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Stockholm School of Economics Asia Working Paper
No. 29

February 2014

Accountability in Autocracies: The Role of Revolution Threat*

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February, 2014

Abstract

The purpose of this paper is to explore the joint work of two mechanisms that might constrain autocratic rulers: the threat of a coup by the political elite and of a revolution by the citizens. Our results will help explain a well-established and crucial fact, that is, autocracies are far more likely than democracies to be either the best or the worst performers in terms of growth and of public goods policies. To this aim, we focus on accountability within dictatorships using a common agency model where the political elite and the citizens are the principals and the autocrat is the agent. Our results highlight that both excessively strong and excessively weak dictators lead to poor economic performances, while a balanced distribution of de facto political power is required to incentivize the ruler to choose congruent economic policies.

Key Words: Autocracy, Accountability, Coup and Revolt.
JEL Code: D02, H11, D74.
Word Count: 10041

*We would like to thank Thomas Apolte, Massimo Bordignon, Scott Gehlbach, Philip Keefer, Kai Konrad, Giovanna Iannantuoni, Peter Murell and Nico Pestel for their comments and insights.We also thank the participants at seminars in Aix-en-Provence, Barcellona, Berlin, Cambridge, Milan, Hamburg and Stockholm, and at the 15th Annual Conference of the International Society for New Institutional Economics, the Ronald Coase Institute 2010 Shanghai Workshop, the 34th PAFTAD Conference, the 12th European Peace Economics Conference, the Fourth Congress of the Game Theory Society and the 12th Journees LAGV for helpful discussions.

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"By a democracy I do not mean something as vague as 'the rule of the people' or 'the rule of the majority', but a set of institutions (among them especially general elections, i.e. the right of the people to dismiss their government) which permit public control of the rulers and their dismissal by the ruled, and which make it possible for the ruled to obtain reforms without using violence, even against the will of the rulers" Karl Popper, 1966, p. 349.

1 Introduction

The purpose of this paper is to explore the joint work of two mechanisms that might constrain autocratic rulers: the threat of a coup d'état by the political elite and of a revolution by the citizens. Our results will help explain a well established and crucial fact, i.e. that autocracies are far more likely than democracies to be either the best or the worst performers in terms of growth and, in general, of public goods policies. The heterogeneity among autocracies is striking: dictatorships have more variable growth rates than democracies and this result holds both within and across countries and it is not sensitive to specific time periods or to different democracy indexes. Just to quote a few examples: by 1975, Spain's per capita income was eight times as large as in 1945, China's average income tripled from 1979 to now and Malaysia, Singapore, Taiwan and South Korea achieved growth rates of over 10 percent a year under the thumb of dictators. Yet some of the worst economic catastrophes also occurred under dictatorial regimes: Zambia witnessed its average income falling from 1964 to 1991, the economic disaster of North Korea led to the starvation of millions and Zaire is probably the most clamorous example of economic collapse in the world. More generally, over 20 percent of all observations within autocratic countries are of negative growth rates and during the tenure of a single dictator, the annual growth rates range from -11.85 percent to +25.03 percent.[1]

This evidence calls for an explanation that we believe should start from similarities and differences between and within two ideal types of political systems, democracies and autocracies. Following the Popper view,[2] we build our approach on the idea that the dichotomy democracy/autocracy relies on the way a ruler can be dismissed by the ruled: through competitive elections in democracies or through coups or revolutions in autocracies. The prospect of acceding to or of being removed from power by violent means is likely to produce specific incentives that lead to different policy choices. Any political leader, even an autocrat, must be judged by her supporters and by the citizens and this is a constraint which might be more or less binding depending on the specific authoritarian system. In particular our approach naturally points to distinguish the dictator's de jure political power, that by definition is total, from her de facto political power, which depends on the way the autocracy is institutional-

[1] Almeida and Ferreira 2002, Gandhi 2008, and Rodrik 1997.

[2] This position is also basic to many approaches to the functioning of authoritarian polities: see, for example, Gandhi and Przeworski 2007 and Svolik 2012b.

ized.[3] This makes it clear that it is necessary to go behind the simple dichotomy between democracy and autocracy in order to understand how different autocratic institutions shape different incentive structures within the same dictatorial framework. We are just beginning to understand how variations among authoritarian polities affect economic policies, and this work want to contribute to this growing literature.

The central argument of this paper hinges on how the distribution of de facto political power among dictator, political elite and citizens affects economic policies. In particular, we will show that the method of selecting and replacing dictators, i.e. either through coups or through revolutions, and the costs of using these tools, are the key elements to distinguish different autocratic systems and their effect on economic outcomes. Naturally, there are other crucial aspects that help explain their behavior, e.g. the rule of law, media independence, the separation of powers, the voting system and the federal or centralized organization of the state. These features significantly differ within democracies and may thus help explain the heterogeneity in their behavior. However, dictatorships lack almost all of these aspects and still there is significant variability in their economic performance. Therefore, to understand the heterogeneity across and within autocracies, we must identify the institutional characteristics that are specific to dictatorships. To this aim, we focus on accountability within dictatorships where by accountability we mean a mechanism that involves an agency relationship between politicians and citizens aimed at screening the different types of rulers providing an effective incentivization system. In autocracies, it might seem that there is no leader's accountability and therefore that public policies are usually not in the public interest. However, a large literature[4] has argued both theoretically and empirically that there exist mechanisms that might constrain the behavior of autocrats.

This paper provides a manageable theoretical framework for analyzing these questions, extending the seminal Besley and Kudamatsu 2008 model. We show that in equilibrium, there are different economic regimes depending on two crucial political parameters that we take as exogenous: the effective power of the political elite and the costs of a popular revolution for the citizens. Roughly, we might have four different economic regimes: an instability situation, where the state has failed and the leader has an incentive to seize funds and flee due to this instability,[5] a more established setting where the credible threat of a coup or of a popular revolution ensures a congruent behavior by the leader, a temporary kleptocratic policy followed by the leader's removal by a coup, a kleptocratic equilibrium when both the elites and the citizens are captured by the incumbent leader.[6] As the above key political parameters depend on

[3] The distinction between de jure and de facto political power is one of the building blocks of Acemoglu and Robinson 2006. For the importance of institutions in dictatorships, see in particular Boix and Svolik 2013, Dominguez 2011, Gandhi and Przeworski 2006 and 2007, Gandhi 2008, Svolik 2009, Wright 2008.

[4] See section 2.

[5] Olson 1993.

[6] These four economic regimes resemble Myerson 2008 results on the emergence of four

institutional details that vary dramatically across countries and time periods, economically successful and unsuccessful autocracies would arise.

The paper proceeds as follows. In section 2, we examine the literature related to our research. We highlight the important insights of this literature and draw attention to the reasons for our contribution. In section 3 we introduce and discuss our model of accountability in autocracies, which is analyzed in section 4. Section 5 concludes the paper with a brief discussion. Calculations are reported in the appendix.

2 Related Literature

The literature on the effects of dictatorships on economic performances is immense and diversified, both theoretically and empirically, even if there are relatively few game-theoretic models of autocratic politics.[7] In particular, all the recent works recognize that the specific details of political institutions cannot be ignored.[8] Here, we don't want to review this entire literature,[9] we just contextualize our work, relating our paper to three different branches: conflict theory, common agency and, most important, the economic analysis of autocracies.

Our model builds on the growing literature on moral hazard in autocracies,[10] with a specific focus on the connection between dictator's de facto accountability and economic performances. The first approach to explain accountability in autocracies has been the selectorate theory: selectorate is an expression adopted from British parliamentary politics to define the group that has the effective power to choose the leader and, consequently, has access to special privileges doled out by the ruler. The seminal works in this field are Bueno de Mesquita et al. 2003, Besley and Kudamatsu 2008 and Svolik 2009. As a way of disciplining the incumbent leader in an autocracy, Bueno de Mesquita and coauthors consider the role of two subsets of citizens, the winning coalition and the selectorate, concluding that the larger is the winning coalition, whose support is necessary for the incumbent politician to remain in power, the higher is the level of public goods provided by the government. Hence, they conclude that public goods provision is maximized in democracy. We start from this crucial insight, but we follow the modeling strategy of Besley and Kudamatsu 2008, and more generally the principled agents approach of Besley 2006, where the policy mechanism is modeled as an incomplete information game, so that the leader's incentive to build her reputation works as an accountability mechanism where the bad leader may pool with the congruent to establish her reputation

political systems.

[7] Myerson 2008.

[8] See, for example, Boix and Svolik 2013, Brownlee 2007, Gandhi 2008, Gandhi and Przeworski 2006 and 2007, Geddes 1999 and 2009, Gehlbach and Keefer 2008, Magaloni 2008, Smith 2005, Svolik 2009, 2012a, 2012b, Weeks 2008, and Wright 2008.

[9] See e.g. Acemoglu et al. 2005a for a review.

[10] See, for example, Besley and Kudamatsu 2008, Boix and Svolik 2011, Bueno de Mesquita et al. 2003, Debs 2008, Egorov and Sonin 2011, Egorov et al. 2009, Gehlbach and Keefer 2008, Guriev and Sonin 2009, Myerson 2008, Svolik 2009 and 2012a.

as a good policy maker. Besley and Kudamatsu argue that in any economic system, the economic performance depends on the leader's accountability, which even in autocracies can be achieved when the selectorate is powerful enough. Then, they are able to show that autocracy performs better than democracy if the selectorate is powerful and the distributional conflict is not too salient. These works are extremely important, but they ignore the fact that autocratic leaders do not only fear a deposition by a coup d'état of the selectorate, but also by a citizens' revolution. Actually, as argued by Tullock 1987, all dictators share the same primary goal, to hold on to office against all odds because failing to do so will result in imprisonment, exile, or execution. This is the underlying reason for why the selectorate and the citizens can indirectly shape a wide variety of economic and political outcomes even in dictatorships. This is the starting point of Svolik 2009: he focus his attention on the ruler's answer to a credible coup threat and on the connected moral hazard problem, emphasizing - as in our work - the specificity of the accountability problem in autocracies where the ultimate role is played by credible threats of using violence. Svolik's works[11] also considers the leader's political answer to the credible threat of a citizens' revolt, showing how this may lead the leader to share power with a ruling coalition. In this paper, we instead take the political regime as given and represented by the two de facto power parameters ϕ and μ, while our focus is on the ruler's economic choices.

