A model of Chinese central government

The role of reciprocal accountability[1]

Mario Gilli* and Yuan Li**

*Department of Economics, University of Milan-Bicocca, Milan, Italy. E-mail: mario.gilli@unimib.it
**Stockholm China Economic Research Institute, Stockholm School of Economics, Stockholm, Sweden; and Institute of East Asian Studies, University of Duisburg-Essen, Duisburg, Germany. E-mail: yuan.li@hhs.se

Abstract

Why was the Chinese State able to promote economic growth during the reform era, yet has been unable to do so over the previous 30 years? In this article, we focus on a specific aspect of the question, which will contribute to the development of a more comprehensive explanation: the specific institutional arrangement that may induce the autocratic government to adopt growth-enhancing policies. We consider a standard political-agency model (Besley, 2006) where the incumbent leader may or may not be congruent, and where, to maintain power, both leader types need the support of the selectorate, an elite group having a say in selecting the leader, as well as associated access to special privileges. Primarily, we find that in autocracies, without electoral discipline to restrain the opportunistic behaviour of a leader, the size of the selectorate should be intermediate; if it is

too small, the selectorate is captured by the leader and has no disciplinary role, but if too big, the leader's incentives are diluted.

JEL classifications: D02, H11, D74.
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1. Introduction

Over the last 30 years, the Chinese central government has been extremely successful in promoting economic development, especially in comparison to other autocratic governments and to the Mao Zedong era. According to the official data, China has maintained an average annual growth rate of 9.7 percent; the per capita GDP increased from 250 USD in the late 1970s to 4,705 USD (current prices) by 2010; and the number of people living in absolute poverty has decreased from approximately 300 million in the early 1980s to 80 million in contemporary China (China Statistical Yearbook, 2010).

Western observers have frequently emphasized the Chinese government's ability to make swift decisions and mobilize significant resources, due to its authoritarian nature. Conversely, opinions from inside China have often attributed the change in economic growth to the benevolence of the Chinese Communist Party (CCP) and of the supreme national leadership. Yet, neither authoritarianism nor the benevolence of the CCP explains the degree of accountability that the Chinese government exhibited in the reform era; if either authoritarianism or Party benevolence was the key to the Chinese government's commitment to economic growth, China would have been successful over the previous 30 years, when the state reached its apogee of authoritarianism. Hence, the root cause of such accountability remains vague. While the Chinese political system may have remained authoritarian, substantial institutional changes have taken place in the internal structure of the system, which we believe have been crucial for achieving government accountability and thereby China's economic success.

Another genre in the transition literature has attributed China's remarkable economic growth to the country's fiscal and political decentralization. Fiscal decentralization is said to have generated 'fiscal incentives' for local governments to promote economic growth, resulting in high investment and hard budget constraints (Montinola *et al.*, 1995; Oi, 1992; Qian and Weingast, 1997; Qian and Roland, 1998). Political decentralization is thought to have stimulated local policy experiments and restrained predatory central interventions (Qian and Weingast, 1996; Xu and Zhuang, 1998). While we do consider these aspects important, they are not, however, adequate to account for the entire success of the reform, as they ignore the role of the central government. Of course, local actors have made important contributions to reforms, but they have acted as agents in a game directed by the centre (Cai and Treisman, 2006). Even if the significant direct investment made by the central

government were ignored, it was still the central government which took the decisive initiative to 'reform and open up' (*gaige kaifang*). It is then important to understand why the Chinese central government showed a striking degree of accountability in promoting economic growth and why this occurred only after Mao's death. In this article, we address this question by studying the internal political structure of China before and after Mao's death, focusing our analysis on the role of reciprocal accountability between the leader and the 'selectorate', the group of people with a say in choosing the leader and a consequent access to special privileges. We find that a significant increase in the size of the selectorate since Deng Xiaoping came to power had rendered reciprocal accountability effective as a disciplinary device on the leader's behaviour.

The remainder of the article is organized as follows. Section 2 outlines our theoretical framework and contextualizes this within the existing literature. Section 3 presents the basic model. In section 4, we analyse the model, describing the equilibria and discussing their interpretations. Section 5 applies the insights derived from the model to China, and we present our conclusions in the last section.

2. Literature review

The majority of literature on democratic institutions assumes that political accountability is achieved through democratic elections, which operate to restrain opportunistic behaviour by politicians. In autocratic institutions, dictators are not held directly accountable to citizens through democratic elections. Nonetheless, they may be answerable to an elite societal group, which forms the 'selectorate' – those elites who have the opportunity to depose a leader in a given political regime.[2] Tullock (1987) argued that all dictators share the same primary goal: to hold on to office at whatever cost because failure to do so would lead to incarceration, exile or death. Therefore, by threatening a coup, the selectorate can shape a wide variety of economic and political outcomes, and its role as a disciplinary body is central to our analysis.

In this article, we rely on three seminal works concerning autocracies: Shirk (1993), Bueno de Mesquita *et al*. (2003) and Besley and Kudamatsu (2008).

Shirk's analysis of the behaviour of the Chinese central government is based on the notion of 'reciprocal accountability' between the selectorate and the leader. 'Reciprocal accountability' describes a phenomenon whereby 'top leaders of the party appoint the subordinate officials of the party and government' and, in turn, 'the officials in the Central Committee choose (or at least ratify the choice of) the leaders … Government officials are both the agents and constituents of the party leaders; local officials are both the agents and constituents of the central leaders.

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[2] This expression is adopted from British parliamentary politics to define the group that has the effective power to choose leaders (Shirk, 1993, p. 71).

Officials hold their positions at the pleasure of the party leadership, but party leaders hold their positions at the pleasure of the officials in the selectorate' (Shirk, 1993, p. 83). In this article, we outline a formal model for reciprocal accountability between the incumbent leader and the selectorate, focusing our analysis on the relationship between the size of the selectorate and the leader's behaviour.

Bueno de Mesquita *et al.* (2003) were the first to formally model accountability in non-democratic regimes. As a means of disciplining the incumbent leader in an autocracy they consider the role of two subsets of citizens, the winning coalition and the selectorate, concluding that the larger the winning coalition, whose support is necessary for the incumbent politician to stay in power, the higher the level of public goods provided by the government. Hence, in a democracy, public goods provision is maximized. In this article, as in Besley and Kudamatsu (2008), there is no distinction between the winning coalition and the selectorate, to focus on the notion of reciprocal accountability as previously defined. A crucial aspect of Bueno de Mesquita *et al.*'s theory is that they model the policy mechanism as a complete information game, a restrictive assumption tailored to their study of political survival for oppressive leaders. However, their model does not allow for analysis of the accountability mechanisms as stressed by Besley's (2006) principal agent approach, which applies to incomplete information settings where the non-congruent leader may pool with the congruent ruler to establish his or her reputation as a good guide.

