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Equality, the Disinterested Government and Economic Growth^{*}

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Abstract: We put forward a dynamic model to explain how initial political and economic equality can lead to a disinterested government in an autocracy. By a disinterested government, we mean a government that does not take into consideration non-productive factors, the political power of social groups in particular, when it allocates resources across the society. Equality of political power reduces the probability of any social group to overthrow the autocrat, and equality of economic assets reduces social groups' incentives to grab from other groups. We show that the social output and its growth rate are both higher under a disinterested government than under a biased government. We also analyze the stability of social structure and the evolution of inequality under a disinterested government when social groups have

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different levels of production efficiency. Lastly, we conduct case studies on China, Korea and Taiwan to show that our model can provide new insights to understanding the diverse performance of autocracies.

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1. Introduction

The performance of autocracies is very diverse across countries and across time (Przeworski, Alvarez, Cheibub and Limongi, 2000; Besley and Kudamatsu, 2007). Yet there are scant studies trying to explain this diversity in the economic literature. In this paper we put forward an explanation centered at the social structure that an autocracy starts with. A more equal social structure, i.e., one with more equal distribution of political power and economic assets, is more conducive for the autocrat to become disinterested with respect to the society. Equality of political power makes it hard for a single social group to threaten the rule of the autocrat, and corresponding equality of economic assets discourages social groups to invest into political power that could help them grab from other groups. As a result, the autocrat can act as if he were disinterested toward social groups,² i.e., does not take into account non-productive factors, political power in particular, when he allocates resources across the society. Consequently, social output and its growth rate, although they may not attain the social optimum, are higher under such an autocrat, whom we will also refer to as a disinterested government, than under a biased autocrat, i.e., one that bends his allocation toward politically stronger yet not necessarily economically more productive social groups.

We formalize the above ideas in a dynamic political economy-growth model. Specifically, we consider a society with two social groups and an autocrat who together play a Stackelberg game in each period. Each social group has a fixed number of people who inherit the stock of political capital and a bequest of physical capital from their parents. Physical capital can be converted into political capital. The autocrat announces a policy at the beginning of each period that consists of a set of group-specific taxes on people's physical assets and a set of group-specific local

² In aesthetics, disinterestedness is a formal concept that bears three interpretations: the observer is uninterested in the object; the observer does not bring in his own experiences and mental feelings when he appreciates the object; and the observer does not bring in his own pursuits or interests when he forms his opinions or takes actions about the object (Rind, 2002; Peng, 2009). Our notion of a disinterested government is close to the second interpretation. That is, a disinterested autocrat is interested in the society and takes into account his own interests when he forms policies; he is disinterested only in the sense that he does not take a personal stance when it comes to the distribution of resources between social groups.

public goods that augment individual production. The two groups then decide whether to accept the autocrat's policy or to reject it. In the meantime, they also decide whether and how much to invest in political capital. When the two groups make different decisions, the group accepting the autocrat's policy can decide whether to start a political competition with the other group. The winning group of the competition then captures the autocrat and seizes the physical assets of the other group, from which point the society enters a game of one social group and one autocrat.

We show that there exists a unique stationary and perfect Markov equilibrium for our game. We also find a parameter region, which we refer to as "the equality cone", for the initial social structure in which the autocrat acts as a disinterested government and prove that both social output and its growth rate are higher under such an autocrat than under any autocrat produced outside the equality cone. We also study the stability of the cone and extend our analysis to the case when the two social groups have different levels of production efficiency. In particular, we analyze how this extension changes the stability of the disinterested government.

Our theory is related to several strands of literature. One of them is the theoretical modeling that relates retarded economic growth to inequality through negative government policies. Most of this literature, however, studies democracies. For instance, Alesina and Rodrik (1994), Benabou (2000), and Hassler, Rodriguez-Mora, Storeletien, and Zilibotti (2003) study the relationship between the inequality of wealth and government's redistributive policies; Esteban and Ray (2006) demonstrate how inequality of wealth may distort government allocation through asymmetric lobbying; Renzo (2007) focuses on how asymmetric political powers may lead to short-sighted government policies; and Galor, Moav, and Vollrath (2009) show how equal land distribution is conducive to growth by promoting human capital accumulation.

Esteban and Ray (2006)'s work has direct bearing to our paper. They treat lobbying as a signal sent by private agents to the government showing their productive

worthiness for preferential treatments. However, high wealth enables agents to launch louder lobbies. Because the distribution of productivity does not match the distribution of wealth, inequality distorts government allocation of resources even if it seeks to maximize economic efficiency. In a sense, our model provides a parallel theory for autocracies. In Esteban and Ray's model, economic equality reduces the strength of lobbying serving as a signal for productivity, while political and economic equality reduces the strength of revolutionary attempts that force the government to take biased policies in ours. In both cases, equality makes the government more likely to allocate resources to match the productivity of social groups. One of the differences, however, lies in the fact that their model is built on the premise that productivity is private information to individual agents and equality reduces the distortion caused by the government's inability to obtain accurate information, while our model assumes perfect information but still shows that equality improves efficiency by freeing the government from the fear of losing power. Another difference is that we do not assume efficiency-maximizing government. The social output and its growth generated under a disinterested government, therefore, is only the second best.

Our model also shares the spirit of Galor, Moav, and Vollrath (2009)'s in that both ascribe underdevelopment to unequal social structure. However, we stress the role played by the competition among different social groups whereas they stress the role of a specific group, the landed class, which is associated with a sector (agriculture) with a low demand for modern inputs like human capital.