Our model differs from that of Besley and Kudamatsu in three ways. First, while the focus of their model is on the ability of enfranchised and disenfranchised citizens to seize power in a voting contest after the incumbent leader has been ousted, our model instead focuses on the "effective" size[12] of the selectorate as a proxy for its power. Second, they model the strength of the selectorate as a monotone increasing function of its size. This implies that a larger selectorate will always lead to more efficient policies, but this result actually comes from the assumption that the patronage is not divided by the size of the selectorate. We believe instead that it is important to model the fact that the accommodation of additional partners requires thinner slices of a relatively fixed pie. Finally, the focus on the institutionalization of the elite inevitably drives the attention toward the excluded majority, the citizens, and their behavior. This motivates our third crucial departure from the Besley and Kudamatsu model, i.e. the introduction of a further principal besides the selectorate, the citizens, i.e. the political active but disenfranchised agents. At least since the seminal papers by Acemoglu and Robinson 2000 and 2001, the role of revolutionary threats has been central to explain democratization. However, we want to understand why there are different public good policies within dictatorships, not the processes of political change. Hence, our work refers to the research that has turned to the analysis of how the distribution of political power delineates the ability of an economic system to realize its potential, for example, Sokolov and Engerman 2000, Bueno de Mesquita et al. 2002, Egorov and Sonin 2005, Gandhi and Prze-

[11] Se also Svolik 2012a and b.

[12] See the next section for a detailed explanation.

worski 2006, Bueno de Mesquita and Smith 2007 and 2009, Cheibub et al. 2010, and Kricheli and Livne 2011. Two are the main differences between our model and these: the role of incomplete information, as is usual in a principal agent model where reputation works as an incentive device, and the conflict technology. In many of the above models, the probability that revolution succeeds is an increasing function of the amount of public goods provided by the autocrats. Hence, providing public goods, the leader faces a trade off since this will increase both the citizens' payoffs and the likelihood of being overthrown by a popular revolt. In our model, the provision of public goods by the leader is instead a costly signal of her type, while we consider the most basic success technology, a function linear in the proportion of revolutionaries. Thus, our approach focuses on the ruler's trade-off between extractive policies and the risk of being overthrown, when the capability of extracting a country's resources depends on both the leader's power and her reputation as a good ruler.

The agency relation between the selectorate and the citizens, as principals, and the leader, as the agent, links this paper to the vast literature on common agency. Agency problems are fundamental in any political system and, following the seminal paper by Bernheim and Whinston 1986, many works have stressed that common agency models are particularly suited to analyze political economic problems: e.g. Grossman and Helpman 1994 and 1996, Martimort 1996, Dixit 1996, Dixit et al. 1997, Martimort 2004 and Egorov 2009. In our model, diverging from the previous works, the two principals - the selectorate and the citizens - are choosing sequentially and have very limited options: whether or not to try to remove the leader risking a defeat. In particular, we assume away monetary transfers. Essentially, we propose an incomplete contract model, hence the standard results do not apply.

The result that the fear of being ousted by a coup or by a revolution might discipline the autocratic leader is not new;[13] however, we are able to connect accountability in dictatorships to specific parameters, showing when and why these mechanisms might not work. More importantly, our model also generates the counter-intuitive result that the threat of revolution has negative effects when associated with weak institutions: our contribution offers a unified account of how the two forces that constrain autocrats - the threat of a coup and of a revolt- interact, sometimes complementing, sometimes substituting each other. Both excessively weak and excessively strong states are likely to act as impediments to economic development: weak states because a self-interested autocrat will pursue the public interest only when she expects future private rewards that are unlikely when she can easily be removed, strong states because there are no checks and balances to the dictator appropriation policies. A balanced distribution of political power between the autocrat, the selectorate and the citizens is necessary for the economy to function efficiently. These results are a preliminary step towards understanding why some dictatorial governments adopt growth-enhancing policies and others do not, implementing kleptocratic

[13] See, for example, Bueno de Mesquita et al. 2002, Bueno de Mesquita and Smith 2007 and 2009, Galetovic and Sanhuenza 2000, and Gandhi and Przeworski 2006.

and inefficient policies. Consider, for example, one of the most puzzling features of kleptocracies, their longevity despite their disastrous policies. The analysis of countries such as Zaire, the Dominican Republic, Nicaragua or Haiti shows that all these regime lack a strong selectorate while the costs of a popular revolt are huge. On the other hand, efficient autocracies such as Brazil, Chile, China, Gabon, Liberia, Singapore, Spain or South Korea are or have been characterized by either a powerful selectorate or by a credible threat of citizens' revolt or both.

3 The Model

The starting point of our work is a two-period political-agency model with incomplete information played by three protagonists: the incumbent leader (female), the selectorate (male) and the citizens (plural). Contrary to standard political-agency models for democracies,[14] there is no regular general election, hence the dictators term might be indefinite[15] and their power unlimited. Yet dictators can be removed from office by a selectorate's coup or by a citizens' revolt. Thus, dictators face two basic problems of governance: first, they need the cooperation from the selectorate and, second, they need to avoid a citizens' revolt. The problems of mass protest and of elite defection most likely intersect and threaten the authoritarian system and the ruler, respectively. When dictators face credible threats by citizens or by the selectorate, they are pressed to choose costly congruent economic policies instead of the personal exploitation of the country's wealth. Yet dictatorships differ in their capability of capturing political elites and in repressing citizens. To model this situation, we introduce two separate conflict technologies, one for coups and one for revolutions. Revolution is defined as a popular revolt whose goal is a permanent change in the distribution of wealth and the replacement of the existing ruling class; hence, it is an absorbing state. A coup d'état, instead, is defined as a forced resignation of the ruler without any transformation of the political regime, but with a change in the composition of the political elite and the replacement of the dictator. Hence, citizen-driven threats to the stability of the regime are different from selectorate-driven threats: a citizens' revolt destabilizes the entire political and social structure of society, while the selectorate's removal of the incumbent leader does not change the basic social order and the governmental apparatus in the country.

Formally, in each period $t = 1, 2$, there is an incumbent leader (L), who can be one of two types, either congruent or non-congruent, $T \in \{C, N\}$, with probability π of being congruent. To model the idea that the ruler might choose good or bad economic policies but that this has a cost, we assume that each type of leader in each period $t = 1, 2$ is privately informed of the true state of nature $\theta_t \in \{0, 1\}$ and has to make a discrete "general interest" policy denoted

[14] Berganze 2000, Besley 2006, Maskin and Tirole 2004.

[15] Even when there are well defined term limits, as in China, they are effective only when the ruler's power is somehow restricted, as the case of Putin in Russia shows.

by $e_t \in \{0,1\}$. The general interest requires the leader to match the true state of nature, but this would also mean that the incumbent leader foregoes her private benefits. The public payoff from the general interest policy is Δ if $e_t = \theta_t$, 0 if $e_t \neq \theta_t$; hence, the congruent policy is a sort of generic public good. However, the non-congruent leader gets a private benefit r_t from picking $e_t \neq \theta_t$, where r_t is drawn according to a continuous cumulative distribution function $G(r_t)$ with $E(r_t) = \overline{r}$, $G(\Delta) = 0$, and $G(r_t) > 0$ for $r_t > \Delta$; while the congruent leader gets a null private benefit from selecting $e_t \neq \theta_t$. To gain the loyalty of the selectorate, the leader pays a patronage to the selectorate by using direct payment or high-level government appointments. We suppose that the patronage is realized through the distribution of a given amount of resources, X. Hence, from this patronage policy, the citizens get 0[16] and the selectorate gets $\frac{X}{\phi}$, where ϕ is a measure of the "effective" size of the selectorate, a measure discussed in Section 3.1.

The selectorate (S) get his utility from the leader's policy and then decides whether to support or remove her, before the citizens' choice whether to revolt: the idea is that the political elite has the possibility of intervening first and more quickly than citizens. If the selectorate decides to oust the leader, she will be removed with certainty, as a leader without the selectorate's support cannot survive. However, when the incumbent ruler is ousted from power, a new one will be appointed and form a new selectorate. We assume that the effective size of the new selectorate remains the same since there is no regime change. The new leader will randomly select the members of the new selectorate from the pool of the population; hence, if the incumbent leader is removed by the selectorate, then each member of the old selectorate has a probability ϕ of being included in the new selectorate.

After the selectorate's choice, it is time for the citizens (Z) to choose whether to revolt or not. The decision to start a revolution (it does not matter whether successful or not) lead to an absorbing state where the utility of the selectorate and of the leader will both be zero. The idea of this assumption is to model the dramatic political failure of the ruling coalition due to any attempts of citizens' revolt even if unsuccessful, and it is particularly effective in modelling the incentivizing role of revolutions' threat. On the other hand, for the citizens it clearly matters whether the revolt is successful or not. We assume a conflict technology as simple as possible: the revolution succeeds with probability $1-\phi$, i.e. linearly increasing in the "effective" size of the citizens. If the revolution succeeds, the citizens will receive the selectorate rent net of the revolt costs, $\frac{X-\mu}{1-\phi}$, where μ is the cost of revolting. If the revolution fails, the citizens will receive a zero payoff. Both these payoffs are realized at the beginning of the second period.

To sum up, the timing of the model is as follows:

1. Nature determines (θ_1, r_1) and the type of leader $T \in \{C, N\}$. These three random variables are stochastically independent and their realization is private information of the leader;

[16] Naturally, this is just normalization.

2. Type T leader chooses a policy and the payoffs for each player in period one are realized. Denote by $\lambda_1^T : r_1 \longmapsto [0,1]$ the probability of choosing a congruent policy;

3. The selectorate observes the effect of the policy chosen by the leader but not her type and, on basis of this information, decides whether to retain the incumbent leader. Denote by $\rho : \{0, \Delta\} \longmapsto [0,1]$ the probability of retaining the leader;

4. If the incumbent leader is ousted from power, a new leader will enter the office and she will be congruent with probability π. The new leader will form her own coalition and the members of the selectorate who deposed the previous leader will have a probability ϕ to be included in the new one;

5. The citizens observe the choice implemented by the selectorate $\widehat{\rho} \in \{0,1\}$ and the effect of the policy chosen by the leader but not her type. On basis of this information, they decide whether to initiate a revolution. Denote by $\alpha : \{0, \Delta\} \times \{0,1\} \longmapsto [0,1]$ the probability of revolting;

6. If the citizens' revolt, the game stops: the citizens will receive a payoff $\frac{X-\mu}{1-\phi}$ with probability $1-\phi$, 0 otherwise, while in any case both the leader and the selectorate will get zero;

7. If there is no citizens revolt, then Nature determines (θ_2, r_2). The period two type $T \in \{C, N\}$ leader observes Nature's choice and chooses a policy, the payoffs of each player in period two are realized and the game ends.