Within the political economic literatures, Besley and Kudamatsu (2008) is a seminal paper on autocracies and it provides our main point of reference. Besley and Kudamatsu (2008) argue that in any economic system, economic performance is dependent on accountability of the leader, which can only be achieved in autocracy if the selectorate is 'powerful' enough. In their model, adequate power is present if replacement of the leader triggers a contest where the opposition wins with positive probability. This idea is developed within a principal agent model of government, using an incomplete information game played between the autocrat and the selectorate. Besley and Kudamatsu (2008) demonstrate that an autocratic regime may foster more rapid economic growth than a democracy if the selectorate is powerful and the distributional conflict is not too salient. Following this approach, we consider incomplete information on the autocrat's possible types. However, our approach simplifies the voting contest in Besley and Kudamatsu's (2008) model and draws on Shirk's notion of reciprocal accountability. Our model differs from Besley and Kudamatsu (2008) in two main ways. First, Besley and Kudamatsu (2008) focus on the ability of enfranchised and disenfranchised citizens, a superset of the selectorate, to take power after the incumbent leader has been ousted, which does not allow for the study of 'reciprocal accountability', whereas we emphasize the size of the selectorate and how this affects both the leader's and the selectorate's equilibrium behaviour. In this way, our model is able to explain the conditions that make reciprocal accountability effective as a disciplinary device. In particular, we are able to derive various political regimes (Kleptocracy, Roving Bandit and Efficiency) as equilibrium outcomes depending on the selectorate size. Second, our findings regarding the size

of the selectorate determines whether accountable policies are upheld differs from Besley and Kudamatsu (2008). They model the strength of the selectorate as an increasing function of its size, implying that a bigger selectorate will ensure more efficient policies, a result that actually depends on their unconvincing specification of the selectorate payoff function where the patronage is not divided by the size of the selectorate. While some empirical works show that overextension of the coalitions may tempt rebellion, as the accommodation of additional partners delivers each player a thinner slice of a fixed-size pie (Arriola, 2009), in the case of China, leaders have often used personnel appointments to reward the selectorate. Hence, offering a position as a lure to another client would mean denying that position to their own client or splitting that position into different jobs. In this context, an over-expanded selectorate might increase the risk of being overthrown, thus inducing the non-congruent leader to embezzle money prior to running away, rather than wait to be overthrown. Our model demonstrates that under certain circumstances the selectorate is able to restrain the incumbent leader from opportunistic behaviour inducing growth-enhancing policies, provided the risk of being excluded from the new challenger's coalition is not too high.

3. The model

The basic game is a two-period political-agency model with incomplete information played between the incumbent leader and the selectorate. The country population is normalized to 1. 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 $1-\phi$. Therefore, in this model ϕ can be considered an indicator of democracy: $\phi = 1$ means full democracy in the sense that the leader is chosen by the entire population, while $\phi = 0$ means a one man dictatorship.

Clearly, in this way we abstract from many other aspects of liberal democracy, such as rule of law, separation of powers, and freedom of speech and information. Nonetheless, we believe our model is an interesting starting point for analysing politicians' accountability in autocracies. Our definition endorses Bollen's (1990) concept of 'democracy as the extent to which the political power of the elites is minimized and that of the non-elites is maximized', and where political power refers 'to the ability to control the national governing system'.[3]

As is standard in political-agency models, there are two types of incumbent leader, congruent or non-congruent, $T \in \{C,N\}$, with probability π of being congruent, and the selectorate revise expectations about the leader's type according to first-period outcomes. However, contrary to standard political-agency models applied to democracies,[4] there is no regular general election and, the incumbent leader is

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[3] Bollen (1990), p. 9.
[4] See, for example, Besley (2006, chapter 3), Berganze (2000), Maskin and Tirole (2004).

removed if and only if the selectorate chooses to depose the leader. As there is no heterogeneity within the selectorate, there is no collective action problem and there is no role for election; the selectorate control the leader through a unanimous decision to either remove or support him or her.[5] In each period $t = 1,2$, the (female) incumbent leader (L) is privately informed of the true state of the world $\theta_t \in \{0, 1\}$ and has to make a discrete 'general interest' policy choice 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 foregoing 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 non-congruent 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 $E(r_t) = \bar{r}$, $G(\Delta) = 0$, and $G(r_t) > 0$ for $r_t > \Delta$; on the other hand, the congruent leader gets a null private benefit from picking $e_t \neq \theta_t$. Hence, a congruent leader will always choose the growth-enhancing policy in the interest of the whole society, while the choice of a non-congruent leader will depend on the trade-off between the desire to be reappointed by the selectorate and the realization of private benefit r_t.

To gain the loyalty of the selectorate, the leader pays a patronage to the selectorate by using direct payment or high-level government appointments. In our model, we suppose this patronage has to be realized through unfair distribution of a fixed amount of wealth, X, which could be thought of as the revenue accumulated from natural resources or as economic rents from holding government positions. The leader distributes all the patronage to the selectorate and nothing to the citizens. Therefore, each member of the selectorate gets $\frac{X}{\phi}$, and each citizen gets 0.[6] At the end of each period, the (male) representative member 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 holds office in the subsequent period, otherwise the leader is ousted from power, as a leader with no support base cannot survive. When the incumbent autocrat is ousted from power, a new ruler will replace her and form a new selectorate of size ϕ. Note that the selectorate's removal of the incumbent leader does not change the basic social order and governmental apparatus in the country; it is merely a *coup d'état*, rather than a revolution.

There are three important assumptions behind these game rules. First, we disregard voting processes because we are not focusing on mechanisms for aggregating heterogenous individual preferences, but rather on how to hold those in office accountable. Besley and Kudamatsu (2008) conceive of voting as a mere mechanism for describing how a specific group of citizens may maintain power when the

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[5] By mapping the diverse dimensions of political behaviours of the selectorate onto this simple dichotomic choice, we sacrifice details and subtle political strategies; however through this simplification, we are able to emphasize the point of the article, that is, the analysis of the incentives that might induce non-congruent politicians to implement a costly but growth-enhancing action even without the threat of new election but just through accountability towards other strategic players of the policy game.

[6] Of course, this is just a normalization.

incumbent is changed, not to model the process of how the new leader is chosen. Second, differing from Bueno de Mesquita *et al.* (2003), we assume that the selectorate size[7] is static and exogenous. Obviously, the constancy of the selectorate's size simplifies analysis. It would not be difficult to assume an exogenous dynamic process for ϕ, but it is easy to check that any monotonic transformation of ϕ would not change the qualitative results of this article. Note that this monotonicity assumption is justified by the fact that the leader's removal by the selectorate is a coup, not a citizens' revolt. Finally, the probability that a selector is included in the coalition of the new leader is ϕ, as we assume that all the selectors are homogeneous and the new leader randomly picks the members of the new selectorate from the pool of the whole population. However, a more or less formalized mechanism could regulate the selectorate recruitment, so that there is significant heterogeneity in the probability of each selectorate member being in future coalitions. This is further explored in subsection 4.4, where we will relax the assumption of a homogeneous selectorate by introducing the notion of affinity.