Our theory is related to a small but growing literature on the performance of autocracies. While most studies focus on the persistence of autocracies (e.g., Acemoglu, Ticchi, Vindigni, 2007; Padro-I-Miquel, 2007; and Acemoglu and Robinson, 2008), two recent papers have studied why some autocracies have obtained better records of economic growth than others. Gehlbach and Keefer (2008) observe that autocracies performed better in terms of economic growth when the ruling party had a longer history. They interpret this finding as evidence for the positive role of party institutionalization. Specifically, their theoretical model takes within-party

information sharing as the most distinctive feature of party institutionalization. Party members are informed of the behavior of the leader and can punish the latter by obstruction. As a result, the leader becomes less predatory on party members who then become more likely to invest in the economy. Besley and Kudamatsu (2007) further provide a detailed documentation of the economic performance of autocracies after World War II and put forward an explanation for successful economic records. In their model, a selectorate comprised of a group of insiders selects the leader. In an agency model, they show that when the selectorate's power does not depend on the leader's being in office, its threat of replacing the leader becomes credible and the leader chooses strategically to adopt growth-friendly policies. In a sense, this story is one of party institutionalization, as proposed by Gehlbach and Keefer (2008).

However, Besley and Kudamatsu (2007), together with Padro-I-Miquel (2007), have a close link with our paper in terms of modeling. Padro-I-Miquel (2007) studies why some failing autocracies could last for a long time. His explanation is one of "rule by fear". In his model, people in the ruling group have to deliberate between replacing a bad ruler and the repression of the competing group if the internal struggle leads to the loss of power of the ruling group. One of his key assumptions is that the probability of losing power is high when people in the ruling group replace their ruler. In a sense, this is equivalent to the assumption that the two groups of citizens have equal political power. In contrast, Besley and Kudamatsu (2007) are at the other extreme. Their condition for a better autocracy, i.e., that the survival of the ruling group does not depend on whom its leader is, is equivalent to the assumption that the ruling group has superior power over the competing group. Put together, these two papers suggest that equality between groups is actually bad for the society.

Our model differs from these two papers by treating the government as a third group and focusing on between-group, instead of within-group, dynamics. Treating the government as an autonomous group is consistent with the roles of rulers in several autocracies (like South Korea under Park Chae-Chi and the current China). Our result that between-group equality helps growth differs from the results of Besley

and Kudamatsu (2007) and Padro-I-Miquel (2007). Those two papers treat between-group dynamics as the background of their models and thus ignore some of their important implications. For example, Besley and Kudamatsu fail to explain why the ruling group does not become excessively predatory on other groups if it has absolute advantage over them. On the other hand, Padro-I-Miquel does not address why the other group cannot force the ruler (and the ruling group) to behave better if it can take any available opportunity to replace the ruling group. The reason that between-group equality does not lead to a better government (ruler) in his model is that the competing group cannot directly influence the behavior of the leader of the ruling group; instead, it undermines the ability of the members in the ruling group to supervise their leader. While our model is not aimed at replacing the arguments of those two papers, we do bridge the above gaps left by them.³

Finally, our notion of disinterested governments is related to several theories of the state in the political economy literature. Skocpol (1979) constructs the notion of the autonomous state which she believes has its own purposes and logic of actions. The disinterested government certainly is autonomous, but bears more structure than the autonomous state. Olson (1982) studies how diverse interest groups can retard a country's economic growth and argues that countries ruled by an encompassing organization --- an organization whose interests largely overlap social interests --- are more likely to grow. Like an encompassing organization, a disinterested government promotes economic growth as a by-product of its pursuit of its own interests. However, a disinterested government does not necessarily hold interests that overlap the social interests; it promotes economic growth relative to other types of government by guarding its policy from the influence of non-productive factors. Lastly, a disinterested government is different from a developmental state. A developmental state puts a positive constraint on the government requiring it put economic development as its top priority; in contrast, a disinterested government puts a negative constraint on the government requiring its policy not be influenced by

³ A unifying model may be possible to accommodate both within-group and between-group dynamics. But for our current purpose, the model presented in this paper may be sufficient.

non-productive factors.

The rest of the paper is arranged as the follows. In Section 2, we provide the setup of our model and analyze some of its properties. In Section 3, we then obtain the key results for the disinterested government and its efficiency. In Section 4, an extension is provided to study the stability of the social structure and the evolution of inequality under a disinterested government. Section 5 then takes China as an example to show how our model can shed new lights to understanding diverse performance in autocracies. We also discuss the cases of Korea and Taiwan where remarkable economic growth has been achieved without deteriorating the distribution of income. Section 6 concludes the paper.

2. Model Setups

2.1 The environment

There are an autocrat and two groups in the society, denoted by \mathbf{P} and \mathbf{E} , whose populations are λ_P and λ_E , respectively. The total population of the society is normalized to 1, so $\lambda_P + \lambda_E = 1$. We abstract from within-group political dynamics and assume that each group can make and implement coherent decisions.⁴ The autocrat lives forever.⁵ Each person of the two groups, though, only lives for one period and at the end of each period gives birth to a new person so the population is stable over time. People are the same in the same group. A typical person in group i inherits k_{it} amount of physical capital from his parent in period t (the amount of capital in period 0 can be thought as endowed by the nature). So the total amount of capital in the society in period t is $k_t = \sum_{i=P,E} \lambda_i k_{it}$.⁶ The autocrat levies a tax on each person's capital with the rate τ_{it} , $i \in \{P, E\}$. Taxes are used for two purposes, one to provide

⁴ We make this assumption because our purpose is to study between-group interactions. Acemoglu and Robinson (2001, pp.941) make the same assumption.

