Accountability in One-party Government: Rethinking the Success of Chinese Economic Reform[1]

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ABSTRACT

How does the internal institutional structure affect government performances in autocracies? In this paper, we focus on modern China, trying to explain what the mechanisms are that might induce an autocratic government to adopt congruent policies. Although there is no party or electoral competition, the leader worries deposition by *coup d'état* by the selectorate and revolutionary threats from the citizens. We build a three players political-agency model, with the leader being the agency, the selectorate and the citizens being the principles. The effectiveness of the selectorate and the existence of revolutionary threats are two factors determine the outcomes. As the size of the selectorate and the willingness to revolt vary dramatically across countries, different types of autocracies arise, with some being kleptocraitc and some being accountable.

Key Words: Institutions, Accountability, Principle-agent, Chinese Economic Reform.

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1. INTRODUCTION

A fundamental question in political economics is how political institutions shape economic outcomes. Different political regimes show extremely heterogeneous economic outcomes, with democracies and autocracies both obtaining significant economic success in some countries and periods while in other situations both regimes have poor economic outcomes. A careful econometric analysis of the empirical evidence on growth and democracy again is not-clear cut, especially in the postwar era. Baum and Lake (2003) show that democracy has no statistically significant direct effect on growth, but has important indirect effects through public policies that increase the level of human capital. In contrast to this point of view, Barro (1996) suggests that democracy depress growth when a moderate level of freedom has already been attained, and after controlling for favorable effects on growth, shows that the overall effect of democracy on growth is weakly negative. Acemoglu et al. (2005) also find that once fixed effects are introduced, the positive relationship between income per capita and various measures of democracy disappears. On the other hand, human history has been mostly dominated by non democratic regimes and even today, despite the advances in democracy in recent decades, more than one third of the countries are still ruled by autocratic governments[4]. This notwithstanding, the research on non-democratic institutions has been stagnant for a long time, possibly because most rich countries are democratic, while most poor countries are not and thus it might be expected that autocracies have significantly worse economic performances than democracies. Nevertheless, among autocracies there is significant heterogeneity and some countries as Singapore under Lee Kwan Yew, South Korea under General Park and China since the economic reform have high growth speed (Acemoglu 2009, ch.23). In particular China's reform since 1978 has been widely regarded as a success. The country has maintained an average growth rate of 9.7 percent, the per capita GDP has increased from 250 USD at the end of 1970s to 3,330 USD (current prices) in 2008 and the number of people in absolute poverty has decreased from early 1980s figure of 300 million to 80 million today[5]. This mixed evidence clearly calls for an explanation that should focus on similarities and differences between these two

[4] The Economist Intelligence Unit's Index of Democracy 2008.

[5] NBS 2009.

ideal types of political institutions. The first motivating question of this research is then the search for an explanation of why some autocratic governments adopt growth-enhancing policies and others don't. More precisely, what are the mechanisms, if any, that in some autocracies might avoid opportunistic policy behavior and in other situations induce kleptocratic policies?

As empirical reference point, our analysis will consider the work of Chinese regime. There have been a large number of excellent researches explaining the recent outstanding economic growth in China and on the policies that might have promoted it. Many researches attribute China's remarkable economic growth to the country's fiscal and political decentralization. Fiscal decentralization is said to have generated "fiscal incentives" for the local governments to promote economic growth, which results in high investment and hard budget constraint (Oi 1992; Montinola et al. 1995; Qian and Weingast 1997; Qian and Roland 1998). Political decentralization is thought to have stimulated local policy experiments and restrained predatory central interventions (Xu and Zhuang 1998; Qian and Weingast 1996). We, too, believe that these aspects are important, however, they were not adequate to account for the entire success of the reform. They ignore the role played by the central government and other institutional changes in the Chinese political systems that were crucial for growth. Of course, local actors were important in the history of Chinese reforms, but they were important as actors in a game directed from Beijing (Cai and Treisman 2006). Even if the huge amount of direct investment made by the central government were ignored, it is anyway the central government who took the decisive initiatives to "reform and open up" (gaige kaifang). But then, the most important point is why did the Chinese central government show a striking degree of accountability in promoting economic growth compared to other autocratic polities and to itself under Mao Zedong's regime? Therefore, the second more specific question we tackle in this paper then is: what kind of the institutional arrangements made China a successful autocracy in developing its economy in the reform era? Under what circumstances can a one-party government be accountable to promote economic growth instead of indulging in kleptocratic policies? Through answering this more specific question concerning China, it will shed light on the first motivating question of this research we asked before.

One of the focal points of the political economy literature on democratic institution is accountability through electoral competition, which is seen as is the main mechanism to restrain opportunistic behavior by politicians. In this paper we are not interested in party and electoral competition, in separation of powers, in the independence of media and in the rule of law, all crucial aspects characterizing a political regime. Instead, our main focus is the role of the elites and of the citizens as disciplining devices on the selected leaders, not through election but by cooptation and possible revolts. We build a three players political-agency model, with the leader being the agency, the selectorate and the citizens being the principles. We find that either through the selectorate accountability or through the citizenry accountability, the two informal channels of accountability in autocracies, it can restrain politicians from opportunistic behaviors. The size of the selectorate is the factor that determines the effectiveness of the selectorate accountability, which we have analyzed in details in our previous research (Gilli and Li 2011). The cost of revolution is the factor determines the effectiveness of the citizenry accountability which is focus of this paper. Our model generates obvious result that revolutionary threats from the citizens would further restrain the leader from adopting non-congruent policies. But it also generates counter-intuitive result that the threat of revolution may have some negative effects when associate to weak institutions. With the possibility of citizens' revolt, there are actually two possible regimes: either an instability situation where because of this instability the leader has an incentive to grab the money running away, or a more established setting where the threat of revolution ensures a congruent behavior of the leader even when the selectorate is captured. Since by definition, the citizens will always avoid to be captured, and this would eliminate the possibility of a Kleptocratic equilibrium. In reality, the size of the selectorate and the willingness of the citizens to revolt vary dramatically across countries, therefore different types of autocracies arise as a consequence, with some being kleptocraitc and some being accountable.

The remainder of the paper is organized as follows. Next section briefly reviews relative literature and the risk of potential social unrest in China. After that, in section three we present both the models with two players and three players. In section four and five we analyze two possible ways of modeling the dynamics of strategic interaction with the participation of the citizens. Section four analyzes

the model when citizens move before the selectorate, while section five analyzes the model when citizens move after the selectorate. Section six applies our model to explain the political logic of Chinese economic reform, and illustrates the institutional structure that can induce Chinese central government adopt growth-enhancing policies in the reform era. Finally, the last section concludes.

2. LITERATURE REVIEW

2.1. The Political Economy in Autocracies

The existing literature on political economy of autocracy suggests that accountability in non-democratic regimes comes from the "selectorate" that comprises insiders who have the ability to depose a leader. This expression is adopted from the British parliamentary politics to define the group within a political party that has the effective power to choose leaders[6]. The role of the selectorate and of the citizen as disciplining bodies is the center of our analysis. Bueno de Mesquita et al. (2003) were the first to model accountability under non-democratic framework concluding that the larger the selectorate, whose support is necessary for the incumbent politician to stay in power, the higher the level of public goods provided by the government. In democracy, since the selectorate contains all the citizens in the society, public goods provision is maximized. On the other hand, autocratic government works well when the power of the selectorate does not depend on the existing leader remaining in office (Besley and Kudamatsu 2007). An important aspect of Besley and Kudamatsu's model is the introduction of incomplete information into the game played between the autocrat and the selectorate. Moreover, by incorporating Padro-i-Miquel (2006)'s insight that if the leader steal resources from her supporter group, then she extracts even more from the opposition group, Besley and Kudamatsu show that citizens have specific gains associate with their group identity. Therefore in ethnically divided society, such as some Sub-Saharan African countries, the role of group specific gains is very important in explaining the strategic interactions between the selectorate and the leader.

We have analyzed the role of "reciprocal accountability" as suggested by Shirk

[6] Shirk 1993, p. 71.

(1993) between the leader and the elites as disciplining devices on the selected leaders in our previous work (Gilli and Li 2011). The leader ensures loyalty of the selectorate through unequal distribution of social wealth to the selectorate. The selectorate trades off the benefits between supporting the leader and defection of the leader. Supporting the leader, the selectorate will gain the patronage in the following period but may also get a bad general interest policy if the leader is non congruent; defecting the leader, the selectorate could change the existing bad leader with a new leader, but accompanied by a risk of exclusion from the new leader's coalition. We found that the leader would implement the congruent but costly growth-enhancing policy because of her accountability to the selectorate even in absence of party and electoral competition. But this "Efficient Equilibrium" only exists under restricted conditions, especially, the size of the selectorate is intermediate. If too small, the selectorate becomes complete loyal, only the "Kleptocratic Equilibrium" exists; if too big, the leader's incentives are diluted, and the "Roving Bandit Equilibrium" may exist when the realization of the rent the leader can extract is high. The change of the Chinese political system from overconcentration of power under Mao Zedong to the expansion of the size of the selectorate, collective leadership and institutionalization of the party by Deng Xiaoping at beginning of the 1980s could partly explain why the CCP could commit itself to "reform and opening up" afterwards.

This analysis highlights how we can think of successful autocracy as a situation that maximizes the utility of the ruling class (selectorate). As political power is monopolized by the leader and the selectorate, in equilibrium the selectorate get all the redistribution. Thereby we also notice that the risk associate with "reciprocal accountability" is turning China into clientelism and a highly unequal society which is commonly found among countries with similar level of development. Actually at the end of 1980s, rampant corruption combined with high inflation finally drove people onto the street in the spring of 1989, which became one of the chilliest moments of recent Chinese history. After the Tiananmen Incident, the Chinese Communist Party (CCP) had faced the biggest challenge ever since the Cultural Revolution. At the beginning of the 90s, pessimism prevailed over the future of the economic reform. At the beginning of the 1990s scholars suggested that corruption in China was becoming systemic and some placed China right in the league of

countries such as Philippines and Indonesia. Our basic model based on reciprocal accountability is consistent with such analysis, since there exists an equilibrium where the selectorate enjoys high private gains, and thus he has no incentives to reform and, any attempts to change the system away from this equilibrium state would be extraordinary difficult. But this prediction was wrong: after Tiananmen Incident and a short economic contraction period in the following two years, CCP continues to promote economic growth and deepens the market economic reform. Dual-track prices began to converge in the early 1990s; economic activities by the army and government branches were divested; oversized bureaucratic organizations were streamlined; State-Owned Enterprises (SOEs) and TVEs owned by local governments were privatized; reinforcement of anticorruption was adopted. Why didn't China turn into clientelism? And what makes the CCP continued to promote economic growth even at the expense of hurting the benefits of its own insiders? We suggest that the accountability of the Chinese government after the 1980s came from the pressures outside the regime — the citizens and their potential revolutionary threats.

2.2. The High Inequality and Risk of Social Conflicts in China

As our previous research shows (Gilli and Li 2011), an unavoidable result from "reciprocal accountability" is the unfairness of the distribution of income in the society. In China, fast economic growth went together with increasing income inequality. The richest 10 percent hold 45 percent of the country's wealth, and the poorest 10 percent have only 1.4 percent.[7] The Gini coefficient in the whole country at the present time is estimated around 0.47, reached to a much higher level compared to 0.30 in early 1980s.[8] Official data shows that in 2010 urban per capita income is 19,109 yuan while rural per capita income is only 5,919 yuan, the ratio of which is 3.23 to 1.[9] On the one hand, rich Chinese begin to pursue lavish lifestyle. The Ministry of Commerce estimates that China will become the world's largest luxury market by 2014, accounting for 23 percent of the total. As a online posting said, "as we just start to solve the dilemma of three generations living un-

[7] Shirk 2007, p30.
[8] Li Shi 2010.
[9] NBS 2010.

der one roof, you now live in fancy villas; as we just start to wear gold necklaces, you are wearing diamonds; as we just start to drink beer, you are switching to 100-year-old Scotch whiskey". This vivid description showcases the lifestyle enjoyed by the newly rich Chinese.[10] But on the other hand, poor people's life is very hard. Poverty is still a serious problem in China. In the rural area, 9.9 percent of the population in 2005 was living with an income below one dollar per day and 34.9 percent was living with an income below two dollars per day.[11] In urban China, the official statistics indicate the number of individuals received income allowance from Dibao Program (Minimum Living Standard Guarantee) approached to 43 million in 2007.[12] At the meantime, the progress of the reconstruction of social security and welfare system is lagged behind. Urban workers lose the in-kind health and education and benefits from the old system of social security, meanwhile the majority of rural residents, migrant workers and informal workers employed by private sectors are not covered by the system. The huge rich-poor gap, especially the ones people can see with their own eyes, motivates potential social unrests by the citizens. The official newspaper of the Communist Party, People's Daily (Renmin Ribao), reports that according to an opinion survey 70 percent of people think that "the great disparity between the rich and the poor" has adversely affected social stability. It notes that people are most outraged about wealth illegitimately acquired by corrupt officials in "power-for-money transactions" (Shirk 2007, p31).

In the past, Chinese authorities tended to attribute social unrests to enemy conspiracies, reflecting the classic Leninist insistence that social protest in a Communist country cannot just happen, it must be instigated. But now they embrace the economic explanations of unrest, with some even claiming that economic conflicts ultimately underlie all social protest (Tanner 2004). Acemoglu and Robinson (2006)'s model describes the dynamics of social unrest in autocratic polities as a result of unequal distribution of wealth. They point out, "the citizens would have a constant desire to change the outcome, the policies and even the regime". What prevents them is the fact that the elites control the political institutions and the military power. "But the citizens are the majority, coordinating their efforts they may be able to overthrow those who are controlling politics" (Acemoglu and Robin-

[10] China Daily 13/09/2008, http://www.chinadaily.com.cn/bizchina/2008-09/13/content_7025131.htm.
[11] The United Nations Development Program (UNDP: 2007). http://hdr.undp.org/en/statistics.
[12] Li Shi 2010.

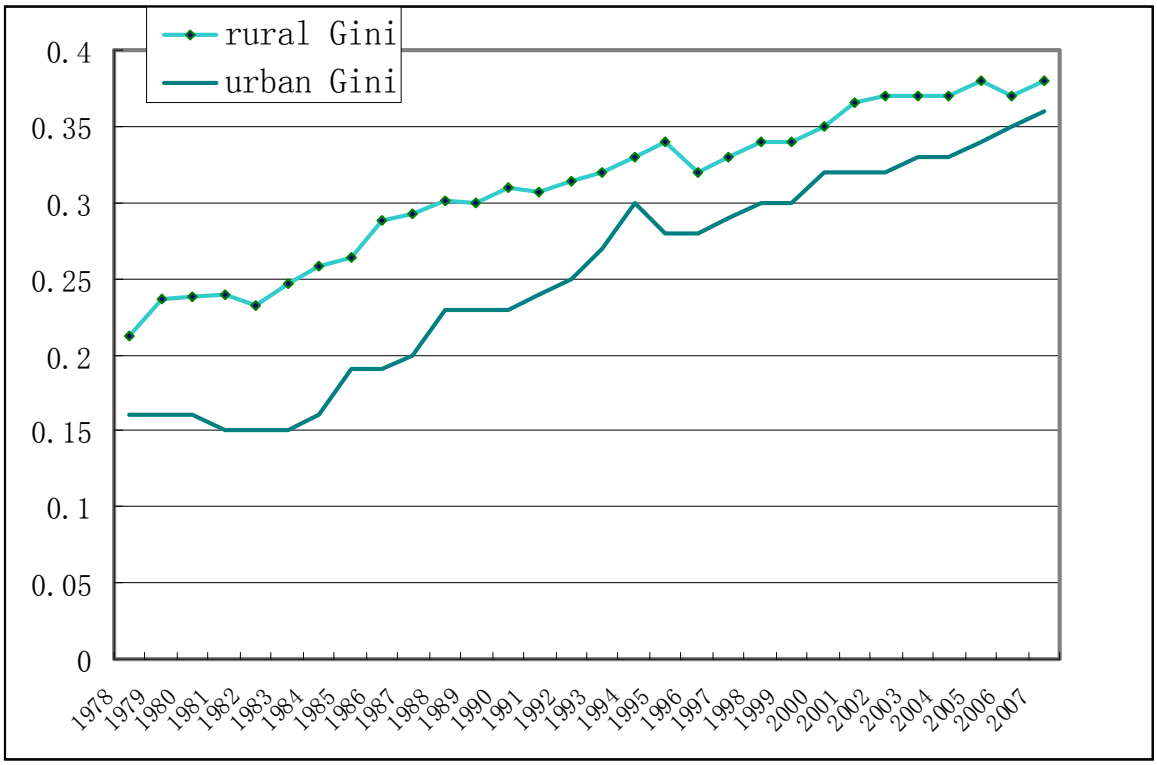

FIG. 1 Changes in income inequality in urban and rural China, 1978-2007. This figure is from Li Shi. "Issues and Options for Social Security Reform in China". Conference paper of The 34th Pacific Trade and Development Conference. (December 2010). Data sources: Annual Report of Household Income Distribution in China, 2008.

son 2006, ch.5). Note that we should distinct between de jure political power and de facto political power. De jure political power is derived from political institutions, while de facto political power is simply what a group can do to other groups and the society at large by using force. In non-democracy, the citizens have no de jure political power, but they may have de facto political power, simply because they are the majority.