The single period utility function of the representative member 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*) coincides 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 non-congruent 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, she receives a zero payoff in the next period. Finally, both 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 the private information of the leader.
2. The leader chooses the policy e_1 and period one payoffs are realized.

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[7] What we refer to as the 'selectorate' is termed the 'winning coalition' by Bueno de Mesquita *et al.* (2003)

Figure 1. The two-player model
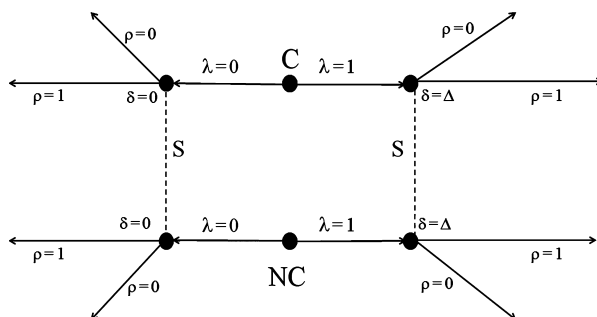
3. The selectorate observes his payoff $\delta \in \{0, \Delta\}$ and thus the policy chosen by the leader but not her type.
4. The selectorate decides whether to retain the incumbent leader.
5. If the incumbent leader is ousted from power, a new leader will enter office and she will be congruent with probability π. The new leader will form her own coalition and members of the selectorate who deposed the previous leader would have a probability ϕ of being included in the new selectorate.[8]
6. Nature determines (θ_2, r_2).
7. The period two leader chooses e_2 and period two payoffs are realized.

Let $\lambda^T(\theta_1, r_1)$ be the probability that, in the first period, the type T leader implements action $e_1 = \theta_1$, given the state of the world θ_1 and the rent r_1, and let $\rho(\delta)$ be the probability of the selectorate retaining the incumbent leader, given that in the first period he obtained a payoff equal to $\delta \in \{0, \Delta\}$.

Figure 1 corresponds to the stage game of the model. The symbols used are summarized in Table 1.

4. Equilibria of the two-player model

We analyse the model using a pure strategy Perfect Bayesian equilibrium (PBE) as the equilibrium concept. The detailed calculations are reported in the Appendix. Although we consider pure strategies, the leader's choice will depend on the realization of her random private rent, and her choice will, therefore, also be random from the point of view of the selectorate. Finally, in the following propositions we will omit the specification of the beliefs that support the equilibrium strategy profile, as they are derived in the Appendix.

We distinguish between two cases according to the size of the selectorate.

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[8] See the previous remarks on this assumption.

Table 1. Definition of symbols

Symbol	Definition
Players	
L	Incumbent leader
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 $\bar{r}$
β	Discount factor
X	Exogenous revenue of the society
$\phi \in [0, 1]$	Size of the selectorate
Endogenous variables	
$\lambda^T(\theta, r)$	Probability that the type T leader implements a congruent policy
$\rho(\delta)$	Probability that the selectorate retains the leader after observing $\delta \in \{0, \Delta\}$
Payoffs	
$U^C(\lambda, \rho \mid \theta, r)$	The single period utility function of the congruent leader
$U^N(\lambda, \rho \mid \theta, r)$	The single period utility function of the non-congruent leader
$U^S(\lambda, \rho)$	The single period utility function of the selectorate
V^S	Expected continuation payoff of the selectorate

4.1 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 its members are certain that she is non-congruent, as the probability of being in a newly appointed selectorate in the next period is too minimal. In this situation, the selectorate is completely loyal to the leader as its members are afraid of losing their privileges and therefore support the leader regardless of the policy choices she has made. The non-congruent leader, knowing that she will always be supported, will choose the action that maximizes her short-term utility, that is for any r_1, $\lambda^N(\theta_1, r_1) = 0$.

Proposition 1. When $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$, there exists an unique Perfect Bayesian equilibrium where

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

This means that the leader would pursue her own interest and she will still retain power.

In this equilibrium, the government is kleptocratic and the bad autocrat behaves as a 'stationary bandit' who can syphon off private rent without fear of being removed from power. Hence, we refer to this as ' **Kleptocratic Equilibrium**', where the size of the selectorate ϕ is sufficiently small.

Why does a small selectorate lead to loyalty regardless of the leader's behaviour? Suppose the selectorate were to defect from the leader by switching allegiance to a challenger, providing the challenger with an opportunity to form a new selectorate. But any defector cannot be certain that he will be included in the new selectorate, for the challenger will only draw ϕ members from the population. In other words, when ϕ is small, the probability of being part of the new establishment is small. Hence, the selectorate is captured by the leader, as here is significant risk associated with defection, that is, a high probability of exclusion from the privileges of being in the selectorate. Therefore, the smaller the size of ϕ, the greater the risk of defection.

This proposition could explain the political failure of China during the Cultural Revolution. During this era, when China grew slowly, the selectorate was extremely small and politics was increasingly despotic. Mao Zedong had absolute power and he only relied on a small selectorate, the core of which was the Gang of Four[9] and CCP General Secretary Hua Guofeng, who was unconditionally loyal to him. According to Liberthal, 2004 (pp. 208–209), Mao 'trusted primarily those in his inner circle – his administrative secretaries … ; personal guards under Wang Dongxing; his physician; a few close associates, relatives and mistresses.' … 'He set his entourage to spying on each other, and he had the last word even on the diagnoses and treatment of medical problems that other leading officials developed. Mao dictated, for example, the timing of operations on Zhou Enlai's cancer in the early 1970s'. As the selectorate was extremely small, it became completely loyal to Mao. Endorsing our theory, this small selectorate could never enforce effective checks on the leader because their hold on power was completely dependent on Mao. Without effective monitoring by the selectorate, Mao abused his power and made many poor decisions which had serious consequences.

Now consider $\Phi(X, \pi, \Delta)$ as a function of X, π and Δ.

Note that $\frac{\partial \Phi(X, \pi, \Delta)}{\partial X} > 0$, that is, higher values of X increase the range of the selectorate's size such that the selectorate always supports the incumbent. Thus, if the exogenous wealth of society that can be privately appropriated by the selectorate and the leader is salient, then the selectorate has no incentive to remove the leader. Hence, there is a natural resource curse in some kleptocratic politics, caused by governments' disregard for economic development, instead simply hoarding resources.

The probability of the incumbent being congruent, π, also plays a role, as $\frac{\partial \Phi(X, \pi, \Delta)}{\partial \pi} < 0$ and in particular $\lim_{\pi \to 0} \Phi(X, \pi, \Delta) = 1$; as the probability of congruent leader decreases, so too does restrictiveness on the selectorate size. If the challenger is expected to be as bad as the incumbent, the selectorate will risk an ineffective

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[9] The group included Mao's wife Jiang Qing and three of her close associates, Zhang Chunqiao, Yao Wenyuan and Wang Hongwen.

change of the leader. Thus, the selectorate will always choose to support the incumbent.