Agents' utilities are linear in the rents they consume, with a discount factor $\beta \in (0,1)$. Hence, the players' payoffs for the two types $T \in \{C, N\}$ of leader, the selectorate S and the citizens Z are, respectively:

$$W^N\left(\lambda_1^T, \rho, \alpha, \lambda_2^T | T, r_1, r_2\right) = \left(\Delta + \frac{X}{\phi}\right) \times \lambda_1^T(r_1) + \left(r_1 + \frac{X}{\phi}\right) \times \left(1 - \lambda_1^T(r_1)\right) +$$

$$+\beta \left[\left(\Delta + \frac{X}{\phi}\right) \times \lambda_2^T(r_2) + \left(r_2 + \frac{X}{\phi}\right) \times \left(1 - \lambda_2^T(r_2)\right)\right] \times \rho(\delta) \times \left(1 - \alpha(\delta, \widehat{\rho})\right);$$

$$W^C(\lambda_1^T, \rho, \alpha, \lambda_2^T | T, r_1, r_2) = W^Z(\lambda_1^T, \rho, \alpha, \lambda_2^T);$$

$$W^S\left(\lambda_1^T, \rho, \alpha, \lambda_2^T\right) = \left(\Delta + \frac{X}{\phi}\right) \times \lambda_1^T(r_1) + \frac{X}{\phi} \times \left(1 - \lambda_1^T(r_1)\right) +$$

$$+\beta \left[\left(\Delta + \frac{X}{\phi}\right) \times \lambda_2^T(r_2) + \frac{X}{\phi} \times \left(1 - \lambda_2^T(r_2)\right)\right] \times \rho(\delta) \times \left(1 - \alpha(\delta, \widehat{\rho})\right) +$$

$$+\beta \left[\left(\Delta + \frac{X}{\phi} \times \phi\right) \times \lambda_2^T(r_2) + \frac{X}{\phi} \times \phi \times \left(1 - \lambda_2^T(r_2)\right)\right] \times (1 - \rho(\delta)) \times (1 - \alpha(\delta, \widehat{\rho}))$$

$$W^Z\left(\lambda_1^T, \rho, \alpha, \lambda_2^T\right) = \Delta \times \lambda_1^T(r_1) + 0 \times \left(1 - \lambda_1^T(r_1)\right) +$$

$$+\beta\left[\frac{X}{1-\phi}\times(1-\phi)\right]\times\alpha(\delta,\widehat{\rho})+\beta\left[\Delta\times\lambda_2^T(r_2)+0\times\left(1-\lambda_2^T(r_2)\right)\right]\times(1-\alpha(\delta,\widehat{\rho}))\,.$$

The first-stage game structure is reported in Figure 1.

<Figure 1 here>

The notation used is summarized in table 1:

<Table 1 here>

3.1 Comments on the Model

Our model aims at analyzing accountability in autocratic regimes and derives many simplifications from this narrow focus. As previously explained, it is a standard model in the tradition of Besley principal agent models, even if we consider two principals, the selectorate and the citizens. From the Besley approach, it inherits being simultaneously a screening and a moral hazard model, where accountability is relevant because there are different types of ruler and the incentive mechanism works when there is pooling. In this simple setting, we explore under what conditions on exogenous institutional parameters this incentive mechanism works efficaciously.

Before the full analysis of the model, a number of specific restrictive features should be discussed

1. the way of modeling the leader's information and her possibilities of choice is the simplest way of formalizing the idea that economic policies might be wrong not because of ignorance or of cultural or technological reasons, but because of the political incentives that induce the leader to prefer her own private rent to the general interest;

2. the players are homogenous in the sense that all members in the same group (leader/selectorate/citizens) share the same preferences. As common practice, we refer to a group of people having a common identifying interest and being capable of making joint decisions as a single player. This assumption avoids two topics that, although relevant, would possibly obscure the main focus of our analysis of accountability - the collective action problem and the mechanism for aggregating different preferences. As Apolte 2012 clearly points out, the collective action problem is particularly important for citizens in dictatorships, however our model relies on the role of rebellion's threats which are a real problem for any authoritarian polity[17] even if their credibility differs for different authoritarian polities.[18] Moreover, note that in this model the citizens are the political active disenfranchised agents, not the entire population. In particular, the parameter μ is a synthetic way of modelling the cost of citizens' collective action;

[17] See e.g. Svolik 2012b.

[18] See, for example, Acemoglu and Robinson 2001, Boix and Svolik 2013, and Gandhi and Przeworski 2007.

3. the leader cannot use redistributive policies to avoid citizens' revolts. The reasons for this assumption are two-fold: first, we believe that such policies are not credible if they are not associated with a change in the political regime from autocracy to democracy;[19] second, we would like to focus on the incentives for promoting congruent policies, whereas the full analysis of redistributive policies would require the introduction of taxation and thus of distortion in production. While our assumption focuses the analysis on the leader's succession rules, thereby stressing a specific accountability mechanism, it does not allow us to study the strategies used by autocrats to divide-and-rule;[20]

4. there are four specific hypothesis behind the rules of the game:

   (a) the two possible types of leader reflect the idea that rulers differ in their intrinsic motivations and that this private characteristic might not be revealed by policy choices (pooling equilibrium); however, the mere possibility of being congruent allows the autocrat to use her reputation as a pre-committing credible device;[21]

   (b) if there is no revolution, then the effective selectorate size[22] is stationary, because there is no structural change in the political regime. Hence, if the selectorate changes the incumbent leader, the appointed leader randomly selects the members of the new selectorate from the pool of the whole population; hence, the selectorate has probability ϕ of being part of the new political elite;

   (c) the formal treatment of revolution is simple, yet effective to catch the essential aspects of the dramatic economic changes implied by a citizens' revolt: the assumptions behind the payoffs' specification is that the citizens will revolt to get a future redistribution of the selectorate rent not to induce a specific economic policy, while the incumbent leader and the selectorate are ousted from the polity. The reason for this is that we don't aim to analyze the transition from a dictatorship to a democracy, but the constraints on a otherwise arbitrary dictator's behavior;

   (d) as usual in this kind of models, the timing of the game is quite arbitrary: we leave the last move in the stage game to the citizens to model the idea that they are a player of last resort who has the possibility of intervention once the selectorate has turned out to be impotent in incentivizing better policies. Although discontent with the dictator can come from any segment of society, members of the

[19] As forcefully argued in Acemoglu and Robinson 2001 and 2006.

[20] See Acemoglu et al. 2004.

[21] This idea is the building block of the principal agent approach to political economics, as explained in Besley 2006 which, in turn, is related to the IO models of reputation building, as pioneered by Milgrom and Roberts 1982.

[22] This is different from Bueno de Mesquita et al. 2003.

ruling elite usually constitute the first threat to the dictator, while a revolution is usually the last resort.

5. to interpret the model and the results, it is important to consider the distinction between de jure and de facto political power: the de jure power is the formal power allocation as determined by political institutions while the de facto political power accrues to the agents that can create coups, riots or revolts.[23] By definition, in autocracies the de jure political power is fully in the dictator's hands, while the de facto political power depends on the details of the political institutions. From this point of view, a crucial role in the model is played by the "effective" size of the selectorate ϕ and by the cost of revolting μ. These two parameters are actually a reduced form of the de facto political power of the political elite and of the citizens in an autocratic polity. In the selectorate theory as developed by Bueno de Mesquita et al. 2003, ϕ is simply the relative proportion of the selectorate (the winning coalition) in the whole population. But a country's population is usually huge compared to the size of its elite. As any number divided by such a huge denominator is tiny, it may be tempting to avoid any distinction among autocracies as all are close to a one-man dictatorship. To interpret our results, first it should be stressed that what really matters for the accountability mechanism is the balance of the de facto power among different players, and power and size are correlated. Secondly, there is increasing costs in increasing group size [24]. In order to make our analysis tractable, we assume the benefit of an increase in the effective size of the selectorate ϕ, is accompanied by the cost of a diluted payoff $\frac{X}{\phi}$. Hence, we will call ϕ the "effective" size of the selectorate, which can be treated as a summary statistics for a wide variety of institutional characteristics that limit the power of the autocrat[25]. Similarly, a crucial role in the model is played by the "cost of revolution" for the citizens, μ, which directly affects the credibility of revolutions' threat. Once more, we treat μ as a summary statistics for a wide variety of institutional characteristics that limit the de facto power of the citizens, i.e. their possibility of credibly threatening the removal of the ruler.

These assumptions are very convenient but are, of course, gross oversimplifications. Because of these hypotheses, the game that represents the model is actually quite simple: there are three players who are each endowed with two possible actions, two possible types of leader, the payoffs are linear and the conflict technology is trivial. However, because of its simplicity, the model is effective since for each combination of the political institutional parameters, there is a unique fully characterized Sequential Equilibrium outcome. Hence,

[23] See, for example, Acemoglu et al. 2003 and 2005b.

[24] Straffin 1994.

[25] From this point of view, the role of ϕ is similar to the role of $1 - M$ in Aghion et al. 2004 even if it is exogenous in our perspective

we are able to make meaningful comparative statics exercises, highlighting the reasons for the heterogeneous economic performances of autocracies.

4 Equilibria of the Model

As usual, the last period choices are easy to derive since players' behavior is given by their myopic best reply. Hence, as is standard in this literature, we will analyze the players' behavior in the first-stage game, given the players' last period myopic best responses. The following proposition presents the equilibrium outcomes of the game in plain language, while the detailed derivation of the players' sequential rational behavior is in the appendix.