⁵ This is equivalent to assume that the autocrat bequests its position to his son if he stays in power until he dies.

⁶ We will use capital subscripts to denote groups and use lower-case subscripts to denote individuals in a specific group. For example, λ_E denotes the population of group E , and k_e denotes the stock of capital owned by an individual in that group.

a local public good to each group, denoted by g_{it} hereafter, and the other one to provide consumption of the autocrat. Production is conducted at the individual level by the following constant-elasticity (CES) production function using the personal capital $(1-\tau_{it})k_{it}$ and the local public good:

$$y_{it} = \Psi \left[(1-\tau_{it})^\gamma k_{it}^\gamma + g_{it}^\gamma \right]^{\frac{1}{\gamma}}, \quad \gamma \in (0,1), \quad 0 \leq \tau_{it} \leq 1, \quad \Psi > 1, \quad i \in \{P, E\}. \quad (1)$$

It is easy to verify that the socially optimal tax rate --- i.e., the rate when the autocrat does not consume --- is 0.5 for both groups and the related local public goods are $0.5k_{it}$, $i \in \{P, E\}$. The size of the social output then is $2^{\frac{1-\gamma}{\gamma}} \Psi k_t$.

Capital perishes in each period after being used in production. Individuals care about their own consumption (c_{it}) and their children's capital stock (k_{it+1}). Similar to Galor et al. (2009), individual utility takes the following form:

$$U_{it} = \text{Max} \left\{ (1-\theta)^\sigma c_{it}^{1-\sigma} + \theta^\sigma k_{it+1}^{1-\sigma} \right\} \quad \text{s.t.} \quad c_{it} + k_{it+1} = y_{it}, \quad i \in \{P, E\}. \quad (2)$$

where $\theta, \sigma \in (0,1)$.⁷ It is straightforward to obtain from (2) that

$$k_{it+1} = \theta y_{it}, \quad U_{it} = y_{it}^{1-\sigma}, \quad i \in \{P, E\}. \quad (3)$$

Under the social optimal tax rate, the growth rate of the economy is $2^{\frac{1-\gamma}{\gamma}} \theta \Psi$, which asymptotically approaches its lower bound $\theta \Psi$ when γ approaches 1. We assume that $\theta \Psi > 1$ to ensure that there is always growth in the economy.

Each person in group i , $i = P, E$ also holds an initial stock of political capital of V_i that can be passed to the next generation without depreciation. Political capital can help a group win the political competition that we will describe later. Similar to Acemoglu and Robinson (2008), individuals can convert physical capital to political capital. Let I_{it} denote the amount of physical capital devoted to produce political

⁷ Later we will see that realized individual utility depends on the result of political competition. By the utility function assumed in Problem (2), individuals do not care about their children's utility, but their endowed stock of physical capital. In this sense, individuals are not fully rational. However, as we will show later in the text, individuals' investment in political power depends on their endowed stock of physical capital which in turns determines their groups' chances of winning the political competition.

capital by an individual in group i in period t . Then the stock of political capital of a person in Group i in period t is

$$\nu_{it} = \nu_i [1 + \phi(I_{it})], i \in \{P, E\}, \phi' > 0, \phi'' < 0, \phi(0) = 0, \text{ and } \phi'(0) < \infty.$$

A group's political capital is the sum of the political capital of its members.

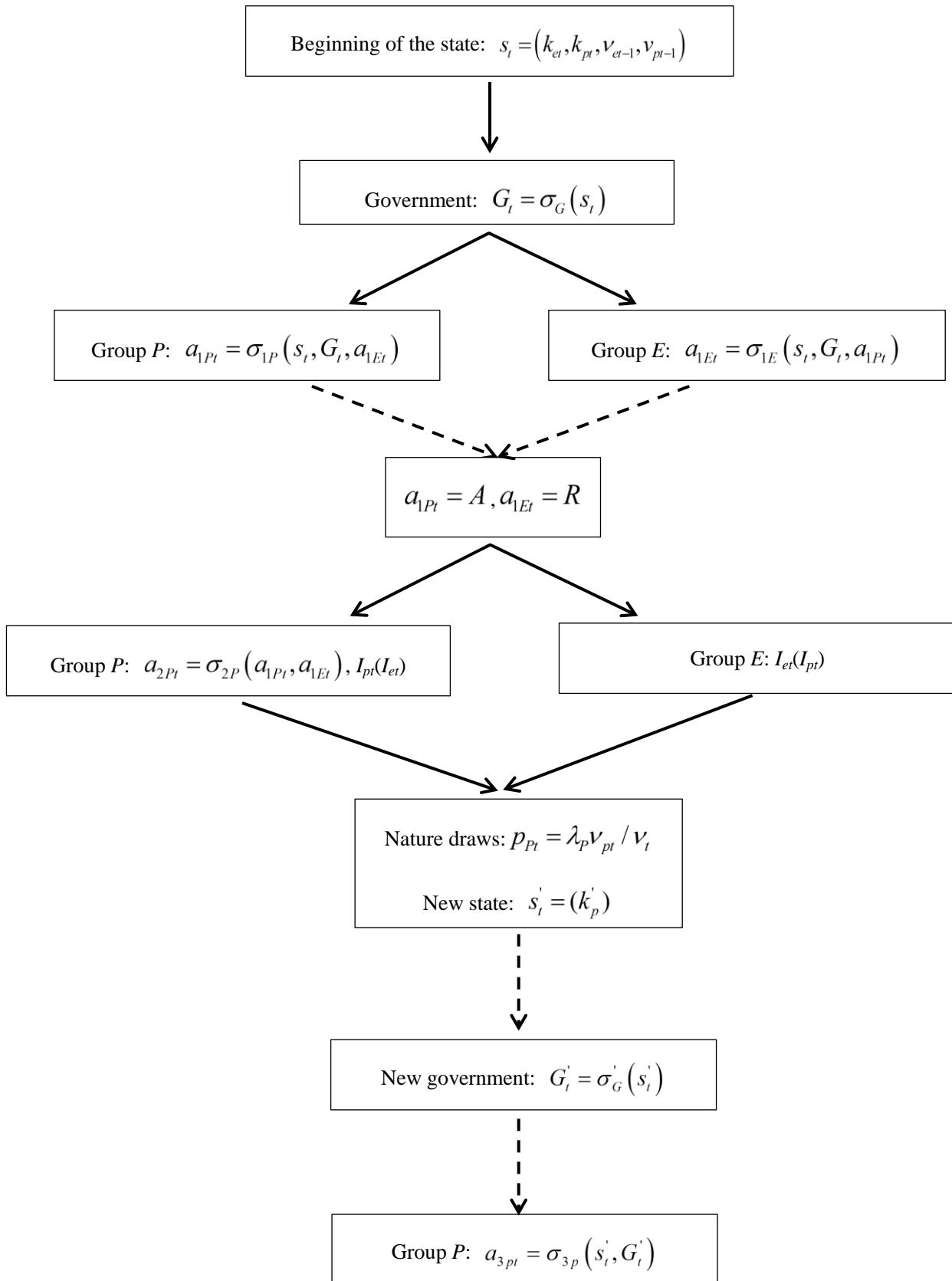
The autocrat lives forever if it is not thrown down. We will discuss the case that it is forced out when we roll out the model. He only cares about his own consumption, which is $y_t^G = \lambda_P(\tau_{Pt}k_t - g_{Pt}) + \lambda_E(\tau_{Et}k_{et} - g_{Et})$. His instantaneous utility function for period t is assumed to take the logarithm form, i.e., $\ln y_t^G$.

