lambda)$ in equilibrium.*

Proposition 1 demonstrates that the absence of a legislature can lead to inefficiency due to either the leader's impatience or high production costs. Intuitively, when either of these factors is present, the leader's temptation to deviate outweighs any possible punishment scheme citizens could implement when producing Y^*. Thus, the representative citizen must limit production to deter deviations by a leader. This is possible because, although doing so leads to a reduction in the overall surplus, it leads to an even larger decrease in the leader's deviation payoff, realigning their incentives.

2.4 Constitutions under despots

Considering the baseline model from the previous section, both citizens and the leader could be made better off by maximizing the societal surplus. Nonetheless, the leader's lack of commitment concerning taxation makes citizens unwilling to produce enough to maximize the surplus, as revealed by Proposition 1. As such, it could be in the leader's best interest to solve this inefficiency, especially if he were able to extract a share of the efficiency gains. One potential way leaders can address this issue is by using a constitution that delegates some of their power to a legislature.

Nevertheless, it is not evident that a constitution could act as a credible commitment mechanism for a despotic leader. It is puzzling that a leader who is unable to restrain himself when it comes to taxation is able to do so when it comes to respecting a mere piece of paper. Under despotism, a leader conceivably has enough power to suppress any opposition to his rule and ignore any dissatisfying decisions made by a legislature.

Moreover, citizens have no guarantee that legislative decisions are made with their interests in mind. Citizens understand that despotic leaders have the opportunity to sway the decisions of legislators with bribes or coercion. Therefore, citizens may remain unwilling to increase production even when a constitution is seemingly respected.

It remains to be shown how the introduction of a constitution can serve as a solution to the leader's lack of commitment. More specifically, it is necessary to ascertain if a despotic leader could credibly respect the decisions of a legislature and if citizens could believe their interests would be upheld by legislators under such a leader. In essence, it is necessary to specify which constitutions can successfully dissuade a leader from subverting it. The analysis in the following section focuses on this point.

2.5 Constitutions, bribes and the threat of repression

As previously discussed, a constitution may help solve the leader's commitment issue as long as he does not have an incentive to subvert it. When a leader subverts a constitution, he is able to avoid its constraints, thereby undermining its credibility as a commitment mechanism. My model considers two methods a leader can use to subvert the constitution: bribery and threats of repression. Thus, a constitution should make a leader unwilling to either make payments that would sway the decision of legislators or to credibly threaten repression against them. In other words, a leader should not find it optimal to offer acceptable bribery payments and

repression should be too costly to engage in. I provide the following definition for constitutions which achieve this

Definition 1. *A constitution is **credible** at output level Y and proposed tax level $\bar{T} \leq Y - c(Y/\lambda)$ if a leader is unwilling to revise the tax level $\bar{T}$ following the citizen's production choice of Y.*

Intuitively, a constitution is credible if the leader is able to credibly commit to his initially proposed level of taxation. In other words, when a constitution is credible, a leader never has an incentive to change his choice of taxation following the representative citizen's choice of production. Thus, identifying the conditions under which a constitution is credible allows me to define when it works as a commitment mechanism.

Notice that a leader would only be willing to subvert a constitution when the costs of bribery and repression are low enough. Moreover, when subverting a constitution, he will always choose a combination of bribery and repression which minimizes his total costs. As such, the least costly method of subverting a given constitution must be specified before characterizing when that constitution is self-enforcing. The following lemma formally reveals such a method of subverting a constitution

Lemma 1. *A leader will either exclusively bribe or exclusively threaten to repress legislators when subverting a constitution.*

Lemma 1 reveals that a leader will not simultaneously bribe and threaten to repress legislators when subverting a constitution. As such, it is unnecessary to worry about strategic combinations of bribes and repression threats when characterizing a credible constitution, it suffices to show when a leader will have no incentive to employ either method.

The intuition behind Lemma 1 arises from two aspects of repression. First, repression eliminates opposition members from the economy deterministically. In other words, repression is not random and affects all members of an opposition equally. As a result, whenever the threat of repression is credible, the expected benefits of joining an opposition fall to zero. In this case, legislators can be swayed without the use of any bribes, as opposing the leader no longer offers any higher payoff to them. Second, repression is costly. Consequently, a leader will avoid repression when it does not affect the amount he can extract from citizens. This implies that a leader will never repress an opposition when his proposal is already approved by the legislature. As a result, repression threats are not credible against members of a non-blocking opposition, i.e., an opposition of size $(1 - \alpha)L$ or smaller. Taking these two aspects into account, the strategy a leader employs to subvert a constitution depends on the characteristics of blocking oppositions, i.e., an opposition of size $(1 - \alpha)L + 1$ or larger. If some blocking oppositions are sufficiently small, repression becomes a credible threat against its members, allowing the leader to influence legislators through coercion alone. However, if no blocking opposition is small enough to make repression viable, a leader cannot credibly threaten to repress the members of any opposition and must rely solely on bribery to sway legislators.

With Lemma 1 in mind, I first specify the cost of swaying the decision of legislators exclusively through bribes. In the absence of repression, a legislator who refuses a bribe and joins an opposition will always have the opportunity to replace the leader in the following period. In other words, by refusing a leader's bribe, the legislator would have a shot at receiving any revenues associated with that position in the future. Thus, to secure the passage of a tax revision through bribes, a leader must offer each member of a passing coalition an amount that matches or exceeds the value of defecting to the opposition. Considering this, it becomes clear that any legislator in the passing coalition will only accept a payment from the leader if it

surpasses the discounted revenues of being a leader, multiplied by the probability of attaining that position when in an opposition of size $(1-\alpha)L+1$. As such, the minimum bribe a leader must offer individual legislators to secure the passage of a tax revision can be described as follows

$$\hat{b}^\ell(\alpha, L) = \frac{\delta}{(1-\alpha)L+1}\left[\frac{T}{1-\delta}\right]. \tag{7}$$

This expression highlights a key aspect of my model: legislators are incentivized to challenge a leader by the opportunity to replace him and access his revenues in the future. Therefore, without a credible threat of repression, a leader must offer a payment higher than (7) to a share α of legislators if he wishes to have his proposal accepted by the legislature. As such, the cost of swaying a legislature exclusively through bribes can be represented by

$$\sum_{\ell=1}^{L} \hat{b}^\ell(\alpha, L) = \frac{\alpha L \delta}{(1-\alpha)L+1}\left[\frac{T}{1-\delta}\right]. \tag{8}$$

Notice that this cost is strictly increasing in α. Intuitively, this occurs because increasing α increases both the number of legislators that must be bribed to pass a proposal and the minimum bribe required to persuade each of them. More precisely, individual bribes increase because, with a higher α, the minimum size of a blocking opposition is reduced. This increases the probability that any given member of an opposition could replace the leader, raising the expected payoff of joining it.

Considering this observation, bribing legislators becomes increasingly more expensive as a constitution requires a larger consensus for legislative decisions. Consequently, when α is sufficiently high, the costs of bribing legislators to pass a proposal can surpass the gains of revising the tax level. This implies that that employing bribery is advantageous for the leader only when α is relatively low. This dynamic is illustrated in Figure 1, which depicts the costs and benefits of bribery, and highlights in cyan the levels of α at which bribery benefits the leader.
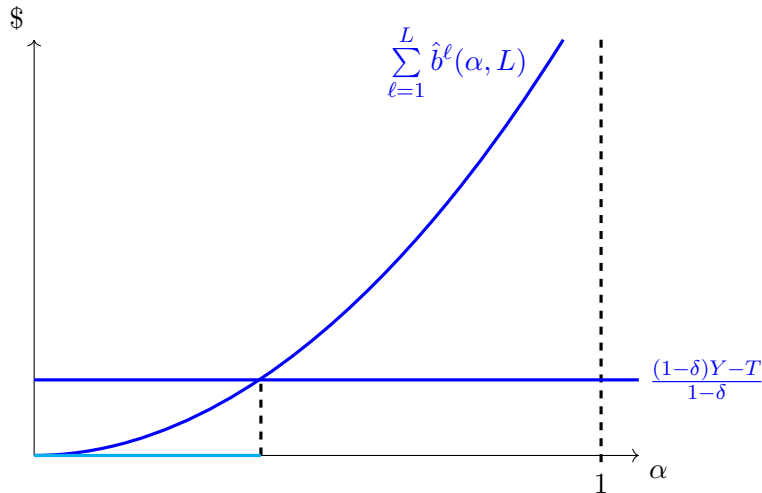

Figure 1: Costs and benefits of bribery with a legislature of size L.

Thus, it might be expected that constitutions requiring a larger consensus, such as unanimity, would be harder to subvert. While this may be true in the absence of repression, recall that

threats of repression can be used as an alternative way of swaying the decisions of legislators. In light of this, it is important to specify when such threats are credible.

Remember that, based on Lemma 1, a leader would only opt for repression if the opposition successfully blocked his proposal. As such, a leader's threat of repression can only be credible against blocking oppositions. Nevertheless, a leader may still be unable to credibly threaten repression against some blocking oppositions. Notably, it may be too costly to carry out repression against blocking oppositions when they are too large. This suggests that repression may not be credible against all blocking oppositions, but it could still be credible against the smallest ones.

Therefore, to determine when a leader is able to influence the decisions of legislators through threats of repression, it suffices to consider the costs of repressing the smallest blocking opposition. Considering this, observe that the cost of repressing such an opposition decreases as α increases. This relationship arises because the minimum size of a blocking opposition, defined as $n_{\alpha,L}^{block} \equiv (1-\alpha)L + 1$, declines with increasing values of α, as noted earlier. Consequently, the benefits of repressing an opposition can outweigh the costs of doing so if α is large enough. This dynamic is illustrated in Figure 2, which depicts the costs and benefits of repression, and highlights in orange the levels of α at which repression benefits the leader.
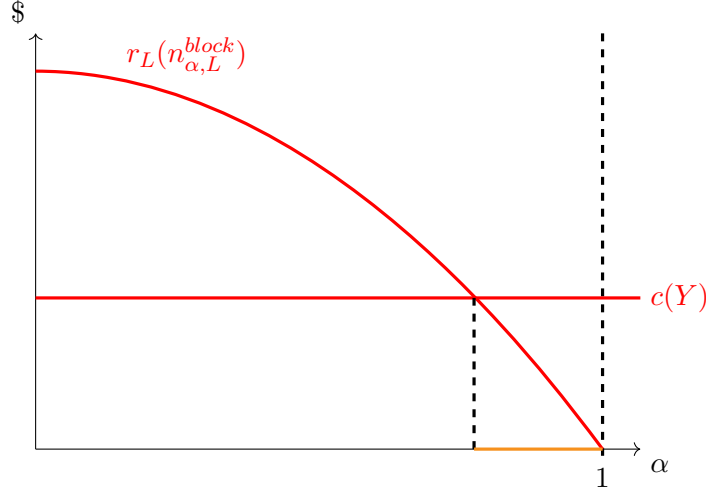

Figure 2: Costs and benefits of repression with a legislature of size L.