In China, social instability becomes a serious problem and a big concern for the Chinese government. Although there is no reliable official statistics, the recent trend shows that social conflicts are increasing in number and size and are becoming better organized. We compared the number of "mass incidents" reported in different sources, the number has surged from 8,700 in 1993,[13] to 32,000 in 1999,[14] 58,000 in 2003,[15] approximately 74,000 in 2004,[16] and rocketed to 180,000 in 2010[17]. The size of the incidents which could be measured by the number of people involved in protests reached 3.76 million in 2004, compared with 730,000 a decade earlier.[18] These incidents also take various forms, from peaceful small-group petitions and sit-ins to marches and rallies, labor strikes, merchant strikes, student demonstrations, ethnic unrest, and even armed fighting and riots (Tanner 2004). The most famous among these was the Tiananmen student movement in 1989, when the whole nation was turned into turmoil by the massive nationwide protests. One of the most important lessons the CCP learnt from the Tiananmen incident is to prevent large scale social unrest in China (Shirk 2007). As Deng Xiaoping put it "Of all China's problems, the one that trumps everything is the need for stability"[19]. Maintain social stability overrides all other considerations for the leaders.

When facing the challenges from the citizens there are several options the autocratic government can adopt to maintain stability, such as concession, repression and democratization (Acemoglu and Robinson, 2006). But just as they analyzed,

[13] Tanner 2004.

[14] Tanner 2004.

[15] Keidel 2005.

[16] Shirk 2007.

[17] Bloomberg News, May 27, 2011. http://www.bloomberg.com/news/2011-05-26/china-tops-india-as-asian-country-most-likely-to-maintain-economic-growth.html

[18] Shirk 2007, p56.

[19] Deng's speech on March 4, 1989. *China Will Tolerate No Disturbances.* Selected Works of Deng Xiaoping, Volume 3.

all these three options have their own limitations and sometimes are impossible to implement. For example, concessions may not enough to appease a revolution because of the commitment problems in autocracy; repression is a method used by many autocracies but its cost is very high, especially in case where repression may fail; democratization is the best solution for the whole society but may only realized in very limited circumstances. As far as China is concerned, on the one hand the government resorts to tight controls over state and society and sometimes even in a repressive manner, on the other hand, they make concessions and responses to the citizens' demand especially to those nationwide popular demands. It is no doubt that the most popular demand for the Chinese citizens is to improve their living standard, therefore using fast economic growth to maintain social stability becomes a very important incentive for the central leaders to adopt good economic policies. Deng Xiaoping started China's economic reforms at the end of 1970s largely because he recognized the dangers to China of falling so dramatically behind the growth rates being achieved elsewhere in East Asia. Deng also saw the need to deliver material rewards to a population that had become bitterly disillusioned with ideological hyperbole by the end of the Maoist era (Liberthal 2004, P246). After the Tiananmen Incident, the legitimacy of the CCP's ruling was again challenged. Although curtailing vest interests was a very tough task, CCP had the resolution to do so, because the top leaders link domestic stability, and thus their power, to the state of the economy: as our model shows, congruent policies were required to avoid further citizens' revolt. The Chinese leaders recognized that in the short-run China's high growth could be achieved from utilizing its relatively cheap labor force, but in the long-run corruption and the direct involvement of government into business were inimical to productivity growth that is required to maintain fast economic expansion. This strategic vision at the top of the political system has guided the reform along its process (Liberthal 2004, P247). As former premier Zhu stated in his March 2003 valedictory, "Development is the fundamental principle, and the key to resolving all problems China is facing. We must maintain a comparatively high growth rate in our national economy." Zhu also argued that the pace of reform had to be balanced against the risks of unrest.[20]

[20] Zhu Rongji, "Report on the Work of the Government," speech, March 5, 2003.

Nowadays, the leaders still feel the pressure to sustain high economic growth into the future, because they realize they must create new jobs rapidly to maintain social stability as many millions of people either enter the urban labor force for the first time or seek to shift from farm to nonfarm jobs. "For more than a decade, the government has based its economic policies on an algorithm derived from its priority on stability. The economy must grow at an annual rate of 7 percent or more in order to create a certain number of jobs ... , and keep unemployment rates at levels that will prevent widespread labor unrest ... . These explicit growth and employment targets remain in the minds of all Chinese officials as they create foreign as well as domestic policies" (Shirk 2007, p55). China, the leaders believe, is threatened with social and political upheaval if it seriously slows economic growth.

3. THE MODEL

Before including the citizens into the model, it is helpful to illustrate the two players game between the leader and the selectorate. Thereby in this section we will first briefly review the game of "reciprocal accountability" between the leader and the selectorate. Then we will include the citizens as another strategic player into the game, and we will show that there are two different timings of their actions, either before or after the move of the selectorate.

3.1. The Game Between the Leader and the Selectorate

The basic starting game between the leader and the selectorate is a two-period political-agency model with incomplete information played between the incumbent leader and the selectorate. The type of the incumbent leader which is the leader's private information can be either congruent or noncongruent, and the selectorate revise their expectations about the leader's type according to first-period outcomes. Contrary to standard political-agency models in democracy (Besley 2006, chapter 3; Berganze, 2000; Maskin and Tirole 2004), there is no regular general election, so the incumbent will be removed from office only if the selectorate choose to depose the leader. There is no heterogeneity within the selectorate and the citizens, so that there is no collective action problem and there is no role for election: the

selectorate control the leader through a single decision either to remove or to support it.

The country population is normalized to 1. The leader is chosen by a subset of the population, the "selectorate". Let $\phi \in [0,1]$ be the size of the selectorate (S). The rest of the people who do not have the power to choose leaders are the citizens and their size is $1-\phi$.

To gain the loyalty of the selectorate, the leader pays a patronage to the selectorate which is realized through the unfair distribution of social wealth. In our simple model, we suppose the leader distribute all the exogenous social wealth X to the selectorate and nothing to the citizens. X could be thought of as the revenue accumulated from sources other than current production (not including producers' capital goods).

In each period $t = 1, 2$, there is a (female) incumbent leader (L), who can be of two types, either congruent or noncongruent, $T_t \in \{C, N\}$, with probability π of being congruent. She is also privately informed of the true state of the world $\theta_t \in \{0, 1\}$ and has to make a discrete "general interest" policy denoted by $e_t \in \{0, 1\}$. The general interest requires the leader to match the true state of the world, 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 $e_t \neq \theta_t$. However the noncongruent leader gets a private benefit r_t from picking $e_t \neq \theta_t$, where r_t is drawn from a distribution whose cumulative distribution function is $G(r_t)$ with $E(r_t) = \overline{r}$, $G(\Delta) = 0$, and $G(r_t) > 0$ for $r_t > \Delta$; on the other hand the congruent leader gets a null private benefit from picking $e_t \neq \theta$. Hence, a congruent leader will always choose the growth-enhancing policy in the interest of the whole society, while the choice of a noncongruent leader will depend on the selectorate's decisions.

At the end of each period, the (male) representative member (S) of the selectorate observes his utility in that period and on the basis of this information decides whether to support the leader or not. If the selectorate support the leader, then the leader still hold office in the subsequent period. If the selectorate decides to oust the leader from power, they succeed automatically, as leader with no basis of support cannot survive. When the incumbent leader is ousted from office, a new challenger, randomly chosen from the pool of the selectorate, will enter the office

and form a new selectorate with minimal size of ϕ.

The single period utility function of the representative member (S) of the selectorate in period $t \in \{1, 2\}$ is

$$U^S(e_t, \theta_t) = \begin{cases} \Delta + \frac{X}{\phi} & \text{if } e_t = \theta_t \\ \frac{X}{\phi} & \text{if } e_t \neq \theta_t \end{cases}$$

The utility function of the congruent politician (C) coincide with the selectorate's utility, so that:

$$U^C(e_t, \theta_t) = U^S(e_t, \sigma_t, \theta_t)$$

The utility function of the noncongruent politician (N) is

$$U^N(e_t, \theta_t) = \begin{cases} \Delta + \frac{X}{\phi} & \text{if } e_t = \theta_t \\ r_t + \frac{X}{\phi} & \text{if } e_t \neq \theta_t \end{cases}$$

If the leader is removed from office, next period she receives a zero payoff.

Finally, all the players maximize the discounted sum of their expected utility in two periods, where $\beta < 1$ is the discount factor.

The timing of the model is as follows:

1. Nature determines (θ_1, r_1) and the type of the leader $T_1 \in \{C, N\}$. These three random variables are stochastically independent and their realization is private information of the leader.
2. The leader chooses the policy e_1 and period one payoffs are realized.
3. The selectorate observes his payoff $\delta \in \{0, \Delta\}$ and thus the policy chosen by the leader but not her type.
4. The selectorate decides whether to retain the incumbent leader, given his information.
5. If the incumbent leader is ousted from office, a new challenger from the selectorate will enter office and she will be congruent with probability π. The new challenger will form her own coalition and members of the selectorate who deposed the incumbent leader would have a probability ϕ to be included in the new coalition.
6. Nature determines (θ_2, r_2).
7. The period two leader chooses e_2 and period two payoffs are realized.

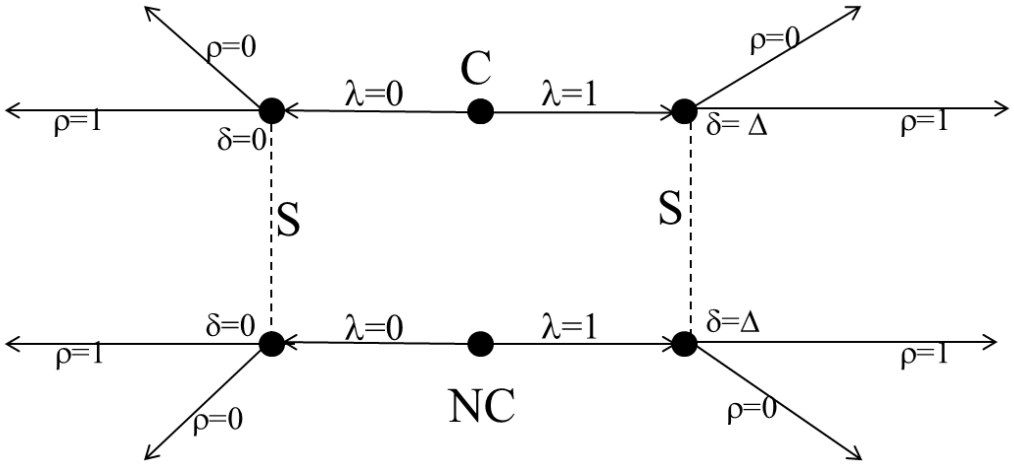

FIG. 2 The stage game of the two players model

Here there is the game tree corresponding to the first stage of the model:

The main findings from the two players model is summarized in the following proposition[21]:

PROPOSITION 1. *When*

1. $\phi \leq \frac{X}{X+\pi\Delta}$, *there exists a separating Perfect Bayesian equilibrium where the non congruent leader separates with the congruent leader and the selectorate always choose to support the leader no matter his payoff from the general interest policy. This is the "Kleptocratic Equilibrium" (KE) which means that the leader would pursue her own interest and this notwithstanding she will retain the power.*
2. $\phi \geq \frac{X}{X+\pi\Delta}$ *and* $r_1 \geq \Delta+\beta(\overline{r}+\frac{X}{\phi})$, *there exists a separating Perfect Bayesian equilibrium where the non congruent leader separates with the congruent leader and the selectorate will support the leader only when his payoff from the general interest policy is* Δ. *This is the "Roving Bandit Equilibrium" (RBE) which means that the non congruent leader would pursue her own interest and because of this she will be overthrown from power, this notwithstanding she will pursue her own interest since the first period rent has had a significant high realization.*

[21] For the detailed derivation and interpretation of the result, see Gilli and Li (2011).

3. $\phi \geq \frac{X}{X+\pi\Delta}$ *and* $r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$*, there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where the non congruent leader pools with the congruent leader and the selectorate will support the leader only when his payoff from the general interest policy is* Δ*. This is the "Efficient Equilibrium" (EE) which means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate.*

Another important implication from this model is that the selectorate get all the redistribution, this is because political power is monopolized by the leader and the selectorate, the fruit from economic growth is mainly enjoyed by them.

3.2. The Role of the Citizens and the Three-player Game

To add the citizens as another player into the original game does not only mean the integration of a new active subject into our political game, but also the introduction of a further role whose effects on the equilibria and thus on the possible regimes might depend on the timing of actions. In particular we might introduce citizens' behavior in two different stages of the game: just after the leader's choice or after the selectorate's choice assuming the citizens and the selectorate share the same information. Before choosing, in both cases the citizens observe their utility in that period which is:

$$U^Z(e_t, \theta_t) = \begin{cases} \Delta & \text{if } e_t = \theta_t \\ 0 & \text{if } e_t \neq \theta_t \end{cases}$$

and, on the basis of this information, they decide whether to initiate a revolution or not. In case the citizens choose to revolt the game ends and therefore in the subsequent periods the utility of all the players (including the selectorate, the leader and the citizens themselves) are zero. In the current period, if the revolution succeeds, each citizen receives a payoff of $\frac{X-\mu}{1-\phi}$ and all other players get zero, if the revolution fails each player gets a zero payoff. These assumptions are clearly a simplification aimed to model the idea that the possibility of revolution generates further constraints on the leader behavior, since the leader wants to act to avoid revolution, in particular these zero payoffs are such that both the leader

and selectorate would like to avoid citizens' revolt even when they get the same zero expected payoff from alternative outcomes.

A final remark on notation:

1. $\lambda^T(\theta_1, r_1)$ is the probability that in the first period the type T leader implements the congruent action $e_1 = \theta_1$, given her private information on the state of the world θ_1 and the rent r_1,
2. $\rho(\delta)$ is the probability that the selectorate retains the incumbent leader, given that in the first period he obtained a payoff equal to $\delta \in \{0, \Delta\}$
3. $\alpha(h)$ is the probability that the citizens will revolt, given previous history $h \in H$, which will depend on the dynamic structure of the game.