2.2. The structure of the game

For the dynamic game that we will set up below, the Markov strategy and its related equilibrium is the most appropriate solution concept. A Markov strategy is only a function of the state variables in the current period and is unrelated with the players' past actions. If all the players adopt the Markov strategy, then their utility is only related with their actions in the current period. As a result, their utility in a certain period can be expressed as value functions that are fully described by the current state variables, so we can apply dynamic programming methods to analyze their behavior. When each player maximizes his sum of discounted future utility in each period, the game then reaches a perfect Markov equilibrium (PME). If each player's strategy is invariant over time, then we have a stationary PME.

The game in our paper runs as the follows. In each period, the three players, i.e. the autocrat and the two social groups, plays a Stackelberg game that proceeds as shown by Figure 1. The endowments of physical and political capital each individual obtains from his parent are the state variables that each period starts with. We summarize them by a generic representation $s_t = (k_{et}, k_{pt}, \nu_{et-1}, \nu_{pt-1})$. The autocrat observes s_t and announces its policy comprised of the group-specific tax rates and local public goods $G_t = (\tau_{Pt}, g_{Pt}; \tau_{Et}, g_{Et})$. Let its strategy be denoted by $G_t = \sigma_G(s_t)$. Its expected sum of discounted future utility starting in period 0 is

Figure 1. The order of the game



$$U^G(G_t) = E \sum_{t=0}^{\infty} \beta^t \ln [\lambda_P (\tau_{P_t} k_t - g_{P_t}) + \lambda_E (\tau_{E_t} k_{et} - g_{Et})], \quad (4)$$

where the expectation takes into account all the contingencies shown in the subsequent stages of Figure 1.

Observing the autocrat's policy, the two social groups play a Nash game. They first decide whether to accept (A) or reject (R) the autocrat's policy. We denote their strategy by $a_{1it} = \sigma_{1i}(s_t, G_t, a_{1ji}) \in \{A, R\}$, $i \neq j \in \{P, E\}$. If both groups accept the autocrat's policy, each person gets the utility assigned by the autocrat (through taxation and the provision of the local public goods) in that period. If both groups reject, the autocrat's policy fails, i.e., $G_t = 0$, and individuals fall back to autarky (i.e., conducting production using their inherited capital alone). When the two groups' decisions are different, the autocrat's policy also fails. But in this case, the group agreeing with the policy can form a (temporary) alliance with the autocrat and start a political competition. Figure 1 illustrates the case when Group **E** rejects the autocrat's policy and Group **P** agrees with it.⁸ Group **P**'s strategy $a_{2Pt} = \sigma_{2P}(a_{1Pt}, a_{1Et})$ is to decide whether to start a political competition. The purpose of the competition is to defeat the other group and set up a group's own government which, however, is still ruled by an autocrat. Regardless whether the competition actually starts, each group decides whether to invest in political capital and how much if the decision is affirmative. People in the same group take the same action. In Figure 1, these two decisions are represented by I_{it} , $i \in \{P, E\}$.

We assume that the competition finishes in one period once it starts and produces an outcome that depends on the stocks of political capital held by the two groups.⁹

⁸ Because this case is hypothetical, the links are represented by dashed arrows. The other dashed arrows bear the same interpretation.