In my analysis, I make two assumptions regarding the costs of repression. First, to rule out the uninteresting case where a leader never finds repression too costly, I make the following assumption

Assumption 1. $\exists \hat{n} \in [0,1]$ *such that* $r_L(\hat{n}) > c(Y^*/\lambda)$ *for some* $L \in \mathbb{N}$.

Second, I assume no single legislator can mount an effective resistance against a leader. In other words, it is never too costly to repress a single legislator, or more formally

Assumption 2. $r_L(1) < c(Y^D/\lambda) \ \forall L \in \mathbb{N}$

The discussion so far indicates that a leader's willingness to subvert certain constitutions hinges on the specific value of α outlined by them. More specifically, a leader would only be willing to subvert a constitution when a large or low enough consensus is required for legislative decision-making. In other words, credible constitutions must contain decision rules α belonging to some set A_L^Y which must be contained in the open interval $(0,1)$. As such, constitutions featuring these decision-making requirements should allow for more efficient production outcomes in equilibrium. The following proposition formalizes this observation

Proposition 2. *A credible constitution with a legislature of size L exists at output level $Y > Y^D$ if and only if α is neither sufficiently low nor sufficiently high, i.e., if and only if $\alpha \in A_L^Y$, where*

- $A_L^Y = \{\alpha \in [0,1] : \underline{\alpha}_L^Y < \alpha < \overline{\alpha}_L^Y\}$,

- $A_L^Y \subset (0,1)$.

Proposition 2 reveals that credible constitutions have decision rules with neither excessively low nor excessively high values of α. Intuitively, this results from the need for constitutions to balance the two competing objectives of making both bribery and repression too costly in order to be credible. Explicitly, these objectives are competing because increasing α makes the minimum passing coalition larger while simultaneously making the minimum blocking opposition smaller. Therefore, as α increases, the costs of bribery increase, while those of repression decrease.

Moreover, Proposition 2 reveals an important characteristic of constitutions and how legislatures interact with leaders. When constitutions outline specific legislative procedures, they do not outright prevent a leader from taking certain actions. Instead, they merely change the relative costs associated with those actions by motivating legislative opposition. As such, the specific design of a constitution does not directly constrain the powers of a leader. In essence, a constitution may be credible not by simply altering the rules of the game and precluding certain actions. Instead, it does so by altering the incentives a leader and the legislators face, making certain actions less appealing to this leader.

The results described so far illustrate which types of constitutions are credible. Explicitly, the set A_L^Y outlined in Proposition 2 ensures that constitutions are self-enforcing once implemented. Nonetheless, Proposition 2 does not rule out the possibility that no such constitution exists. Thus, it remains to be shown under which conditions credible constitutions exist. To show this, conditions under which the set A_L^Y is non-empty must be specified. One such condition is the size of a legislature, as revealed by the following proposition

Proposition 3. *A credible constitution requires a sufficiently large legislature.*

Proposition 3 highlights the role of a legislature's size in preventing the subversion of a constitution. This result stems from the fact that as legislatures grow larger, the costs associated with both bribing or intimidating a portion of it also grow larger. This increase in costs provides stronger incentives against engaging in such actions, thereby dissuading a leader from subverting the constitution and expanding the interval A_L^Y. Consequently, a constitution is more likely to be credible under larger legislatures.

Moreover, Proposition 3 implies that it may always be possible to design a constitution that will be credible. In essence, it suffices to have a large enough legislature such that some legislative decision rule is capable of discouraging the subversion of the constitution. As such, the existence of credible constitutions is guaranteed as long as no constraints on the size of a legislature exist. Moreover, with Propositions 2 and 3 in mind, it is possible to define the set of all credible constitutions at output level Y as $A^Y \equiv \bigcup\limits_{L=1}^{\infty} A_L^Y$.

Evidently, A^Y will be non-empty and a strict subset of the set $\mathbb{N} \times [0,1]$ for any $Y > Y^D$. With this in mind, it is also possible to define the set of all constitutions that can be subverted at output level Y, the complement of A^Y in $\mathbb{N} \times [0,1]$. Consequently, one can evaluate the credibility of any given constitution by considering the elements of these sets. As depicted in Figure 3 below, any constitution within the shaded area serves as a credible constraint on a

self-interested leader, enabling a production level of $Y > Y^D$ in equilibrium. Conversely, any constitution in the non-shaded area of Figure 3 can be subverted, undercutting its merit as a credible constraint on such a leader.
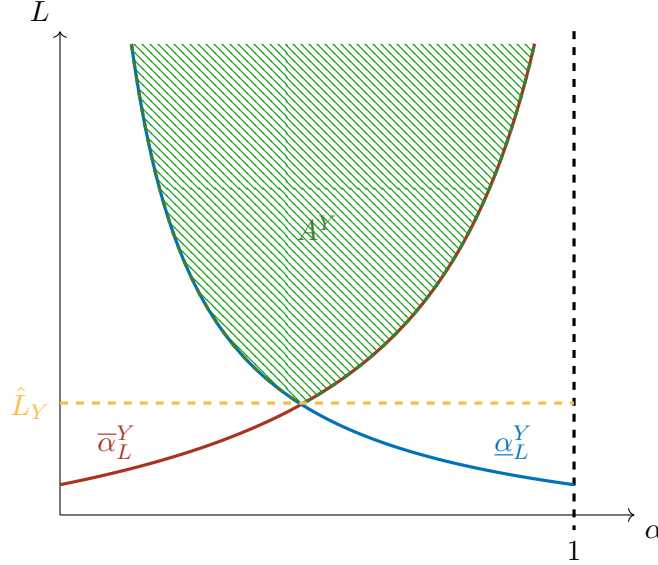
Figure 3: Graphical representation of A^Y

Finally, it is possible to show that a self-interested leader will implement a credible constitution belonging to set A^Y in equilibrium. Intuitively, implementing a credible constitution provides a leader with a fully credible commitment allowing citizens to make their production choices without fearing revisions to the tax level. Thus, the overall taxable level of output under a credible constitution can be greater than under no constitution, leading a leader to favor its implementation. The following proposition summarizes this result.

Proposition 4. *In equilibrium a leader will implement a credible constitution, i.e., $(\alpha, L) \in A^Y$ in equilibrium.*

Taken together, Propositions 2, 3, and 4 reveal how a constitution can be designed to ensure that both output and tax revenues are maximized in equilibrium. To clarify the intuition behind this result, it is possible to break down the individual propositions and the underlying mechanisms driving them. First, Proposition 2 outlines the features of a credible constitution by demonstrating how it can provide the right incentives for legislators to oppose a rapacious leader. Specifically, a credible constitution achieves this by influencing the size of an effective opposition, which ultimately shapes the benefits of joining it and discourages repression by the leader. Second, Proposition 3 establishes the existence of such a constitution by showing that a credible constitution can be designed if a sufficient number of legislators are available to oppose the leader. Finally, Proposition 4 shows that a credible constitution will be implemented in equilibrium, allowing a leader to improve his tax revenues.

In summary, I have so far outlined the characteristics of credible constitutions and demonstrated how their implementation results in better outcomes in equilibrium. In the following subsections, I will explore factors that may complicate or even prevent the design of credible constitutions.

2.6 Composition of a legislature

In the previous section, the existence of a credible constitution was established. Considering these results, the exercise of designing a constitution that imposes credible constraints on a

leader appears to be as simple as calling upon a large enough legislature with some appropriate decision rule. As such, the fact that many societies have been unable to design such a constitution seems perplexing at first. Nonetheless, there is a simple explanation which can reconcile the existence of constitutions with the fact that they are only implemented sometimes. It is possible that implementing some constitutions may not be feasible in particular contexts. Consequently, for a credible constitution to be implemented in a nation, it must not only exist, but also be feasible. In light of this, it is necessary to identify and investigate potential factors preventing the feasible implementation of specific constitutions.

As previously described, a credible constitution is one that makes both bribery and repression too costly for a leader. This occurs when a large enough number of legislators have the proper incentives and benefit from opposing a leader's attempts at subverting a constitution. As such, it is imperative that legislators are not easily repressed and that they have a chance of replacing a leader. In the model so far, it has been assumed that all legislators are identical in both the cost of their repression and their chances of succeeding an ousted leader. Nevertheless, it is possible that some legislators differ in these aspects and may be more easily bribed and repressed than others. Moreover, it is possible that most legislators are easily swayed by a leader while only a limited number of legislators can truly challenge him.

Considering these possibilities, it is necessary to investigate what effect the composition of a legislature has on the incentives of a leader. For this purpose, let me now consider constitutions that not only outline the size and decision rule of a legislature but also specify its composition. By specifying the composition of a legislature, such a constitution will determine which types of legislators a particular legislature comprises. For simplicity, let me assume there are two types of legislators, weak and strong, denoted by a binary variable $h_\ell \in \{0; 1\}$, and that a constitution delineates the number $L^H \in \mathbb{N}$ of strong legislators in a legislature.[8] A weak legislator ($h_\ell = 0$) has no chance of replacing a leader and can be repressed at no cost when opposing him. Conversely, a strong legislator ($h_\ell = 1$) is identical to the legislators discussed in the previous section. With these definitions in mind, it is relatively straightforward to show that it becomes harder for a leader to subvert a constitution when there are more legislators of the strong type in a legislature, as shown by the following lemma.

Lemma 2. *The costs of subverting a constitution are increasing in L^H.*

Quite intuitively, this occurs because strong legislators have a genuine incentive to oppose a leader, while weak legislators are indifferent between acquiescing and opposing him. As such, legislatures with a substantial number of strong legislators are more effective at dissuading a leader from subverting a constitution. This result shows that it becomes harder for a leader to subvert a constitution when he must deal with increasingly large numbers of strong legislators. Regardless, it remains to be shown if a large number of strong legislators is indeed crucial to prevent the subversion of a constitution. More specifically, it remains to be shown that limiting the available number of such legislators can prevent the feasible implementation of a credible constitution.

To show whether or not the number of strong legislators is a crucial feature of credible constitutions, let me assume there exists a limit $\bar{L}^H \in \mathbb{N}$ to the number of strong legislators available. Put simply, $\bar{L}^H$ captures the strength of a nation's political class. A low $\bar{L}^H$ implies a weak political class, while a high $\bar{L}^H$ implies a strong one

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[8]While assuming there are only two types of legislators simplifies my analysis, it is not crucial for the results discussed in this section. As long as there exists some lowest type of legislator similar to the weak type described here, it remains entirely possible to generalize these results to situations with more types of legislators.

Taking this assumption into account, a constitution will only be feasible if $L^H \leq \bar{L}^H$. Thus, if a credible constitution requires a minimum number of strong legislators, it is possible that no credible constitution may be feasible. The following proposition formally shows that this is indeed the case.