Proposition 1 *The first-stage game has the following Sequential Equilibrium outcomes depending on the parameter values:*

1. *when* $\mu \in [0, X - \Delta]$, *there exists a unique Sequential Equilibrium outcome, where both types of leader would pursue their own interest and both would be challenged by a citizens' revolt, because of the unequal income distribution; hence, the selectorate's behavior is irrelevant for the outcome of the game. This is the case of a Failed State Equilibrium (FSE) outcome, since we have revolt with certainty, even if the policy is congruent. For this reason, there are no incentives for the non-congruent leader to ever induce a congruent economic policy;*

2. *when* $\mu \in [X - \Delta, X - \pi\Delta]$, *there exists a Sequential Equilibrium outcome where the non-congruent leader would pursue her own interest with strictly positive probability. If an inefficient policy is implemented, she would face a citizens' revolt and the selectorate behavior is irrelevant: this is the case of a Roving Bandit Equilibrium (RBE) outcome; if the implemented policy is congruent, then with probability* $\overline{\alpha}$ *we will have a citizens revolt because of the unequal income distribution, while the selectorate will not remove the leader: this is the case of a Partially Efficient Equilibrium (PEE) outcome, since the noncongruent leader has only partial incentives to behave correctly because with strictly positive probability she will be challenged by a revolt anyway*;

3. *when* $\mu \in [X - \pi\Delta; X]$, *there exists a unique Sequential Equilibrium outcome, where the non congruent leader would pursue her own interest with strictly positive probability. If a non congruent policy is implemented, then she would be dismissed by a coup of the selectorate who is afraid of a citizens' revolt otherwise: this is the case of a Roving Bandit Equilibrium (RBE) outcome; if the implemented policy is congruent, then we will have no revolt and no coup: this is the case of an Efficient Equilibrium (EE) outcome, since the noncongruent leader has the maximum possible incentive to behave correctly*;

4. *when* $\mu \in [X, +\infty)$ *and* $\phi \leq \frac{X}{X+\pi\Delta}$, *there exists a unique Sequential Equilibrium outcome, where the non-congruent leader would pursue her own interest with certainty and notwithstanding this, she will remain in power because neither the selectorate nor the citizens have the incentives to remove her: this is the case of a Kleptocratic Equilibrium (KE) outcome ;*

5. *when* $\mu \in [X, +\infty)$ *and* $\phi \geq \frac{X}{X+\pi\Delta}$, *there exists a unique Sequential Equilibrium outcome, where the non-congruent leader would pursue her own interest with strictly positive probability; if a non congruent policy is implemented, then she would be dismissed by a coup of the selectorate: this is the case of a Roving Bandit Equilibrium (RBE) outcome; if the implemented policy is congruent, then we will have no revolt and no coup: this is the case of an Efficient Equilibrium (EE) outcome, since the noncongruent leader has the maximum possible incentive to behave correctly.*

4.1 Comments

Proposition 1 illustrates how different economic regimes can arise in equilibrium within an autocratic polity, explaining when and why efficient growth enhancing economic institutions emerges and persists in autocracies. This allows us to provide a sharp answer to our basic question: why and when would a self-interested dictator pursue a costly congruent policy giving up private rents? Table 2 sum up our results: it delineates the economic policies that can emerge in equilibrium as a function of the combination of the two key political institutional parameters: the de facto power of the selectorate ϕ and the de facto power of the citizens μ.

<Table 2 here>

The general vision behind our results is that the details of political institutions shape how political power is distributed in society, particularly the ability of different groups to act collectively to pursue their objectives or to stop other people from pursuing theirs which, in turn, determines the incentives and constraints for economic policy making, hence economic growth and regime duration. Political power comes from two sources. First, the de jure power which is allocated by formal political institutions. Second, the de facto political power which accrues to individuals or groups when they can create coups, riots or revolts.[26] In an autocratic polity, the de jure political power is allocated to the ruler only, while the de facto political power of the other players depends on how costly it is for them to replace the dictator, in our model on ϕ and μ. We distill the variety of autocratic institutional arrangements into these two critical dimension: the selectorate effective size and the costs of revolt for the citizens, both constituting a reduced-form measure of the de facto power of the two principals. By mapping real-world political systems onto these two dimensions, we sacrifice detail and precision, but we gain the possibility of explaining a rich

[26] See e.g. Acemoglu et al. 2005a.

variety of economic phenomena with a simple theoretical structure. Thus, even in autocracies, the de facto political power of the selectorate and of the citizens may threaten the autocrat with a coup or with a revolt and it is the distribution of the de facto power that in practice critically determines the economic outcomes of an autocratic polity. The point is that the ruler accountability towards the elites and the citizens when their removal threats are credible allows the dictator to credibly precommit to congruent economic policies.

Proposition 1 highlights that the role of checks and balances in disciplining autocrats turns out to be subtle: congruent policies in autocracies require either an intermediate strength of the state, so that the revolution threat by the citizens is credible only when there are poor outcomes, or a political elite that is strong enough, so that a coup threat is credible when economic policies are non-congruent. Otherwise, we will have inefficient states: in some cases, the state can be so weak that the citizens will revolt anyway and therefore, there is no way of incentivizing the ruler to avoid temporary extractive policies; in other cases the dictator is so strong that she can't be credibly threatened of removal following bad economic policies and therefore, again, there is no way of incentivizing the ruler to avoid extractive policies. Hence, both excessively strong and excessively weak rulers lead to poor economic performances: in autocracies, there is an optimal intermediate level of power for the citizens (possibility of collective action) and an optimal intermediate level of power for the political elites (reciprocal accountability). Note that the driving forces behind the dictator's behavior are the selectorate's and the citizens' credible threat, not the actual implementation of coups or revolts. Moreover, often a coup is an attempt of avoiding a citizens' revolution. Hence, the available empirical evidence on the significant role of coups in autocracies[27] is very well consistent with our results.

A Failed State Equilibrium characterizes countries where the dictator has the possibility of extracting resources but is not powerful enough to withstand challenges from the exploited citizens, a situation of undefended continuous insurgency close to anarchy. This distribution of power lead to chaos, which destroys any incentive for the ruler to behave congruently; hence, it generates temporary extractive economic policies: the dictator maximizes her rent before being challenged by a revolt. In this case, we observe continuous fighting and the credibility of the citizens' revolution threat is counterproductive, generating instability and an inefficient economic regime. Note that an increment of rents or a reduction in the effectiveness of public policies as in many weak states[28] makes this inefficient outcome more likely. This result is therefore connected to the well-known natural resource curse.[29] To evaluate the empirical relevance of this situation, it is important to stress that a citizens' revolt has an uncertain outcome; hence, many long standing dictatorships that continuously face military or popular revolts belong to this class of economic regimes. For example, countries such as the Democratic Republic of Congo from 1998, contemporary

[27] See for example O'Kane 1981, Svolik 2009, and Svolik 2012a.

[28] Important analyses of the formation of weak states are found in Acemoglu 2005, Besley and Persson 2011, and Vallings and Moreno-Torres 2005.

[29] See Van der Ploeg 2007 for a survey.

Mali, Sierra Leone from 1991 to 2001, Somalia after the collapse of Siad Barre's government, Yemen from 1990, Haiti from 1990 and Afghanistan after the withdrawal of the Soviet Union are situations where rulers face endemic revolts and that should be considered as Failed States even if some of them maintain the same dictator for many years: continuous violent conflicts constitute the ultimate manifestation of state failure, since the monopoly of force is the minimal function of a government.[30]

Instead, when the costs of revolution are intermediate, the citizens will accept the unequal distribution if the ruler will behave congruently providing public benefits, otherwise they will revolt; then, to avoid a radical change of political regime, the selectorate prefers to remove a leader who does not behave congruently. In this situation, there are two possible equilibrium outcomes: a Roving Bandit Equilibrium or an Efficient Equilibrium. In this case, the ruler is reassured that the citizens and the selectorate will not remove her when she chooses efficient economic policies. Therefore, unless the private rents of the dictator are so huge as to make future revenues less valuable than appropriation today, she will decide to follow congruent economic policies in order to maintain her political power. In this case, we observe either congruent economic policies and stability in the ruler's power or extractive economic policies followed by the removal of the leader by the selectorate. In both situations, the threat of a popular revolt is crucial to incentivize the selectorate to behave as an effective watchman but, in equilibrium, we will never observe popular revolutions: the selectorate will remove the leader after a non-congruent policy, because its members are strategically motivated by the possibility of a citizens' revolution. The selectorate coup threat is credible and works effectively, even if his power is small, because otherwise the citizens will actually revolt: after a non-congruent policy, the selectorate's discipline is the only way of avoiding a revolt which would destroy both the selectorate and the leader. This is a very important qualification for the results of the selectorate theory of De Mesquita et al. 2003 and of Besley and Kudamatsu 2008, where the stress was on the power of the selectorate only: the introduction of a further principal, the citizens, induces an incentivizing role of the selectorate even when he is powerless. The effects of the different parameters on the probability of these two outcomes (Roving Bandit or Efficient) are reported in table 3:

<Table 3 here>

These comparative statics results have a number of implications that can be used to empirically check our theory. In particular, they suggest a sort of modernization theory:[31] an increment in the country resources X and in the amount of public benefit Δ generated by congruent policies increase the likelihood of an efficient political regime; hence, these results suggest the possibility of virtuous (vicious) circles of good (bad) policies. It is also interesting to stress that an increase in π, the ex ante probability of facing a congruent leader, has no direct

[30] See, for example, the Failed States Index of The Fund for Peace 2012 and the Index of State Weakness of Brookings Institutions, 2008.

[31] Lipset 1959.

effect on the likelihood of getting an efficient equilibrium. This implication is consistent with the emphasis in the political and economics literature on the negligible importance of the leader's quality in well institutionalized autocracies.[32]

Finally, when the cost of revolution is extremely high, we actually have the reciprocal accountability model between the selectorate and the autocrat analyzed in Gilli and Li 2013. In this situation, there are two possible economic regimes in equilibrium: either a Kleptocratic Equilibrium when the selectorate is powerless or an equilibrium with two possible outcomes, the Efficient Equilibrium outcome and the Roving Bandit Equilibrium outcome, when the selectorate is powerful enough. In this case, the crucial incentivizing role is indeed played by the selectorate and the political regime fully maximizes the leader's incentives to behave congruently when the threat of removal by the selectorate is credible, i.e. when the power of the selectorate is sufficiently large. In this situation, after a non-congruent policy, the selectorate's discipline is the only way of avoiding kleptocratic policies. Many autocracies can be characterized by these economic regimes, for example China after Mao's death before the Tiananmen protests, Singapore, and South Korea as examples of efficient outcomes, North Korea, Zaire and Haiti before 1990 as examples of kleptocracies.[33] An interesting example of a shift from a partially efficient equilibrium to a kleptocratic equilibrium is Uzbekistan before and after 1990. When Uzbekistan was part of the Soviet Union, the Uzbekistan ruler Karimov was restrained by the Soviet selectorate and the credible threat of being removed by the Central Committee of the Communist Party. Once Uzbekistan gained its independence, there was no more constraint and the country developed into a full kleptocracy. Note that in these two last cases, the effect of X on economic policies is ambiguous in the sense that it increases the probability of an efficient equilibrium outcome, however it also increases the threshold on the selectorate de facto power that avoid kleptocratic policies: this double role of the national wealth might explain the partially contradictory empirical results on the natural-resource curse.[34] Moreover, our results provide an indirect explanation of the survival of autocrats, since they imply that more institutionalized autocracies should survive longer than other dictatorial polities, as Gandhi and Przeworski 2007 and Wright 2008 evidence show.