The definitions used in the game and the rest of the paper are summarized in the following table:

SYMBOL	DEFINITIONS
	PLAYERS
L	incumbent leader
Z	citizen
S	selectorate
$T \in \{C, N\}$	type of the 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
$r \sim G(r)$	random rent the leader can extract, with cdf $G(r)$ and expected value $\overline{r}$
β	discount factor
X	exogenous revenue of the society
μ	destruction of the society's revenue because of revolt
$\phi \in [0, 1]$	size of the selectorate
	ENDOGENOUS VARIABLES
$\lambda^T(\theta, r)$	probability that the type T leader implements a congruent policy
$\alpha(h)$	probability that the citizens revolt after observing $h \in H$
$\rho(\delta)$	probability that the selectorate retains the leader after observing $\delta \in \{0, \Delta\}$
	PAYOFFS
$U^C(\lambda, \alpha, \rho \mid \theta, r)$	the single period utility function of the congruent leader
$U^N(\lambda, \alpha, \rho \mid \theta, r)$	the single period utility function of the noncongruent leader
$U^Z(\lambda, \alpha, \rho)$	the single period utility function of the citizen
$U^S(\lambda, \alpha, \rho)$	the single period utility function of the selectorate
$V^{S/Z}$	expected continuation payoff of the selectorate/citizens

4. EQUILIBRIA WHEN THE CITIZENS CHOOSE BEFORE THE SELECTORATE

The game structure is reported in Figure 3. As usual we solve the game backward. Moreover we will assume consistency in the sense of Sequential Equilibria, so that players' beliefs on the leader's type agree even out of equilibrium.

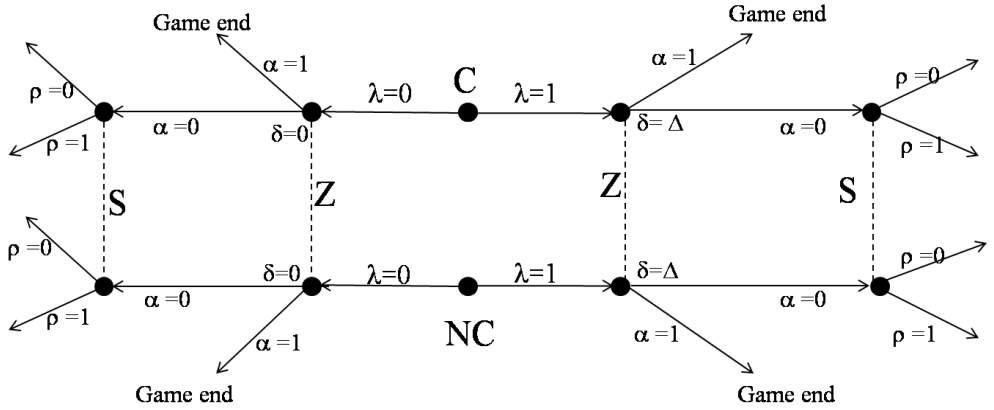

FIG. 3 The stage game when the citizens choose before the selectorate

The detailed analysis to calculate the set of pure strategy Perfect Bayesian Equilibria are reported in the Appendix, here we just consider the results and the comments on them.

4.1. Separating Actions By the Leader

PROPOSITION 2. *When*

1. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu \geq X - \Delta$, *there exists no separating Perfect Bayesian equilibrium. This means that when the citizens play an active role before the selectorate has to choose, the leader can not behave as a kleptocrat, otherwise she will be removed by a citizens' revolt;*
2. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu \leq X-\Delta$, *there exists a separating Perfect Bayesian equilibrium, where*

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 0, \rho(\Delta) = 1^{22}.$$

This means that both types of the leader would pursue their own interest and both will be overthrown from power by a citizens' revolt, because given the unequal income distribution, the citizens' payoffs from accepting a congruent policy are too small compared to the cost of revolution.

Comments:

[22] The beliefs are derived in the Appendix.

These are interesting results that change significantly the possible regimes we analysed when the citizens are not active players.

The first proposition shows that the Kleptocratic Equilibrium we found in the two players game does not exist anymore, because the citizens will revolt if government is kleptocratic and the leader want to avoid a citizens' revolt anyway. The point is that in the two player model, the selectorate can be captured by the distribution of X when they are few and thus $\frac{X}{\phi}$ is big enough to disincentivize the leader's removal, but in this more complex model the citizens can get the payoff of a congruent policy only, and thus they choose to revolt if they get zero otherwise.

The second proposition shows the condition for a Failed State Equilibrium (FSE), in the sense that the gains from accepting a congruent policy compared to the cost of revolution are such that the citizens will always revolt, and because of this the non congruent leader will try to reap as much money as possible before being overthrown by revolts. Note that in this case, the selectorate's behavior is irrelevant since it is captured by the leader being too small to want to remove the leader.

PROPOSITION 3. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$, $\mu \geq X - \Delta$ *and* $r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta,\beta,\overline{r},X,\phi)$, *there exists a separating Perfect Bayesian equilibrium where*

$$\lambda^N(\theta_1, r_1) = 0, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 1^{23}.$$

This means that the non congruent leader would pursue her own interest, the citizens will never revolt, but the selectorate will overthrown the non congruent leader from power, this notwithstanding she will pursue her own interest since the first period private rent has had a significant high realization;

2. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu \leq X - \Delta$, *there exists a separating Perfect Bayesian equilibrium where*

$$\lambda^N(\theta_1, r_1) = 0, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1^{24}.$$

This means that the non congruent leader would pursue her own interest, the citizens will revolt after a congruent policy only and the selectorate will

[23] The beliefs are derived in the Appendix.

[24] The beliefs are derived in the Appendix.

overthrown the non congruent leader from power, this notwithstanding she will pursue her own interest since she will be overthrown from power anyway.

Comments:

The equilibrium illustrated in the first proposition is exactly the Roving Bandit Equilibrium we found in the game without citizens, which is not surprising since in this equilibrium they will never revolt. In this context, we have to add a condition on revolution cost being big enough, otherwise we are back to the Failed State Equilibrium. This Roving Bandit Equilibrium happens with probability $1 - G\left(R(\Delta, \beta, \overline{r}, X, \phi)\right) =: H(R(\Delta, \beta, \overline{r}, X, \phi))$ which depends on the parameters.[25]

The second part of the proposition illustrates a second case of a Failed State Equilibrium, where the selectorate is not captured by the leader, but the state is so ineffective that the citizens will revolt even after a congruent policy, hence the reciprocal accountability between the leader and the selectorate is not enough to avoid revolution. The paradoxical aspect of this equilibrium is that it is the threat of revolution after a congruent policy that induces the leader to choose a bad policy; since after the non congruent policy there is no revolution but simply a removal by the selectorate, and it is this removal that being anticipated by the citizens will avoid revolution attempts. On the contrary, after a congruent policy there is revolution, because the expected gains from revolution are higher than

[25] Note that $\frac{\partial H}{\partial R} < 0$, therefore the calculation of the effects of our parameters on the probability of a RBE is easy.

First, note that $\frac{\partial H(R(\Delta,\beta,\overline{r},X,\phi))}{\partial \Delta} < 0$, therefore the more effective is a congruent policy, the less likely is a RBE since it is more difficult to have a high realization of the private benefits such that the leader grab the rent and run away.

Second, $\frac{\partial H(R(\Delta,\beta,\overline{r},X,\phi))}{\partial \beta} < 0$, therefore the less myopic is a leader, the less likely is a RBE since the future expected benefit of holding power have more weight and thus the leader needs to have a particularly high realization of today private benefits to induce her to grab the rent and run away.

Third, $\frac{\partial H(R(\Delta,\beta,\overline{r},X,\phi))}{\partial \overline{r}} < 0$, therefore the higher the expected value of private benefits, the less likely is a RBE since the future expected benefit of holding power are higher and thus the leader needs to have a particularly high realization of today private benefits to induce her to grab the rent and run away.

Fourth, $\frac{\partial H(R(\Delta,\beta,\overline{r},X,\phi))}{\partial X} < 0$, i.e. higher values of X decreases the probability of a RBE: as before the future expected benefit of holding power are higher and thus the leader needs to have a particularly high realization of today private benefits to induce her to grab the rent and run away.

Finally $\frac{\partial H(R(\Delta,\beta,\overline{r},X,\phi))}{\partial \phi} > 0$, i.e. a bigger size of the selectorate increases the probability of a RBE since the future expected benefit of holding power are smaller and thus the leader does not need a particularly high realization of today private benefits to induce her to grab the rent and run away.

the expected costs, which in turn is because the gains from the congruent policy cannot compensate the unequal income distribution within the players, and the citizens will anticipate that the selectorate will not remove the leader.

4.2. Pooling Actions by the Leader

PROPOSITION 4. *When*

1. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu \geq X - \pi\Delta$, *there exists a pooling Perfect Bayesian equilibrium where*

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1^{26}.$$

This means that the noncongruent leader would pursue the congruent policy not because of the selectorate control but because afraid of the citizens' revolt;

2. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu < X - \pi\Delta$ *, there exists no pooling Perfect Bayesian equilibrium consistent with forward induction.*

Comments:

This Efficient Equilibrium is very interesting because it relies on the leader's accountability towards the citizens and not towards the selectorate, who is not disciplining leader's behavior because he is afraid of loosing his privileges since the probability of being in the new selectorate after the leader's removal is small.

This proposition says that the citizens will revolt if they observe non congruent general policy and will not revolt otherwise, therefore the non congruent incumbent leader adopts growth-enhancing policy in the first period. On the other hand, the selectorate is too small to control the leader and because of this he will always accommodate, this notwithstanding the control by the citizens is enough to induce the Efficient Equilibrium even if the selectorate size would be ineffective.

In particular, there are several interesting aspects of this equilibrium:

1. The equilibrium shows that because of the threat of revolution, the government will adopt growth-enhancing policies, which means the threat of social unrest is an important force that can make the leader accountable.
2. The threat of revolution is effective to make the leader accountable only when the selectorate do not has the ability to constrain the leader. This happens when the size of the selectorate is very small.

[26] The beliefs are derived in the Appendix.

3. To sustain such equilibrium expected payoffs from holding office are irrelevant.

PROPOSITION 5. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta), \mu \geq X - \pi\Delta$ *and* $r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta,\beta,\overline{r},X,\phi)$, *there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where*

$$\lambda^N(\theta_1, r_1) = 1, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 1^{27}.$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate.

2. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and either* $\mu < X - \pi\Delta$ *or* $r_1 > \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta,\beta,\overline{r},X,\phi)$ *or both, there exists no pooling Perfect Bayesian equilibrium consistent with forward induction.*

Comments:

These propositions are interesting, since they show that, with three players, to get an Efficient Equilibrium the previous conditions on the selectorate's size and on the realization of the leader's private benefits are not enough: when the citizens are active players, a further condition on the cost of revolution is required to avoid a Failed State Equilibrium. Otherwise the non congruent incumbent leader will choose to grab the rent even if she anticipates her removal next period, since in this way, she will be able to avoid the revolution, at the same time, getting her private rents in the first period.

4.3. Summarization of The Equilibria in the Game Between The Leader, The Citizens and The Selectorate

First of all, remember that we are considering pure strategy equilibria, therefore non existence results do not mean that there are no equilibria, which would be quite surprising with finite games, but just pure strategy equilibria.

Then, to illustrate how the possible regimes change as a consequence of citizens' revolution threat, we should distinguish four different range for the cost of revolutions.

[27] The beliefs are derived in the Appendix.

Small costs of revolution:

$$\mu \in [0, X - \Delta].$$

In this simple model, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefits can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Failed State Equilibrium	Failed State Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Failed State Equilibrium	Failed State Equilibrium

This table shows that when the cost of revolution are small enough, probably because of the ineffectiveness of the state, the citizens will never accept the unequal distribution due to autocracy choosing always to revolt.

Intermediate costs of revolution:

$$\mu \in (X - \Delta, X - \pi\Delta).$$

For these parameters' values, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefit can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Roving Bandit Equilibrium	$\nexists$
$\phi \leq \frac{X}{X+\pi\Delta}$	$\nexists$	$\nexists$

The reason for the non existence of PBE in this case is due to the fact that the intermediate cost of revolution would induce the citizens to revolt after a congruent policy, and this has a perverse incentive on the leader's behavior.

High costs of revolution:

$$\mu \in [X - \pi\Delta, X].$$

For these parameters' values, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefit can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Roving Bandit Equilibrium	Efficient Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Efficient Equilibrium	Efficient Equilibrium

Enormous costs of revolution:

$$\mu \in [X, +\infty).$$

For these parameters' values, the cost of revolution is so high that rational citizens will never revolt notwithstanding the leader's behavior, thus it is as if the citizens are not an active player:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Roving Bandit Equilibrium	Efficient Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Kleptocratic Equilibrium	Kleptocratic Equilibrium

Comparing these results with those found in the two players' model, we can see that with the possibility of citizens' revolt there are actually two possible regimes: either an instability situations where because of this instability, the leader has an incentive to grab the money running away; or a more established setting where the threat of revolution ensures a congruent behavior of the leader, even when the selectorate is captured, since by definition the citizens will always avoid to be captured, and this would eliminate the possibility of a Kleptocratic equilibrium. The possibility of a Roving Bandit Equilibrium can never be avoided, it is independent of the political institutions prevailing, i.e. not depending on her accountability towards the citizens or to the selectorate, but only depends on the particularly high realization of the private rents she can grab and run away.

In the most interesting case of high revolution cost, we can check the effects of the different parameters on the likelihood of the different equilibria when $\phi < 1$.:

	Roving Bandit Equilibrium	Efficient Equilibrium
$\uparrow \phi$	$\uparrow$	$\downarrow$
$\uparrow \pi$	$\uparrow$	$\downarrow$
$\uparrow X$	$\downarrow$	$\uparrow$
$\uparrow \Delta$	$\downarrow\uparrow$=?	$\downarrow\uparrow$=?
$\uparrow \beta$	$\downarrow$	$\uparrow$

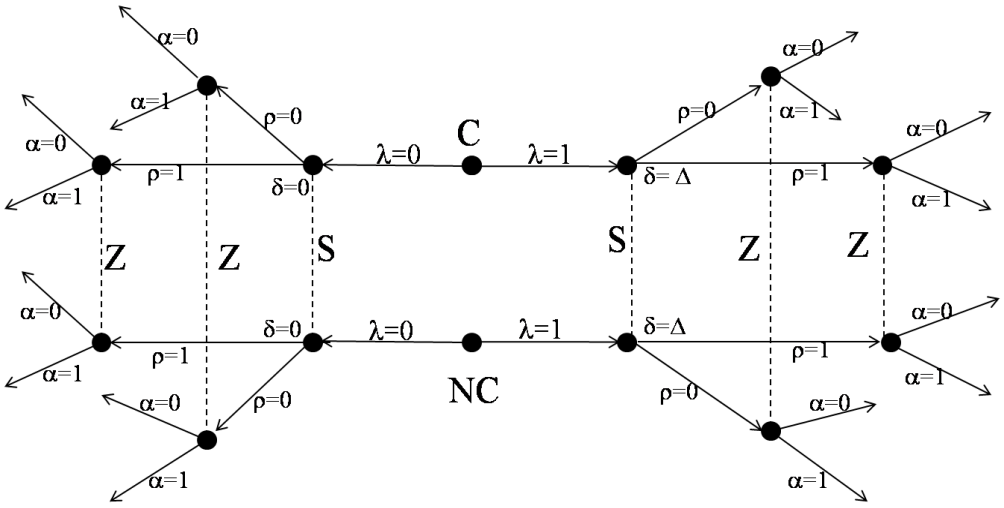

FIG. 4 The stage game when the citizens choose after the selectorate

Of course, citizens' revolt is meaningful only for autocracies, therefore in this setting there is no room for comparisons between democracy and autocracy.