Proposition 5. *If a nation's political class is weak enough, then no feasible constitution will be credible.*

Intuitively, this result stems from the fact that only strong legislators can effectively hinder a leader's attempts to subvert a constitution. As such, expanding a legislature will only help prevent the subversion of a constitution when its fraction of strong legislators also increases. Conversely, when expanding a legislature only increases its fraction of weak legislators, doing so will only make a constitution more easily subvertible. Therefore, designing a constitution that is simultaneously feasible and credible may be impossible when only a limited number of strong legislators is available. This occurs because, even a legislature comprising all these legislators may be unable to prevent the subversion of a constitution. Additionally, any larger legislature would not provide stronger incentives to a leader, since any additional legislator would be of the weak type.

Proposition 5 shows that a strong enough political class is necessary to prevent the subversion of a constitution. More precisely, it reveals that both the quantity and the quality of legislators are fundamental factors to sustaining credible constitutions. Therefore, it is possible to infer that limits on the strength of a political class can prevent the implementation of a credible constitution, ergo, having deleterious effects on an economy and limiting potential tax revenues. Moreover, Proposition 5 further underscores the importance of providing legislators with the proper motivation to constrain a rapacious leader. In the framework of my model, notice that strong legislators are the only type of legislators with incentives to actually oppose a leader when necessary. As such, only their presence can deter a leader from attempting to revise taxes and make a constitution credible.

Considering this result, it becomes evident that increasing the available quantity of strong legislators in an economy can have significant benefits and help increase its overall surplus. Consequently, even a self-interested leader may surprisingly find an incentive to foster the presence of strong legislators who can oppose and replace him. Fundamentally, this result sheds light on why political insiders, i.e., individuals with the highest chances of replacing leaders, can be most adept at constraining them. Moreover, it also clarifies why leaders often rely on these individuals, rather than relying exclusively on loyal allies, to facilitate effective governance.

2.7 The challenges of transplanting constitutions

A significant issue related to the analysis and design of constitutions is identifying the potential obstacles in using existing constitutions as a template for new constitutions in different contexts, i.e., the challenges involved in transplanting constitutions. While it may be evident from the analysis so far which constitutions are both credible and feasible, the question of why some constitutions may be credible in the context of one nation but not so when implemented elsewhere has not been directly addressed. Without directly addressing this question, some of the most significant challenges involved in transplanting constitutions still remain elusive.

In particular, it remains puzzling why transplanting a successful constitution to a different context might lead to its failure. This particular challenge is especially pronounced when considering the implementation of credible constitutions in the weakly institutionalized settings typical of developing nations. Considering that these are settings where such constitutions can

be most valuable, and given that most existing examples of credible constitutions originate from developed nations, which differ significantly from developing ones, it becomes apparent how this might prove to be an important challenge to understand and overcome.

Some of the main issues surrounding the transplant of constitutions can be seen in the experiences of former colonies in Africa. The post-independence trajectories of many of these nations offer compelling evidence of how constitutions that prove effective in certain environments can be undermined by powerful leaders and fail to adequately constrain them when applied in different environments. Despite initially modeling their constitutions on successful examples from their colonizers, many of these newly independent nations would eventually devolve into autocracies whose rulers would either disregard or outright revoke their constitutions. A particularly illustrative example of this phenomenon is that of Eswatini, a former British high commission territory and currently the only absolute monarchy on the African continent. Following a protracted negotiation process, Eswatini gained its independence in 1968 as a constitutional monarchy where the traditional Swazi monarch, Sobhuza II, was subject to the constraints of a parliament structured according to the British Westminster system. This system of government proved short-lived, less than five years later, in 1973, King Sobhuza II abandoned the 1968 constitution, opting instead to govern the nation through proclamations and decrees.[9] Episodes like this reveal the fragility of constitutions and the challenge of transplanting them into new settings. Within the framework of this model, this challenge may present itself when the sets of credible and feasible constitutions differ among nations. As such, it is necessary to investigate exogenous factors potentially involved in the subversion of constitutions and how they may differ between different nations.

In the previous section, I illustrated how constraining the supply of strong legislators can affect the feasible implementation of credible constitutions. While variations in these constraints can reasonably explain why similar constitutions may be subverted in some contexts but not in others, another factor fundamentally involved in a leader's decision making process remains unexplored: productivity. It is clear that productivity can directly influence a leader's incentives, since higher levels of productivity can allow for higher levels of production and surplus. Nonetheless, it remains unclear whether these higher levels of production and surplus make subversion more or less tempting to a leader, *ceteris paribus*. To determine this, I investigate how changes in the value of λ affect the size of the set of credible and feasible constitutions, A^Y. Consequently, I find that this set grows as λ increases, as formally shown in the following proposition.

Proposition 6. *The set of credible and feasible constitutions at output level Y grows as productivity λ increases.*

Intuitively, there are two main effects that drive Proposition 6. In essence, these two effects occur because the costs of producing a certain output level decrease as productivity increases. First, this decrease in costs increases the overall surplus in the economy. As a result, tax revenues also increase, making leadership more valuable and increasing bribery costs. Second, this decrease in costs also decreases the potential gains from subverting a constitution. This is a result of the direct relationship between these gains and the total production cost, as subverting a constitution essentially allows a leader to extract a greater share of the output than the total surplus by implementing taxes $T > Y - c(Y/\lambda)$. These two effects work in tandem, making subversion less appealing to a leader *ceteris paribus*. Therefore, as productivity increases, it becomes easier to deter subversion under additional constitutional designs, enlarging the set of credible and feasible constitutions.

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[9]For a more detailed account of the constitutional history of Eswatini leading up to King Sobhuza II's 1973 repeal of the 1968 constitution, consult Dlamini (2019)

Proposition 6 alludes to a particularly detrimental consequence of low productivity on a nation's development. In countries with low productivity, leaders may struggle to enact a constitution that adequately limits their power. Consequently, these nations could find themselves trapped in a cycle of low output, driven by their leaders' lack of credible commitment, rather than being simply a consequence of a lower overall level of efficient output. This scenario mirrors the situations observed in the aforementioned cases of former African colonies, providing a novel perspective on their development trajectories.

2.8 Transparency and majorities

A key tool at the leader's disposal to subvert a constitution, the threat of repression, hinges on a specific characteristic present in the model so far, knowledge about legislators' votes. If a leader were unable to observe individual legislators' votes, he would also be unable to discern between his allies and members of the opposition. At the same time, legislators who allied with the leader may be able to escape punishment from citizens when their votes are not public, making them more susceptible to bribery. Therefore, it is not clear how knowledge about legislators' votes affects the incentives of a leader to subvert a constitution. In light of this, it is important to identify the effect knowledge about legislators' votes has on the task of designing a credible constitution. To investigate this I introduce a modified version of the model discussed so far. For clarity, I assume there is no constraint on the number of strong legislators throughout this section.

Consider that individual legislators' votes are secret, and other players can only observe the final result of the voting process. More formally, consider that players K and C only have information about the final value of ν_t, while V_t is unknown to them. In this version of the model, these players can condition their actions only on the overall result of the legislative voting, ν_t. This leads to a couple of significant implications for the strategies of these players. First, repression by the leader cannot exclusively target members of the opposition. Second, legislators who supported the leader cannot be selectively removed from the economy. As such, legislators cannot be held accountable for their individual actions, only for the aggregate result of these.

To represent the legislators' lack of accountability when their votes are secret, consider the following changes in the model. First, K's bribery payments to any legislator ℓ can only be contingent on the overall result of the legislative process, and not on v_t^ℓ. Second, all legislators are considered part of an opposition and K must repress the entire legislature at a cost of $r_L(L)$ when engaging in repression. Finally, at the end of every period, every legislator is removed from the economy if and only if a proposal $\hat{T} > \bar{T}$ is approved by the legislature. Evidently, these changes will have significant effects on the costs of subverting a constitution.

In the model from the last section, a leader was able to discern between members of the opposition and his allies because their votes and stances were public information. As such, the costs of repression depended only on the size of the opposition. Now, a leader is unable to discern between members of the opposition and his allies. Consequently, the leader must repress all members of the legislature whenever he engages in repression. This causes the leader's threat of repression to only be credible if the legislature itself is small enough. The following lemma highlights this result

Lemma 3. *When votes are secret, a leader cannot credibly threaten to repress legislators if the legislature is large enough.*

Lemma 3 shows that there exists some legislature large enough to always deter the use of repression when votes are secret. Thus, implementing a secret vote in the legislature may

prevent a leader from using repression as a means of subverting a constitution. Nevertheless, it remains to be shown how a secret vote affects the leader's incentive to bribe legislators, the alternative means of subverting a constitution.

Under secret voting, every legislator will have the opportunity to take the leader's place when his proposal is rejected. This opportunity no longer depends on an individual legislator's choice of refusing a bribe, it only depends on the aggregate result of legislative voting. Thus, any non-pivotal legislator will always be willing to accept a leader's offer of bribes. Moreover, this implies that a leader will always be able to sway a passing coalition where every legislator is non-pivotal, i.e., any coalition larger than αL. This leads to the following result regarding credible constitutions

Lemma 4. *When votes are secret, a credible constitution exists only if $\alpha = 1$.*

Lemma 4 shows that only constitutions with a unanimity decision rule will be credible when votes are secret. This occurs because non-pivotal voters can always be swayed by a leader in this scenario. Thus, it is possible for a leader to sway a larger share of legislators than necessary for approval of his proposal. When such a share of legislators votes in favor of the leader's proposal, no single legislator will have an incentive to unilaterally change their vote. Consequently, a credible constitution can only exist if a leader needs to sway an exact share of legislators to approve a proposal, which is only true under a unanimity decision rule. This decision rule guarantees that every single one of these legislators is pivotal, and, thus, has an incentive to unilaterally vote against the leader.

It remains to be shown whether a credible constitution will always exist under a secret voting regime. Recall that Proposition 3 revealed that it is always possible to design a credible constitution under an open voting regime. This was possible because increasing the size of a legislature increased the costs of subverting a constitution for any decision rule under an open-voting regime. Nevertheless, this is no longer the case under a secret-voting regime. Under such a regime, the costs of subverting a constitution are constant on the size of the legislature, as long as $L \geq \hat{n}$, where $\hat{n}$ is the size of the smallest opposition that cannot be credibly repressed based on Assumption 1. This observation suggests it may be impossible to design a credible constitution under certain circumstances when voting is secret, as the following proposition summarizes

Proposition 7. *For any constitution under secret voting, there exists some constitution under open voting which is costlier to subvert. Nonetheless, the opposite is not true.*

Proposition 7 suggests that public knowledge about legislators' votes can be an important tool in dissuading a leader from subverting a constitution. More precisely, it indicates that citizens' capacity to monitor legislators is essential for motivating them to oppose a leader when necessary. In light of this result, implementing a secret voting regime does not seem to help in the exercise of designing credible constitutions. In essence, this is due to the fact that there always exists some constitution that imposes higher subversion costs on a leader under an open voting regime. As such, citizens' ability to observe the votes of individual members of a legislature seems to be an important tool in preventing the subversion of a constitution.