5 Conclusion

What are dictatorships? We start from the assumption that they are political systems where the ruler is appointed to or removed by power, not by regular contested elections but by force, either by a coup of the political elite or by a popular revolt. Within this general framework, the way in which autocracies organize their institutions is reflected in the distribution of the de facto political

[32] See, for example, Acemoglu et al 2004 and Acemoglu et al. 2009.
[33] See Acemoglu et al. 2004.
[34] See, for example, Ross 2001, Smith 2004, Ulfelder 2007, and Van der Ploeg 2007.

power among political players and this, in turn, is mirrored in their economic performances. Understanding the subtle ways of incentivizing autocratic rulers to undertake congruent economic policies is central for explaining the existence of both economic prosperity and economic misery in autocratic systems. Actually, after being treated as a residual category for a long period of time, autocracies are increasingly recognized as encompassing different political institutions that have crucial consequences for economic policies, outcomes and, in the end, for the stability of authoritarianism itself, although there is no clear agreement on the dimensions along which dictatorships should be distinguished.[35] Here we have argued that the ways in which governments are removed from power drive not only the distinction between democracies and dictatorships, but also dictators' economic policies. Hence, this paper contributes to explain why, even if human history is a story of self-interested autocrats, under some dictators there has also been a surprising amount of economic progress.

As discussed in section 2, our approach is a generalization of Besley and Kudamatsu 2008 to a common agency setting, providing a further step towards a systematic explanation of the differences between successful and unsuccessful autocracies[36] in terms of the forces that shape accountability in the absence of regularized elections. On the other hand, our model abstracts from many important aspects of the question at hand. It is very simple and relies on many special assumptions. However, a successful model does not faithfully reproduce all details, but provides a useful and empirically grounded explanation of a specific phenomenon. Simplicity has the advantage of keeping the theoretical analyses manageable and transparent, allowing us to come up with clean insights. In this way, we have been able to focus on the primary objective of any dictator, survival, showing how the selectorate and the citizens de facto power shape the ruler's behavior to contend with the two deposition risks, coups and revolts. Our results highlight that even in this context, efficiency considerations cannot be separated from the combination of players' de facto political power:[37] not only in democracies, but also in autocracies is the way the political power is institutionalized of importance for checking what policies are incentive-compatible and what threats are credible. In particular, the role of checks and balances in disciplining autocrats turns out to be subtle: congruent policies in autocracies require either an intermediate strength of the state, so that the revolution threat by the citizens is credible only when there are poor outcomes, or a sufficiently strong political elite, so that a coup threat is credible. Otherwise, we will have inefficient failed or kleptocratic states. We also stress that the crucial incentivizing role is played by the citizens while the selectorate plays the role of "watchman" who will remove the leader after a non-congruent policy, because its members are strategically motivated by the possibility of a citizens' revolution, providing an interesting qualification for the classic results of the selectorate theory.

[35] Cheibub et al. 2010.

[36] In particular, we complement the results of Bueno De Mesquita et al. 2003 and Besley and Kudamatsu 2008.

[37] This point is beautifully and elegantly established in Acemoglu 2003.

The model presented in this paper is preliminary in many important respects; in the future, it is important to generalize our model and test the robustness of our findings. The model is an aggregate and reduced-form frame of the interaction between economic and political forces. To reach a deeper understanding of this interaction, a disaggregation is necessary, so that political reform may be an equilibrium outcome. This leads us to consider a further important generalization for future works, the endogeneization of our two key parameters ϕ and μ. For example, a problem that is overlooked in this model and that should be the object of further research is the regime's reaction to the risk of a popular revolution: the ruler may react increasing repression or allowing partial political rights, thus making the costs of revolution endogenous. In this different frame, the way of modelling the effects of a popular revolution should be changed focusing on the different economic policies following a successful or a failed revolt.

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Table 1: Definition of Symbols

SYMBOL	DEFINITIONS
	PLAYERS
L	incumbent leader
S	selectorate
Z	citizens
$T \in \{C, N\}$	type of incumbent leader with $\Pr\{T = C\} = \pi$
	EXOGENOUS VARIABLES
$\theta \in \{0, 1\}$	state of nature
$\delta \in \{0, \Delta\}$	payoff from the general interest policy
$r \sim G(r)$	private random rent the leader can extract with cdf $G(r)$
β	discount factor
X	exogenous revenue of the country
μ	cost of revolution
$\phi/1 - \phi \in [0, 1]$	effective size of the selectorate/citizens
	ENDOGENOUS VARIABLES
$\lambda^T(r)$	probability that the type T leader implements a congruent policy
$\rho(\delta)$	probability that the selectorate retains the leader after observing δ
$\alpha(\delta, \rho)$	probability that the citizens revolt after observing δ, ρ
	PAYOFFS
$U^{N/Z/S}(\lambda, \alpha, \rho)$	first-period utility of the noncongruent leader/selectorate/citizens
$V^{N/Z/S}$	expected continuation payoff of the noncongruent leader/selectorate/citizens

Table 2: The Possible Economic Regimes in Equilibrium

	$\phi \leq \frac{X}{X+\pi\Delta}$	$\phi \geq \frac{X}{X+\pi\Delta}$
$\mu \in [0, X-\Delta]$	**Failed State Outcome**	**Failed State Outcome**
$\mu \in [X-\Delta, X-\pi\Delta]$	**Partially Efficient Outcome** with probability $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)(1+\overline{\alpha})\right)$ **Roving Bandit Outcome** with probability $1-G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)(1+\overline{\alpha})\right)$	**Partially Efficient Outcome** with probability $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)(1+\overline{\alpha})\right)$ **Roving Bandit Outcome** with probability $1-G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)(1+\overline{\alpha})\right)$
$\mu \in [X-\pi\Delta, X]$	**Efficient Outcome** with probability $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$ **Roving Bandit Outcome** with probability $1-G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$	**Efficient Outcome** with probability $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$ **Roving Bandit Outcome** with probability $1-G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$
$\mu \in [X, +\infty)$	**Kleptocratic Outcome**	**Efficient Outcome** with probability $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$ **Roving Bandit Outcome** with probability $1-G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)$

Table 3: Comparative Statics For Intermediate Cost of Revolt

	Roving Bandit Equilibrium	**Efficient Equilibrium**
$\uparrow \phi$	$\uparrow$	$\downarrow$
$\uparrow X$	$\downarrow$	$\uparrow$
$\uparrow \Delta$	$\downarrow$	$\uparrow$
$\uparrow \beta$	$\downarrow$	$\uparrow$

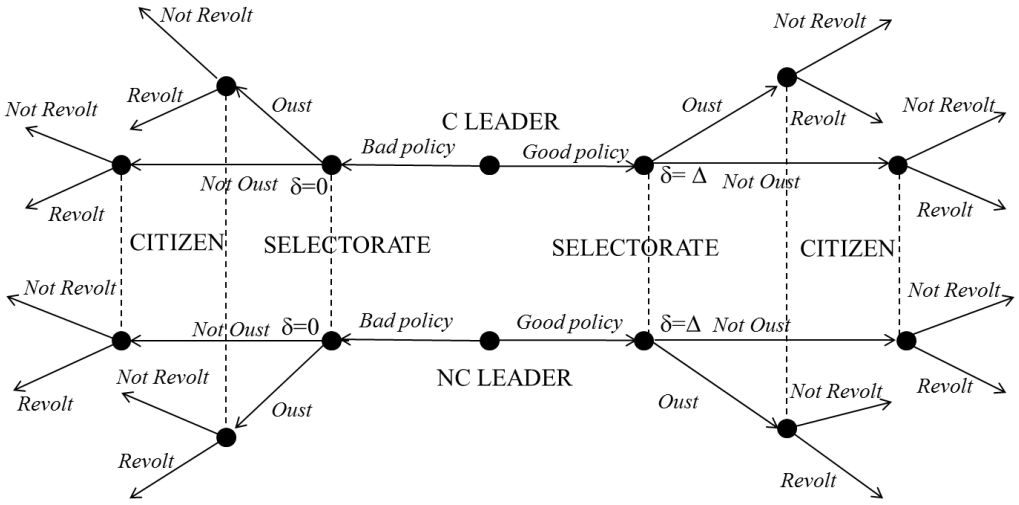

Figure 1: The first stage game

6 Appendix: the proof of Proposition 1

We use Sequential Equilibrium (SE) as the solution concept instead of the more commonly used notion of Perfect Bayesian Equilibrium, since we have to analyze a three-player game and Sequential Equilibria encompass the notion of consistency which implies that players' beliefs about the true type of leader agree out of the equilibrium path

As usual, we work backwards to calculate the set of Sequential Equilibria.

6.1 Players' Sequential Rational Choices

As explained in the main text, in these principal agents models, the second period choices are trivially given by their myopic best reply, exactly because it is the last period. Hence, we will analyze the players' behavior in the first-stage game, assuming that the players will play their best responses in the second final period.