5. EQUILIBRIA WHEN THE CITIZENS CHOOSE AFTER THE SELECTORATE

In this section we consider again the citizens as active players, but we change the dynamics of the game assuming that they are playing after having observed the choice of the selectorate. All other elements of the game remains as before. The game structure is pictured in Figure 4.

This new dynamic structure changes the role of the citizens too. In this game the citizens have the last word on the distribution of the gains from economic growth. Moreover, since the leader and the selectorate want to act to avoid revolution, the possibility of revolution would generate further constraints on the leader and on the selectorate behavior. Here the role of the citizens is neither simply another common principle like the selectorate nor simply a door-keeper for the leader. It is a mixture. First, we can see the citizens as a "passive" principle who delegates the

task of pursuing their well-being to a leader not chosen by themselves. When the agent (the leader) fails her job, the citizens can utilize their power to overthrow the regime. Second, different from a "common" principle who can choose his own agent, the role of the citizen can be seen as a veto player who only has the door-keeping power for the leader. Besides, the citizens interact with both the leader and the selectorate, so they not only can constrain the behavior of the leader but also can constrain the selectorate's behavior.

As usual, all the details required to calculate the set of Perfect Bayesian equilibria are reported in the Appendix.

5.1. Separating Actions by the Leader

PROPOSITION 6. *When $\mu \in [0, X - \Delta]$, there exist four separating Perfect Bayesian equilibria*[28]*, i.e.*

1.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 0, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

2.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 1, \rho(\Delta) = 0, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

3.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

4.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 1, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1, \end{aligned}$$

all with the same outcome i.e. the citizens' revolt notwithstanding leader's and selectorate's behavior. This means that both types of the leader would pursue their

[28] The beliefs are derived in the Appendix.

own interest and both will be overthrown from power by a citizens' revolt, because the citizens' payoffs from accepting a congruent policy are too small compared to the cost of revolution, given the unequal income's distribution.

Comments:

This result shows that in this case the previous restrictions on the selectorate size are irrelevant. In particular, the Kleptocratic Equilibrium we found in the two players game does not exist anymore, instead we obtain a Failed State Equilibrium (FSE), in the sense that in this case the gains from accepting a congruent policy compared to the cost of revolution are such that, the citizens will always revolt, and because of this the non congruent leader will try to reap as much money as possible before being overthrown by the revolts. Note that in this case, the selectorate's behavior is irrelevant since the citizens will revolt anyway.

PROPOSITION 7. *When* $\mu \in (X - \Delta, X - \pi\Delta]$, *there exists no separating Perfect Bayesian equilibria.*

PROPOSITION 8. *When* $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and* $\mu \in (X - \pi\Delta, X]$, *there exists no separating Perfect Bayesian equilibrium.*

Comments:

The Kleptocratic Equilibrium we found in the two players game does not exists anymore, since the citizens will revolt if they are sure to face a non congruent leader, since the expected payoff from revolution are positive given the unequal distribution of income.

PROPOSITION 9. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$, $\mu \in (X - \pi\Delta, X]$, *and* $r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a separating Perfect Bayesian equilibrium where*

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{29}. \end{aligned}$$

This means that the non congruent leader would pursue her own interest and because of this she will be overthrown from power by the selectorate, this notwithstanding she will pursue her own interest since the first period rent has had a significant high realization.

2. $\phi > \frac{X}{X+\pi\Delta}$, $\mu \in (X - \pi\Delta, X]$, *and* $r_1 < \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists no separating Perfect Bayesian equilibrium.*

Comments:

When the size of the selectorate is big enough, the selectorate has the ability to remove the non congruent incumbent. But since the rent she can extract in the first period is very high given her discount factor, the non congruent incumbent still choose to grab the rent even if she anticipates her removal next period. In this equilibrium, the bad autocrat behaves as roving bandit, whose aim of holding office is to steal the country's wealth, then leave. Therefore, this is exactly the "Roving Bandit Equilibrium". This removal and the consequent probability π of having a congruent policy next period are enough to avoid revolution. This Roving Bandit Equilibrium happens with probability $1 - G\left(R(\Delta, \beta, \overline{r}, X, \phi)\right) =: H(R(\Delta, \beta, \overline{r}, X, \phi))$.

Finally, if $\mu > X$, then the citizens will never revolt, thus they are not active players and we are back to the two players' game.

5.2. Pooling actions by the leader

PROPOSITION 10. *When* $\mu \in [0, X - \pi\Delta]$, *there exists no pooling Perfect Bayesian equilibrium.*

Comments:

This result shows that in this case the previous restrictions on the selectorate size are irrelevant. In particular, the equilibria we found in the two players game does not exist anymore, instead we obtain a Failed State Equilibrium (FSE), in the sense that the gains from accepting a congruent policy compared to the cost of revolution are such that the citizens will always revolt even if the non congruent leader will try to mimic the congruent one, and because of this she will try to reap as much money as possible before being overthrown by revolts. Again, in this case, the selectorate's behavior is irrelevant since the citizens will revolt anyway.

PROPOSITION 11. *When* $\phi \geq \frac{X}{X+\pi\Delta}$, $\mu \in (X - \pi\Delta, X]$ *and* $r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a pooling Perfect Bayesian equilibrium consistent with*

forward induction where

$$\begin{aligned}\lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 1, \rho(0) = 0, \rho(\Delta) = 1,\\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{30}.\end{aligned}$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate.

Comments: In this equilibrium, as in the game with two players, successful autocracy arises. Although not democratic, the government chooses correct policies because of the leader's accountability towards the selectorate. The citizens in equilibrium will never revolt and their role is actually irrelevant since the role of the selectorate as incentive system is effective.

Note that to sustain such equilibrium expected payoffs from holding office must be greater than today's personal rents, as then the incumbent leader has more to lose from being removed from office. This Efficient Equilibrium (EE) happens with the complementary probability of having a Roving Bandit Equilibrium, i.e. $G\left(R(\Delta, \beta, \overline{r}, X, \phi)\right) = 1 - H(R(\Delta, \beta, \overline{r}, X, \phi))$ and thus the previous analysis on how this probability changes with our parameters can immediately be replicated here .

PROPOSITION 12. *When* $\phi \leq \frac{X}{X+\pi\Delta}$ *and* $\mu \in (X - \pi\Delta, X]$*, there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where*

$$\begin{aligned}\lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 1, \rho(0) = 1, \rho(\Delta) = 1,\\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{31}.\end{aligned}$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the citizens.

Comments:

In this equilibrium successful autocracy arises. Although not democratic, the government chooses correct policies because of the leader's accountability towards the citizens, who will revolt when facing non congruent policy and accommodation by the selectorate. Since it is their credible threat of revolting, their role is to effectively incentivize the leader, even if the selectorate is captured by the leader. Note that to sustain such equilibrium expected payoffs from holding office are irrelevant.

5.3. Summarization of The Equilibria in the Game Between The Leader, The Selectorate and The Citizens

First of all, remember that we are considering pure strategy equilibria, therefore non existence results do not mean that there are no equilibria, which would be quite surprising with finite games, but just pure strategy equilibria.

Then, to illustrate how the possible regimes change as a consequence of citizens' revolution threat, we should distinguish four different range for the cost of revolution.

Small costs of revolution:

$$\mu \in [0, X - \Delta].$$

In this simple model, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefit can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Failed State Equilibrium	Failed State Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Failed State Equilibrium	Failed State Equilibrium

This table shows that when the cost of revolution are small enough, probably because of the ineffectiveness of the state, the citizens will never accept the unequal distribution due to autocracy choosing always to revolt.

Intermediate costs of revolution:

$$\mu \in (X - \Delta, X - \pi\Delta).$$

For these parameters' values, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefit can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	$\nexists$	$\nexists$
$\phi \leq \frac{X}{X+\pi\Delta}$	$\nexists$	$\nexists$

The reason for the non existence of pure strategy PBE in this case is due to the fact that the intermediate cost of revolution would induce the citizens to revolt after a congruent policy which has a perverse incentive on the leader behavior.

High costs of revolution:

$$\mu \in [X - \pi\Delta, X].$$

For these parameters' values, the set of possible equilibria as a function of the selectorate size and of the probability of first period private benefit can be summed up as follows:

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Roving Bandit Equilibrium	Efficient Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Efficient Equilibrium	Efficient Equilibrium

Enormous costs of revolution:

$$\mu \in (X, +\infty).$$

In this case the cost of revolution is so high that rational citizens will never revolt notwithstanding the leader's behavior, thus it is as if the citizens are not an active player.

	$r \geq \Delta + \beta(\overline{r} + \frac{X}{\phi})$	$r \leq \Delta + \beta(\overline{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X+\pi\Delta}$	Roving Bandit Equilibrium	Efficient Equilibrium
$\phi \leq \frac{X}{X+\pi\Delta}$	Kleptocratic Equilibrium	Kleptocratic Equilibrium

Comparing these results with those found in the two players' model, we can see that with the possibility of citizens' revolt there are actually two possible regimes: either an instability situations where because of this instability the leader has an incentive to try to grab the money running away, or a more established setting where the threat of revolution ensures a congruent behavior of the leader even when the selectorate is captured. Since by definition the citizens will always avoid to be captured, and this would eliminate the possibility of a Kleptocratic equilibrium. In the most interesting case of high costs of revolution, we can check the effects of the different parameters on the likelihood of the different equilibria when $\phi < 1$:

	Roving Bandit Equilibrium	Efficient Equilibrium
$\uparrow \phi$	$\uparrow$	$\downarrow$
$\uparrow \pi$	$\uparrow$	$\downarrow$
$\uparrow X$	$\downarrow$	$\uparrow$
$\uparrow \Delta$	$\downarrow\uparrow$=?	$\downarrow\uparrow$=?
$\uparrow \beta$	$\downarrow$	$\uparrow$

Of course, citizens' revolt is meaningful only for autocracies, therefore in this setting there is no room for comparisons between democracy and autocracy.

6. THE LINK BETWEEN CHINA AND THE THEORY

As the above chapters indicate, the results are very similar with both sequential structures once we introduce a third active player, the citizens. Highlighting the incentive schemes that generating successful autocracy, we can sum them up into two categories: either because of the leader's accountability towards the selectorate, or because of the leader's accountability towards the citizens. In this section we will illustrate that whereas China in the 1980s fits into the first category, beginning from 1990s it fits into the second category, and the 1989 Tiananmen incident was the watershed.

6.1. Improvement in the Elite Politics in the 1980s

Positive changes had taken place in the Chinese political system since the late 1970s, particularly in the areas of elite politics. Under Mao, when China's economy was becoming paralyzed, the politics was characterized by increasing despotism. The selectorate was too small to be an effective disciplining device for the leader. After Mao's death, Deng Xiaoping undertook numerous actions to accelerate the long delayed process of institutionalization within the Chinese Communist Party (CCP). Clearly, he saw the accountability failure in Chinese political system under Mao's era, thus tried to rebuild a political system that be able to create effective checks on the paramount leader and can make politicians accountable. Deng laid out a political agenda which proposed a system governed by rules, clear lines of

authority, and collective decision-making institutions to replace the overconcentration of power and patriarchal rule that had characterized China under Mao. He recommended abolishing the life tenure in leading posts, to promote young and middle-aged cadres, to ensure necessary degree of decentralization, and even to distinguish between the responsibilities of the Party and the government[32]. Therefore there had been a significant expansion of the size of the selectorate, from a small coterie consist of revolutionary elders, top military leaders to a larger coalition including younger generation of CCP leaders and members of the Central Committee. Although important economic decisions were still made in the politburo and party elders were still active, people had reasons to expect that the collective institutions of the party, particularly the Central Committee, soon would play a larger role. Led by Hu Yaobang and Zhao Ziyang, reformists in the party wished to further expand inner-party democracy. For instance, reforms at the Twelfth Party Congress in 1982 and Thirteenth Party Congress in 1987 were aimed at democratizing delegate selection to the Central Committee and the separation of the party and government (Shirk 1993, p79, Rosen 1988) .

Another trend in the development of incipient institutional pluralism in the elite politics is the growing role of the National People's Congress and local legislatures in policy-making. Although their power is still limited, but they are no more only "rubber stamps", the strengthening of the legislative branch of the government has acquired a political momentum of its own. Consequently, China's legislature has become increasingly assertive of its constitutional prerogatives and gained considerable political stature (Pei 1998).

As a result of the expansion of the selectorate, checks and balances within party institutions emerged which was absent in Mao's era. This institutional change in the political structure could explain for the accountability of the Chinese central government exhibited in the first phase of the reform. China in this period fit into Proposition 5 and Proposition 11, which say in absence of general elections the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate. A significant example of the role of selectorate as a disciplining device to the leader was the removal of Hua Guofeng

[32] Deng's speech on August 18, 1980. *On the Reform of the System of Party and State Leadership.* Selected Works of Deng Xiaoping, 302-25

and replacing him by Deng Xiaoping. This decision was made by the selectorate inside the Politburo; apparently this was because the Politburo members were not satisfied with Hua's attempt to continue Mao's policies (Lieberthal 2004, p. 125-7). In the 1980s, the need to promote economic growth overwhelmed the demand of political struggle which was the guideline in Mao's era. Partly, this was because the Chinese people including the elite inside the Party had suffered a lot from the 10-year Cultural Revolution. Therefore after Hua Guofeng putting forward the ideological guideline of "Two whatevers"[33] in a working conference of the Central Committee in 1977, supporters of Deng Xiaoping decided to force him to hand over power gradually (Lieberthal 2004, p. 125-7). It was hard to imagine any leader could survive, should he had continued to advocate Maoist road in the reform era. Should Hua Guofeng not put forward "Two whatevers" but abandoning Mao's policies instead, he would not lose his position as the top leader. Gaining more weight in constraining the leader's behavior, the selectorate at that time was eager to have a leader who could rescue the regime from being collapsing and who could deliver material rewards to a population that had become bitterly disillusioned the end of the Maoist era. Deng Xiaoping, definitely, was the better candidate than Hua Guofeng. Another significant example happened when conservative CCP leaders Chen Yun and Yao Yilin tried to recentralize China's fiscal system after 1989. In the work conferences preceding both Fifth Plenum of the Thirteenth Central Committee in November 1989 and the Seventeenth Plenum in December 1990, the provincial and municipal officials in the Central Committee objected to the recentralization proposals. As a result of this opposition, the Central Committee had to be postponed, and when they finally met, it acted to retain fiscal decentralization, thereby reversing the original recommendation of the leaders (Lam 1989; Shirk 1993).

As a result of the significant improvement in elite politics, with the role of the selectorate as a disciplining device more effective as compared to dictatorship under Mao, the central government became more accountable and could commit itself to promote economic growth. We also notice that initially, reform ideas

[33] The "Two whatevers" refers to the statement that "We will resolutely uphold whatever policy decisions Chairman Mao made, and unswervingly follow whatever instructions Chairman Mao gave". People's Daily February 7, 1977.

did not extend much beyond "giving farmers a chance to catch their breath" or "expanding enterprise autonomy." And, inevitably, initial reforms were "without a blue print", characterized by experimentation, or "groping for stepping stones to cross the river" (Naughton 2005). That is to say, it would be biased to attribute all the success of Chinese economic reform to the economic policies adopted by the central leadership. But at the same time, we cannot deny that without the reforms in the political system after the Cultural Revolution, the economic reform may not survive a fortiori to success.