Moreover, Proposition 7 also reveals that any majority decision rule under an open voting regime imposes higher bribery costs on a leader than any decision rule under a secret voting regime. This observation is summarized by the following corollary

Corollary 1. *The bribery costs associated with any majority decision rule under open voting are always higher than those associated with any decision rule in a legislature of the same size under secret voting.*

Taking Corollary 1 into account, the prevalence of majority decision rules and open voting in real legislatures could be associated with the shortcomings of a secret voting regime. This result may help explain why both majority decision rules and transparency in legislative proceedings seem to be common characteristics of many modern constitutions. In essence, Proposition 7 reveals how these characteristics can ensure the existence of credible constitutions by maximizing the costs associated with their subversion. Particularly, Proposition 7 highlights the essential role citizens play in holding individual legislators accountable by observing their actions and punishing them when necessary.

3   Discussion

Authors in the political economy literature have long acknowledged the predicament faced by despots in making credible commitments and the detrimental impacts that follow as a result. Within this literature, institutions have often been discussed as a potential solution to a despot's commitment issues. Nevertheless, it remains unclear when despots can credibly commit to upholding such institutions, and to what extent their design plays a role in this process.

To address this problem, I have developed a dynamic model of non democratic politics where a despotic leader can implement a constitution to allow himself to make credible commitments. Specifically, I focused on how constitutions enable such a leader to delegate some of their power by convening a legislature and delineating its rules and procedures. Using this model, I was able to characterize the types of constitutions that place effective constraints on powerful leaders. This characterization highlights a significant element of constitutional design, specifically its ability to deter the co-optation of legislators through bribery or threats of repression. Moreover, this characterization incorporates features commonly found in many modern constitutions, such as majority or supermajority decision rules and transparency. Finally, this characterization also allowed me to reveal how context-specific elements such as low productivity and weak political classes can prevent constitutions from effectively constraining powerful leaders, providing insights into the failure of many transplanted constitutions.

Appendix

3.1   Composition of an opposition

In the main model presented so far, it has been assumed that an opposition comprised all legislators who voted against the leader's proposal in the legislature. Yet, the reasoning behind this assumption may not be immediately clear, and a couple of concerns may be raised about it. Specifically, could legislators who supported the proposal join the opposition and increase the cost of repression? Similarly, could those who opposed the proposal choose not to engage in active opposition due to fear of repression? The answer to both questions is no, as I will demonstrate in this section using a slight variation of the main model.

Consider the following stage introduced at every period following the legislative voting procedure, an before the leader's choice of repression. Legislators are divided among allies and enemies of the leader based on how they voted. Specifically, any legislator who voted in favor of the leader's proposal is classified as an ally, while those who voted against it are classified as enemies. Any legislator is free to change sides and switch stances by incurring an infinitesimally small but positive cost ε. After legislators have been properly sorted, an opposition is made up of every enemy of the leader. The individual decisions of a legislator ℓ can be represented by a binary variable o_t^ℓ.

Incorporating this stage into the game enables the opposition's size to be determined endogenously, yet independently of legislators' decisions during the legislative vote. Therefore, it is possible to explore whether the equilibrium opposition would have a composition different from what has been assumed in this paper so far. The following result reveals that is not the case.

Lemma 5. *No legislator will switch stances in equilibrium.*

This lemma shows that an opposition will only contain legislators who voted against the leader's proposal in the legislature, as assumed in the main model. Intuitively, this occurs because any legislator who voted in favor of the leader's proposal know that they will be removed from the economy at the end of the period. As such, they will not be willing to incur the cost of joining the opposition.

At the same time, legislators who voted against the leader's proposal know that if they are part of the opposition, they can possibly replace the leader in the following period if no repression occurs. These legislators would only switch their stance if they anticipated repression, but in such a case, they would have initially strictly preferred to vote in favor of the leader's proposal. Thus, as long as repression is not credible, all of these legislators would be willing to keep their stance.

3.2 Succession and the incentives of a leader and the legislators

As outlined in subsection 2.1 of this paper, a few significant assumptions concerning succession are made in the main model discussed throughout the paper. Specifically, it has been assumed that a rapacious leader who tries to revise his proposed level of taxation, as well as any legislator who supports him, is removed from power following such an attempt. By making these assumptions about the succession process, the analysis becomes simpler, and the paper's main findings are clearer. But, on the other hand, these assumptions obscure whether such a succession process could emerge endogenously and whether it would be self-enforcing. To clarify these points, I present a slight variation of the main model in this section.

Consider the following changes to the succession process in the main model. First, at the end of every period, an incumbent leader is always able to maintain power in the following period, but must incur an infinitesimally small but positive cost γ. If the leader is unwilling to incur cost γ, he may relinquish power and earn a payoff of 0 for all following periods. Second, if a leader relinquishes power, any legislator may incur cost γ to lay claim to power. Any legislator who lays claim to power has a probability $1/m$ to become a leader in the following period, where m is the number of legislators laying claim to power. Third, if a new leader is chosen for the following period, he may remove any number of legislators from the economy for the following periods. Finally, assume there exists some common knowledge state variable $S_=\{0;1\}$, where $S_t = 1$ denotes whether the representative citizen earned a negative payoff in a previous period and the incumbent leader either was in power during that period, or was a legislator who voted in favor of a tax revision during that period.

These modifications to the main model capture the idea that an incumbent leader is powerful enough to cling to power, and that any legislator may attempt to replace the leader if he relinquishes power. Moreover, they represent the notion that citizens are able to coordinate on punishments against transgressing leaders and legislators.

Under these adjustments to the model, a leader and his supporters would only be willing to step down from their roles if they expected their future equilibrium payoffs to be smaller than γ. As such, to replicate the succession process found in the main model, any attempt by the

leader to revise the proposed tax level should trigger equilibrium punishments that reduce both his and his supporters' payoffs to zero. This occurs when the representative citizen employs a grim trigger strategy, which the following lemma reveals is an equilibrium strategy.

Lemma 6. *There exists an equilibrium where the representative citizen produces nothing whenever the incumbent leader transgressed in a previous period, i.e., when $S_t = 1$.*

Lemma 6 demonstrates that the main model's succession process can both arise endogenously and be self-enforcing. Moreover, it reveals that such a process can occur as a result of a simple optimal punishment scheme, as discussed in Abreu (1988). What remains is to determine whether the equilibrium described by Lemma 6 is both desirable and likely to occur. To address this, I now turn to the results outlined in the following lemma.

Lemma 7. *The equilibrium described in Lemma 6 yields an incumbent leader the maximum equilibrium payoffs.*

Lemma 7 reveals that an incumbent leader prefers facing the type of grim trigger strategy outlined in Lemma 6. Intuitively, this occurs because this type of strategy maximizes the costs of subversion, enlarging the set of credible constitutions. As such, a leader faced with this punishment is better positioned to implement a credible constitution that increases his tax revenues. In essence, Lemmas 6 and 7 demonstrate that the succession process assumed in the main model can arise and persist endogenously, while also being preferred by a powerful leader.

3.3   Proofs

Proof of Proposition 1. First, assume there exists an equilibrium where C produces $Y > 0$ and $\delta Y - c(Y/\lambda) < 0$. Then, notice that if that is the case, then K's best reply to C choosing output level Y is to choose tax level $T = Y$. If that is the case, C's payoff when choosing to produce Y will be $-c(Y/\lambda)$, which is lower than 0. Thus, C's best response to K's strategy cannot be producing $Y > 0$, which shows that such an equilibrium cannot exist. Since $Y^* > 0$, it must be the case that if $\delta Y^* - c(Y^*/\lambda) < 0$, (6) is violated when production is Y^* and that level of production is not sustainable in equilibrium.

Now, consider an equilibrium where K proposes tax level $\bar{T} = Y^D - c(Y^D/\lambda)$, C produces Y^D, K chooses an effective level of taxation $T = Y^D - c(Y^D/\lambda)$, and any deviations from this on-path behavior is met with C producing 0 and K taxing Y. Notice that no agent has a profitable deviation in this situation, meaning Y^D can be supported in equilibrium.

Finally, notice that no other output level that is supported in equilibrium can yield a higher surplus than Y^D by definition. Consequently, no other output level allows the leader to yield a higher tax revenue than $Y^D - c(Y^D/\lambda)$, concluding this proof.

$\square$

Proof of Lemma 1. First, recall that an opposition will be made up exclusively of legislators who voted against the leader's proposal.

Now, consider a situation where a leader bribed some share $a \geq \alpha$ of the legislature, ensuring a favorable legislative decision. In this case, the leader has already achieved the outcome he would desire when he reaches the point where he may decide to repress the opposition. As such, repressing the opposition strictly lowers his payoff and his best reply must be to not repress the opposition. In other words, a leader has no incentive to incur the costs of repression if he is able to sway the legislative decision through the use of bribes. Furthermore,

this observation demonstrates that a leader will only repress an opposition if his proposal is rejected by the legislature. In other words, a leader will not repress non-blocking oppositions, i.e., oppositions of size $n < 1 - \alpha$.

Now, consider a situation where repression is never credible against a blocking opposition, i.e., an opposition of size $n \geq 1 - \alpha$. In this situation, a leader would be unable to subvert a constitution exclusively through threats of repression. Moreover, in this situation, only some non-blocking oppositions are small enough to make repression cheap enough to be advantageous to a leader. Yet, as previously shown, repression is never credible against non-blocking oppositions. Thus, a leader would only subvert a constitution through bribes in this situation.

Now, consider a situation where some blocking opposition is small enough to make repression credible against it. In this case, if a legislator expects himself to be pivotal in the voting process, he is choosing between being part of the opposition and earning a payoff of 0, or voting in favor of the leader's proposal and earning a payoff of b. Evidently, this legislator will be replying optimally by voting in favor of the leader's proposal regardless of the value b because $b \geq 0$. As such, a leader can maximize his payoffs by choosing $b = 0$ in this situation. In other words, a leader is able to persuade legislators without paying them bribes if he is able to credibly threaten the use of repression.

$\square$

Proof of Proposition 2. I have split the proof of this Proposition into four parts. In part 1, I describe what the legislators' best replies can look like. In part 2, I define set A_L^Y. In part 3, I show that if $\alpha \in A_L^Y$ there exists a credible constitution at output Y. In part 4 I show that if there is a credible constitution at output Y then $\alpha \in A_L^Y$. Finally, in part 5 I show that $0 \notin A_L^Y$ and $1 \notin A_L^Y$ making A_L^Y a strict subset of $[0, 1]$.

Part 1

Assume a constitution (L, α) is in place, citizens have produced output level Y, and the leader's proposal is $\hat{T} > Y - c(Y/\lambda) \geq \bar{T}$. Every legislator has two choices of action, either to vote for or against the leader's proposal. When deciding which of these actions to take, a legislator must reply optimally to the decisions of the rest of the legislature and the leader's choice of bribes.