Finally $\frac{\partial \Phi(X, \pi, \Delta)}{\partial \Delta} < 0$ and in particular $\lim_{\Delta \to 0} \Phi(X, \pi, \Delta) = 1$; as the effectiveness of a congruent policy decreases, so too does the restrictiveness on the selectorate size. Again, if the type of challenger is irrelevant, then the selectorate will risk an ineffective change of leader. Thus, the selectorate will always choose to support the incumbent.

4.2 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 might choose to change the incumbent leader when it is certain that the leader is not congruent.

Proposition 2. When $\phi \geq \frac{X}{X+\pi\Delta}$, there exists a unique Perfect Bayesian equilibrium where

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = G\left(\Delta + \beta\left(\bar{r} + \frac{X}{\phi}\right)\right), \rho(0) = 0, \rho(\Delta) = 1.$$

This means that even the non-congruent leader might pursue the general interest because of her accountability towards the selectorate, depending on the realization of her private rent.

When the selectorate is sufficiently large, its members have the incentive to remove the non-congruent incumbent. However, as the rent the leader can extract in the first period can be very high, she may still choose to take the rent, even if she anticipates her removal in the next period. In this situation, the bad autocrat behaves as a roving bandit, whose motivation for holding office is to steal the country's wealth before leaving. Therefore, we will call the equilibrium path when $r_1 \geq \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi)$ the '**Roving Bandit Equilibrium**' (RBE) outcome. Autocracies are often ruled by such roving bandits who syphon off huge private rent before being removed. Mohammed Suharto and Ferdinand Marcos embezzled up to US\$50 bn from the impoverished people of Indonesia and the Philippines. Alberto Fujimori was estimated to have stolen up to US\$600 million between 1990 and 2000 as president of Peru, before fleeing to Japan in 2000 amidst the ensuing corruption scandal.[10] On the other hand, when $r_1 \leq \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi)$, a successful autocracy may be established. Although non-democratic, the government does implement policies which benefit the majority because the leader is accountable to the selectorate. To sustain such an '**Efficient Equilibrium**' (EE) path, expected payoffs from holding office must be greater than today's personal rents, so that the incumbent leader has more to lose from being removed from office. An EE

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[10] See for example http://www.guardian.co.uk/world/2004/mar/26/indonesia.philippines.

happens with probability $G(R(\Delta, \beta, \bar{r}, X, \phi))$ and it is interesting to consider how this probability changes with our parameters.

First, $\frac{\partial G(R(\Delta, \beta, \bar{r}, X, \phi))}{\partial \Delta} > 0$. Therefore, the more effective a congruent policy, the greater the likelihood of an EE, as it is more difficult to realize private benefits high enough to induce the leader to grab the rent and run away.

Second, $\frac{\partial G(R(\Delta, \beta, \bar{r}, X, \phi))}{\partial \beta} > 0$. Therefore, the less myopic a leader is, the greater the likelihood of an EE, as the future expected benefits of holding power carry more weight.

Third, $\frac{\partial G(R(\Delta, \beta, \bar{r}, X, \phi))}{\partial \bar{r}} > 0$. Therefore, the higher the expected value of private benefits, the greater the likelihood of an EE, as the future expected benefits of holding power are higher.

Fourth, $\frac{\partial G(R(\Delta, \beta, \bar{r}, X, \phi))}{\partial X} > 0$. Therefore, higher values of X increase the probability of an EE, as the future expected benefits of holding power are higher.

Finally, $\frac{\partial G(R(\Delta, \beta, \bar{r}, X, \phi))}{\partial \phi} < 0$. Therefore, a larger selectorate decreases the probability of an EE. To induce congruent policies, on the one hand the selectorate cannot be too small. At the same time, we find that larger selectorate, does not always increase efficiency, diverging from the arguments of Besley and Kudamatsu (2008) and Bueno de Mesquita *et al.* (2003). The motivation for the non-congruent leader to mimic the behaviour of the congruent leader in the first period – the expected payoffs from holding office – consists of two components: the total payoffs from implementing the general interest policy, $\Delta + \beta \bar{r}$; and the expected future rent from redistribution, $\beta \frac{X}{\phi}$. The second component implies that the effect the selectorate's size on the incumbent leader's incentive to maintain power is negative: a bigger selectorate dilutes the patronage every member of the selectorate can receive. Hence, it reduces the incentive for the non-congruent leader to hold office and thus her incentive to pick the congruent policy.

4.3 The characteristics of the possible political regimes and the selectorate size

The set of equilibrium outcomes as a function of the selectorate size and of the probability of first period private benefit can be summed up as shown here in Table 2.

Table 2. Summary of equilibria

	$r_1 \geq \Delta + \beta(\bar{r} + \frac{X}{\phi})$	$r_1 \leq \Delta + \beta(\bar{r} + \frac{X}{\phi})$
$\phi \geq \frac{X}{X + \pi \Delta}$	Roving Bandit equilibrium	Efficient equilibrium
$\phi \leq \frac{X}{X + \pi \Delta}$	Kleptocratic equilibrium	Kleptocratic equilibrium

Table 3. The effects of different parameters on the likelihood of different equilibria

	Kleptocratic equilibrium	Roving Bandit equilibrium	Efficient equilibrium
$\uparrow \phi$	$\downarrow$	$\uparrow$	$\downarrow\uparrow$ = ?
$\uparrow \pi$	$\downarrow$	$\uparrow$	$\uparrow$
$\uparrow X$	$\uparrow$	$\downarrow$	$\downarrow\uparrow$ = ?
$\uparrow \Delta$	$\downarrow$	$\downarrow\uparrow$ = ?	$\uparrow$
$\uparrow \beta$	$\leftrightarrow$	$\downarrow$	$\uparrow$
$\uparrow \bar{r}$	$\leftrightarrow$	$\downarrow$	$\uparrow$
$\uparrow r_1$	$\leftrightarrow$	$\uparrow$	$\downarrow$

Using previous observations, we can sum up the effects of different parameters on the likelihood of different equilibria when $\phi < 1$: shown in Table 3.

Consider the EE regime and focus on the size of the selectorate ϕ as restricted by the two inequalities $\phi \geq \frac{X}{X+\pi\Delta}$ and $r_1 \leq \Delta + \beta(\bar{r} + \frac{X}{\phi})$.

Note that if $r_1 \leq \Delta + \beta\bar{r}$, the second inequality is trivially satisfied for any ϕ. As the payoffs from the general interest policy are already greater than the personal rent the non-congruent leader can extract in the first period. Thus, to pursue public interest and remain in power is always better than to grab money and run away. Provided there is an effective selectorate, the non-congruent leader will always implement the congruent policy in the first period. In this scenario, there are no upper limits on the size of the selectorate: the larger the selectorate, the more effective it becomes.