⁹ We assume away the government's political/military capital to serve our purpose of studying the government's behavior when it faces the society. This is of course an unrealistic assumption. However, unless the government is ruled by an absolute despot who can impose his will whenever some groups of the society do not comply with his decisions, considering the political/military forces held by the government will only add one more dimension of competition to our model. But this will only create a "parallel shifter" to our model in the sense that it will intensify

Winning the competition certainly is not a sure thing. The probability that Group i will win the competition is proportional to its aggregate stock of political power relative to the stock of political power in the society. To be specific, let

$$V_t = \lambda_P V_{pt} + \lambda_E V_{et}$$

be the stock of political capital in the society in period t . Like the related references(eg., Grossman,1999; Esteban and Ray,1999), we assume that the group i will win the competition by a probability of $p_{it} = \lambda_i V_{it} / V_t$ and lose the competition by a probability of $1 - p_{it}$. A winner is drawn according to these probabilities at the end of the political competition. The losing group permanently loses its political power and its physical capital is taken away by the winning group and is evenly distributed among its members. That is, the losing group ceases to exist.¹⁰ The game then restarts with a new state $s_t^+ = (k_p^+)$, where k_p^+ is the stock of physical capital owned by each person of Group **P** after it wins the political competition. If the winning group is the group that agrees with the autocrat's policy, the autocrat stays; if the winning group is the group that rejects the autocrat's policy, that group chooses a new autocrat. In either case, the autocrat faces only one group of people that now has the unilateral right to veto his policy. For this reason, he has no incentive to announce a policy that would be rejected by the winning group. Let $a_{2P} = \sigma_{2P}(a_{1P}, a_{1E})$ denote his policy. Observing this policy, each person of the winning group then engages in production and makes his consumption decision afterwards. In Figure 1, these actions are summarized by $s_t^+ = (k_p^+)$.

A stationary PME is obtained if all the strategies, i.e., $\sigma_G, \sigma_G^+, \sigma_{1i}, \sigma_{2i}, \sigma_{3i}$ and I_{it} , $i \in \{P, E\}$, taking into account all the future contingencies, maximize the sum of expected future utility of the respective player in each period. As shown by Figure 1, the model is complicated and contains numerous contingencies at each stage. To

the competition between the two societal groups but will not fundamentally alter the structure of that competition.

¹⁰ This assumption can be understood as requiring the losing group to fall back to a situation of subsistence living and, for the time being, severed off from the society's political life.

solve the model, it is the best to go backward by starting with the political investment.

2.3 Political investment

Because political capital can be accumulated, each person has to consider all the future contingencies to make the decision about its investment. The following lemma, however, drastically simplifies our analysis.

Lemma 1. *Under the assumption that the conversion from physical capital to political power can be done instantaneously, individuals will always wait until the political competition begins to start investing in political power.*

Proof. In any period, individuals face a trade-off between leaving more physical capital to their children and investing in political power that would help their children win political competition in case it happens. However, political power is useless unless political competition happens, which is a probabilistic event, whereas physical capital can always be used to produce consumption or political power. Because the conversion from physical capital to political capital can happen instantaneously,¹¹ it thus always pays to wait until the political competition happens to invest in political power. **Q.E.D.**

This lemma allows us to abstract from the accumulation of political capital. In addition, it means that individuals can always postpone investing in political power until a political competition is about to take place. A person's decision about his political investment is comprised of two parts. One is to decide whether to invest, and the other is to invest how much if the first decision is affirmative. The first decision is based on the comparison of the expected utility of winning the political competition under the optimal amount of investment and the utility obtained when no investment is done. In the latter case, the utility is always the autarkic utility, $U_i^0(k_{it}) = (\Psi k_{it})^{1-\sigma}$, because by the time the investment decision is made, at least one group has already

¹¹ Because we adopt an overlapping generation framework, “instantaneity” in the lemma actually means a generation of time.

rejected the autocrat's policy and both groups have to fall back on autarkic production if political competition does not start. To determine the expected utility of winning the political competition, we start with the utility of the winning group.

This group now owns the whole stock of physical capital in the society. However, the total amount of physical capital in the society, after political investment has been rendered, is $k_t' = k_t - \sum_{i \in \{P, E\}} \lambda_i I_{it}$, and each person in the winning group, group i , say,

gets $k_{it}' = k_t' / \lambda_i$. The autocrat chosen by the winning group decides its policy $G_t' = (\tau_t', g_t')$ by solving the following problem:

$$\begin{aligned} & \underset{\tau_t, g_t}{\text{Max}} \left\{ \sum_{t=0}^{\infty} \beta^t \ln(\tau_t k_t' - g_t') \right\} \\ \text{s.t. } & \left[(1 - \tau_t')^\gamma (k_{it}')^\gamma + (g_t')^\gamma \right]^{\frac{1}{\gamma}} \geq k_{it}' \\ & k_{it+1}' = \theta \Psi \left[(1 - \tau_t')^\gamma (k_{it}')^\gamma + (g_t')^\gamma \right]^{\frac{1}{\gamma}}. \end{aligned} \quad (5)$$

The first constraint is the participation constraint that guarantees the winning group's consent of the autocrat's policy, and the second constraint is the transition function of physical capital. There is a possibility that the participation constraint is not binding. To exclude this possibility (which is not an interesting case anyway), we assume

$$2^{\frac{1-\gamma}{\gamma}} \beta < 1. \quad (6)$$

Then, it is easy to obtain the autocrat's policy, $(\tau_t^\Delta, g_t^\Delta)$, say, where $\tau_t^\Delta = 1 - 2^{-1/\gamma}$, $g_{it}^\Delta = (1 - \tau_t^\Delta) k_{it}'$. Individual utility of the winning group is the autarkic utility $U_i^0(k_{it}')$ under which the winning group has no incentive to reject. The autocrat's policy and the group's choice consist of a stationary PME equilibrium.