6.2. Trapped Inner-party Democracy after the 1980s

Slowly but gradually, as originally planned at the very beginning of the reform[34], political reform went hand in hand with economic reform in the first ten years of the "reform and opening up". Hu Yaobang and Zhao Ziyang sustained to push to liberalize the polity in China. Some bold tentative measures planned to reform the political system included abolishing party committees within government agencies and separating functions of the party and government (Huang 2008).

However the gradual progress of the political reform was trapped after the 1989 Tiananmen incident. The Tiananmen incident, the watershed of politics in China, had profound and far-reaching influences over the reform process, whose impact had been deeply engraved in China's political system today. The incident ended with the reformists being completely defeat by the conservatives inside the party, some dissident people left China and some other lost power, thus in fact, the size of the selectorate stopped growing and even began to shrink to some extent. The attempts to create a more powerful Central Committee, to separate functions of the party and government and ultimately to realize inner-party democracy were cutoff. Maintaining stability became the top priority of the top leadership, and any sign of public leadership splits would be seen as dangerous, since they believe if the divisions among the top leaders come into the open as they did in 1989, people will take to the streets with little fear of punishment (Shirk, 2007). Consequently, inner-party competition and even a more powerful Central Committee were treated as threat of stability (Guo 2004). Worse still, public discussion and

[34] Besides economic reform Deng Xiaoping also proposed political reform at the beginning of the 1980s. But his views on political reform received relatively little attention. (Ng-Quinn 1982)

debate on political liberalization and democratization had been banned since then, which was tolerated and even sanctioned during the Deng era (Pei 2006). As a result, a concentration of power into the Politburo, particularly in the Politburo Standing Committee emerged. All the members of the Politburo Standing Committee are top leaders from the party, the government and military, who decide the nomination of members to the Central Committee and promotion of government officials and military officers. The number one leader, from then on, simultaneously assume three most important political positions in China—general secretary of the CCP, president of China, and chairman of the Central Military Commission. This institutional arrangement weakens the checks from the Central Committee as selectorate on the leader's power. Although power still flows in both directions, as the leaders still need the approval of members in the Central Committee to be elected according to the Constitution of CCP; top-down power is greater than bottom-up power, since top party leaders have effective control over the composition and membership of the Central Committee. This could be seen as when general agreement is reached among the top leadership or any opposition has been silenced, the Central Committee always acquiescence (Oksenberg 2001). No more a "rubber stamp", but the role of the Central Committee is important only during a leadership transition or separation of opinions among the leaders on a particular policy issue (Shirk 1993, p83).

As a result, after the Tiananmen Incident, few new or significant political reform initiatives had been launched. The role of the selectorate as an effective incentive scheme to constrain the leader's behavior has been weakened since then. A good example to show this point is related to the resistance of the recentralization attempts proposed by central authorities we mentioned before. Actually the man who led this confrontation against center authorities was Ye Xuanping, the reformist governor of Guangdong province (Cai and Treisman 2006, Montinola et al. 1996, Shirk 1993). At several meetings in 1989-90, Ye, sometimes supported by other governors, criticized recentralization of budget revenues proposed by Premier Li Peng. At one conference of provincial governors, his speech was reportedly met by "wild applause" (Gibney 1990), therefore the Central Committee had to be postponed and central government backed down. But this was only half of the story happened when the reformists not totally be defeated by the conservatives,

and thus could be seen as an example of the selectorate constraining the central leader's behavior. However after the conservatives concentrating power at the center, the rest of the story was the central authorities removed Governor Ye in 1991, along with the Guangdong party secretary, and appointed two more junior officials who were more pliant. In late 1993, the fiscal system favored by Ye was scrapped and replaced by the central authority's preferred arrangement (Cai and Treisman 2006). Moreover, the center also removed the party secretary of Jiangsu province, and other regional politicians were reportedly "dumped for rubbing up Beijing the wrong way" (Yang 1997, p.103). The provincial officials are still important players in the games of Beijing politics, but they can never be relied on to coordinate to limit central interventions (Cai and Treisman 2006). Since then, the selectorate is more likely to be a subordinate to the central leadership than a disciplining device.

6.3. Maintain Social Stability, A New Source of Accountability

If the game is played only between the leader and the selectorate, without the citizens as another active player, as our theory predicted, the Kleptocratic Equilibrium will arise, the leader will not be accountable to the general interest, because the selectorate is too weak to discipline the leader, as the center consolidated power after the Tiananmen incident. However despite the trapped political reform and weakened restraints from the selectorate, the central leadership still accountable to the general interest and their ultimate goal remained the same: pursuing economic growth. We argue that this is because the institutional structure of the political game in China changed into another pattern which fits into Proposition 4 and Proposition 12, i.e. the leader notwithstanding her type would pursue the general interest not because of the selectorate control but because of her accountability towards the citizens. As our model indicated, another pitfall resulted from the "reciprocal accountability" between the leader and the selectorate is high inequality, as in equilibrium, the selectorate get all the redistribution, which is because political power is monopolized by the leader and the selectorate. As a result, the citizens have a constant desire to change the outcomes even through risky collective actions. In China, the threat of social unrest grows as a result of the worsening inequality. In recent years, the view that China's inequality trends are

producing growing popular anger that may threaten to turn China into a social volcano, has gained general, even if not universal, acceptance among researchers, policy analysts and even China's leadership (Whyte 2010, p5). In this subsection we will first show that the worsening inequality in China is partly resulted from the weakened role of the selectorate, which makes further political reform difficult, and thus turning promoting economic growth an alternative choice to maintain social stability. In addition, we argue that the effectiveness of citizenry accountability in China also results from the not too coercive attitudes towards social conflicts by the Chinese leadership and their willingness to offer a clean, responsive autocracy. In autocratic countries, the cost of revolution and the citizens' willingness to revolt is influenced by the leader, who can exercise strict control over the threats of potential social unrest through strengthening national coercive power. Our model shows that in order to assure the channel of citizenry accountability effective, the cost of revolution should be large but not enormous. If the cost of revolution is too small, the society will turn into failed state, which is the situation in some Sub-Sahara African countries, where too many revolts going on and opportunistic behavior of the politicians become common practices. On the other hand, if the cost of revolution is enormous, there will be no willingness to revolt even if the citizens suffer seriously from the bad policies implemented by the leader. North Korea is an example fit into this category.

The current political system in China bears no relationship to the "separation of party and government" that Zhao Ziyang tried to institute in the 1980s which would make the role of the selectorate more effective. On the contrary, the party center directly manage key posts and decision-making process, actively rationalizes its procedures, and tries to improve its capacity as a "governing party" (Naughton 2005). In a research comparing the divergent income inequality patterns between Vietnam and China, Malesky et al.(2010) find that the result of the kind of political structure in China with small governing coalition is the worsening of income inequality. The absence of a political shock like Tiananmen Incident allowed the inner-party democratization reform in Vietnam went on smoothly. Hence the Vietnamese decision-making body not only necessitates a larger governing coalition than China, but also represents more diverse constituencies. The Vietnamese Central Committee is composed of members of the party apparatus,

government officials, state owned enterprises, provincial leaders, military, mass organizations (such as the Women's Union and Peasant Union), business associations, ethnic organizations, and research and educational institutions. While they are all high-ranking leaders in Vietnam's cadre system, they are elected to attend the national Party Congress from within their own provinces and institutions. As such, they represent a much broader collection of interests than in China. (Malesky et al.2010). Moreover, the central committee of Vietnam also had been able to hold the party leadership accountable on a continual basis. The most striking example took place in 2001, when the central committee rejected the Politburo's recommendation that Le Kha Phieu continue as the General Secretary of the Party and selected instead Nong Duc Manh (Abuza 2002). Compared to China, Vietnam's institutions empower a larger group of decision-makers and place more constraints on the party leadership, therefore Vietnamese economic policies must consider a larger cross-section of society, they spend a larger portion of revenue on public expenditures and engender greater equalization between provinces and individuals; but in contrast, in China, political participation is extremely limited, top-down authority is superior to bottom-up authority, local officials see their interests in terms of a narrow constituency from above rather than from below, therefore they acquiesce the fiscal arrangements that exacerbating inter-provincial inequality (Malesky et al 2010). In Pei Mingxin' terms "the market-oriented economic policies, pursued in a context of exclusionary politics and predatory practices, make the CCP increasingly resemble a self-serving ruling elite" (Pei p19). The rising inequality, the simultaneous consolidation of an elite-based exclusivist ruling coalition and the increasing marginalization of weak groups, such as workers, peasants, and migrant laborers cause the growing tensions between the ruling elite and the masses as we have analyzed in Section 2. The rising numbers in the protests is, in turn, partly due to the CCP's resistance to democratic reforms, which results in the lack of effective channels for political participation and interest representation, creating an environment in which groups unable to defend their interests are forced to take high-risk options of collective protest to voice their demands and hope for compensatory policies (Pei p31). This situation put the CCP in a trapped dilemma. First, inequality raises the aversion that the elite have to democracy, this is because with greater inequality the burden placed on the elite increases,

as a larger share of tax revenue will be raised from the elite, therefore when a society is very unequal, the likelihood of transition to democracy decreases (Acemoglu and Robinson 2006, p35). Second, the resistance to political reforms further aggravates state-society tensions, as individual and collective grievances continue to accumulate, compounding risks of future reform (Pei 32). As a result, pursing high economic growth to maintain social stability becomes the reasonable choice for the CCP to solve the current problem, because robust economic growth, improved living standards, and ample new opportunities promote general optimism and acceptance of the current system.

On the other hand, Chinese authorities' attitudes toward social conflicts keep evolving over time, making the cost of revolution large but not enormous in nowadays China. In the past, Chinese authorities tended to attribute social unrests to enemy conspiracies, and suppress them with tough means, which made the cost of revolt enormous. Gradually, they begin to embrace the economic cause of the unrests and recognize that it was no longer possible to force protests back down to the very low rates China witnessed in the years immediately following the 1989 Tiananmen incident. Their views and responses toward social conflicts change too. First, more and more sympathetic views arise. For example, surprising numbers of analysts in the public security system display an undisguised sympathy for the very worker and peasant protestors the police are supposed to suppress. In their writings, they characterize laid-off demonstrators as "exploited," "marginalized," "socially disadvantaged," "victims," and "losers" in economic competition, driven to protest by social distrust and the "heartlessness" of the free market. They frankly concede that many protestors are victims of crooked managers who drove their factories into bankruptcy through illicit dealings or who absconded with company assets.(Tanner 2004) Second, the central authority tolerates petty riots because sometimes they can use the conflicts as a multipurpose governance tool. The small scale riots can serve as an information collection source for the leader. They also can help central leadership check the principal-agent problem inherent in Chinese governance and monitor the actions of local officials (Minzner 2006). Moreover, sometimes through direct intervention by correcting the mistreatment to the citizens and punishing the corrupted local officials, the central leadership can maintain their image among the people and the legitimacy of the CCP and

the government. Third, in the past Chinese media were not allowed to publish any news about protests and demonstrations, but beginning from 2008, after Hu Jintao lifting the ban against media reporting of mass protests, official news media has green light from the CCP to report mass protests. Just a week after Hu's speech in June 2008, the first "mass incident," a protest in Weng'an county was reported in the official Xinhua News. A year later, the People's Daily, also for the first time, broadcast local protests in Shishou City (Shirk 2010, p24-26). Therefore instead of simply repression, the new implicit goal of the central authorities was to forge an internal security strategy that would permit them to effectively contain unrest, address some of its underlying economic and policy-related causes, and prevent it from becoming a major threat to the regime's stability (Tanner 2006). From Jiang Zeming's initiation of the "Development of the West" campaign in the late 1990s, to Hu Jingtao's proclaimed goal of a "harmonious society", all of them intended to improve the lives of China's poor citizens in general, and poor farmers in particular, and thus steer China away from the looming social volcano.

This logic answers the question we put forward at the beginning of the paper: why the CCP could be accountable even when the selectorate is captured by the leader? When the "reciprocal accountability" is ineffective since the selectorate is too small to control the leader, this notwithstanding the check by the citizens is effective to induce the Efficient Equilibrium, because the leader wants act to avoid revolution. The necessary condition for the channel of citizenry accountability to be effective is the cost of revolution is large but not enormous, which China satisfies after the 1980s because of the willingness of the central leaders to tolerate petty riots. Thereby we can conclude that, China, before the Tiananmen incident fits the propositions where successful autocracy arises because of the accountability towards the selectorate; while the reform process after the Tiananmen incident could be explained by the equilibria where successful autocracy arises because of the accountability towards the citizens.

7. CONCLUSION

This paper tries to find the institutional basis of China's fast economic growth in the reform era. It also attempts to discover the differences between successful

and unsuccessful autocracies in terms of the forces that shape accountability in the absence of regularized elections. From the simple model played between the leader and the selectorate we find that the selectorate will be able to discipline the leader if they are not too dependent on her, i.e. in terms of reciprocal accountability. Although economic development can be achieved, it is characterized by social inequality, since the leader is only accountable to the vested interests in the society. Next, we add the citizens as another player into the game. The participation of the citizens creates another incentive for the leader to promote economic growth; the leader wants to use fast economic growth to maintain social stability. This effect can be seen when the selectorate do not has the ability to create real checks to the leader. This model can explain China's experience very well. The reciprocal accountability between the top leader and the selectorate leads to policies that only catering the interests of the groups holding powerful positions inside the party but hurt economic growth in the long-run. Nevertheless, the CCP seems do not hold back by vested interests, the governance improved and the policies become more people centered. Our model suggests that the change of CCP's ruling pattern was due to the pressure outside the regime — the threat of social upheaval by the citizens. The CCP adopted good policies to promote economic growth, because they believe high growth rate would cover other social problems and, improvements in living standards can divert people's demand of democracy. High economic growth helps to generate social stability, and social stability in turn provide China a peaceful environment to develop its economy. However, the two-digit growth rate cannot last forever, as China is facing more constraints than ever before, such as constraints on environment, energy and natural resources. At the same time, rich-poor gap, gap between rural and urban, ethnical conflicts in areas populated by minorities and, rent-seeking without proper order tend to create more serious social tensions than before. As the strategy of using high growth to maintain social stability will not be effective for ever, to catch up the long-lagged political reform is a reasonable choice.

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8. APPENDIX

8.1. Equilibria when the Citizens choose before the Selectorate

As usual we solve the game backward. Moreover we will assume consistency in the sense of Sequential Equilibria, so that players' beliefs on the leader's type agree even out of equilibrium.