6.1.1 Sequential Rationality of the Citizens

After knowing their first-period utility and the selectorate's choice at the end of the first period, the citizens choose between revolt ($\alpha = 1$) or not ($\alpha = 0$). This means that to derive the citizens' sequential rational behavior, we should consider four possible information sets: $(\delta = \Delta, \rho = 1)$, $(\delta = \Delta, \rho = 0)$, $(\delta = 0, \rho = 1)$, $(\delta = 0, \rho = 0)$, where in each information set, there are two decision nodes depending on the type of leader. Let $V^Z(\alpha|\delta, \rho)$ be the expected

continuation payoff for the citizens when they choose α if (δ, ρ) has been observed. The expected continuation utility that the citizens will get after they choose to initiate a revolution in (δ, ρ) is:

$$V^Z(\alpha = 1|\delta, \rho) = (1 - \phi) \times \frac{X - \mu}{1 - \phi} + \phi \times 0 = X - \mu. \tag{1}$$

Clearly, this payoff does not depend on their beliefs about the leader's type and thus on (δ, ρ). On the other hand, if the citizens decide to accommodate, the continuation payoff will depend on their beliefs about the type of leader which, in turn, will depend on their information at the time of deciding. Therefore, to find the citizens' rational behavior, we need to consider the four possible information sets:

1. $(\delta = \Delta, \widehat{\rho} = 1)$
2. $(\delta = \Delta, \widehat{\rho} = 0)$
3. $(\delta = 0, \widehat{\rho} = 1)$
4. $(\delta = 0, \widehat{\rho} = 0)$

and the citizens' beliefs in these information sets. Their posterior beliefs should be derived by Bayes' rule, thus in general

$$P^Z(C|\delta = \Delta, \rho) = \frac{\pi \times \overline{\lambda}^C \times \rho(\Delta)}{\pi \times \overline{\lambda}^C \times \rho(\Delta) + (1 - \pi) \times \overline{\lambda}^N \times \rho(\Delta)}. \tag{2}$$

$$P^Z(C|\delta = 0, \rho) = \frac{\pi \times \left(1 - \overline{\lambda}^C\right) \times \rho(0)}{\pi \times \left(1 - \overline{\lambda}^C\right) \times \rho(0) + (1 - \pi) \times \left(1 - \overline{\lambda}^N\right) \times \rho(0)}, \tag{3}$$

where

$$\overline{\lambda}^T = \int_{-\infty}^{\infty} \lambda^T(r_1) dG(r_1), \text{ with } T \in \{C, NC\}.$$

Note that, by consistency, $\rho(\delta) > 0$; hence, we can simplify the previous ratios getting

$$P^Z(C|\delta = \Delta, \rho) = \frac{\pi \times \overline{\lambda}^C}{\pi \times \overline{\lambda}^C + (1 - \pi) \times \overline{\lambda}^N} = P^S(C|\delta = \Delta) \tag{4}$$

$$P^Z(C|\delta = 0, \rho) = \frac{\pi \times \left(1 - \overline{\lambda}^C\right)}{\pi \times \left(1 - \overline{\lambda}^C\right) + (1 - \pi) \times \left(1 - \overline{\lambda}^N\right)} = P^S(C|\delta = 0), \tag{5}$$

while if $\rho(\delta) = 0$, there is a new appointed leader and thus, for any $\delta \in \{0, \Delta\}$

$$P^Z(C|\delta, 0) = \pi. \tag{6}$$

Finally, since by construction $\lambda^C(r_1) = 1$ for any r_1 and thus $\overline{\lambda}^C = 1$, then

$$P^S(C|\delta = \Delta) = P^Z(C|\delta = \Delta, \rho) =: \Pi(\overline{\lambda}^N) = \frac{\pi}{\left[\pi + (1-\pi) \times \overline{\lambda}^N\right]} \in [\pi, 1] \quad (7)$$

with

$$\frac{\partial \Pi}{\partial \overline{\lambda}^N} < 0, \ \Pi(0) = 1 \ \text{ and } \ \Pi(1) = \pi.$$

Moreover

$$P^Z(C|\delta = 0, \rho) = P^S(C|\delta = 0) = \frac{0}{(1-\pi) \times \left(1 - \overline{\lambda}^N\right)} \quad (8)$$

which implies

$$\forall \overline{\lambda}^N \in [0, 1) \qquad P^Z(C|\delta = 0, \rho) = P^S(C|\delta = 0) = 0. \quad (9)$$

Hence, the only problematic case is when $\overline{\lambda}^N = 1$, which would imply $P^Z(C|\delta = 0, \rho) = P^S(C|\delta = 0) \in [0, 1]$. However, in this case, we can use a standard forward induction argument[38] to assume that $P^Z(C|\delta = 0, \rho) = P^S(C|\delta = 0) = 0$ since the congruent type has no reason to deviate to a non-congruent policy. Hence, we might conclude that

$$\forall \overline{\lambda}^N \in [0, 1] \qquad P^Z(C|\delta = 0, \rho) = P^S(C|\delta = 0) = 0. \quad (10)$$

Now we can analyze the citizens' sequential rational behavior in each information set.

1. Information set $(\delta = \Delta, \widehat{\rho} = 1)$ The expected continuation payoff the citizens will get after they choose not to revolt is

$$V^Z(\alpha = 0|\delta = \Delta, \rho = 1) = P^Z(C|\delta = \Delta, \rho = 1) \times \Delta + \left(1 - P^Z(C|\delta = \Delta, \rho = 1)\right) \times 0 = \Pi(\overline{\lambda}^N)\Delta.$$

Sequential rationality implies that the citizens will choose to revolt in $(\delta = \Delta, \rho = 1)$ if and only if

$$V^Z(\alpha = 1|\delta = \Delta, \rho = 1) \geq V^Z(\alpha = 0|\delta = \Delta, \rho = 1) \quad (11)$$

i.e.

$$\alpha\left(\delta = \Delta, \rho = 1\right) = 1 \Longleftrightarrow X - \mu \geq \Pi(\overline{\lambda}^N)\Delta \Longleftrightarrow \mu \leq X - \Pi(\overline{\lambda}^N)\Delta \Longleftrightarrow \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right). \quad (12)$$

[38] For example, we can apply the intuitive criterion of Cho and Kreps 1987.

2. Information set $(\delta = \Delta, \widehat{\rho} = 0)$ In this information set, the incumbent leader is removed from office by the selectorate; therefore, there is a new leader and thus the expected utility the citizens will get after they choose not to revolt does not depend on the previous observation on δ. Then, the expected utility the citizens will get after they choose not to revolt is:

$$V^Z(\alpha = 0|\delta = \Delta, \widehat{\rho} = 0) = \pi\Delta + (1 - \pi)0 = \pi\Delta. \tag{13}$$

Sequential rationality implies that the citizens will choose to revolt in $(\delta = \Delta, \widehat{\rho} = 0)$ if and only if

$$V^Z(\alpha = 1|\delta = \Delta, \widehat{\rho} = 0) \geq V^Z(\alpha = 0|\delta = \Delta, \widehat{\rho} = 0) \tag{14}$$

i.e.

$$\alpha\left(\delta = \Delta, \widehat{\rho} = 0\right) = 1 \Longleftrightarrow X - \mu \geq \pi\Delta \Longleftrightarrow \mu \leq X - \pi\Delta. \tag{15}$$

3. Information set $(\delta = 0, \widehat{\rho} = 1)$ The expected continuation payoff the citizens will get after they choose not to revolt is:

$$V^Z(\alpha = 0|\delta = 0, \widehat{\rho} = 1) = P(C|\delta = 0, \widehat{\rho} = 1)\Delta + \left(1 - P(C|\delta = 0, \widehat{\rho} = 1)\right)0 = 0.$$

Sequential rationality implies that the citizens will choose to revolt in $(\delta = 0, \widehat{\rho} = 1)$ if and only if

$$V^Z(\alpha = 1|\delta = 0, \widehat{\rho} = 1) \geq V^Z(\alpha = 0|\delta = 0, \widehat{\rho} = 1) \tag{16}$$

i.e. if and only if

$$\alpha\left(\delta = 0, \widehat{\rho} = 1\right) = 1 \Longleftrightarrow X - \mu \geq 0 \times \Delta \Longleftrightarrow \mu \leq X. \tag{17}$$

4. Information set $(\delta = 0, \widehat{\rho} = 0)$ In this information set, the incumbent leader is removed from office by the selectorate; therefore, there is a new leader and thus the expected utility the citizens will get after they choose not to revolt does not depend on the previous observation on δ. Because of our previous assumptions, the expected utility the citizens will get after they choose not to revolt is:

$$V^Z(\alpha = 0|\delta = 0, \widehat{\rho} = 0) = \pi\Delta + (1 - \pi) \times 0 = \pi\Delta. \tag{18}$$

Sequential rationality implies that the citizens will choose to revolt in $(\delta = 0, \widehat{\rho} = 0)$ if and only if

$$V^Z(\alpha = 1|\delta = 0, \widehat{\rho} = 0) \geq V^Z(\alpha = 0|\delta = 0, \widehat{\rho} = 0) \tag{19}$$

i.e.

$$\alpha\left(\delta = 0, \widehat{\rho} = 0\right) = 1 \Longleftrightarrow X - \mu \geq \pi\Delta \Longleftrightarrow \mu \leq X - \pi\Delta. \tag{20}$$

Thus, this analysis allows us to derive the following best reply correspondences for each citizens' information set:

$$\alpha\left(P^Z(C|\delta, \rho)|\delta = \Delta, \widehat{\rho} = 1\right)^{BR} = \begin{cases} 1 & \mu \leq X - \Pi(\overline{\lambda}^N)\Delta \\ 0 & \mu \geq X - \Pi(\overline{\lambda}^N)\Delta \end{cases} = \begin{cases} 1 & \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \\ 0 & \overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \end{cases}$$

$$\alpha\left(P^Z(C|\delta,\rho)|\delta=0,\widehat{\rho}=1\right)^{BR}=\left\{\begin{array}{ll}1 & \mu\leq X\\ 0 & \mu\geq X\end{array}\right.$$

$$\alpha\left(P^Z(C|\delta,\rho)|\delta=\Delta,\widehat{\rho}=0\right)^{BR}=\left\{\begin{array}{ll}1 & \mu\leq X-\pi\Delta\\ 0 & \mu\geq X-\pi\Delta\end{array}\right.$$

$$\alpha\left(P^Z(C|\delta,\rho)|\delta=0,\widehat{\rho}=0\right)^{BR}=\left\{\begin{array}{ll}1 & \mu\leq X-\pi\Delta\\ 0 & \mu\geq X-\pi\Delta\end{array}\right.$$

6.1.2 Sequential Rationality of the Selectorate

Let $V^S(\rho=0,\alpha^{BR}|\delta)$ be the expected continuation payoff for the selectorate in δ if he subverts the incumbent leader and the citizens will subsequently choose according to α^{BR}. Note that in this case, the payoff does not depend on δ being either 0 or Δ, since the leader has been changed. Therefore, for any $\delta\in\{0,\Delta\}$

$$V^S(\rho=0,\alpha^{BR}|\delta)=\left(1-\alpha^{BR}\right)\left[\pi\times\Delta+(1-\pi)\times 0+\phi\times\frac{X}{\phi}+(1-\phi)\times 0\right]+\alpha^{BR}\times 0=$$

$$=\left(1-\alpha^{BR}\right)(\pi\Delta+X):$$

as the type of the newly picked up leader is unknown, she will produce Δ with probability π and 0 otherwise. Moreover, both types of leader will distribute the entire social revenue to the selectorate, but the members of the selectorate who ousted the leader, with probability ϕ, will be included in the successor's selectorate getting the patronage $\frac{X}{\phi}$ in the second period. Given $\alpha(\delta,\rho)^{BR}$, we get

$$V^S(\rho=0,\alpha^{BR}|\delta)=\left\{\begin{array}{ll}0 & \mu\leq X-\pi\Delta\\ \pi\Delta+X & \mu\geq X-\pi\Delta.\end{array}\right.$$

Note that $V^S(\rho=0,\alpha^{BR}|\delta)$ does not depend on δ, since the leader has been removed by the selectorate and thus, the continuation payoff cannot depend on the previous leader's choice.