On the other hand, if $r_1 > \Delta + \beta\bar{r}$, the second inequality implies the following upper limit on the size of the selectorate: $\phi \leq \beta\frac{X}{r_1-\Delta-\beta\bar{r}}$. This condition shows that when the payoffs from the general interest policy are insufficiently high compared to the realization of today's personal rents, the other component of the expected payoffs from holding office, $\beta\frac{X}{\phi}$, becomes salient for the non-congruent leader. As this amount of payoffs decreases with ϕ, an overly large selectorate reduces incentive to hold office. Therefore, to induce the non-congruent leader to mimic the behaviour of the congruent leader, the size of the selectorate cannot be too large. When $r_1 > \Delta + \beta\bar{r}$, there is an EE if the size of the selectorate is intermediate, that is if

$$\phi \in \left[\frac{X}{X+\pi\Delta}, \beta\frac{X}{r_1-\Delta-\beta\bar{r}}\right].$$

Clearly, this interval is not empty if and only if $\beta \geq \frac{r_1-\Delta}{\pi\Delta+X+\bar{r}}$, that is if the leader is not too myopic.

4.4 Heterogeneous selectorate

In the previous analysis, we relied on the assumption of an homogeneous selectorate, with members which are perfectly interchangeable from the point of view of the leader. The selectors will expect to be part of the new winning coalition with probability ϕ; the risk of exclusion from the new selectorate is therefore $1-\phi$. Thus, on the one hand, an increase in ϕ decreases the chances of exclusion. On the other hand, as the selectorate increases in size, the incumbent must appease more people through patronage. Since the resources that can be appropriated are finite, the utility from being part of the selectorate becomes less valuable for each selector when ϕ expands. Thus, the leader has a greater incentive to implement congruent policies to induce loyalty of the selectorate. This explains why the expansion of ϕ eliminates the 'Klepto-cratic Equilibrium'. However, when the selectorate is sufficiently large, the minimum amount of rent required to induce the leader to extract rent decreases by ϕ. Apparently, this is because the leader will have to split X, which comes out of the resources the leader retains for her own use, with a larger number of individuals, so it becomes less tempting for her to maximize social welfare to avoid being removed from office. As the value of holding office decreases by ϕ, the possibility of 'Roving Bandit Equilibrium' also increases by ϕ. This dual role of ϕ is what generates the trade-off in the selectorate's decision and thus drives our results: each member of the selectorate must decide between retaining the old leader who displayed non-congruent behaviour (lower social welfare, but probability one of being a member of the selectorate also in the following period) and removing her (higher expected social welfare, but probability less than one of being a member of the selectorate also in the following period).

In reality, the leader might feel varying levels of affinity for different followers who may also have varying degrees of faithfulness to the leader. In this subsection, we will relax the homogeneous selectorate assumption which is not an essential element of the theory and has merely been used to simplify mathematics. Affinity describes the bonds between leaders and followers which allow the parties to anticipate each other's future loyalty. Factors which may influence affinity include ethnicity, religion, personality, ideology, political party identification, experience, family ties or charisma (Bueno de Mesquita *et al.*, 2003).

We assume the leader has a strict lexicographic preference for the population. The population is defined as the set of individuals $I = \{I_1, I_2, \ldots, I_{\phi N}, \ldots, I_N\}$. The affinity the incumbent leader feels towards the population is a vector of the form $A^L(I) = [i_1^L, i_2^L, \ldots, i_{\phi N}^L, \ldots, i_N^L]$. Suppose $i_1^L > i_2^L > \ldots > i_{\phi N}^L > \ldots > i_N^L$, the incumbent will form a selectorate with members for whom she feels highest degree of affinity, which is a subset of the population $S = \{I_1, I_2, \ldots, I_{\phi N}\}$. The affinity the new leader (the challenger) feels towards the population is a vector of the form $A^H(I) = [i_1^H, i_2^H, \ldots, i_{\phi N}^H, \ldots, i_N^H]$. Suppose $A^H(I)$ is unknown to the challenger before she comes to power, because the challenger, who has had less opportunity to interact with and learn about the selectors than the incumbent, is less confident about her affinity towards the selectors. Therefore, all possible affinity orderings are

equally likely, that is, $P(A^H = a) = P(A^H = a') = \frac{1}{N!}$, for all a, a'. Thus, the probability of each selector being included in the new selectorate after the switch of leadership is $\left(\sum_{i=1}^{\phi N} \frac{1}{N} \right) \cdot N! \cdot \frac{1}{N!} \equiv \phi$, which is the probability we use when the selectorate is homogenous and the new leader randomly picks the selectorate. Hence, our previous results hold even in this case, as long as the selectorate members are not aware of the extent to which the challenger feels an affinity with them at the time of leadership selection. The results will change if we assume the selectors are aware of the extent to which the challenger feels an affinity with them, as the selectors would prefer a leader with whom they have a closer affinity. But in reality, it is difficult to measure the extent to which one individual feels an affinity towards another, and this problem is further compounded by the fact that tests could not be run until the new leader came into power. This presents a direction for future research, which could explore an alternative model with private partial knowledge of affinities.

4.5 A comparison of autocracy and democracy

In this section, we apply our earlier framework concerning selectorate size in autocracies to make a comparison of the policy outcomes between autocracies and democracies. In democracy the voters coincide with the selectorate, therefore, ϕ equals to 1.

Obviously, in a democracy the lower limit on the selectorate size is always satisfied, that is, the voters are always able to provide an effective check on the incumbent leaders. In a democracy, if the incumbent leader has been shown to engage in non-congruent activities, then voters remove the leader in the next election. However, in an autocracy the institutions to restrain the politician's behaviour are weak. Hence, if the selectorate cannot effectively monitor the leader's behaviour, the citizens may only count on good luck to have congruent politicians to rule their country.

However, in a democracy the non-congruent incumbent leader will implement policies in the greater public interest if and only if $r_1 \le \Delta + \beta(\bar{r} + X)$, that is, $\beta \ge \frac{r_1 - \Delta}{\bar{r} + X}$. Therefore, in a democracy it is essential to avoid myopic leaders, while a frequent criticism of democracies is the lack of incentives for leaders to implement farsighted policies.

In summary, consider the likelihood of getting the different political regimes in a democracy compared with an autocracy: see Table 4.

A final aspect we should note is that although both democracies and autocracies can promote economic growth, social inequalities are likely to be more pronounced in autocracies, where leaders often only distribute resources to members of the selectorate in return for their loyalty and support. In contrast, within a democratic system all citizens can influence leadership and policy choices through direct elections, and the wealth is therefore generally distributed more equally. This is consistent with the claim that democracy reduces economic inequality (Bollen and Jackman, 1985).