8.1.1. Sequential rationality of the Selectorate

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

$$V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0) \tag{1}$$

This implies,

$$P^S(C|\delta)\Delta + \frac{(1-\phi)}{\phi} X \geq \pi\Delta, \tag{2}$$

where $P(C|\delta)$ should be derived using Bayes rule, knowing that by construction $\lambda^C(\theta_1, r_1) = 1$

$$\begin{aligned} P^S(C|\delta &= \Delta) = \frac{\pi \times \lambda^C(\theta_1, r_1) \times (1 - \alpha(\Delta))}{\Big[\pi \times \lambda^C(\theta_1, r_1) + (1-\pi) \times \lambda^N(\theta_1, r_1)\Big] \times (1 - \alpha(\Delta))} = \\ &= \frac{\pi \times 1 \times (1 - \alpha(\Delta))}{\Big[\pi \times 1 + (1-\pi) \times \lambda^N(\theta_1, r_1)\Big] \times (1 - \alpha(\Delta))} \end{aligned} \tag{3}$$

$$\begin{aligned} P^S(C|\delta &= 0) = \frac{\pi \times \Big(1 - \lambda^C(\theta_1, r_1)\Big) \times (1 - \alpha(0))}{\Big[\pi \times \Big(1 - \lambda^C(\theta_1, r_1)\Big) + (1-\pi) \times \Big(1 - \lambda^N(\theta_1, r_1)\Big)\Big] \times (1 - \alpha(0))} = \\ &= \frac{\pi \times 0 \times (1 - \alpha(0))}{\Big[\pi \times 0 + (1-\pi) \times \Big(1 - \lambda^N(\theta_1, r_1)\Big)\Big] \times (1 - \alpha(0))}. \end{aligned} \tag{4}$$

Note that by consistency $(1 - \alpha(0)) > 0$ and $(1 - \alpha(\Delta)) > 0$, hence we can simplify previous ratios getting

$$\begin{aligned} P^S(C|\delta &= \Delta) = \frac{\pi \times \lambda^C(\theta_1, r_1)}{\pi \times \lambda^C(\theta_1, r_1) + (1-\pi) \times \lambda^N(\theta_1, r_1)} = P^Z(C|\delta = \Delta) = \\ &= \frac{\pi \times 1}{\pi \times 1 + (1-\pi) \times \lambda^N(\theta_1, r_1)} = \frac{\pi}{\pi + (1-\pi) \times \lambda^N(\theta_1, r_1)} \end{aligned} \tag{5}$$

$$P^S(C|\delta = 0) = \frac{\pi \times \left(1 - \lambda^C(\theta_1, r_1)\right)}{\pi \times \left(1 - \lambda^C(\theta_1, r_1)\right) + (1-\pi) \times \left(1 - \lambda^N(\theta_1, r_1)\right)} = P^Z(C|\delta = 0) =$$
$$= \frac{\pi \times 0}{\pi \times 0 + (1-\pi) \times \left(1 - \lambda^N(\theta_1, r_1)\right)} = \frac{0}{(1-\pi) \times \left(1 - \lambda^N(\theta_1, r_1)\right)}. \quad (6)$$

8.1.2. Separating actions by the leader

Suppose the two types of the leader choose different actions. Since by construction the congruent type always chooses the congruent policy, this means $\lambda^C(\theta_1, r_1) = 1$ and $\lambda^N(\theta_1, r_1) = 0$.

Beliefs of the selectorate and of the citizens From previous calculations we get

$$P^S(C|\delta = \Delta) = P^Z(C|\delta = \Delta) = \frac{\pi \times 1}{\pi \times 1 + (1-\pi) \times 0} = 1 \quad (7)$$

and

$$P^S(C|\delta = 0) = P^Z(C|\delta = 0) = \frac{\pi \times 0}{\pi \times 0 + (1-\pi) \times 1} = 0. \quad (8)$$

8.1.3. Sequential rational choices of the selectorate

If $\delta = \Delta$, then $V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0)$ is equivalent to

$$\Delta + \frac{(1-\phi)}{\phi} X \geq \pi\Delta, \quad (9)$$

which is always satisfied. Therefore in a possibly separating equilibrium the selectorate observing $\delta = \Delta$ will choose to retain the incumbent leader being certain that she is congruent, i.e. $\rho(\Delta) = 1$.

This means that the following strategy profiles can not be Perfect Bayesian equilibria:

1. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 0\right)$,
2. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 0\right)$,
3. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 0\right)$
4. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 0, \rho(\Delta) = 0\right)$
5. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 0\right)$,
6. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 0\right)$,

7. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 0\right)$
8. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 0, \rho(\Delta) = 0\right)$.

If $\delta = 0$, then $V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0)$ is equivalent to

$$\frac{(1-\phi)}{\phi} X \geq \pi\Delta, \tag{10}$$

which might be satisfied depending on the exogenous parameters.

Case 1. Suppose $\frac{(1-\phi)}{\phi} X \geq \pi\Delta$ which implies $\phi \leq \frac{X}{X+\Delta\pi} =: \Phi(X, \pi, \Delta)$. In this case the selectorate will choose to retain the incumbent leader even if he is certain that she is not congruent since the probability of being in the selectorate next period is too small, i.e. $\rho(0) = 1$. In this situation, the selectorate is completely loyal to the leader being afraid of loosing his privileges and therefore he is always supporting the leader no matter what kind of general interest policy choice she had made.

Sequential rational choices of the Citizens The expected continuation utility the citizens will get in δ after they choose to initiate a revolution is:

$$V^Z(\alpha(\delta) = 1|\delta) = (1-\phi) \times \frac{X-\mu}{1-\phi} + \phi \times 0 = X - \mu \tag{11}$$

The expected utility the citizens will receive without revolution is:

$$\begin{aligned} V^Z(\alpha(\delta) &= 0|\delta) = \rho(\delta) P^Z(C|\delta)\Delta + (1-\rho(\delta))[\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta] = & (12) \\ &= \rho(\delta) P^Z(C|\delta)\Delta + (1-\rho(\delta))(\pi\Delta + X) & (13) \end{aligned}$$

where $P^Z(C|\delta)$ is the citizens' posterior belief on the incumbent leader being congruent given that in the first period they obtained $\delta \in \{0, \Delta\}$. Moreover if the selectorate will retain the incumbent at the end of period one, i.e. if $\rho(\delta) = 1$, the citizens will get the expected payoff $P^Z(C|\delta)\Delta$. If the selectorate will remove the incumbent at the end of period one, i.e. $\rho(\delta) = 0$, the citizen will get an expected payoff $\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta$, since once the incumbent has been ousted, the citizens will have probability ϕ to be included in the challenger's coalition getting $\pi\Delta$ from the general interest policy and a private payoff $\frac{X}{\phi}$, while with probability $1-\phi$, the citizens will not be included into the newly formed selectorate receiving just $\pi\Delta$.

The citizens will accommodate in δ, i.e. $\alpha(\delta) = 0$, if:

$$V^Z(\alpha = 1|\delta) \leq V^Z(\alpha = 0|\delta) \tag{14}$$

i.e.

$$X - \mu \leq \rho(\delta)P^Z(C|\delta)\Delta + (1 - \rho(\delta))(\pi\Delta + X) \tag{15}$$

Moreover since we are analyzing the situation where the selectorate will always choose to support the incumbent leader, i.e. $\rho(\delta) = 1 \quad \forall\delta \in \{0, \Delta\}$, then the citizens will accommodate in δ, i.e. $\alpha(\delta) = 0$, if and only if

$$X - \mu \leq P^Z(C|\delta)\Delta \tag{16}$$

which is never satisfied in $\delta = 0$ since $P^Z(C|0) = 0$, hence $\alpha(0) = 0$ is never sequentially rational and thus the following strategy profiles can't be Perfect Bayesian equilibria.

1. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1\right)$,
2. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1\right)$.

Therefore under these hypotheses in any possible separating Perfect Bayesian equilibrium $\alpha(0) = 1, \rho(0) = 1, \rho(\Delta) = 1$.

Now consider the citizens sequentially rational behavior in $\delta = \Delta$. Suppose that $X - \mu \leq \Delta$, then the sequentially rational choice by the citizens is $\alpha(\Delta) = 0$, hence to avoid the revolt the noncongruent leader would deviate to $\lambda^N(\theta_1, r_1) = 1$.Therefore $(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1)$ can't be a Perfect Bayesian equilibrium.

To conclude, under these hypotheses there is a separating Perfect Bayesian Equilibrium if and only if $X - \mu \geq \Delta$, i.e. $(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1)$, an equilibrium where the citizens will always revolt. Clearly this result depend on the significant amount of the expected payoff to the citizens from revolting. Moreover note that when $X - \mu \geq \Delta$ the citizens will revolt notwithstanding the leaders behavior, who then would follow her short run myopic interest.

PROPOSITION 13. *When*

1. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and* $\mu \geq X - \Delta$, *there exists no separating Perfect Bayesian equilibrium. This means that when the citizens play an active role before the selectorate has to choose, the leader can not behave as a kleptocrat, otherwise she will be removed by a citizens' revolt;*

2. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ *and* $\mu \leq X-\Delta$, *there exists a separating Perfect Bayesian equilibrium, where*

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 0, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1^{35}.$$

This means that both types of the leader would pursue their own interest and both will be overthrown from power by a citizens' revolt because given the unequal income distribution their payoffs from accepting a congruent policy are too small compared to the cost of revolution.

Case 2 Suppose $\frac{(1-\phi)}{\phi}X \leq \pi\Delta$ which implies $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$. In this case the selectorate will choose to change the incumbent leader when $\delta = 0$ being certain that she is not congruent. In this scenario, to find out the behavior of the non congruent incumbent leader, we need to compare her payoffs when she switch from non congruent to congruent actions behaving as if she is the congruent type and to this aim we need to find the sequential rational action of the citizens

Sequential rational choices of the Citizens The expected continuation utility a citizen will get after they choose in δ to initiate a revolution is:

$$V^Z(\alpha(\delta) = 1|\delta) = (1-\phi) \times \frac{X-\mu}{1-\phi} + \phi \times 0 = X - \mu \tag{17}$$

The expected utility a citizen will receive without revolution is:

$$\begin{aligned} V^Z(\alpha(\delta) &= 0|\delta) = \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))[\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta] = \\ &= \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))(\pi\Delta + X) \end{aligned}$$

where $P^Z(C|\delta)$ is the citizen's posterior belief on the incumbent leader being congruent given that in the first period he obtained an payoff of $\delta \in \{0, \Delta\}$ from the general interest policy. Moreover if the selectorate will retain the incumbent at the end of period one, i.e. if $\rho(\delta) = 1$, then the citizens will get an expected payoff $P^Z(C|\delta)\Delta$. If the selectorate will remove the incumbent at the end of period one, i.e. if $\rho(\delta) = 0$, then the citizens will get an expected payoff $\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta$, since once the incumbent has been ousted, the citizen will have probability ϕ to be included in the challenger's coalition getting $\pi\Delta$ from the general interest policy

[35] The beliefs have been derived before, here are omitted to avoid unnecessary complications

and a private payoff $\frac{X}{\phi}$, while with probability $1-\phi$ the citizen will not be included into the newly formed selectorate receiving just $\pi\Delta$.

The citizens will accommodate in δ, i.e. $\alpha(\delta)=0$, if and only if

$$V^Z(\alpha=1|\delta) \leq V^Z(\alpha=0|\delta) \tag{18}$$

i.e. if and only if

$$X-\mu \leq \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))(\pi\Delta + X) \tag{19}$$

Moreover we are analyzing the situation where the selectorate will choose to support the incumbent leader if $\delta=\Delta$ and to remove her otherwise, i.e. $\rho(0)=0$, $\rho(\Delta)=1$, then the citizens will accommodate in $\delta=0$, i.e. $\alpha(0)=0$, if and only if

$$X-\mu \leq \pi\Delta + X \tag{20}$$

which is always satisfied. Therefore $\alpha(0)=0$ is the unique sequentially rational choice and thus the following strategy profiles can't be Perfect Bayesian equilibria:

1. $\left(\lambda^C(\theta_1,r_1)=1, \lambda^N(\theta_1,r_1)=0, \alpha(0)=1, \alpha(\Delta)=0, \rho(0)=0, \rho(\Delta)=1\right)$,
2. $\left(\lambda^C(\theta_1,r_1)=1, \lambda^N(\theta_1,r_1)=0, \alpha(0)=1, \alpha(\Delta)=1, \rho(0)=0, \rho(\Delta)=1\right)$.

Therefore under these hypotheses in any possible separating Perfect Bayesian equilibrium $\alpha(0)=0, \rho(0)=0, \rho(\Delta)=1:$ the citizens know that after observing a non congruent behavior, the selectorate would remove the leader and so they prefer to free-ride on this opportunity instead of risking a revolt.

Now consider the sequentially rational choice by the citizens in $\delta=\Delta$: they will accommodate if and only if $X-\mu \leq \Delta$. This means that the noncongruent leader might remain in power switching to a congruent policy. Let $EU^N(\lambda=1)$ be the non congruent leader's expected utility she get switching to a growth-enhancing action in period one, i.e. when $\lambda^N(\theta_1,r_1)=1$

$$EU^N(\lambda=1) = \Delta + \frac{X}{\phi} + \beta(\overline{r} + \frac{X}{\phi}). \tag{21}$$

And let $EU^N(\lambda=0)$ be the non congruent leader's expected utility from choosing a non congruent action in period one i.e. when $\lambda^N(\theta_1,r_1)=0$

$$EU^N(\lambda=0) = r_1 + \frac{X}{\phi}. \tag{22}$$

The non congruent leader will choose $\lambda^N(\theta_1,r_1)=0$ if and only if

$$EU^N(\lambda=1) \leq EU^N(\lambda=0) \tag{23}$$

that is

$$r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi). \tag{24}$$

On the other hand suppose $X - \mu \geq \Delta$, then the citizens will revolt only after a congruent policy. This result depend on the significant amount of the expected payoff to the citizens from revolting and on the citizens' free riding on the selectorate removal after a non congruent policy. In this situation the non congruent leader would follow her short run myopic interest.

PROPOSITION 14. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$, $\mu \geq X - \Delta$ *and* $r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a separating Perfect Bayesian equilibrium where*

$$\lambda^N(\theta_1, r_1) = 0, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 1^{36}.$$

This means that the non congruent leader would pursue her own interest, the citizens will never revolt but the selectorate will overthrown the non congruent leader from power, this notwithstanding she will pursue her own interest since the first period private rent has had a significant high realization;

2. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and* $\mu \leq X - \Delta$, *there exists a separating Perfect Bayesian equilibrium where*

$$\lambda^N(\theta_1, r_1) = 0, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 0, \rho(\Delta) = 1^{37}.$$

This means that the non congruent leader would pursue her own interest, the citizens will revolt after a congruent policy only and the selectorate will overthrown the non congruent leader from power, this notwithstanding she will pursue her own interest since she will be overthrown from power anyway.

8.1.4. Pooling actions by the leader

Now suppose the two types of the leader choose the same actions. Since by construction the congruent type always chooses the congruent policy, this means $\lambda^C(e_1 = \theta_1, r_1) = \lambda^N(e_1 = \theta_1, r_1) = 1$.

[36] The beliefs have been derived before, here are omitted to avoid unnecessary complications

[37] The beliefs have been derived before, here are omitted to avoid unnecessary complications

Beliefs of the selectorate and of the citizens From previous calculations we get

$$P^S(C|\delta=\Delta)=P^Z(C|\delta=\Delta)=\frac{\pi\times 1}{\pi\times 1+(1-\pi)\times 1}=\pi \tag{25}$$

and

$$P^S(C|\delta=0)=P^Z(C|\delta=0)=\frac{\pi\times 0}{\pi\times 0+(1-\pi)\times 0}\in[0,1], \tag{26}$$

i.e. we get the usual indeterminacy out of the equilibrium path but, since the congruent leader has no reason to deviate, a standard forward induction argument restricts the out of equilibrium beliefs:

$$P^S(C|\delta=0)=P^Z(C|\delta=0)=0. \tag{27}$$

Sequential rational choices of the selectorate If $\delta=\Delta$, then $V^S(\rho(\delta)=1)\geq V^S(\rho(\delta)=0)$ is equivalent to

$$\pi\Delta+\frac{(1-\phi)}{\phi}X\geq\pi\Delta,$$

which is always satisfied. Therefore the selectorate observing $\delta=\Delta$ will choose to retain the incumbent leader even if he is uncertain on her type, i.e. $\rho(\Delta)=1$.

This means that the following strategy profiles can not be Perfect Bayesian equilibria:

1. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=0,\alpha(\Delta)=0,\rho(0)=1,\rho(\Delta)=0\right)$,
2. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=0,\alpha(\Delta)=0,\rho(0)=0,\rho(\Delta)=0\right)$,
3. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=0,\alpha(\Delta)=1,\rho(0)=1,\rho(\Delta)=0\right)$
4. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=0,\alpha(\Delta)=1,\rho(0)=0,\rho(\Delta)=0\right)$
5. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=1,\alpha(\Delta)=0,\rho(0)=1,\rho(\Delta)=0\right)$,
6. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=1,\alpha(\Delta)=0,\rho(0)=0,\rho(\Delta)=0\right)$,
7. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=1,\alpha(\Delta)=1,\rho(0)=1,\rho(\Delta)=0\right)$
8. $\left(\lambda^C(\theta_1,r_1)=1,\lambda^N(\theta_1,r_1)=1,\alpha(0)=1,\alpha(\Delta)=1,\rho(0)=0,\rho(\Delta)=0\right)$.