With that, we can now study political investment. The purpose of group members to engage in political competition is to have an autocrat favored by them and to share equally among its members the total amount of physical capital left in the society, k_t' . Under the assumption specified in (9), each member of the winning group obtains

the autarkic utility $U_i^0(k_{it}')$. But the probability of winning the competition is

$p_{it} = \lambda_i [v_i + \phi(I_{it})]/v_t$. Therefore, a person of group i decides his political investment I_{it} by maximizing his expected utility once he decides to invest:

$$U_{it}^C = \max_{I_{it}} p_{it} U_i^0(k_{it}'), \quad (7)$$

where, once again, $U_i^0(k_{it}') = (\Psi k_{it}')^{1-\sigma} = \left[\Psi \left(k_t - \sum_{i \in \{P, E\}} \lambda_i I_{it} \right) / \lambda_i \right]^{1-\sigma}$. However,

whether a person invests depends on his comparison between his expected utility of investment, U_{it}^C , and what he can get when he does not invest. The latter is a result of the strategic plays of the two social groups, which we will analyze later.

2.4 The autocrat's problem

To discuss the autocrat's problem, note first that the game only has three outcomes in any period t : both groups accept the autocrat's policy, both groups reject the autocrat's policy, and one group accepts and the other group rejects. In the first outcome, the autocrat's policy is implemented and we denote the realized individual utility by U_{it}^* , which is $y_{it}^{1-\sigma}$, where y_{it} is defined in (1). In the second outcome, the two groups fall back to autarky and each individual gets his autarkic utility $U_i^0(k_{it}')$.

In the third outcome, political competition may or may not start. If it does not start, the two groups fall back to autarky again and each individual still gets his autarkic utility $U_i^0(k_{it}')$; if it does start, an individual gets his expected utility of winning the competition, $U_{it}^C = p_{it} U_i^0(k_{it}')$. The autocrat's decision, therefore, depends critically on the relative size of U_{it}^C and $U_i^0(k_{it}')$, which falls in one of the following three cases.

The first case is when both groups expect at least their autarkic utility for political competition and at least one group expects higher utility. That is, $U_{it}^C \geq U_i^0(k_{it}')$, $\forall i \in \{P, E\}$, and $U_{it}^C > U_i^0(k_{it}')$, $\exists i \in \{P, E\}$. In this case, political

competition could start if U_{it}^* is less than the autarkic utility for one group, but is larger than the autarkic utility, yet less than U_{it}^C for another group. However, the following lemma renders this case impossible.

Lemma 2. *The sum of expected individual utility of political competition is not larger than the sum of individual utility under autarky.*

Proof. Note first that even when neither group invests in political capital, the expected individual utility is $p_{it}(\Psi k_i / \lambda_i)^{1-\sigma}$, $i = P, E$. By the indirect utility function stated in (3), the required individual income is $y_{it} = p_{it}^{1/\sigma} \Psi k_i / \lambda_i$, $i = P, E$, and the corresponding total (virtual) social output is $y_t = \left[p_{it}^{1/\sigma} + (1 - p_{it})^{1/\sigma} \right] \Psi k_t$, which is smaller than Ψk_t , the social output under autarky. Because utility is a concave transformation of income, it is impossible for the two groups to share the virtual social output of political competition to make even the sum of their members' largest expected utility of political competition, $\lambda_P p_{Pt} (\Psi k_t / \lambda_P)^{1-\sigma} + \lambda_E p_{Et} (\Psi k_t / \lambda_E)^{1-\sigma}$, larger than the sum of their utility of autarky, $\lambda_P (\Psi k_{pt})^{1-\sigma} + \lambda_E (\Psi k_{et})^{1-\sigma}$.¹² **Q.E.D.**

The second case is when both groups expect a lower level of utility of political competition than their respective autarkic level. That is,

$$U_{it}^C < U_i^0(k_{it}), \quad \forall i \in \{P, E\}. \quad (8)$$

Political competition will not happen because it is a strategy dominated by a unilateral rejection of the autocrat's policy for both groups. For this reason, no one in either group has incentive to invest in political power. Then the autocrat's optimal response is to give members of each group their autarkic utility. That is,

$$U_{it}^* = U_i^0(k_{it}), \quad i \in \{P, E\}, \quad (9)$$

which, together with the two groups' strategies, form a Nash equilibrium.

¹² Note that the proof does not involve the functional form of the production technology; instead, it used the concavity of the utility function, which is, in most cases, regarded as a reasonable assumption for human behavior.

The third case is when one group expects a higher level of utility of political competition than autarky while the other groups expects the opposite. That is,

$$U_{it}^C \geq U_i^0(k_{it}), \quad U_{jt}^C < U_j^0(k_{jt}), \quad i \neq j \in \{P, E\}. \quad (10)$$

In this case, it is a Nash strategy for each group to accept the autocrat's policy if it is in the following form:

$$U_{it}^* = U_i^0(k_{it}), \text{ and } U_{jt}^* = \max \{U_{jt}^C, U_j^\nabla(k_{jt})\}, \quad i \neq j \in \{P, E\}, \quad (11)$$

where $U_j^\nabla(k_{jt})$ is defined as the utility that Group j gets when the autocrat solves the following optimization problem:

$$\begin{aligned} \max_{G_t} \sum_{t=0}^{\infty} \beta^t \ln & \left[\lambda_i (\tau_{it} k_{it} - g_{it}) + \lambda_j (\tau_{jt} k_{jt} - g_{jt}) \right] \\ \text{s.t. } & U_{it}^* = U_i^0(k_{it}), \\ & U_{jt}^* \geq U_{jt}^C, \\ & k_{mt+1} = \theta \Psi \left[(1 - \tau_{mt})^\gamma (k_{mt})^\gamma + (g_{mt})^\gamma \right]^{\frac{1}{\gamma}}, \quad m = i, j, \end{aligned} \quad (12)$$

when the constraint for Group j does not bind. This can happen if Group j has little political power so U_{jt}^C is very small. The autocrat may be willing to provide a higher utility to Group j in each period so its members can continue to accumulate physical capital from which he can appropriate a steady stream of income over time. It is readily verifiable that $U_j^\nabla(k_{jt}) = (2^{\frac{1-\gamma}{\gamma}} \beta) U_i^0(k_{it})$, which is less than $U_i^0(k_{it})$ by the assumption made in (6).