Table 4. Comparison of autocracy and democracy

Autocracy				Democracy			
	KE	RBE	EE		KE	RBE	EE
$\uparrow \phi$	↓	↑	↓↑ = ?	↑	not exist	↔	↔
$\uparrow \pi$	↓	↑	↑	$\uparrow \pi$	not exist	↔	↔
$\uparrow X$	↑	↓	↓↑ = ?	$\uparrow X$	not exist	↓	↑
$\uparrow \Delta$	↓	↓↑ = ?	↑	$\uparrow \Delta$	not exist	↓	↑
$\uparrow \beta$	↔	↓	↑	$\uparrow \beta$	not exist	↓	↑
$\uparrow \underline{r}$	↔	↓	↑	$\uparrow \underline{r}$	not exist	↓	↑
$\uparrow r_1$	↔	↑	↓	$\uparrow r_1$	not exist	↑	↓

5. China and the theory

In this section, we want to test our model on a crucial case study: China and its transition, which has been explained by Shirk (1993) as a salient example of reciprocal accountability. Before any further consideration, it is important to stress that this article does not aim to identify the optimal mechanism design for Chinese leaders; our primary concern is to provide some insights into explaining radical differences in economic performance between Mao's ruling period and in the post-Mao era, and how these discrepancies may be linked to the changes in selectorate size.

5.1 The selectorate in China

In the specific case of China, Mao Zedong represents the leader in our model until he died in 1976. Successive leaders examined using our model are Hua Guofeng, Deng Xiaoping and the Politburo Standing Committee during Jiang Zemin's and Hu Jintao's administration. We identify the selectorate in Mao's era as a small number of powerful people in his inner circle, including other Chinese leaders who had not been purged, his successors and his wife. This undersized selectorate expanded significantly after Mao's death. At the beginning of the reform period, the selectorate was made up of the revolutionary elders and top military leaders. Later, after Deng Xiaoping assumed power, the selectorate was expanded to a much larger coalition including the younger generation of CCP leaders, members of the Central Committee, and other high-ranking officials of the central or local party and government institutions. Note that every member of the selectorate is not simply an individual but a nodule of power which represents the interests of a particular region or a societal faction. The Central leader who wants to buy the loyalty of these elite selectors must therefore also consider the interests of the selectors' constituents.

In China, institutions are formally hierarchical: top leaders of the party appoint subordinate officials of the party, government and military. Yet, this relationship is not purely hierarchical, as party leaders need the support of the selectorate to remain in power. Shirk (1993) refers to this phenomenon as 'reciprocal accountability', a relationship in which neither party has a definitive right and the lines of authority run in both directions. In this system, 'patronage' plays an important role which encourages members of the selectorate to remain loyal to the incumbent leader. In exchange for loyalty and ideological adherence from officials and other individuals at various levels in the hierarchy, the leader offers career opportunities and other tangible or intangible rewards. However, this loyalty is not absolute. It varies depending on the value of the 'patronage' and the likelihood that a defector may be selected for the new leader's coalition. As the probability of being included in the future selectorate ϕ increases, the loyalty of the selectorate towards the incumbent decreases. Therefore, variations of the size of the selectorate, ϕ, shape a wide variety of economic and political outcomes in China.

5.2 *The role of the selectorate as disciplinary device*

According to our theory, within an autocracy like China, the transition from the disastrous economic policies in Mao's period to the extremely successful economic growth in the reform era might be partially explained as a transition towards the 'Efficient Equilibrium' outcome where the leader would pursue the general interest because of the reciprocal accountability to the selectorate. Our model shows that reciprocal accountability might work effectively as a disciplinary device leading to good policies if the size of the selectorate is not too small and, in certain cases, not too large. Although in the model we treat the selectorate size as exogenous, in reality the changes in selectorate size are partially due to the proclivities of individual leaders and partially to institutional structures that have evolved in response to crises and needs. Nonetheless, once the changes in the selectorate size consolidate, they begin to shape policy outcomes according to the game we have described.

Analysis of Chinese politics before and after the reform period reveals significant expansion in the size of the selectorate. Under Mao's totalitarian rule, the selectorate was extremely small, and its members, therefore, lived in the leader's shadow, rather than the other way around. Mao did not tolerate any challenge to his rule. Those who dared to question the Chairman's infallible capability to map out the correct road to socialism came to miserable ends. Defence Minister Peng Dehuai was thrown out of the party and later tortured to death after criticizing Mao's launch of the 'Great Leap Forward'. Similarly, Liu Shaoqi and Deng Xiaoping were accused of being capitalist-roaders and were attacked by the red guards after readjusting policies from radical Maoism to reconstruct the economy. In the late years of the Cultural Revolution, the 'Criticize Lin, Criticize Confucius' campaign was modified to indirectly attack Zhou Enlai, who tried to bring many cadres back to work who had been purged during the early phase of the Cultural Revolution. Due to the

ineffectiveness of the reciprocal accountability between leader and selectorate, China was in the disastrous 'Kleptocratic Equilibrium' status. At the time of Mao's death in 1976, the average per capita income of Chinese peasants, who represented 80 percent of the population, was only 40 USD per year; the amount of grain produced per person had fallen below the amount it had been in 1957.

Not for the first time in a Communist system, it was the death of the supreme leader that offered a window of opportunity for a radical break with the past. After Mao's death (September 1976) and the arrest of the Gang of Four (October 1976), Deng Xiaoping returned to his post at the Tenth Plenum of the Tenth Central Committee (July 1977). One of the major policies Deng implemented immediately after his restoration involved the reinstatement of the veteran leaders and Long March loyalists who had been purged by Mao. This policy helped Deng to build a new larger coalition to support himself and to compete with Hua Guofeng, another dominant leader who was Mao's hand-picked successor. Power struggle often stimulates a search for new constituencies. Deng needed to enlarge the selectorate to dilute Hua supporters and at the same time to increase his own followers.

Besides the consideration related to power struggle, Deng clearly saw the potential serious consequences if the elite and masses lost their confidence in the Communist party rule due to the post-Cultural Revolution crisis. Thus, he tried to rebuild a political system that ensured create effective checks on the main leader and accountability of all politicians. 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 over-concentration of power and patriarchal rule that had characterized China under Mao. For example, he recommended abolishing life tenure in leading posts, promoting young and middle-aged cadres, ensuring a necessary degree of decentralization, and even distinguishing between the responsibilities of the party and of the government.[11] More generally, Deng argued that the over-concentration of power in the hands of a few individuals in the party had produced disastrous policies as the Great Leap Forward, the Cultural Revolution and other excesses of the Mao Zedong era. Hence, he recommended that more groups be consulted in policy decision making. During the early 1980s, a number of initiatives were undertaken to reform the political system, including the adoption of new Party Statutes, measures to improve the quality of cadre force and steps to promote more effective participation.

All these policies launched by Deng Xiaoping led to a significant expansion in the size of the selectorate, from a tiny coterie of members of the leader's inner circle to a much larger coalition including revolutionary elders, military leaders, a younger generation of CCP leaders, members of the Central Committee, and other high-ranking officials of the central or local party and government apparatus. As the size grows, we expect an increased role of the selectorate in

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

constraining the leader's behaviour, and this was exactly the case in China during Deng's era.