First, without loss of generality, consider that an arbitrary legislator l expects a number $n < (1 - \alpha)L$ to vote 0. In this case, legislator l knows that the leader's proposal will be accepted regardless of what l chooses. Moreover, following Lemma 1, l knows a leader will not repress an opposition when his proposal is accepted by the legislature. As such, the legislator is choosing between accepting the leader's bribe and voting 1, or voting 0 and getting the chance of potentially becoming the leader in the following period. As such, he will only be willing to vote in favor of the leader's proposal if the bribe's value is at least $\hat{b}_t^l$. Thus, a best reply by this legislator must satisfy

- vote 1 if $b^\ell > \hat{b}^\ell(\frac{n+1}{L}, L)$,

- vote 1 or 0 if $b^\ell = \hat{b}^\ell(\frac{n+1}{L}, L)$,

- vote 0 otherwise.

Second, consider that legislator l expects a number $n > (1 - \alpha)L$ to vote 0. In this case, legislator l knows that the leader's proposal will be rejected regardless of what l chooses. As such, the legislator is choosing between accepting the leader's bribe and voting 1, or voting 0

and being part of the blocking opposition. However, a leader might now have an incentive to repress an opposition since his proposal is rejected. Whether the leader will do that or not, depends on the size of the opposition. Recall that the opposition will comprise all legislators who voted against the leader. As such, the legislator's decision now depends on whether a blocking opposition of size $n + 1$ is large enough to deter repression. Thus, a best reply by this legislator must satisfy

1. If an opposition of size $n + 1$ is large enough:

   - vote 1 if $b^\ell > \hat{b}^\ell(\frac{n+1}{L}, L)$,

   - vote 1 or 0 if $b^\ell = \hat{b}^\ell(\frac{n+1}{L}, L)$,

   - vote 0 otherwise.

2. If an opposition of size $n + 1$ is too small:

   - vote 1 regardless of b^ℓ

Finally, consider that legislator l expects a number $n = (1 - \alpha)L$ to vote 0. In this case, legislator l knows he is a pivotal voter in the legislature. In other words, if he votes 1, the leader's proposal will be approved, and if he votes 0 it will be rejected. Once again, the legislator's decision depends on whether the blocking opposition of size $n + 1$ is large enough to deter repression. Thus, a best reply by this legislator must satisfy

1. If an opposition of size $n + 1$ is large enough:

   - vote 1 if $b^\ell > \hat{b}^\ell(\frac{n+1}{L}, L)$,

   - vote 1 or 0 if $b^\ell = \hat{b}^\ell(\frac{n+1}{L}, L)$,

   - vote 0 otherwise.

2. If an opposition of size $n + 1$ is too small:

   - vote 1 regardless of b^ℓ

I shall formally define when an opposition is large enough or not in part 2 of this proof.

Now, it is also necessary to describe a legislator's best reply to a proposal $\hat{T} \leq \bar{T}$. Notice that regardless of the result of the legislative session, a leader is able to always revert to tax level $\bar{T}$ without any cost. Thus, any vote by legislators would configure a best reply in this situation.

In essence, a legislator's strategies must satisfy the conditions described in this part of the proof to be part of any equilibrium.

Part 2

To define A_L^Y, I start by analyzing the incentives of the leader, and when he would be unwilling to subvert a constitution. First, consider when he would be willing to acquiesce to a legislative opposition. Recall, from Lemma 1, that a leader would be unwilling to engage in repression if his proposal is accepted by the legislature. Moreover, recall that a leader would be unwilling to both repress and pay off any bribes. As such, I must show when a leader would be willing to respect the decision of a legislature that rejects his proposal.

If a leader's proposal is rejected, he faces the choice between acquiescing and taxing only $\bar{T}$ or repressing the opposition and taxing as much as he wants. In either case, the leader knows he will be removed from the economy at the end of the period. As such, assuming

$\bar{T} \leq Y - c(Y/\lambda)$, he will only be willing to acquiesce to the legislative decision if the following condition holds

$$\bar{T} \geq Y - r_L(n), \tag{9}$$

Notice that the LHS of this condition is increasing in $\bar{T}$. As such, let me substitute it with its highest possible value which satisfies the representative citizen's participation constraint. Moreover, let me substitute n with the size of the smallest blocking opposition $n_{\alpha,L}^{block} \equiv (1-\alpha)L + 1$. Doing so and rearranging condition (9) yields the following condition

$$r_L(n_{\alpha,L}^{block}) \geq c(\frac{Y}{\lambda}). \tag{10}$$

Whenever condition (10) is satisfied, a leader will be willing to respect the legislature's decision, even when his proposal is rejected. Moreover, when condition (10) is satisfied strictly, the leader would be unwilling to engage in repression.

Now, in the absence of repression, consider when a leader would be willing to propose a reasonable level of taxes and offer no bribes to legislators. Recall that, a leader must compensate the legislators for their expected payoffs of becoming a leader if he wishes to sway their decisions solely through bribes. As such, the leader is willing not to pay bribes to legislators when the following condition holds

$$\frac{\bar{T}}{1-\delta} \geq Y - \sum_{l=1}^{L} \hat{b}^\ell(\alpha, L). \tag{11}$$

Once again, notice that the LHS is increasing in $\bar{T}$. As such, let me simplify this condition by rearranging it and substituting the highest possible value that does not violate the representative citizen's participation constraint.

$$\sum_{\ell=1}^{L} \hat{b}^\ell(\alpha, L) \geq \frac{c(Y/\lambda) - \delta Y}{1-\delta}. \tag{12}$$

Whenever condition (12) is satisfied, a leader will be willing to propose a reasonable level of taxes and offer no bribes as long as repression is also costly enough. Moreover, he would strictly prefer to do so if condition (12) is strictly satisfied.

Now, notice that the LHS of conditions (10) and (12) are respectively decreasing and increasing in α, while the RHS of both conditions is constant in it. As such, let me define $\bar{\alpha}_L^Y$ and $\underline{\alpha}_L^Y$ as real numbers such that conditions (10) and (12) are binding respectively.[10] Notice that $\underline{\alpha}_L^Y$ exists by default and is greater than 0 if $Y > Y^D$. Moreover, Assumption 1 guarantees that $\bar{\alpha}_L^Y$ will also exist. Finally, I define A_L^Y as follows

$$A_L^Y = \{\alpha \in [0,1] : \alpha < \bar{\alpha}_L^Y, \alpha > \underline{\alpha}_L^Y\}. \tag{13}$$

Finally, recall the legislators' strategy from part 1. Notice that an opposition of size n is large enough to support those decisions as a best reply if a legislator expects it to be too expensive

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[10]Keep in mind that since $\bar{\alpha}_L^Y$ and $\underline{\alpha}_L^Y$ are real numbers, they may be outside the $[0,1]$ interval.

for a leader to repress an opposition of that size. Moreover, Notice that condition (10) is satisfied whenever the size of an opposition is $n \geq (1 - \overline{\alpha}_L^Y)L + 1$. As such, I define a large enough opposition to be of size $n \geq (1 - \overline{\alpha}_L^Y)L + 1$.

Part 3

First, assume $\alpha \in A_L^Y$ and the constitution (α, L) is subvertible. Then, it must be the case that the leader is choosing to either threaten or bribe legislators in an equilibrium of the subgame after C's production choice of Y. But, since $\alpha \in A_L^Y$, conditions (10) and (12) are strictly satisfied by definition. As such, the leader could strictly increase his payoff by proposing no revision to the tax level and offering no bribes or threats of repression. This shows that revising taxes and swaying the decision of legislators is never an equilibrium play in this subgame, contradicting the statement that constitution (α, L) is subvertible. Therefore, if $\alpha \in A_L^Y$, the constitution (α, L) must be credible.

Part 4

Now, I must show that if a credible constitution exists, then $\alpha \in A_L^Y$. To do so, I will demonstrate that its contrapositive is true, i.e., that no credible constitution exists if $\alpha \notin A_L^Y$. More specifically, I will show that if $\alpha \notin A_L^Y$, then there exists an equilibrium where a leader proposes $\hat{T} > \bar{T}$ in the subgame following C's production choice Y.

First, assume that $\alpha \leq \underline{\alpha}_L^Y$ and the representative citizen produces Y. It is evident that (12) is either violated or binding. Thus, a leader is able to weakly increase his payoff by offering bribes $\hat{b}^l(\alpha, L)$ to a share α of legislators and taxing $T = Y$. Thus, there exists an equilibrium in this subgame where the leader proposes a revised tax level $\hat{T} = Y$, he offers $\hat{b}^l(\alpha, L)$ to a share α of legislators, and they vote in favor of his proposal.

Now, assume that $\alpha \geq \overline{\alpha}_L^Y$ and the representative citizen produces Y. Consider the following equilibrium strategies

- L proposes a revised tax level $\hat{T} = Y_t$ and offers no bribes to legislators,

- Each legislator ℓ employs a strategy following the description from part 1

- L chooses $R = 0$ if his proposal is accepted or there is an opposition of size $n > (1 - \overline{\alpha})L + 1$ and chooses $R = 1$ otherwise.

By backward induction, it is possible to show that these strategies are supported by an equilibrium. By the definition of $\overline{\alpha}$, the leader's choice of repression under this equilibrium is optimal. Considering this, let me go over the legislators' strategies. Each legislator voting $V = 1$ knows that the leader will repress them if they change their vote to $V = 0$, since $\alpha \geq \overline{\alpha}_L^Y$. Thus, they cannot increase their payoff by changing their vote. As for the other legislators, it was shown in Part 1 of this proof that they would be unwilling to change their votes in exchange for no bribes considering the strategies of other legislators. These observations demonstrate that no credible constitution exists if $\alpha \notin A_L^Y$.

Part 5

Now to conclude the proof, I must show that $0 \notin A_L^Y$ and $1 \notin A_L^Y$. First, to see that $0 \notin A_L^Y$ recall that since $Y > Y^D$, it must be the case that (12) is violated when $\alpha = 0$. Thus, by the definition of A_L^Y it must be that $0 \notin A_L^Y$.

Finally, recall that Assumption 2 implies that (10) is violated when $\alpha = 1$. Thus, once again, by the definition of A_L^Y it must be that $1 \notin A_L^Y$, concluding this proof.

$\square$

Proof of Proposition 3. To prove this proposition, I must show that $\exists \underline{L}^Y$ such that $\forall L > \underline{L}^Y$ A_L^Y is non-empty.