Let $V^S(\rho=1,\alpha^{BR}|\delta)$ be the expected continuation payoff for the selectorate in δ if he supports the incumbent leader and the citizens will choose according to $\alpha(\delta,\rho)^{BR}$. Clearly, in this case, the payoff does depend on δ, since the leader has not been changed and δ might convey some information on her type. Therefore, for any $\delta\in\{0,\Delta\}$

$$V^S(\rho=1,\alpha^{BR}|\delta)=\left(1-\alpha^{BR}\right)\left[P^S(C|\delta)(\Delta+\frac{X}{\phi})+(1-P^S(C|\delta))\frac{X}{\phi}\right]+\alpha^{BR}\times 0=$$

$$=\left(1-\alpha^{BR}\right)\left(P^S(C|\delta)\Delta+\frac{X}{\phi}\right).$$

Given $\alpha(\delta,\rho)^{BR}$, we get

$$V^S(\rho=1,\alpha^{BR}|\delta=\Delta)=\left\{\begin{array}{ll}0 & \mu\leq X-\Pi(\overline{\lambda}^N)\Delta\\ \Pi(\overline{\lambda}^N)\Delta+\frac{X}{\phi} & \mu\geq X-\Pi(\overline{\lambda}^N)\Delta\end{array}\right.=\left\{\begin{array}{ll}0 & \overline{\lambda}^N\geq\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)\\ \Pi(\overline{\lambda}^N)\Delta+\frac{X}{\phi} & \overline{\lambda}^N\leq\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)\end{array}\right.$$

and

$$V^S(\rho=1,\alpha^{BR}|\delta=0)=\begin{cases}0 & \mu\leq X\\ \frac{X}{\phi} & \mu\geq X.\end{cases}$$

Sequential rationality implies that for any $\delta\in\{0,\Delta\}$, the selectorate will retain the incumbent leader if and only if:

$$V^S(\rho=1,\alpha^{Br}|\delta)\geq V^S(\rho=0,\alpha^{BR}|\delta) \tag{21}$$

which in $\delta=0$ implies

$$\rho\left(\alpha^{BR}|\delta=0\right)=1\Longleftrightarrow\begin{cases}0 & \mu\leq X\\ \frac{X}{\phi} & \mu\geq X\end{cases}\geq\begin{cases}0 & \mu\leq X-\pi\Delta\\ X+\pi\Delta & \mu\geq X-\pi\Delta\end{cases} \tag{22}$$

which, in turn, implies the following sequential best reply correspondence when $\delta=0$

$$\rho\left(\delta=0|\alpha^{BR}\right)^{BR}=\begin{cases}[0,1] & \mu\leq X-\pi\Delta\\ 0 & \mu\in[X-\pi\Delta,X]\\ 0 & \mu\geq X\ \&\ \phi\geq\frac{X}{X+\pi\Delta}\\ 1 & \mu\geq X\ \&\ \phi\leq\frac{X}{X+\pi\Delta}.\end{cases} \tag{23}$$

Similarly in $\delta=\Delta$ we get

$$\rho\left(\alpha^{BR}|\delta=\Delta\right)=1\Longleftrightarrow\begin{cases}0 & \mu\leq X-\Pi(\overline{\lambda}^N)\Delta\\ \Pi(\overline{\lambda}^N)\Delta+\frac{X}{\phi} & \mu\geq X-\Pi(\overline{\lambda}^N)\Delta\end{cases}\geq\begin{cases}0 & \mu\leq X-\pi\Delta\\ X+\pi\Delta & \mu\geq X-\pi\Delta\end{cases} \tag{24}$$

which, in turn, implies the following sequential best reply correspondence when $\delta=\Delta$

$$\rho\left(\delta=\Delta|\alpha^{BR}\right)^{BR}=\begin{cases}[0,1] & \mu\leq X-\Pi(\overline{\lambda}^N)\Delta\\ 1 & \mu\geq X-\Pi(\overline{\lambda}^N)\Delta.\end{cases}=\begin{cases}\in[0,1] & \overline{\lambda}^N\geq\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)\\ 1 & \overline{\lambda}^N\leq\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)\end{cases} \tag{25}$$

Hence, we can conclude that both the selectorate's and the citizens' sequential rational behavior depend on the costs of revolting and on their beliefs which, in turn, depend on the leader's behavior.

6.1.3 Sequential Rationality of the Leader and the Consequent Players' Beliefs

Suppose that $\mu\in[0,X-\Pi(\overline{\lambda}^N)\Delta]$. In this situation, the citizens will revolt in any information set (δ,ρ), i.e. $\alpha\left(\delta,\rho\right)^{BR}=1\ \ \forall\left(\delta,\rho\right)\in\{0,\Delta\}\times\{0,1\}$. Moreover, for any $\delta\in\{0,\Delta\}$, the selectorate's best reply is $\rho(\delta)^{BR}\in[0,1]$. Now consider the non-congruent leader. She anticipates that the citizens will revolt anyway, so she would always choose to get the private rent, i.e. $\lambda^N(r_1)=0$ $\forall r_1$, since the other players' choice will not depend on her behavior. Therefore, we get the following beliefs

$$P(C|\delta=\Delta)=:\Pi\left(\overline{\lambda}^N\right)=\frac{\pi\times1}{\pi\times1+(1-\pi)\times0}=1 \tag{26}$$

as $\overline{\lambda}^N = \int_{-\infty}^{\infty} \lambda^N(r_1) dG(r_1) = \int_{-\infty}^{\infty} 0 \times dG(r_1) = 0$. Finally, remember that we start assuming $\mu \leq X - \Pi(\overline{\lambda}^N)\Delta$ which is equivalent to $\overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right)$. Therefore

$$\overline{\lambda}^N = 0 \Longleftrightarrow \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \leq 0 \Longleftrightarrow \mu \leq X - \Delta.$$

Hence, when $\mu \leq X - \Delta$ we have a Sequential equilibrium with $\lambda^C(r_1) = 1$ $\forall r_1$, $\lambda^N(r_1) = 0 \ \ \forall r_1, \ \rho(\delta) \in [0,1] \ \ \forall \delta$ and $\alpha(\delta, \rho) = 1 \ \ \forall(\delta, \rho)$.

Suppose that $\mu \in [X - \Delta, X - \pi\Delta]$. The citizens will revolt in any information set (δ, ρ) apart from the case $(\delta = \Delta, \rho = 1)$, where the citizens' behavior will depend on the value $\Pi(\overline{\lambda}^N)$ which is endogenous. Consider $\delta = 0$, the selectorate's sequential best reply is then $\rho(0)^{BR} \in [0,1]$. Suppose instead that $\delta = \Delta$, then the selectorate's sequential best response $\rho(\Delta)^{BR}$ depends on $\Pi(\overline{\lambda}^N)$ which is endogenous, as previously stated. Remember that the condition $\mu \leq X - \Pi(\overline{\lambda}^N)\Delta$ can be rewritten as $\overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right)$; hence, the citizens' and the selectorate's sequential best reply correspondences when $\delta = \Delta$ can be rewritten as

$$\alpha\left(\overline{\lambda}^N | \delta = \Delta, \rho = 1\right)^{BR} = \begin{cases} 1 & \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \\ 0 & \overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \end{cases}$$

$$\rho\left(\overline{\lambda}^N | \delta = \Delta, \alpha^{BR}\right)^{BR} = \begin{cases} [0,1] & \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right) \\ 1 & \overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right). \end{cases} \tag{27}$$

Now, consider the non-congruent leader's expected payoff following the simple strategy $\lambda^N(r_1) = 1$, given the subsequent sequentially rational choices of the other players: she would get $EU^N(\lambda^N(r_1) = 1) = \Delta + \frac{X}{\phi}$ while a deviation to $\lambda^N(r_1) = 1$ would generate the payoff $EU^N(\lambda^N(r_1) = 0) = r_1 + \frac{X}{\phi}$, which is greater. Hence, $\lambda^N(r_1) = 1$ is not part of an equilibrium. On the other hand, consider the simple strategy $\lambda^N(r_1) = 0$ given the the subsequent sequentially rational choices of the other players: she would $EU^N(\lambda^N(r_1) = 0) = r_1 + \frac{X}{\phi}$ while a deviation to $\lambda^N(r_1) = 1$ would generate the payoff $EU^N(\lambda^N(r_1) = 1) = \Delta + \frac{X}{\phi} + \beta\left(\overline{r} + \frac{X}{\phi}\right)$, which is smaller if $r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right)$ Hence, if $r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right)$, we have a pure sequential equilibrium outcome. However, when $r_1 \leq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right)$, we need to look for mixed strategy behavior since $\lambda^N(r_1) = 1$ would imply $\alpha(\Delta, 1) = 1$ which, in turn, would imply $\lambda^N(r_1) = 0$, inducing however $\alpha(\Delta, 1) = 0$ as a best reply, which implies $\lambda^N(r_1) = 1$ so that we have returned to the starting point without any fixed point. Note that the restriction $\mu \in [X - \Delta, X - \pi\Delta]$ implies that $\alpha(0, \rho) = \alpha(\Delta, 0) = 1$ are strictly

dominant actions for the citizens so that they only mix in $\delta = \Delta, \rho = 1$. Hence, a mixed behavioral strategy for the citizens is just $\alpha(\Delta, 1) \equiv \overline{\alpha} \in [0, 1]$. As previously seen, the citizens best reply correspondence in $\delta = \Delta, \rho = 1$ is

$$\alpha(\Delta,1)^{BR} = \begin{cases} 0 & \text{if } \overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right) \\ [0,1] & \text{if } \overline{\lambda}^N = \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right) \\ 1 & \text{if } \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right) \end{cases}.$$