An important and interesting example of the way in which the selectorate can discipline the incumbent leader was the removal of Hua Guofeng. This decision was made for two main reasons: first, the size and thus the power of the selectorate had been increased thanks to the policies Deng had implemented after returning to his post; second, the selectorate was not satisfied with Hua's attempt to pursue a policy of 'Maoist without Mao'. Most of the selectorate had suffered dramatically during the Cultural Revolution. Therefore, when they witnessed Hua's attempts to continue the Mao cult and set about creating one of his own, they decided to force him to gradually relinquish power (Saich, 2004, p. 55; Liberthal, 2004, pp. 125–127). Indeed, Hua gave up the Premiership in September 1980 and his position as party chair in June 1981. If Hua had not put forward the 'Two whatever'[12] approach and had abandoned Maoist policies instead, he would not have lost his position as the top leader. Gaining more weight in constraining the leader's behaviour, the selectorate at that time was eager to have a leader who could rescue the regime from collapsing and who could deliver material rewards to a population that had become bitterly disillusioned.

Another significant example can be seen when conservative CCP leaders Chen Yun and Yao Yilin tried to recentralize China's fiscal system after 1989. In the work conferences preceding both the 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 its members finally met they 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 disciplinary device becoming more effective, the incumbent leader became more accountable and could commit himself to promoting economic growth. Meanwhile, it is important to note that reform ideas did not initially extend much beyond 'giving farmers a chance to catch their breath' or 'expanding enterprise autonomy.' Inevitably, initial reforms were 'without a blue print', characterized by experimentation, or 'groping for stepping stones to cross the river' (Naughton, 2005). It would be amiss of us to attribute the success of Chinese economic reform to the Central leadership only. But at the same time, we cannot deny that if the central authorities had behaved as poorly as Mao, the economic reforms would not have been implemented or led to such successful outcomes. We believe that an important key to the accountable behaviours of the Chinese central

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

government in the reform era was the existence of a partially independent selectorate, which was not too small in size.

6. Conclusion

Ensuring that the government allocates resources for the provision of public goods, rather than rent-seeking for personal gain is an ever-present challenge. If rulers build tax and legal systems and direct public spending in the interests of the general population, then they may foster growth and human and social development. We do not purport to hold the answer to this difficult and crucial question; there is probably no single answer and no magic formula. However, we aim here to provide some insights into a specific area: reciprocal accountability in autocratic systems. This article offers some insights on the institutional basis of China's rapid economic growth throughout the reform era, providing a plausible explanation for the dramatic change from the Mao's radicalism to gradual 'reform and opening up'. This dramatic transition was successful because the selectorate had efficiently constrained autocratic power with internal checks and balances which gave policy makers an incentive to promote economic growth. The expansion of the size of the selectorate was the most important institutional change in the post-Mao political system, as the top leader no longer held sole power as a one-man dictator, but rather needed the approval of members of the selectorate. Drawing on Shirk (1993), we refer to such an accountability mechanism in a one-party political system as 'reciprocal accountability'.

It is important to emphasize that the 'reciprocal accountability' system is vulnerable to external changes. For example, after the political upheavals and the subsequent repressions at the end of the 1980s, the selectorate became subordinate to the central leadership and was unable to carry out its disciplinary function. From then on, power was concentrated in the Politburo Standing Committee and the selectorate would acquiesce once a general agreement had been reached among the top leadership. Afterwards, the incentive to promote effective economic policies can be explained by other forces such as pressures outside the regime, in particular the threat of a civilian led revolution (Shirk, 2007). However, we believe that reciprocal accountability remains a crucial force to be considered when analysing autocratic economic policies in general and China's transition in particular. The intention of the reforms was not to support democracy or a capitalist economic system, but rather to enable the survival of socialism. Whether such an approach to development is still tenable is one of the major questions the CCP faces in the near future. The final result could be either the democratization of the system or an increasingly brutal regime. China's best hope is to open the political system gradually, while, at the same time, increasing the constraints on executive power. But managing such a feat will not be easy.

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Appendix

This Appendix reports all the detailed calculations required to find the pure strategy Perfect Bayesian equilibria of our model. Note that we consider only pure strategies, but since the non-congruent leader's choice will depend on the realization of her random private rent not observed by the selectorate, from the point of view of the selectorate the leader's choice will be random depending on the cumulative distribution function of the leader's rent, $G(r)$. Moreover, in the propositions we will omit the specification of the beliefs that support the equilibrium strategy profile, since they will be explicitly derived in the proof of the results.

Preliminary remarks on the choices of the leader

In the first period, the congruent leader has the strictly dominant action of choosing the congruent policy, so only the non-congruent type is actually a strategic player as leader. In the second final period, both types of the incumbent leader will choose to implement the policy according to their short-term preferences. This implies that in

period two a congruent incumbent will choose $e_2 = \theta_2$, while a non-congruent politician will choose $e_2 = 1 - \theta_2$.

Best responses and beliefs of the selectorate

Working backward we derive the conditions under which the selectorate will choose to retain the incumbent leader, that is, $\rho(\delta) = 1$ or subvert her authority, that is, $\rho(\delta) = 0$. This choice depends on the observation $\delta \in \{0,\Delta\}$ since this would provide some information about the type of the leader and thus on her future policy choices, since the selectorate will choose to support the incumbent leader if and only if the expected continuation payoff from retaining the incumbent is greater than the expected continuation payoff from subverting her.

Let $V^S(\rho(\delta) = 0)$ be the expected continuation payoff for the selectorate if they subvert the incumbent leader. Clearly, this payoff does not depend on the previous observation δ, since the leader has been changed. Therefore for any $\delta \in \{0,\Delta\}$,

$$V^S(\rho(\delta) = 0) = \pi \times \Delta + (1 - \pi) \times 0 + \phi \times \frac{X}{\phi} + (1 - \phi) \times 0 = \pi\Delta + X. \quad \text{(A1)}$$

As the type of the newly picked up leader is unknown, she will produce Δ with probability π and 0 otherwise. Moreover, both types of the leader will distribute all the social revenue to the selectorate, but the members of the selectorate who ousted the leader, with probability ϕ will be included in the successor's selectorate getting the patronage $\frac{X}{\phi}$ in the second period.

Let $V^S(\rho(\delta) = 1)$ be the expected continuation payoff for the selectorate if they support the incumbent leader. Clearly in this case, the payoff does depend on the previous observation δ, since the leader has not been changed and δ might convey some information about the type of the leader. Therefore, for any $\delta \in \{0,\Delta\}$,

$$V^S(\rho(\delta) = 1) = P(C|\delta)(\Delta + \frac{X}{\phi}) + (1 - P(C|\delta))\frac{X}{\phi} = P(C|\delta)\Delta + \frac{X}{\phi} \quad \text{(A2)}$$

where $P(C|\delta)$ is the selectorate's posterior belief on the incumbent leader being congruent given that in the first period from the general interest policy he got a payoff $\delta \in \{0,\Delta\}$.