If $\delta=0$, then $V^S(\rho(\delta)=1)\geq V^S(\rho(\delta)=0)$ is equivalent to

$$\frac{(1-\phi)}{\phi}X\geq\pi\Delta, \tag{28}$$

which might be satisfied depending on the exogenous parameters.

Case 1. Suppose $\frac{(1-\phi)}{\phi}X \geq \pi\Delta$ which implies $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$. In this case the selectorate will choose to retain the incumbent leader even if he is certain that she is not congruent since the probability of being in the selectorate next period is too small, hence $\rho(0) = 1$. In this situation, the selectorate is completely loyal to the leader being afraid of loosing his privileges and therefore he is always supporting the leader no matter what kind of general interest policy choice she had made.

Sequential rational choices of the Citizens The expected continuation utility the citizens will get after they choose to initiate a revolution in δ is:

$$V^Z(\alpha(\delta) = 1|\delta) = (1-\phi) \times \frac{X-\mu}{1-\phi} + \phi \times 0 = X - \mu \tag{29}$$

The expected utility the citizens will receive without revolution is:

$$\begin{aligned} V^Z(\alpha(\delta) &= 0|\delta) = \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))[\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta] = \\ &= \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))(\pi\Delta + X) \end{aligned}$$

where $P^Z(C|\delta)$ is the citizens' posterior belief on the incumbent leader being congruent given that in the first period they obtained $\delta \in \{0, \Delta\}$ from the general interest policy. Moreover if the selectorate will retain the incumbent at the end of period one, i.e. if $\rho(\delta) = 1$, the citizens will get the expected payoff $P^Z(C|\delta)\Delta$. If the selectorate will remove the incumbent at the end of period one, i.e. if $\rho(\delta) = 0$, the citizens will get the expected payoff $\phi(\pi\Delta + \frac{X}{\phi}) + (1-\phi)\pi\Delta$, since once the incumbent has been ousted, the citizens will have probability ϕ to be included in the challenger's coalition getting $\pi\Delta$ from the general interest policy and a private payoff of $\frac{X}{\phi}$, while with probability $1-\phi$ the citizens will not be included into the newly formed selectorate receiving just $\pi\Delta$.

Hence the citizens will accommodate in δ, i.e. $\alpha(\delta) = 0$, if and only if

$$V^Z(\alpha = 1|\delta) \leq V^Z(\alpha = 0|\delta) \tag{30}$$

i.e. if and only if

$$X - \mu \leq \rho(\delta)P^Z(C|\delta)\Delta + (1-\rho(\delta))(\pi\Delta + X) \tag{31}$$

Moreover since we are analyzing the situation where the selectorate will always choose to support the incumbent leader, i.e. $\rho(\delta) = 1 \quad \forall\delta \in \{0, \Delta\}$, then the citizens

will accommodate in δ, i.e. $\alpha(\delta) = 0$, if and only if

$$X - \mu \leq P^Z(C|\delta)\Delta. \tag{32}$$

This inequality is never satisfied in $\delta = 0$, since $P^Z(C|0) = 0$ hence $\alpha(0) = 0$ is never sequentially rational and the following strategy profiles can't be a Perfect Bayesian equilibria:

1. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1\right)$,
2. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1\right)$.

Therefore under these hypotheses in any possible pooling Perfect Bayesian equilibrium $\alpha(0) = 1, \rho(0) = 1, \rho(\Delta) = 1$.

On the other hand, the citizens will accommodate in $\delta = \Delta$, i.e. $\alpha(\Delta) = 0$, if and only if

$$X - \mu \leq \pi\Delta, \tag{33}$$

since $P^Z(C|\Delta) = \pi$. Therefore the sequentially rational choice by the citizens in $\delta = \Delta$ will depend on the comparison between $X - \mu$ and $\pi\Delta$.

Suppose that $X - \mu \geq \pi\Delta$, then the sequential rational choice by the citizens is $\alpha(\Delta) = 1$, i.e. the citizens will revolt notwithstanding the leader's behavior. But then, because of this citizens' behavior, the noncongruent leader would deviate to $\lambda^N(\theta_1, r_1) = 0$.Therefore $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 1, \rho(\Delta) = 1\right)$ can't be a Perfect Bayesian equilibrium.

On the other hand, suppose that $X - \mu \leq \pi\Delta$, then the sequential rational choice by the citizens is $\alpha(\Delta) = 0$: since $\alpha(0) = 1$ and $\alpha(\Delta) = 0$, the noncongruent leader prefers to pool.

To conclude, under these hypotheses, there is one possible Perfect Bayesian Equilibrium if and only if

$$X - \mu \leq \pi\Delta,$$

i.e. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1\right)$, i.e. an equilibrium where the citizens will revolt if there is a noncongruent policy.

PROPOSITION 15. *When*

1. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and* $\mu \geq X - \pi\Delta$, *there exists a pooling Perfect Bayesian*

equilibrium where

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 1, \rho(\Delta) = 1^{38}.$$

This means that the noncongruent leader would pursue the congruent policy not because of the selectorate control but because afraid of the citizens' revolt;

2. $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and* $\mu < X - \pi\Delta$ *, there exists no pooling Perfect Bayesian equilibrium consistent with forward induction.*

Case 2 Suppose $\frac{(1-\phi)}{\phi} X \leq \pi\Delta$ which implies $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$. In this case the selectorate will choose to change the incumbent leader when $\delta = 0$ being certain that she is not congruent, therefore $\rho(0) = 0$. On the other hand, we know from previous calculations that the selectorate observing $\delta = \Delta$ will choose to retain the incumbent leader even if he is uncertain on her type, i.e. $\rho(\Delta) = 1$.

Sequential rational choices of the Citizens The expected continuation utility a citizen will get after they choose in δ to initiate a revolution is:

$$V^Z(\alpha(\delta) = 1|\delta) = (1 - \phi) \times \frac{X - \mu}{1 - \phi} + \phi \times 0 = X - \mu \tag{34}$$

The expected utility a citizen will receive without revolution is:

$$\begin{aligned} V^Z(\alpha(\delta) &= 0|\delta) = \rho(\delta) P^Z(C|\delta)\Delta + (1 - \rho(\delta))[\phi(\pi\Delta + \frac{X}{\phi}) + (1 - \phi)\pi\Delta] = \\ &= \rho(\delta) P^Z(C|\delta)\Delta + (1 - \rho(\delta))(\pi\Delta + X) \end{aligned}$$

where $P^Z(C|\delta)$ is the citizens' posterior belief on the incumbent leader being congruent given that in the first period they obtained δ from the general interest policy. Moreover if the selectorate will retain the incumbent at the end of period one, i.e. if $\rho(\delta) = 1$, the citizens will get the expected payoff $P^Z(C|\delta)\Delta$. If the selectorate will remove the incumbent at the end of period one, i.e. if $\rho(\delta) = 0$, the citizens will get the expected payoff $\phi(\pi\Delta + \frac{X}{\phi}) + (1 - \phi)\pi\Delta$, since once the incumbent has been ousted, the citizens will have probability ϕ to be included in the challenger's coalition getting $\pi\Delta$ from the general interest policy and a private payoff $\frac{X}{\phi}$; while with probability $1 - \phi$ the citizens will not be included into the newly formed selectorate receiving just $\pi\Delta$.

[38] The beliefs have been derived before, here are omitted to avoid unnecessary complications.

The citizens will accommodate in δ, i.e. $\alpha(\delta) = 0$, if and only if

$$V^Z(\alpha = 1|\delta) \leq V^Z(\alpha = 0|\delta) \tag{35}$$

i.e. if and only if

$$X - \mu \leq \rho(\delta)P^Z(C|\delta)\Delta + (1 - \rho(\delta))(\pi\Delta + X) \tag{36}$$

Moreover we are analyzing the situation where the selectorate will choose to support the incumbent leader if $\delta = \Delta$ and to remove her otherwise, i.e. when $\rho(0) = 0$, $\rho(\Delta) = 1$, then the citizens will accommodate in $\delta = 0$, i.e. $\alpha(0) = 0$ if and only if

$$X - \mu \leq \pi\Delta + X \tag{37}$$

which is always satisfied. Therefore $\alpha(0) = 0$ is the unique sequentially rational choice and the following strategy profiles can't be Perfect Bayesian equilibria:

1. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 1\right)$,
2. $\left(\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = 1, \alpha(0) = 1, \alpha(\Delta) = 1, \rho(0) = 0, \rho(\Delta) = 1\right)$.

Therefore under these hypotheses in any possible pooling Perfect Bayesian equilibrium $\alpha(0) = 0, \rho(0) = 0, \rho(\Delta) = 1$.

Now consider the sequentially rational choice by the citizens in $\delta = \Delta$: they will accommodate if and only if

$$X - \mu \leq \pi\Delta. \tag{38}$$

If $X - \mu \geq \pi\Delta$, then the citizens will revolt after congruent behavior, i.e. $\alpha(\Delta) = 1$, since the citizens' payoff from good policies is anyway too low compared with the expected gains from getting power; therefore the non congruent leader would switch to her most preferred non congruent policy avoiding revolution but being removed by the selectorate. Thus under these conditions there is no pooling Perfect Bayesian equilibrium.

Instead if $X - \mu \leq \pi\Delta$, then the noncongruent leader will remain in power adopting a congruent policy. Let $EU^N(\lambda = 1)$ be the non congruent leader's expected utility when $\lambda^N(\theta_1, r_1) = 1$

$$EU^N(\lambda = 1) = \Delta + \frac{X}{\phi} + \beta(\overline{r} + \frac{X}{\phi}). \tag{39}$$

Let $EU^N(\lambda = 0)$ be the non congruent leader's expected utility from choosing a non congruent action in period one i.e. when $\lambda^N(\theta_1, r_1) = 0$

$$EU^N(\lambda = 0) = r_1 + \frac{X}{\phi}. \tag{40}$$

Therefore the non congruent leader will choose $\lambda^N(\theta_1, r_1) = 1$ if and only if

$$EU^N(\lambda = 1) \leq EU^N(\lambda = 0) \tag{41}$$

that is if and only if

$$r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}). \tag{42}$$

Therefore under these hypotheses, there is a possible pooling Perfect Bayesian Equilibrium depending on the relative values of the parameters.

PROPOSITION 16. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta), \mu \geq X - \pi\Delta$ *and* $r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where*

$$\lambda^N(\theta_1, r_1) = 1, \lambda^C(\theta_1, r_1) = 1, \alpha(0) = 0, \alpha(\Delta) = 0, \rho(0) = 0, \rho(\Delta) = 1^{39}.$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate.

2. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$ *and either* $\mu < X - \pi\Delta$ *or* $r_1 > \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$ *or both, there exists no pooling Perfect Bayesian equilibrium consistent with forward induction.*

8.2. Equilibria when the Citizens choose after the Selectorate

In this section we consider again the citizens as active players, but we change the dynamic of the game assuming that they are playing after having observed the choice of the selectorate. All other elements of the game remains as before.

This new dynamic structure changes the role of the citizens too. In this game the citizens have the last word on the distribution of the gains from economic growth. Moreover, since the leader and the selectorate want to act to avoid revolution, the possibility of revolution would generate further constraints on the leader and on the selectorate behavior. Here the role of the citizens is neither simply another common principle like the selectorate nor simply a door-keeper for the leader. It is a mixture. First, we can see the citizens as a "passive" principle who delegates the task of pursuing their well-being to a leader not chosen by themselves. When the

[39] The beliefs have been derived before, here are omitted to avoid unnecessary complications

agent (the leader) fails her job, the citizens can utilize their power to overthrow the regime. Second, different from a "common" principle who can choose his own agent, the role of the citizen can be seen as a veto player who only has the door-keeping power for the leader. Besides, the citizens interact with both the leader and the selectorate, so they not only can constrain the behavior of the leader but also can constrain the selectorate's behavior.

As usual, we work backwards to calculate the set of Perfect Bayesian equilibria.

8.2.1. Sequential Rationality of the Citizens

At the end of the first period after knowing their first-period utility and after the selectorate's choice, 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: $(\delta = 0, \rho = 0)$, $(\delta = 0, \rho = 1)$, $(\delta = \Delta, \rho = 0)$, $(\delta = \Delta, \rho = 1)$, where in each information set there are two decision nodes depending on the type of the leader, congruent or not.

Let $V^Z(\alpha|\delta, \rho)$ be the expected continuation payoff for the citizen when he chooses α if (δ, ρ) has been observed.

The expected continuation utility the citizens will get after they choose to initiate a revolution in (δ, ρ) is:

$$V^Z(\alpha = 1|\delta, \rho) = (1 - \phi) \times \frac{X - \mu}{1 - \phi} + \phi \times 0 = X - \mu. \tag{43}$$

Clearly this payoff does not depend on the previous observation of (δ, ρ). On the other hand, the citizens' payoff if they decide to accommodate, i.e. if $\alpha = 0$, will depend on the citizens beliefs on the type of the 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. $(\delta = \Delta, \rho = 1)$
2. $(\delta = \Delta, \rho = 0)$
3. $(\delta = 0, \rho = 1)$
4. $(\delta = 0, \rho = 0)$

and the citizens' beliefs in this information sets. The posterior beliefs should

be derived by Bayes rule, thus in general

$$P^Z(C|\delta,\rho(\delta)) = \frac{\pi \times \lambda^C \times \rho(\delta)}{\pi \times \lambda^C \times \rho(\delta) + (1-\pi) \times \lambda^N \times \rho(\delta)}. \tag{44}$$

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

$$P^Z(C|\delta, 0) = \pi. \tag{45}$$

1. Information set $(\delta = \Delta, \rho = 1)$

Because of our previous assumptions, the expected continuation payoff a citizen will get after they choose not to revolt is

$$V^Z(\alpha = 0|\delta = \Delta, \rho = 1) = P^Z(C|\delta = \Delta, \rho = 1) \times \Delta + \big(1 - P^Z(C|\delta = \Delta, \rho = 1)\big) \times 0.$$

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

$$V^Z(\alpha = 1|\delta = \Delta, \rho = 1) \geq V^Z(\alpha = 0|\delta = \Delta, \rho = 1) \tag{46}$$

i.e. if and only if

$$X - \mu \geq P^z(C|\delta = \Delta, \rho = 1)\Delta \implies \mu \leq X - P^z(C|\delta = \Delta, \rho = 1)\Delta. \tag{47}$$

Consider the citizens' beliefs $P^z(C|\delta = \Delta, \rho = 1)$. Given the game structure, there are two possibilities: either it is derived in a pooling equilibrium where $\lambda^C = \lambda^N = 1$ and thus by Bayes rule $P^z(C|\delta = \Delta, \rho = 1) = \pi$ or it is derived in a separating equilibrium where $\lambda^C = 1 \& \lambda^N = 0$ and thus by Bayes rule $P^z(C|\delta = \Delta, \rho = 1) = 1$.