I start this proof by showing that $\underline{\alpha}_L^Y$ is strictly decreasing in L. Recall that, $L \in \mathbb{N}$ and $\sum_{l=1}^{L} \hat{b}^l(\underline{\alpha}_L^Y, L) = \sum_{l=1}^{L+1} \hat{b}^l(\underline{\alpha}_{L+1}^Y, L+1)$ by definition. Thus, the following condition must hold

$$\frac{\underline{\alpha}_L^Y L \delta}{(1 - \underline{\alpha}_L^Y)L + 1}\left[\frac{Y - c(Y/\lambda)}{1 - \delta}\right] = \frac{\underline{\alpha}_{L+1}^Y (L+1)\delta}{(1 - \underline{\alpha}_{L+1}^Y)(L+1) + 1}\left[\frac{Y - c(Y/\lambda)}{1 - \delta}\right]. \tag{14}$$

Simplifying this condition yields the following

$$\frac{\underline{\alpha}_L^Y}{\underline{\alpha}_{L+1}^Y} = \frac{[(1 - \underline{\alpha}_L^Y)L + 1](L+1)}{[(1 - \underline{\alpha}_{L+1}^Y)(L+1) + 1]L}. \tag{15}$$

Now, assume that $\underline{\alpha}_L^Y \leq \underline{\alpha}_{L+1}^Y$. Then, $\frac{\underline{\alpha}_L^Y}{\underline{\alpha}_{L+1}^Y} \leq 1$, and consequently

$$[(1 - \underline{\alpha}_L^Y)L + 1](L+1) \leq [(1 - \underline{\alpha}_{L+1}^Y)(L+1) + 1]L. \tag{16}$$

Simplifying this condition yields the following

$$(\underline{\alpha}_{L+1}^Y - \underline{\alpha}_L^Y)(L^2 + L) + 1 \leq 0. \tag{17}$$

Nevertheless, the LHS of this condition is strictly positive, providing a contradiction. $(\Rightarrow \Leftarrow)$

Thus, by elimination, it must be that $\underline{\alpha}_L^Y > \underline{\alpha}_{L+1}^Y$, confirming that $\underline{\alpha}_L^Y$ is strictly decreasing in L.

Now, let me show that $\overline{\alpha}_L^Y$ is strictly increasing in L. Analogous to the first part of this proof, notice that $r_{L+1}((1 - \overline{\alpha}_{L+1}^Y)(L+1) + 1) = r_L((1 - \overline{\alpha}_L^Y)L + 1)$ by definition. With this definition in mind, consider the difference between $(1 - \overline{\alpha}_{L+1}^Y)(L+1) + 1$ and $(1 - \overline{\alpha}_L^Y)L + 1$. If $\overline{\alpha}_{L+1}^Y \leq \overline{\alpha}_L^Y$, we shall have that this difference will be

$$L(\overline{\alpha}_L^Y - \overline{\alpha}_{L+1}^Y) + 1 - \overline{\alpha}_{L+1} > 0. \tag{18}$$

Clearly, this implies that $r_{L+1}((1 - \overline{\alpha}_{L+1}^Y)(L+1) + 1) > r_L((1 - \overline{\alpha}_L^Y)L + 1)$, which violates the definition of $(1 - \overline{\alpha}_{L+1}^Y)(L+1) + 1$ and $(1 - \overline{\alpha}_L^Y)L + 1$. Thus, in order to satisfy the condition that $r_{L+1}((1 - \overline{\alpha}_{L+1}^Y)) = r_L((1 - \overline{\alpha}_L^Y))$, it must be that $\overline{\alpha}_{L+1}^Y > \overline{\alpha}_L^Y$.

Now, recall that the set A_L^Y can only be non-empty when $\underline{\alpha}_L^Y < \overline{\alpha}_L^Y$ by definition. Then, let me define $\hat{L}_Y$ as a real number such that $\underline{\alpha}_{\hat{L}_Y}^Y = \overline{\alpha}_{\hat{L}_Y}^Y$. Considering that $\underline{\alpha}_L^Y$ is strictly decreasing in L, and $\overline{\alpha}_L^Y$ is strictly increasing in it, notice that $\underline{\alpha}_L^Y < \overline{\alpha}_L^Y \ \forall L > \hat{L}_Y$.

Then, notice that $\lim_{L \to \infty} \underline{\alpha}_L^Y \in (0, 1)$, and $\lim_{L \to \infty} \overline{\alpha}_L^Y = 1$. As such, $\underline{\alpha}_L^Y$ and $\overline{\alpha}_L^Y$ must cross at some L, ergo, $\hat{L}_Y$ must exist.

Finally, consider that $\lim_{L \to \infty} \frac{z}{L} - \frac{z}{L+1} = 0 \ \forall z \in [1, L)$. Moreover, notice that the interval $(\underline{\alpha}_L^Y, \overline{\alpha}_L^Y)$ keeps growing as L increases. Thus, there must be some $\underline{L}^Y \geq \hat{L}_Y$ such that $\forall L > \underline{L}^Y$ some element of $\{\frac{1}{L}; \frac{2}{L}; \ldots; 1\}$ will belong to the interval $(\underline{\alpha}_L^Y, \overline{\alpha}_L^Y)$. Making A_L^Y non-empty $\forall L > \underline{L}^Y$, concluding this proof. $\square$

Proof of Proposition 4. To prove this proposition, first consider the following feature of the representative citizen C's best reply to a leader's choices of (α, L) and $\bar{T}$. Clearly, whenever $\bar{T} < Y - c(Y/\lambda)$ and the implemented constitution (α, L) is credible at Y and $\bar{T}$, C will strictly prefer to produce output level Y over any lower level of output. Thus, C can never choose to produce 0 in such a situation as a best reply. In contrast if $\bar{T} = Y - c(Y/\lambda)$ and the implemented constitution is credible at Y and $\bar{T}$, C will be indifferent between producing Y and 0 and strictly prefer either level of output over any in the interval $(0, Y)$.

Now assume that a constitution is credible at output level $Y \in (Y^D, Y^*]$ and some $\bar{T}$. Based on the proof to Proposition 2, this constitution must be credible at output level $Y \in (Y^D, Y^*]$ and $\bar{T} = Y - c(Y/\lambda)$, the leader-preferred level. Additionally, notice that it will also be credible at output level $Y \in (Y^D, Y^*]$ and $\bar{T} = Y - c(Y/\lambda) - \varepsilon$ for some $\varepsilon > 0$.

Now, consider a leader choosing $(\alpha, L) \in A^Y$ and an initial level of taxation $\bar{T} = Y - c(Y/\lambda) - \gamma$ with $\gamma > \varepsilon$, in order for an equilibrium strategy to include this choice, a leader must be unable to strictly increase his payoff with an alternative $\bar{T}$. But, recall that if the leader chose $\bar{T} = Y - c(Y/\lambda) - \varepsilon$ instead, C's best reply would be to produce Y, and the leader would yield a strictly higher payoff. The leader can always keep lowering ε and push his tax revenues closer to $Y - c(Y/\lambda)$. Thus, in equilibrium a leader cannot choose $\bar{T} < Y - c(Y/\lambda)$.

Now, consider a leader choosing $(\alpha, L) \in A^Y$ and an initial level of taxation $\bar{T} = Y - c(Y/\lambda)$. C's best reply to this can be either producing Y or 0. If C's best reply is to produce 0, analogous to the aforementioned case, a leader can always increase his payoff by slightly lowering his initial proposal of taxes. This suggests in equilibrium C's best reply cannot be to produce 0.

Alternatively, if C's best reply is to produce Y, a leader cannot increase his payoff by lowering his initial tax proposal. Moreover, it is possible to see that a leader's payoff is strictly higher when he chooses $(\alpha, L) \in A^Y$ as opposed to $(\alpha, L) = (0, 0)$. Since the choice of summoning a legislature is costless to a leader, this gives him a strict incentive to summon a legislature and implement a constitution, meaning there can be no equilibrium where $(\alpha, L) = (0, 0)$.

Now, recall that the highest possible level of $\bar{T} = Y - c(Y/\lambda)$ is achieved at $\bar{T} = Y^* - c(Y^*/\lambda)$ with a constitution $(\alpha, L) \in A^{Y^*}$. Considering how C's best reply can never be to produce 0 whenever $\bar{T} = Y - c(Y/\lambda)$ with a constitution $(\alpha, L) \in A^Y$ $\forall Y > Y^D$, a leader would be able to extract the entire optimal surplus in equilibrium if he implemented a constitution $(\alpha, L) \in A^{Y^*}$. As such, a leader would strictly prefer implementing a constitution $(\alpha, L) \in A^{Y^*}$ over any other type of constitution. In essence, notice that an equilibrium will consist of strategies following the following form since a leader holds the agenda making power of defining a constitution

1. K

    - Implement a constitution $(\alpha, L) \in A^{Y^*}$ and propose tax level $\bar{T} = Y^* - c(Y^*/\lambda)$,

    - Propose no tax revisions and offer no bribes,

    - Acquiesce to the legislature whenever a tax revision proposal is rejected and employ no repression whenever it is accepted,

2. ℓ

    - vote 1 if $b^\ell \geq \hat{b}^\ell(\frac{n+1}{L}, L)$,

    - vote 0 otherwise,

3. C

- Produce Y^* if $(\alpha, L) \in A^{Y^*}$ and $\bar{T} \leq Y^* - c(Y^*/\lambda)$,
- $\forall Y \in (Y^D, Y^*)$, produce Y if $(\alpha, L) \in A^Y \bigcup_{Y' \in (Y, Y^*]} A^{Y'}$ and $\bar{T} \leq Y - c(Y/\lambda)$.
- Produce 0 otherwise.

$\square$

Proof of Lemma 2. First, notice that when there are $L^H \leq L$ strong legislators in a legislature, that implies that there must be $L - L^H$ weak legislators. With this observation in mind, let me start by considering the costs of subverting a constitution through bribes.

When dealing with a legislature made up of both weak and strong legislators, a leader can attempt to bribe legislators of either type. Since weak legislators stand no chance of replacing a leader, they stand to gain nothing by opposing a leader and would be willing to vote in favor of his proposal even when receiving no positive bribes. As such, a leader can minimize his costs of bribery by swaying weak legislators before attempting to bribe any strong legislators. In other words, a leader will try to sway as many weak legislators as he needs to pass a proposal, and will only bribe strong legislators if there are not enough weak legislators. This implies that a leader's bribery costs in the presence of weak legislators is

$$\sum_{\ell=1}^{L} \hat{b}^\ell(\alpha, L, L^H) = \frac{\max\{L^H - (1-\alpha)L; 0\}\delta}{(1-\alpha)L + 1} \left[\frac{Y - c(Y/\lambda)}{1 - \delta} \right]. \tag{19}$$

Clearly, this expression is equal to 0 if $L^H \leq (1-\alpha)L$ and increasing in L^H otherwise. Thus, as L^H increases, subverting a constitution through bribes becomes increasingly more expensive.

Now, let me consider the costs of subverting a constitution through threats of repression. Recall that weak legislators are easily repressed and impose no costs on a leader when being part of an opposition. Thus, to find when an equilibrium with subversion through threats of repression exists, I must show when a threat of repression is credible against a minimum blocking opposition with as many weak legislators as possible, such that no strong legislator will be willing to join it. Such an opposition will be made up of $\min\{L - L^H; L\}$ weak legislators and $\max\{L^H - \alpha L + 1; 1\}$ strong legislators. This implies that the costs of repressing such an opposition are $r_L(\max\{L^H - \alpha L + 1; 1\})$. Analogous to the costs of bribery, this will be equal to $r_L(1)$ if $L^H \leq \alpha L$ and increasing in L^H otherwise. Thus, once again, as L^H increases, the costs of repression increase, making threats of repression less likely to be credible.