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

$$V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0), \quad \text{(A3)}$$

which implies,

$$P(C|\delta)\Delta + \frac{(1 - \phi)}{\phi}X \geq \pi\Delta. \quad \text{(A4)}$$

As usual, $P(C|\delta)$ is derived using Bayes rule:

$$P(C|\delta = \Delta) = \frac{P(C)P(\delta = \Delta|C)}{P(C)P(\delta = \Delta|C) + P(N)P(\delta = \Delta|N)} =$$

$$= \frac{\pi \times \lambda^C(\theta_1, r_1)}{\pi \times \lambda^C(\theta_1, r_1) + (1 - \pi) \times \lambda^N(\theta_1, r_1)} = \qquad \text{(A5)}$$

$$= \frac{\pi \times 1}{\pi \times 1 + (1 - \pi) \times \lambda^N(\theta_1, r_1)}$$

$$P(C|\delta = 0) = \frac{P(C)P(\delta = 0|C)}{P(C)P(\delta = 0|C) + P(N)P(\delta = 0|N)} =$$

$$= \frac{\pi \times \left(1 - \lambda^C(\theta_1, r_1)\right)}{\pi \times \left(1 - \lambda^C(\theta_1, r_1)\right) + (1 - \pi) \times \left(1 - \lambda^N(\theta_1, r_1)\right)} = \qquad \text{(A6)}$$

$$= \frac{\pi \times 0}{\pi \times 0 + (1 - \pi) \times \left(1 - \lambda^N(\theta_1, r_1)\right)}$$

The selectorate will support the incumbent leader if and only if (A4) holds.

The choices of the leader and of the selectorate

Since by construction the congruent type always chooses the congruent policy $\lambda^C(\theta_1, r_1) = 1$, while in general $\lambda^N(\theta_1, r_1) \in [0, 1]$. Therefore,

$$P(C|\delta = \Delta) = \frac{\pi \times 1}{\pi \times 1 + (1 - \pi) \times \lambda^N(\theta_1, r_1)} \equiv \Pi(\lambda^N) \in [\pi, 1]; \qquad \text{(A7)}$$

and

$$P(C|\delta = 0) = \frac{\pi \times 0}{\pi \times 0 + (1 - \pi) \times (1 - \lambda^N(\theta_1, r_1))} \in [0, 1]. \qquad \text{(A8)}$$

However, a simple forward induction argument shows that we can restrict $P(C|\delta = 0)$:

$$P(C|\delta = 0) = \frac{\pi \times 0}{\pi \times 0 + (1 - \pi) \times (1 - \lambda^N(\theta_1, r_1))} = 0. \qquad \text{(A9)}$$

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

$$\Delta + \frac{(1-\phi)}{\phi} X \geq \pi\Delta, \tag{A10}$$

which is always satisfied. Therefore, after observing $\delta = \Delta$ the selectorate will choose to retain the incumbent leader being certain that she is congruent.

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

$$\frac{(1-\phi)}{\phi} X \geq \pi\Delta, \tag{A11}$$

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 to lose his privileges and therefore supporting the leader no matter what kind of general interest policy choice she makes. The non-congruent leader, knowing that she could always obtain support, will choose the action that maximizes her short term utility, that is for any $r_1, \lambda^N(\theta_1, r_1) = 0$.

Proposition 1. When $\phi \leq \frac{X}{X+\pi\Delta} =: \Phi(X, \pi, \Delta)$, there exists an unique Perfect Bayesian equilibrium where

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

This means that the leader would pursue her own interest and she will still retain power.

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 if $\delta = 0$, the selectorate will choose to change the incumbent leader being certain that she is not congruent.

In this scenario, to find out the behaviour of the non-congruent incumbent leader, we need to compare her payoffs when she switches from non-congruent to congruent actions behaving as if she is the congruent type. Thanks to this switching behaviour, she might be able to stay in power depending on the selectorate beliefs.

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

$$EU^N(\lambda = 1) = \Delta + \frac{X}{\phi} + \beta(\bar{r} + \frac{X}{\phi}). \tag{A12}$$

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

$$EU^N(\lambda = 0) = r_1 + \frac{X}{\phi}. \tag{A13}$$

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

$$EU^N(\lambda = 1) \leq EU^N(\lambda = 0), \tag{A14}$$

that is,

$$r_1 \geq \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi). \tag{A15}$$

Therefore, when $\phi \geq \frac{X}{X + \pi\Delta}$, the non-congruent leader's sequentially rational actions are

$$\lambda^N(\theta_1, r_1) = \begin{cases} 1 & r_1 \leq \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi) \\ \in [0,1] & r_1 = \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi) \\ 0 & r_1 \geq \Delta + \beta(\bar{r} + \frac{X}{\phi}) =: R(\Delta, \beta, \bar{r}, X, \phi). \end{cases}$$

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

Therefore, on the equilibrium path we get the following beliefs:

$$P(C|\delta = \Delta) = \frac{\pi \times 1}{\pi \times 1 + (1 - \pi) \times G(\Delta + \beta(\bar{r} + \frac{X}{\phi}))} =: \Pi(\Delta + \beta(\bar{r} + \frac{X}{\phi})) > \pi, \tag{A16}$$

while out of equilibrium we obtain,

$$P(C|\delta = 0) = \frac{\pi \times 0}{\pi \times 0 + (1 - \pi) \times \left(1 - G(\Delta + \beta(\bar{r} + \frac{X}{\phi}))\right)} = 0. \tag{A17}$$

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

$$V^S(\rho(\delta) = 1) \geq V^S(\rho(\delta) = 0) \tag{A18}$$

that is

$$P(C|\delta)\Delta + \frac{(1-\phi)}{\phi}X \geq \pi\Delta. \tag{A19}$$

When $\delta = \Delta$, this implies

$$\Pi\Delta + \frac{(1-\phi)}{\phi}X \geq \pi\Delta \tag{A20}$$

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

When $\delta = 0$, this implies

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

To sustain the non-congruent leader choices as an equilibrium, we need to have that the selectorate is loyal to the leader only when the general interest policy choice she had made is congruent, otherwise the non-congruent leader has an obvious incentive to switch to a non-congruent policy. Then, $\rho(0) = 0$ if and only if $\phi \geq \frac{X}{X+\pi\Delta}$.

Proposition 2. When $\phi \geq \frac{X}{X+\pi\Delta}$, there exists an unique Perfect Bayesian equilibrium where

$$\lambda^C(\theta_1, r_1) = 1, \lambda^N(\theta_1, r_1) = G\left(\Delta + \beta\left(\bar{r} + \frac{X}{\phi}\right)\right), \rho(0) = 0, \rho(\Delta) = 1.$$

This means that even the non-congruent leader might pursue the general interest because of her accountability towards the selectorate, depending on the realization of her private rent.