Now, consider the non-congruent leader expected payoff from playing a mixed strategy $\lambda^N(r_1)$ when $\alpha(\Delta, 1) \in [0, 1]$, otherwise $\alpha(\delta, \rho) = 1$:

$$EU^N(\lambda(r_1), \alpha | r_1) = \left[1 - \lambda^N(r_1)\right]\left(r_1 + \frac{X}{\phi}\right) + \lambda^N(r_1)\left[\Delta + \frac{X}{\phi} + \beta\left(1 - \alpha(\Delta,1)\right)\left(\overline{r} + \frac{X}{\phi}\right)\right] \quad (28)$$

$$= -\lambda^N(r_1)\left[r_1 - \Delta - \beta\left(\overline{r} + \frac{X}{\phi}\right) + \alpha(\Delta,1)\beta\left(\overline{r} + \frac{X}{\phi}\right)\right] + r_1 + \frac{X}{\phi}. \quad (29)$$

Working backward, we substitute $\alpha(\Delta, 1)^{BR}$ in $EU^N(\lambda(r_1), \alpha | r_1)$, getting

$$EU^N(\lambda(r_1), \alpha(\Delta,1)^{BR} | r_1,) =$$

$$= \begin{cases} -\lambda^N(r_1)\left[r_1 - \Delta - \beta\left(\overline{r} + \frac{X}{\phi}\right)\right] + r_1 + \frac{X}{\phi} & \text{if } \overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right) \\ -\lambda^N(r_1)\left[r_1 - \Delta - \beta\left(\overline{r} + \frac{X}{\phi}\right) + \overline{\alpha}\beta\left(\overline{r} + \frac{X}{\phi}\right)\right] + r_1 + \frac{X}{\phi} & \text{if } \overline{\lambda}^N = \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right), \overline{\alpha} \in [0,1] \\ -\lambda^N(r_1)\left[r_1 - \Delta\right] + r_1 + \frac{X}{\phi}. & \text{if } \overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right) \end{cases}$$

Consider the three possible situations one by one:

1. If $\overline{\lambda}^N \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$, then the non-congruent leader's best reply is $\lambda^N(r_1)^{BR} = 0$ which is not consistent with the condition $\overline{\lambda}^N = \int_\Delta^{+\infty} \lambda^N(r_1) dG(r_1) \geq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$.

2. If $\overline{\lambda}^N \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$, then the non-congruent leader's best reply is $\lambda^N(r_1)^{BR} = \begin{cases} 0 & r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \\ 1 & r_1 \leq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \end{cases}$ which might be consistent with the condition $\overline{\lambda}^N = \int_\Delta^{+\infty} \lambda^N(r_1) dG(r_1) = G\left(\Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right)\right) \leq \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$, depending on the characteristic of the cdf G and of the structural parameters.

3. Finally, if $\overline{\lambda}^N = \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$, then the non-congruent leader's best reply is $\lambda^N(r_1)^{BR} = \begin{cases} 0 & r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) + \overline{\alpha}\beta\left(\overline{r} + \frac{X}{\phi}\right) \\ 1 & r_1 \leq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) + \overline{\alpha}\beta\left(\overline{r} + \frac{X}{\phi}\right) \end{cases}$ which is

consistent with the condition $\overline{\lambda}^N = \int_{\Delta}^{+\infty} \lambda^N(r_1) dG(r_1) = G\left(\Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) + \overline{\alpha}\beta\left(\overline{r} + \frac{X}{\phi}\right)\right) = \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right)$ for an opportune value of $\overline{\alpha} \in [0,1]$ that depends on the characteristic of the cdf G and the structural parameters. In other words, the equation

$$G\left(\Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) + \overline{\alpha}\beta\left(\overline{r} + \frac{X}{\phi}\right)\right) = \frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu} - 1\right)$$

implicitly defines the equilibrium mixed behavioral strategy $\alpha(\Delta, 1) = \overline{\alpha} \in [0,1]$.

Suppose that $\mu \in [X - \pi\Delta, X]$ The citizens will revolt in the information set $(\delta = 0, \rho = 1)$ only; otherwise they will accommodate, while the selectorate will choose $\rho(0) = 0$ and $\rho(\Delta) = 1$. Now consider the non-congruent leader playing $\lambda^N(r_1) = 1$, she gets

$$EU^N(\lambda(r_1) = 1) = \Delta + \frac{X}{\phi} + \beta\left(\overline{r} + \frac{X}{\phi}\right); \tag{30}$$

while when $\lambda^N(r_1) = 0$ she gets

$$EU^N(\lambda(r_1) = 0) = r_1 + \frac{X}{\phi}. \tag{31}$$

Hence, the non-congruent leader will choose $\lambda^N(r_1) = 0$, if and only if:

$$EU^N(\lambda(r_1) = 1) \leq EU^N(\lambda(r_1) = 0) \tag{32}$$

that is,

$$r_1 + \frac{X}{\phi} \geq \Delta + \frac{X}{\phi} + \beta\left(\overline{r} + \frac{X}{\phi}\right) \Longleftrightarrow r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right). \tag{33}$$

Therefore, the non-congruent leader's sequentially rational action is

$$\lambda^N(r_1) = \begin{cases} 1 & r_1 \leq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \\ 0 & r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \end{cases}.$$

This means that $\overline{\lambda}^N = G\left(\Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right)\right)$: when the first period rent has a significant high realization, the non-congruent leader will pursue her own interest; however, for this reason, she will be removed by the selectorate; otherwise, the selectorate will accommodate and the citizens will accommodate too. Note that the selectorate's size does not play any role in this result, it is the fear of revolution that induces the selectorate to remove the leader, since he perfectly

anticipates that the citizens will revolt after a non-congruent policy. Moreover, in this case, the players' beliefs are

$$P(C|\delta=\Delta)=\frac{\pi\times 1}{\pi\times 1+(1-\pi)\times G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)}=:\Pi\left(\overline{\lambda}^{N}\right)>\pi. \quad (34)$$

Hence when $\mu\in[X-\pi\Delta,X]$ we have a Sequential equilibrium with $\lambda^{C}(r_1)=1$ $\forall r_1,\ \lambda^{N}(r_1)=\begin{cases}1 & r_1\leq\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\\ 0 & r_1\geq\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\end{cases},\ \rho(0)=0,\ \rho(\Delta)=1,\ \ \alpha(0,1)=1$ and $\alpha(\Delta,1)=\alpha(\Delta,0)=\alpha(0,0)=0$.

Suppose that $\mu\in[X,+\infty)$ In this setting, the citizens are passive players that will always accommodate, hence we have returned to the reciprocal accountability model analyzed in Gilli-Li 2013 and we can refer to that result without any further calculations.

Now we can sum up these calculations in the following general proposition, which is the formal counterpart of proposition 1.

Proposition 2 *The first-stage game has the following Sequential Equilibria:*

1. *when* $\mu\in[0,X-\Delta]$, *there exists a continuum of Sequential Equilibria with a unique outcome, where*

$$\lambda^{C}(r_1)=1,\lambda^{N}(r_1)=0,$$

$$\rho(0)\in[0,1],\rho(\Delta)\in[0,1],\alpha(\Delta,1)=\alpha(\Delta,0)=\alpha(0,0)=\alpha(0,1)=1;$$

2. *when* $\mu\in[X-\Delta,X-\pi\Delta]$, *there exists a continuum of Sequential Equilibria with a unique outcome where:*

$$\lambda^{C}(r_1)=1,\lambda^{N}(r_1)=G\left(H\left(\Delta,\beta,\overline{r},X,\phi\right)\right)$$

$$\rho(0)\in[0,1],\rho(\Delta)=1,\alpha(\Delta,1)=\overline{\alpha},\alpha(\Delta,0)=1,\alpha(0,0)=1,\alpha(0,1)=1;$$

$\overline{\alpha}$ *and* $H\left(\Delta,\beta,\overline{r},X,\phi\right)$ *are defined by the equations* $G\left(\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)+\overline{\alpha}\beta\left(\overline{r}+\frac{X}{\phi}\right)\right)=\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$ *and* $\int_{\Delta}^{H(\Delta,\beta,\overline{r},X,\phi)}\lambda^{N}(\theta_1,r_1)dG(r_1)=\frac{\pi}{1-\pi}\left(\frac{\Delta}{X-\mu}-1\right)$.

3. *when* $\mu\in[X-\pi\Delta;X]$, *there exists a unique Sequential Equilibrium, where*

$$\lambda^{C}(r_1)=1,\lambda^{N}(r_1)=\begin{cases}1 & r_1\leq\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\\ 0 & r_1\geq\Delta+\beta\left(\overline{r}+\frac{X}{\phi}\right)\end{cases},$$

$$\rho(0)=0,\rho(\Delta)=1,\alpha(\Delta,1)=0,\alpha(\Delta,0)=0,\alpha(0,0)=0,\alpha(0,1)=1;$$

4. *when* $\mu \in [X, +\infty)$ *and* $\phi \leq \frac{X}{X+\pi\Delta}$, *there exists a unique Sequential Equilibrium, where*

$$\lambda^C(r_1) = 1, \lambda^N(r_1) = 0,$$

$$\rho(0) = 1, \rho(\Delta) = 1, \alpha(\Delta, 1) = 0, \alpha(\Delta, 0) = 0, \alpha(0, 0) = 0, \alpha(0, 1) = 0;$$

5. *when* $\mu \in [X, +\infty)$ *and* $\phi \geq \frac{X}{X+\pi\Delta}$, *there exists a unique Sequential Equilibrium, where*

$$\lambda^C(r_1) = 1, \lambda^N(r_1) = \begin{cases} 1 & r_1 \leq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \\ 0 & r_1 \geq \Delta + \beta\left(\overline{r} + \frac{X}{\phi}\right) \end{cases},$$

$$\rho(0) = 0, \rho(\Delta) = 1, \alpha(\Delta, 1) = 0, \alpha(\Delta, 0) = 0, \alpha(0, 0) = 0, \alpha(0, 1) = 0.$$