$\square$

Proof of Proposition 5. To prove this statement, I will show that $\forall \bar{L}^H \leq \hat{L}$, all feasible constitutions are subvertible.

First, recall Lemma 2 showed that the costs of subversion is non-decreasing in the number of strong legislators. This implies that if $\forall L$ feasible constitutions with the maximum possible number of strong legislators are subvertible, then all feasible constitutions must be subvertible as well. As such, in this proof, I can restrict my attention to constitutions with $L^H = L$ if $L \leq \bar{L}^H$ and $L^H = \bar{L}^H$ if $L > \bar{L}^H$.

Now, recall that by the definition of $\underline{\alpha}_L^Y$ the following condition must hold $\forall L$

$$\sum_{\ell=1}^{L} \hat{b}^{\ell}(\underline{\alpha}_L^Y, L) = \frac{c(Y/\lambda) - \delta Y}{1 - \delta}. \tag{20}$$

When taking into account different types of legislators, this equality will also depend on the number of strong legislators, and this condition will become

$$\sum_{\ell=1}^{L} \hat{b}^{\ell}(\underline{\alpha}_{L,L^H}^Y, L, L^H) = \frac{c(Y/\lambda) - \delta Y}{1 - \delta}. \tag{21}$$

Looking at the left side of this equality yields the following

$$\sum_{\ell=1}^{L} \hat{b}^{\ell}(\underline{\alpha}_{L,L^H}^Y, L, L^H) = \frac{\max\{L^H - (1 - \underline{\alpha}_{L,L^H}^Y)L; 0\}\delta}{(1 - \underline{\alpha}_{L,L^H}^Y)L + 1} \left[\frac{Y - c(Y/\lambda)}{1 - \delta} \right]. \tag{22}$$

Notice that as long as $L \le \bar{L}^H$, this will be equal to the cost of bribery with only strong legislators, which is increasing in L. Moreover, as shown in Proposition 3, $\underline{\alpha}_{L,L^H}^Y$ will be decreasing in this scenario. However, when $L > \bar{L}^H$, it is evident that this expression will be decreasing in L, as adding more legislators to the legislature only increases the number of weak legislators in it. As such, when $L > \bar{L}^H$, $\underline{\alpha}_{L,L^H}^Y$ must increase as L increases to maintain the equality since the RHS of (21) is constant in L, and its LHS is still increasing in $\underline{\alpha}_{L,L^H}^Y$.

Now, recall that by the definition of $\overline{\alpha}_L^Y$ the following condition must hold $\forall L$

$$r_L((1 - \overline{\alpha}_L^Y)L + 1) = c(\frac{Y}{\lambda}). \tag{23}$$

Once again, when taking into account different types of legislators, this equality will also depend on the number of strong legislators, and this condition will become

$$r_L(\max\{L^H - \overline{\alpha}_{L,L^H}^Y L + 1; 1\}) = c(\frac{Y}{\lambda}). \tag{24}$$

Analogous to the case with bribery, notice that as long as $L \le \bar{L}^H$, the LHS of this expression will be equal to the cost of repression with only strong legislators, which is increasing in L. Moreover, as shown in Proposition 3, $\overline{\alpha}_{L,L^H}^Y$ will be increasing in this scenario. However, when $L > \bar{L}^H$, it is evident that the LHS of this expression will be decreasing in L, as adding more legislators to the legislature only increases the number of weak legislators in it. As such, when $L > \bar{L}^H$, $\overline{\alpha}_{L,L^H}^Y$ must decrease as L increases to maintain the equality since the RHS of (24) is constant in L, and its LHS is still decreasing in $\overline{\alpha}_{L,L^H}^Y$. Considering this, I define the set of all credible and feasible constitutions at output Y with size L as

$$\mathbf{A}_L^Y = \{\alpha \in [0,1] : \alpha < \overline{\alpha}_{L,L^H}^Y, \alpha > \underline{\alpha}_{L,L^H}^Y\}, \tag{25}$$

with $L^H = \min\{\bar{L}^H, L\}$.

Finally, recall from Proposition 3 that by definition, $\underline{\alpha}_{L,L^H}^Y > \overline{\alpha}_{L,L^H}^Y \ \forall L < \hat{L}_Y$ and $\forall L^H > 0$. This implies that if $\bar{L}^H < \hat{L}_Y$, it must be that $\underline{\alpha}_{\bar{L}^H, \bar{L}^H}^Y > \overline{\alpha}_{\bar{L}^H, \bar{L}^H}^Y$. Considering that $\underline{\alpha}_{L,L^H}^Y$

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$\overline{\alpha}_{L,L^H}^Y$ are respectively increasing and decreasing $\forall L > \bar{L}^H$, this further implies that $\underline{\alpha}_{L,L^H}^Y > \overline{\alpha}_{L,L^H}^Y \ \forall L, L^H$ if $\bar{L}^H < \hat{L}_Y$. As such, the set $\mathbf{A}_L^Y$ must be empty $\forall L$ if the number of strong legislators is restrictive enough, concluding this proof.

$\square$

Proof of Proposition 6. In this proof, I shall show that, if $\lambda_1 > \lambda_0$, then $\mathbf{A}^Y(\lambda_0) \subset \mathbf{A}^Y(\lambda_1)$ and $\mathbf{A}^Y(\lambda_1) \not\subset \mathbf{A}^Y(\lambda_0) \ \forall L$.

First, assume an arbitrary L and recall the definition of $\mathbf{A}_L^Y$ based on proposition 2 and 4

$$\mathbf{A}_L^Y = \{\alpha \in [0,1] : \alpha < \overline{\alpha}_{L,L^H}^Y, \alpha > \underline{\alpha}_{L,L^H}^Y\}, \tag{26}$$

with $L^H = \min\{\bar{L}^H, L\}$.

To start, let me consider set $\mathbf{A}_L^Y \ \forall L \leq \bar{L}^H$. Notice that, when $L \leq \bar{L}^H$, $L^H = L$.

Now, consider how λ affects $\overline{\alpha}_{L,L}^Y$. By definition

$$r_L((1 - \overline{\alpha}_{L,L}^Y)L + 1) = c(Y). \tag{27}$$

Considering this, taking an implicit derivative with regards to λ of this expression yields the following

$$r_L'((1 - \overline{\alpha}_{L,L}^Y)L + 1)(-L)\frac{\partial \overline{\alpha}_{L,L}^Y}{\partial \lambda} = c'(Y/\lambda)Y(-\lambda^{-2}). \tag{28}$$

Since $r_L'(n) > 0 \ \forall n$ and $c'(Y/\lambda) > 0$, it must be that $\frac{\partial \overline{\alpha}_{L,L}^Y}{\partial \lambda} > 0$. Thus it must be that $\overline{\alpha}_{L,L}^Y(\lambda_1) > \overline{\alpha}_{L,L}^Y(\lambda_0)$.

Now, consider λ affects $\underline{\alpha}_{L,L}^Y$. By definition

$$\frac{\underline{\alpha}_{L,L}^Y L\delta}{(1 - \underline{\alpha}_{L,L}^Y)L + 1}\frac{\lambda Y - c(Y)}{1 - \delta} = \frac{c(Y) - \delta\lambda Y}{1 - \delta} \tag{29}$$

Once again, taking an implicit derivative with regards to λ of this expression yields the following

$$\frac{\partial \underline{\alpha}_{L,L}^Y}{\partial \lambda}\frac{((1 - \underline{\alpha}_{L,L}^Y)L + 1)L\delta + \underline{\alpha}_{L,L}^Y L^2\delta}{[(1 - \underline{\alpha}_{L,L}^Y)L + 1]^2} = \frac{c'(Y/\lambda)Y^2(1 - \delta)(-\lambda^{-2})}{[Y - c(Y/\lambda)]}. \tag{30}$$

Since the RHS of this expression is negative, and $\frac{((1 - \underline{\alpha}_{L,L}^Y)L + 1)L\delta + \underline{\alpha}_{L,L}^Y L^2\delta}{[(1 - \underline{\alpha}_{L,L}^Y)L + 1]^2}$ is positive, it must be the case that $\frac{\partial \underline{\alpha}_{L,L}^Y}{\partial \lambda} < 0$. Thus, it must be that $\underline{\alpha}_{L,L}^Y(\lambda_1) < \underline{\alpha}_{L,L}^Y(\lambda_0)$.

Now, consider $\mathbf{A}_L^Y \ \forall L > \bar{L}^H$. Notice that, when $L \leq \bar{L}^H$, $L^H = \bar{L}^H$. Then, consider how λ affects $\overline{\alpha}_{L,\bar{L}^H}^Y$. By definition

$$r_L(\max\{\bar{L}^H - \overline{\alpha}_{L,\bar{L}^H}^Y L + 1; 1\}) = c(\frac{Y}{\lambda}). \tag{31}$$

Considering this equality and Assumption 2, it must be that $\bar{L}^H > \overline{\alpha}^Y_{L,L} L$. Then taking the implicit derivative yields

$$r'_L(\bar{L}^H - \overline{\alpha}^Y_{L,\bar{L}^H} L + 1)(-L)\frac{\partial \overline{\alpha}^Y_{L,\bar{L}^H}}{\partial \lambda} = c'(Y/\lambda)Y(-\lambda^{-2}). \tag{32}$$

Which clearly shows that $\overline{\alpha}^Y_{L,\bar{L}^H}(\lambda_1) > \overline{\alpha}^Y_{L,\bar{L}^H}(\lambda_0)$.

Now, consider λ affects $\underline{\alpha}^Y_{L,\bar{L}^H}$. By definition

$$\frac{\max\{\bar{L}^H - (1-\underline{\alpha}^Y_{L,\bar{L}^H})L; 0\}\delta}{(1-\underline{\alpha}^Y_{L,\bar{L}^H})L + 1}\left[\frac{Y - c(Y/\lambda)}{1-\delta}\right] = \frac{c(Y/\lambda) - \delta Y}{1-\delta}. \tag{33}$$

Since, $\frac{c(Y/\lambda)-\delta Y}{1-\delta} > 0$, it must be that $\bar{L}^H > (1-\underline{\alpha}^Y_{L,\bar{L}^H})L$. Then taking the implicit derivative yields

$$\frac{\partial \underline{\alpha}^Y_{L,L}}{\partial \lambda}\frac{L(\bar{L}^H + 1)\delta}{[(1-\underline{\alpha}^Y_{L,\bar{L}^H})L + 1]^2} = \frac{c'(Y/\lambda)Y^2(1-\delta)(-\lambda^{-2})}{[Y - c(Y/\lambda)]}. \tag{34}$$

Once again, it is possible to see that the RHS is negative, implying that $\frac{\partial \underline{\alpha}^Y_{L,L}}{\partial \lambda}$ must also be negative. As such, $\underline{\alpha}^Y_{L,\bar{L}^H}(\lambda_1) < \underline{\alpha}^Y_{L,\bar{L}^H}(\lambda_0)$.