The payment scheme (11) is unconventional. The first instinct is that both group should get the higher levels of utility stated in (10). The reason that group i gets the lower level of $U_i^0(k_{it})$ not the higher level of U_{it}^C is the follows. U_{it}^C is the utility that group i would get only if political competition happened. Although this group prefers the expected result of political competition to autarky, group j prefers the opposite. If Group i rejects the autocrat's policy, Group j will strategically reject

the autocrat's policy to align its decision with group i 's so the autocrat's policy fails and both groups fall back to autarky. The reason that group j cannot get $U_j^0(k_{jt})$ is similar. To get this utility, group j needs to wait for group i to reject the autocrat's policy in addition to its own rejection. However, group i prefers competition so it will strategically accept the autocrat's policy. Group j gets $\max\{U_{jt}^C, U_j^\nabla(k_{jt})\}$ not U_{jt}^C because U_{it}^C may be smaller than $U_j^\nabla(k_{jt})$. Note that $U_j^\nabla(k_{jt})$ is only obtained when it is smaller than the autarkic utility $U_j^0(k_{jt})$ because otherwise the autocrat would just give Group j $U_j^0(k_{jt})$.

With the above discussions, we can now consider the decision of the autocrat. Note first that the autocrat faces two kinds of risk when it makes its decision. One is that its policy can be rejected by both groups, and the other is that its policy is rejected by one of the groups and the group agreeing with its policy loses in political competition. The following lemma shows that the autocrat prefers avoiding these two kinds of risk so its policy is accepted by both groups.

Lemma 3. *The autocrat announces a policy G_t that is accepted by both groups in any period t .*

Proof. The autocrat has first-mover advantage and can provide a level of utility to each group that this group does not reject and the autocrat's own utility is higher.¹³ In the case that both groups reject the autocrat's policy, each person falls back to autarkic production so his income is Ψk_{it} and his utility is $U_i^0(k_{it}) = (\Psi k_{it})^{1-\sigma}$. By the CES production function specified in (1), individuals' physical capital is not perfect substitute for the local public good provided by the autocrat, so the autocrat can always find a policy mix G_t such that each person's output is higher than Ψk_{it} . This means that the autocrat can afford to provide $U_i^0(k_{it})$ to each group so neither group

¹³ The assumption that the autocrat has first-mover advantage over the social groups distinguishes our model from the standard models of democracy centered at the median voter theory. In those models, government policy responds passively to the contests of group interests in the society. In our model, the autocrat is autonomous and can take preemptive actions to prevent things of bad consequences from happening.

rejects his policy while he still enjoys some surplus. In the case that the two groups have different opinions, two more cases need to be considered. Case 1 is when political competition does not happen. But the result of this case is the same as when both groups reject the autocrat's policy. Case 2 is when political competition happens. Then the best outcome for the autocrat is that the group agreeing with his policy wins the political competition so he stays in power. But because now the winning group has unilateral veto power on his policy, the best that the autocrat can achieve is to enjoy the surplus of physical after the winning group gets the autarkic utility $U_i^0(k_{it}')$.

However, the social output when only one group produces can never be higher than the social output when both groups produce even if no physical capital is wasted in political competition because the production function is concave. As a matter of fact, the autocrat can always take the policy $(\tau_t^\Delta, g_t^\Delta)$ he would adopt when he only faces one social group (whose problem is described in (5)) to provide each individual his autarkic utility $U_i^0(k_{it}')$ from the very start. As a result, there is a potential for him to reap a higher surplus by avoiding political competition.¹⁴ **Q.E.D.**

This lemma greatly simplifies the problem facing the autocrat. It not only means that the autocrat can choose its policy to maximize his sum of discounted utility subject to the constraint that neither group rejects his policy, but also means that no one in either group invests in political power on the equilibrium path. Our next task then is to study the individual reservation utility under different scenarios of outcome.

In the end, the autocrat faces one of the two sets of participation constraints stated in (12) and (14). We can then write the autocrat's problem in any period T as the follows:

$$\underset{G_t}{\text{Max}} \sum_{t=T}^{\infty} \beta^t \ln \left[\lambda_P (\tau_{Pt} k_{pt} - g_{Pt}) + \lambda_E (\tau_{Et} k_{et} - g_{Et}) \right] \quad (13)$$

¹⁴ Note that the proof does not rely on the assumption that political competition is wasteful. The concavity of the production function is important, though.

s.t. $k_{it+1} = \theta y_{it}$, $\forall i \in \{P, E\}$; and

- (a) $U_{it}^* = U_i^0(k_{it})$, $\forall i \in \{P, E\}$, if $U_{it}^C < U_i^0(k_{it})$, $\forall i \in \{P, E\}$; or
- (b) $U_{it}^* = U_i^0(k_{it})$, $U_{jt}^* = \max \{U_{jt}^C, U_j^\nabla(k_{jt})\}$, if $U_{it}^C \geq U_i^0(k_{it})$, and $U_{jt}^C < U_j^0(k_{jt})$, $i \neq j \in \{P, E\}$.