Therefore we can conclude that

- in a pooling equilibrium where $\lambda^C = \lambda^N = 1$, the citizens will choose to revolt in $(\delta = \Delta, \rho = 1)$ if and only if

$$\mu \leq X - \pi\Delta; \tag{48}$$

- in a separating equilibrium where $\lambda^C = 1 \& \lambda^N = 0$, the citizens will choose to revolt in $(\delta = \Delta, \rho = 1)$ if and only if

$$\mu \leq X - \Delta; \tag{49}$$

2. Information set $(\delta = \Delta, \rho = 0)$

In this information set the incumbent leader is removed from office by the selectorate at the end of the first period, therefore there is a new leader in the

second period and hence the expected utility a citizen will get after they choose not to revolt does not depend on the previous observation on δ. Then the expected utility a citizen will get after they choose not to revolt is:

$$V^Z(\alpha = 0|\delta = \Delta, \rho = 0) = \pi\Delta + (1 - \pi)0 = \pi\Delta. \tag{50}$$

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

$$V^Z(\alpha = 1|\delta = \Delta, \rho = 0) \geq V^Z(\alpha = 0|\delta = \Delta, \rho = 0) \tag{51}$$

i.e. if and only if

$$X - \mu \geq \pi\Delta \implies \mu \leq X - \pi\Delta. \tag{52}$$

3. Information set $(\delta = 0, \rho = 1)$

Because of our previous assumptions, the expected continuation payoff a citizen will get after they choose not to revolt is:

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

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

$$V^Z(\alpha = 1|\delta = 0, \rho = 1) \geq V^Z(\alpha = 0|\delta = 0, \rho = 1) \tag{53}$$

i.e. if and only if

$$X - \mu \geq P^z(C|\delta = 0, \rho = 1)\Delta \implies \mu \leq X - P^z(C|\delta = 0, \rho = 1)\Delta. \tag{54}$$

Consider the citizens' beliefs $P^z(C|\delta = 0, \rho = 1)$. Given the game structure, there are two possibilities: either it is derived in a pooling equilibrium where $\lambda^C = \lambda^N = 1$ and thus by Bayes rule $P^z(C|\delta = 0, \rho = 1) \in [0, 1]$ or it is derived in a separating equilibrium where $\lambda^C = 1 \& \lambda^N = 0$ and thus by Bayes rule $P^z(C|\delta = 0, \rho = 1) = 0$. Note that in the pooling equilibrium we can apply a standard forward induction argument to conclude that the congruent leader will never deviate and thus that $P^z(C|\delta = 0, \rho = 1) = 0$.

Therefore we can conclude that

- in a pooling equilibrium consistent with forward induction where $\lambda^C = \lambda^N = 1$, the citizens will choose to revolt in $(\delta = 0, \rho = 1)$ if and only if

$$\mu \leq X \tag{55}$$

- in a separating equilibrium where $\lambda^C = 1 \& \lambda^N = 0$, the citizens will choose to revolt in $(\delta = 0, \rho = 1)$ if and only if

$$\mu \leq X. \tag{56}$$

4. Information set $(\delta = 0, \rho = 0)$

In this information set the incumbent leader is removed from office by the selectorate at the end of the first period, therefore there is a new leader in the second period and hence the expected utility a citizen 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 a citizen will get after they choose not to revolt is:

$$V^Z(\alpha = 0 | \delta = 0, \rho = 0) = \pi\Delta + (1 - \pi) \times 0 = \pi\Delta. \tag{57}$$

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

$$V^Z(\alpha = 1 | \delta = 0, \rho = 0) \geq V^Z(\alpha = 0 | \delta = 0, \rho = 0) \tag{58}$$

i.e. if and only if

$$X - \mu \geq \pi\Delta \implies \mu \leq X - \pi\Delta. \tag{59}$$

8.2.2. Sequential Rationality of the Leader and of the Selectorate

Now, to derive the PBE of this game, we need to consider the leader and selectorate possible behavior, i.e. we should consider eight possible pure strategy profiles since the congruent leader will always choose the congruent policy:

1. $\lambda^C = 1, \lambda^N = 0, \rho(0) = 0, \rho(\Delta) = 0$
2. $\lambda^C = 1, \lambda^N = 0, \rho(0) = 1, \rho(\Delta) = 0$
3. $\lambda^C = 1, \lambda^N = 0, \rho(0) = 0, \rho(\Delta) = 1$
4. $\lambda^C = 1, \lambda^N = 0, \rho(0) = 1, \rho(\Delta) = 1$
5. $\lambda^C = 1, \lambda^N = 1, \rho(0) = 0, \rho(\Delta) = 0$
6. $\lambda^C = 1, \lambda^N = 1, \rho(0) = 1, \rho(\Delta) = 0$
7. $\lambda^C = 1, \lambda^N = 1, \rho(0) = 1, \rho(\Delta) = 1$
8. $\lambda^C = 1, \lambda^N = 1, \rho(0) = 0, \rho(\Delta) = 1.$

8.2.3. Separating Actions by the Leader

Suppose the two types of the leader choose different actions. Since by construction the congruent type always chooses the congruent policy, this means $\lambda^C(\theta_1, r_1) = 1$ and $\lambda^N(\theta_1, r_1) = 0$, hence we are considering the first four possible strategy profiles.

Beliefs and Sequential Rational Behavior of the Selectorate and of the Citizens

Suppose that $\mu \in [0, X - \Delta]$: The citizens will revolt in any information set (δ, ρ) therefore the selectorate's behavior is irrelevant for his payoff and the non congruent leader will grab the money and run away. Hence we have the following simple result:

PROPOSITION 17. *When $\mu \in [0, X-\Delta]$, there exist four separating Perfect Bayesian equilibria*[40]*, i.e.*

1.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 0, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

2.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 1, \rho(\Delta) = 0, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

3.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1 \end{aligned}$$

4.

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 1, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 1, \alpha(\Delta, 0) = 1, \alpha(0, 1) = 1, \alpha(0, 0) = 1, \end{aligned}$$

[40] The beliefs have been derived before, here are omitted to avoid unnecessary complications

all with the same outcome i.e. the citizens' revolt notwithstanding leader's and selectorate's behavior. This means that both types of the leader would pursue their own interest and both will be overthrown from power by a citizens' revolt because their payoffs from accepting a congruent policy are too small compared to the cost of revolution, given the unequal income's distribution.

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 will accommodate being sure of facing a congruent leader. But then the non congruent leader will deviate to avoid revolution and thus we can't have a separating equilibrium.

PROPOSITION 18. *When* $\mu \in (X-\Delta, X-\pi\Delta]$, *there exists no separating Perfect Bayesian equilibria.*

Suppose that $\mu \in (X-\pi\Delta, X]$**:** The citizens will never revolt in any information set (δ, ρ) apart from the case $(\delta = 0, \rho = 1)$. This means that the citizens will revolt only when they are certain that the leader is noncongruent but the selectorate will not remove the leader, hence in this case the noncongruent leader would change her behavior to avoid the revolution and thus we can't have a separating equilibrium. Then, in this setting there are only two possible PBE $\lambda^C = 1, \lambda^N = 0, \rho(0) = 0, \rho(\Delta) = 0$ and $\lambda^C = 1, \lambda^N = 0, \rho(0) = 0, \rho(\Delta) = 1$. Therefore we need to check whether the previous strategies of the selectorate are sequentially rational given the leader and the citizens' choices.

If $\delta = \Delta$, then $V^S(\rho(\Delta) = 1) \geq V^S(\rho(\Delta) = 0)$ is equivalent to

$$\Delta + \frac{(1-\phi)}{\phi} X \geq \pi\Delta, \tag{60}$$

which is always satisfied. Therefore the selectorate observing $\delta = \Delta$ will choose to retain the incumbent leader being certain that she is congruent, anticipating that the citizens will not revolt. Therefore $\lambda^C = 1, \lambda^N = 0, \rho(0) = 0, \rho(\Delta) = 0$ can't be part of an equilibrium.

If $\delta = 0$, then $V^S(\rho(0) = 1) \leq V^S(\rho(0) = 0)$ is equivalent to

$$\frac{(1-\phi)}{\phi} X \leq \pi\Delta, \tag{61}$$

which might be satisfied depending on the exogenous parameters.

Case 1. Suppose $\frac{(1-\phi)}{\phi}X \geq \pi\Delta$ which implies $\phi \leq \frac{X}{X+\Delta\pi} =: \Phi(X,\pi,\Delta)$. In this case the selectorate will choose to retain the incumbent leader even if he is certain that she is not congruent since the probability of being in a new appointed selectorate next period is too small. In this situation, the selectorate is completely loyal to the leader being afraid of loosing his privileges and therefore supports the leader no matter what kind of general interest policy choice she had made. The noncongruent leader, knowing that she could always obtain support, will choose the action that maximize her short term utility, that is for any r_1, $\lambda^N(\theta_1, r_1) = 0$. But then the citizens being certain of facing a non congruent leader who has not been removed by the selectorate, will revolt, hence the leader anticipating the revolution will deviate.

PROPOSITION 19. *When $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$ and $\mu \in (X - \pi\Delta, X]$, there exists no separating Perfect Bayesian equilibrium.*

Case 2 Suppose $\frac{(1-\phi)}{\phi}X \leq \pi\Delta$ which implies $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X,\pi,\Delta)$. In this case the selectorate will choose to change the incumbent leader being certain that she is not congruent.

In this scenario, to find out the behavior of the non congruent incumbent leader, we need to compare her payoffs when she switch from non congruent to congruent actions behaving as if she is the congruent type. Thanks to this switching behavior, she would stay in power because of our previous calculations and her expected period two payoff would be $\overline{r} + \frac{X}{\phi}$. Otherwise behaving in a non congruent way, she would be removed from office by the selectorate, getting an expected second period payoff equal to 0.

Let $EU^N(\lambda = 1)$ be the non congruent leader's expected utility she get switching to a growth-enhancing action in period one, i.e. when $\lambda^N(\theta_1, r_1) = 1$

$$EU^N(\lambda = 1) = \Delta + \frac{X}{\phi} + \beta(\overline{r} + \frac{X}{\phi}). \tag{62}$$

And let $EU^N(\lambda = 0)$ be the non congruent leader's expected utility from choosing a non congruent action in period one i.e. when $\lambda^N(\theta_1, r_1) = 0$

$$EU^N(\lambda = 0) = r_1 + \frac{X}{\phi}. \tag{63}$$

The non congruent leader will choose $\lambda^N(\theta_1, r_1) = 0$ if and only if

$$EU^N(\lambda = 1) \leq EU^N(\lambda = 0) \tag{64}$$

that is if and only if

$$r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi). \tag{65}$$

PROPOSITION 20. *When*

1. $\phi \geq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$, $\mu \in (X - \pi\Delta, X]$, *and* $r_1 \geq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a separating Perfect Bayesian equilibrium where*

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 0, \rho(0) = 0, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{41}. \end{aligned}$$

   This means that the non congruent leader would pursue her own interest and because of this she will be overthrown from power by the selectorate, this notwithstanding she will pursue her own interest since the first period rent has had a significant high realization.

2. $\phi > \frac{X}{X+\pi\Delta}$, $\mu \in (X - \pi\Delta, X]$,*and* $r_1 < \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists no separating Perfect Bayesian equilibrium.*

Finally, if $\mu > X$, then the citizens will never revolt, thus they are not active players and we are back to the two players' game.

8.2.4. Pooling actions by the leader

Suppose the two types of the leader choose the same action. Since by construction the congruent type always chooses the congruent policy, this means $\lambda^C(\theta_1, r_1) = 1$ and $\lambda^N(\theta_1, r_1) = 1$, hence we are considering the last four possible strategy profiles.

Beliefs and Sequential Rational Behavior of the Selectorate and of the Citizens

Suppose that $\mu \in [0, X - \pi\Delta]$**:** The citizens will revolt in any information set (δ, ρ). Therefore the selectorate's behavior is irrelevant for his payoff and the non congruent leader will grab the money and run away. Hence we have the following simple result:

PROPOSITION 21. *When $\mu \in [0, X - \pi\Delta]$, there exists no pooling Perfect Bayesian equilibrium.*

Suppose that $\mu \in (X - \pi\Delta, X]$: The citizens will never revolt in any information set (δ, ρ) apart from the case $(\delta = 0, \rho = 1)$. This means that the citizens will revolt only when they are certain that the leader is noncongruent. Therefore we need to check what are the sequential rational strategies of the selectorate and of the leader, given the citizens choices.

Sequential rationality implies that the selectorate will retain the incumbent leader if and only if:

$$V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0) \tag{66}$$

i.e. if and only if

$$P^S(C|\delta)\Delta + \frac{(1-\phi)}{\phi}X \geq \pi\Delta. \tag{67}$$

When $\delta = \Delta$, this implies

$$\pi\Delta + \frac{(1-\phi)}{\phi}X \geq \pi\Delta \tag{68}$$

which is always satisfied. Therefore, $\rho(\Delta) = 1$.

When $\delta = 0$, this implies

$$P^S(C|0)\Delta + \frac{(1-\phi)}{\phi}X \geq \pi\Delta. \tag{69}$$

Note that since the congruent leader has no reason to deviate, a standard forward induction argument lead to restrict the out of equilibrium beliefs to be equal to 0. Therefore, assuming forward induction, $\rho(0) = 0$ if and only if

$$\phi \geq \frac{X}{X + \pi\Delta} \tag{70}$$

Assume this condition is satisfied and derive the leader's behavior.

Let $EU^N(\lambda = 1)$ be the non congruent leader's expected utility from choosing growth-enhancing action in period one. Since $\rho(\Delta) = 1$, then:

$$EU^N(\lambda = 1) = \Delta + \frac{X}{\phi} + \beta(\overline{r} + \frac{X}{\phi}). \tag{71}$$

Let $EU^N(\lambda = 0)$ be the non congruent leader's expected utility from choosing non congruent action in period one. Since $\rho(0) = 0$, then:

$$EU^N(\lambda = 0) = r_1 + \frac{X}{\phi}. \tag{72}$$

The non congruent leader will choose $\lambda^N(\theta_1, r_1) = 1$ if and only if:

$$EU^N(\lambda = 1) \geq EU^N(\lambda = 0) \tag{73}$$

that is when

$$r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi}). \tag{74}$$

PROPOSITION 22. *When* $\phi \geq \frac{X}{X+\pi\Delta}$, $\mu \in (X - \pi\Delta, X]$ *and* $r_1 \leq \Delta + \beta(\overline{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \overline{r}, X, \phi)$, *there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where*

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 1, \rho(0) = 0, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{42}. \end{aligned}$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the selectorate.

On the other hand $\rho(0) = 1$ if and only if

$$\phi \leq \frac{X}{X + \pi\Delta} \tag{75}$$

Assume this condition is satisfied and derive the leader's behavior.

Let $EU^N(\lambda = 1)$ be the non congruent leader's expected utility from choosing growth-enhancing action in period one. Since $\rho(\Delta) = 1$, then

$$EU^N(\lambda = 1) = \Delta + \frac{X}{\phi} + \beta(\overline{r} + \frac{X}{\phi}). \tag{76}$$

Let $EU^N(\lambda = 0)$ be the non congruent leader's expected utility from choosing non congruent action in period one. Since $\delta = 0$ and $\rho(0) = 1$, then the citizens will revolt and thus the non congruent leader prefers to mimic the congruent one and we get the following result.

PROPOSITION 23. *When* $\phi \leq \frac{X}{X+\pi\Delta}$ *and* $\mu \in (X - \pi\Delta, X]$, *there exists a pooling Perfect Bayesian equilibrium consistent with forward induction where*

$$\begin{aligned} \lambda^C(\theta_1, r_1) &= 1, \lambda^N(\theta_1, r_1) = 1, \rho(0) = 1, \rho(\Delta) = 1, \\ \alpha(\Delta, 1) &= 0, \alpha(\Delta, 0) = 0, \alpha(0, 1) = 1, \alpha(0, 0) = 0^{43}. \end{aligned}$$

This means that the leader notwithstanding her type would pursue the general interest because of her accountability towards the citizens.