Considering this discussion, it must be that $\mathbf{A}^Y(\lambda_1) \not\subset \mathbf{A}^Y(\lambda_0)$ regardless if $L \leq \bar{L}^H$ or $L > \bar{L}^H$. As such this must be true $\forall L$, concluding this proof.

$\square$

Proof of Lemma 3. First, consider that the cost of repressing a legislature will always be $r_L(L)$ when individual votes are secret. Thus, a leader would be unable to credibly threaten to repress legislators if the following condition is satisfied

$$r_L(L) > c(Y). \tag{35}$$

Now, substitute $L = \hat{n}$ into this condition. That yields the following expression

$$r_{\hat{n}}(\hat{n}) > c(Y). \tag{36}$$

Now, recall that $r_L(n)$ is a non-decreasing function of n, and that $\{r_L(n)\}_{L=0}^{\infty}$ is a non-decreasing sequence $\forall n$. This implies that $r_{\hat{n}}(\hat{n}) \geq r_L(\hat{n}) \forall L \leq \hat{n}$.

Finally, recall that Assumption 1 states that $r_L(\hat{n}) > c(Y^*)$. Thus, it must be that $r_{\hat{n}}(\hat{n}) > c(Y^*)$. This observation implies that a leader's payoff is strictly lowered when engaging in repression against a legislature of at least size $\hat{n}$. Therefore, a leader cannot credibly threaten repression against a legislature of size $\hat{n}$ or larger, concluding this proof.

$\square$

Proof of Lemma 4. Assuming votes are secret, to prove that a credible constitution exists only if $\alpha = 1$, it suffices to show that an equilibrium with $\hat{T} > \bar{T}$ exists in the subgame following C's production choice Y if $\alpha < 1$.

Consider the following strategy for legislators when votes are secret. First, notice that a legislator is always indifferent between voting for or against the leader's proposal if he expects a number of legislators $n \neq (1 - \alpha)L$ to vote against the leader's proposal, even when $\hat{T} > \bar{T}$. Thus, the following response configures a best reply for a legislator l when he expects a number of legislators $n \neq (1 - \alpha)L$ to vote against the leader's proposal and $\hat{T} > \bar{T}$

- Vote 1 if $b^\ell \geq 0$.

Now, consider what would happen if legislator ℓ expects a number of legislators $n = (1 - \alpha)L$ to vote against the leader's proposal. In this case, legislator ℓ is pivotal, and he knows that the approval of the leader's proposal hinges on his decision. If he votes 1, the proposal is accepted, he receives the offered bribe, and the entire legislature is removed from the economy. Alternatively, if he votes 0, the proposal is rejected and all members of the legislature have the opportunity to replace the leader in the following period. With this in mind, the following response configures a best reply for a legislator l when he expects a number of legislators $n = (1 - \alpha)L$ to vote against the leader's proposal and $\hat{T} > \bar{T}$

- Vote 1 if $b^\ell \geq \frac{1}{L}\frac{\delta}{1-\delta}[Y - c(Y/\lambda)]$,

- Vote 0 otherwise.

Considering these strategies by the legislators, we can describe the following strategies in the subgame following C's production decision of Y

- L proposes $\hat{T} = Y > \bar{T}$ and offers no bribes to legislators,

- Each legislator ℓ votes 1 regardless of b^ℓ,

- L never represses a legislature.

These strategies configure an equilibrium as long as $\alpha < 1$. Therefore, an equilibrium with $\hat{T} > \bar{T}$ exists in the subgame following C's production choice Y if $\alpha < 1$.

$\square$

Proof of Proposition 7. First, recall that, when votes are secret, a credible constitution exists only under a unanimity decision rule based on Lemma 4. Then, consider the following expression for the cost of subverting a constitution with a unanimity decision rule under a secret voting regime if $L \geq \hat{n}$

$$\frac{\delta}{1 - \delta}[Y - c(Y/\lambda)]. \tag{37}$$

Notice that this expression describes the highest costs of subversion for any constitution under secret voting. Then, consider the cost of subverting some constitution through bribes when votes are open, given by the following expression

$$\frac{\alpha L}{(1 - \alpha)L + 1}\frac{\delta}{1 - \delta}[Y - c(Y/\lambda)]. \tag{38}$$

Notice that (37) is equivalent to (38) when $\alpha = \frac{1}{2} + \frac{1}{2L}$. With Proposition 3 in mind, consider the following constitution $(L, \frac{1}{2} + \frac{1}{L})$ with $L \geq \hat{L}_Y$. Evidently, the costs of subverting this

constitution under open voting will be strictly higher than those associated with subverting a constitution with a unanimity decision rule under secret voting. As such, there is some constitution under open voting that imposes higher subversion costs on a leader than any constitution can under secret voting, proving the first part of this proposition.

For the second part of this proposition, with open voting, consider any constitution (L, α) with $L \geq \hat{L}_Y$ and $\alpha > \frac{1}{2} + \frac{1}{2L}$. Clearly, the costs of subverting these constitution will be strictly higher than those associated with subverting any constitution under secret voting.

$\square$

Proof of Corollary 1. By definition, any majority decision rule must be associated with $\alpha \geq \frac{1}{2} + \frac{1}{L}$. Then recall from the proof of proposition 7 that the costs of bribery under a unanimity decision rule with secret voting are equivalent to those associated with a decision rule $\alpha = \frac{1}{2} + \frac{1}{2L}$ with open voting. Finally, notice that $\frac{1}{2} + \frac{1}{L} > \frac{1}{2} + \frac{1}{2L}$. Thus, the costs of bribery associated with any majority decision rule with open voting must be higher than those associated with any decision rule with secret voting when a legislature is of the same size.

$\square$

Proof of Lemma 5. First, recall that in order for any particular player's strategy to be part of an equilibrium, it must be a best reply to some other combination of strategies by other players. As such, any strategy that never is a best reply cannot be part of any equilibrium.

Then, assume there is an equilibrium where a legislator's strategy is to switch stances in some situation. Consider the situation where a legislator who voted in favor of the leader's proposal decides to switch stances when given the opportunity. By doing so, he is incurring an immediate negative payoff of $-\varepsilon$ and is still being removed from the economy at the end of the period. Thus, he could strictly increase his payoff by not switching stances which means switching stances is not a best reply in this situation.

Now, consider the situation where a legislator who voted against the leader's proposal decides to switch stances when given the opportunity. In this situation, the legislator's potential payoffs depend on the future decision of a leader regarding repression. If a leader decides to not engage in repression, the legislator is foregoing a positive expected payoff and earning $-\varepsilon$ by switching stances. If a legislator expects this to be the case, his best reply cannot be to switch stances. At the same time, if a leader decides to engage in repression, the legislator is foregoing a payoff of 0 and earning $-\varepsilon$ by switching stances. As such, even when threatened with repression, a legislator's best reply still cannot be to switch stances.

Considering these observations, it becomes evident that switching stances is never part of any strategy which constitutes a best reply by the legislator. Consequently, no legislator switches stances in any equilibrium.

$\square$

Proof of Lemma 6. First, let me define $\hat{Y}(\alpha)$ as the maximum level of $Y \in [0, Y^*]$ such that $\alpha \in A^{\hat{Y}}$. Consider the following equilibrium set of strategies:[11]

1. K

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[11]For simplicity, I omit the strategies of legislators and the leaders responses to legislative decisions when a leader does not summon a legislature.

- Summon no legislature if $S_t = 1$, summon a legislature with a constitution $(\alpha, L) \in A^{Y^*}$ and propose $\bar{T}_t = \hat{Y} - c(\hat{Y}/\lambda)$ otherwise;

- Choose tax level $T = Y_t$ if $S_t = 1$, propose no tax revisions and offer no bribes otherwise,

- Acquiesce to the legislature whenever a tax revision proposal is rejected and employ no repression whenever it is accepted,

- Relinquish power if $S_t = 1$ or if he propose a tax revision, maintain power otherwise.

2. ℓ

- vote 1 if $b^\ell \geq \hat{b}^\ell(\frac{n+1}{L}, L)$,

- vote 0 otherwise,

- Lay claim to power if he did not vote in favor of a leader's proposal, lay no claim to power otherwise.

3. C

- Produce $\hat{Y}(\alpha)$ if $S_t = 0$ and $\bar{T}_t \leq \hat{Y}(\alpha) - c(\hat{Y}(\alpha)/\lambda)$,

- Produce 0 if $S_t = 1$.

Now, notice that C's strategy incorporates the response laid out in the lemma's statement. Moreover, notice that with this strategy in mind, an incumbent K who attempts to revise the tax level and any legislators ℓ who voted in favor of that proposal will earn a payoff of 0 in all subsequent periods. Consequently, their best response to C's strategy is to relinquish power and lay no claim to power respectively. This means this strategy perfectly replicates the assumptions about succession made in the main model. This suggest K and all agents ℓ face the same incentives they did in the main model, and the rest of their strategies must be part of an equilibrium response to C's strategy following the proofs of Propositions 1 and 2.

Then, notice that this also means that C's response on the path is also part of an equilibrium based on the proofs of Propositions 1 and 2. As such, demonstrating that this is an equilibrium only requires proving that producing 0 in response to any of the actions laid out in the lemma's statement is credible.

In light of this, consider K's strategies. Whenever $S_t = 1$, he will always attempt to tax as much as possible. In response to this, C will always earn a negative payoff if choosing to produce at any positive level. Thus, producing 0 in this situation is a best response by C, concluding this proof. $\qquad\square$

Proof of Lemma 7. To prove that no equilibrium where C employs a different strategy then the one described in Lemma 6 can yield K a greater payoff to K, first recall that C is only willing to produce $Y > Y^D$ when a constitution is credible.

Then, consider the incentives of agents ℓ based on the strategies they face. Under the strategy laid out in Lemma 6, agents ℓ would only accept bribes from K if they were higher than

$$\hat{b}^\ell = \frac{\delta}{(1-\alpha)L+1}\left[\frac{Y^* - c(Y^*/\lambda)}{1-\delta}\right] - \gamma\left[\frac{1 + [(1-\alpha)L+1](1-\delta)}{[(1-\alpha)L+1](1-\delta)}\right]. \qquad (39)$$

Now, the opportunity cost of accepting bribes from K must be lower under any alternative strategies, since C would not implement the optimal punishment against agents ℓ who accepted bribes and voted in favor of a revision attempt by K. Moreover, the benefits of rejecting bribes from K must also be lower under any alternative strategies for two reasons. First, if K did not expect zero payoffs from attempting to revise the tax level, he would be willing to maintain power and no agent ℓ would be able to claim power from him. Second, if agents ℓ did not expect zero payoffs after voting n favor of a revision attempt by K, they would also be willing to lay claim to power if K relinquished it.

Put together, these observations point to the fact that the cost of bribing legislators would be lower whenever C did not implement a grim trigger strategy. Thus, under any equilibrium where C did not implement a grim trigger strategy, the set of credible constitutions will be smaller $\forall Y > Y^D$. This means that K's equilibrium payoffs can never be higher under alternative strategies, only lower, concluding this proof.

$\square$

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