Based on our proceeding analysis, an MPE is obtained when the autocrat solves the problem in (13). The autocrat chooses his optimal policy which preempts the two groups' attempt to reject it. Because of the nature of the objective function and the constraints in (13), it is readily shown that this policy is unique. And by Lemma 3, this policy is stationary. Let us denote this policy by G_t^* . We then have the following proposition:

Proposition 1. *Given the initial stocks of physical capital and political capital, there exists a unique pure and stationary MPE in which neither group rejects the autocrat's policy G_t^* .*

As a result of Proposition 1, political investment never happens on the equilibrium path; nor does political competition. Note, however, there can be many off-equilibrium paths. For example, a group may mistakenly start investing in political power so it may reject a policy that it would not reject otherwise. This then induces the other group to invest so a political competition starts. Depending on the result of the competition, the autocrat may or may not stay in power. Therefore, the autocrat's policy on the equilibrium path G_t^* is contingent on the two social groups' behavior on off-equilibrium paths.

3. The Disinterested Government

In general, the autocrat's equilibrium policy G_t^* depends on the two social groups' stocks of political and physical capital. While the dependency on physical capital can stem from efficiency consideration, the dependency on political capital may distort the allocation of resources between the two groups and social output may be compromised further compared with the social optimum. This then leads to our definition of the disinterested government.

Definition. A government is a disinterested government if its policy is independent of political power, or formally, if

$$\tau_i(k_{it}, k_{jt}; v_{it}, v_{jt}) = \tau(k_{it}), \quad g_i(k_{it}, k_{jt}; v_{it}, v_{jt}) = g(k_{it}), \quad i \in \{P, E\}. \quad (14)$$

That is, a disinterested government is identity-blind when it decides its policy. From the autocrat's problem in (13), it is clear that the disinterested government cannot exist when the constraint is (13b) because under this condition the utility level of a person in group j not only depends on his physical capital, but also depends on the two groups' stocks of political capital. The disinterested government can only exist when (13a) holds for every period. That is, the disinterested government solves the following problem under the condition $U_{it}^C < U_i^0(k_{it})$, $\forall i \in \{P, E\}$:

$$\underset{G_t}{\text{Max}} \sum_{t=T}^{\infty} \beta^t \ln \left[\lambda_P (\tau_{Pt} k_{pt} - g_{pt}) + \lambda_E (\tau_{Et} k_{et} - g_{et}) \right] \quad (15)$$

$$\text{s.t. } k_{it+1} = \theta y_{it}, \text{ and } U_{it}^* = U_i^0(k_{it}), \forall i \in \{P, E\}.$$

Under the program described by (15), the government's policy is $\tau_{it} = 1 - 2^{-\frac{1}{\gamma}}$, $g_{it} = 2^{\frac{1}{\gamma}} k_{it}$, $\forall i \in \{P, E\}$. The tax is constant and the local public goods to each group is only related to their physical capital, which satisfies the definition of (14).

In contrast, a biased government solves the following problem under the condition

$$U_{it}^C \geq U_i^0(k_{it}) \text{ and } U_{jt}^C < U_j^0(k_{jt}), \quad i \neq j \in \{P, E\}:$$

$$\underset{G_t}{\text{Max}} \sum_{t=T}^{\infty} \beta^t \ln \left[\lambda_P (\tau_{Pt} k_{pt} - g_{pt}) + \lambda_E (\tau_{Et} k_{et} - g_{et}) \right] \quad (16)$$

$$\begin{aligned} \text{s.t. } k_{it+1} &= \theta y_{it}, \quad \forall i \in \{P, E\}; \text{ and} \\ U_{it}^* &= U_i^0(k_{it}), \quad U_{jt}^* = \max \{U_{jt}^C, U_j^0(k_{jt})\}, \quad i \neq j \in \{P, E\}. \end{aligned}$$

Under this situation, the government's policy to group i is $\tau_{it} = 1 - 2^{-\frac{1}{\gamma}}$, $g_{it} = 2^{\frac{1}{\gamma}} k_{it}$, and the policy to group j is $\tau_{jt} = 1 - 2^{-\frac{1}{\gamma}} \left(U_{jt}^{*\frac{1}{\sigma}} / \Psi k_{jt} \right)$, $g_{jt} = 2^{\frac{1}{\gamma}} U_{jt}^{*\frac{1}{\sigma}} / \Psi$.

Since U_{jt}^* contains the variables of v_{jt} and v_{it} . τ_{jt} and g_{jt} are related to the

political power distribution, so the government is biased.

To make the condition $U_{it}^C < U_i^0(k_{it})$, $\forall i \in \{P, E\}$ for the disinterested government more transparent, for any period T , let

$$\nu_{peT} = \nu_{pT}/\nu_{eT}, \quad k_{peT} = k_{pT}/k_{eT},$$

and define

$$\underline{\varphi}_T = \frac{\lambda_e}{\lambda_p} \left[\left(1 + \frac{\lambda_p k_{peT}}{\lambda_e} \right)^{1-\sigma} - 1 \right], \quad \bar{\varphi}_T = \frac{\lambda_e}{\lambda_p} \left[\left(1 + \frac{\lambda_e}{\lambda_p k_{peT}} \right)^{1-\sigma} - 1 \right]^{-1}$$

for ν_{peT} . It is readily verifiable that $\underline{\varphi}_T$ is smaller than $\bar{\varphi}_T$. Note that because there is no political investment, Group **P**'s expected utility of political competition is

$$U_{pT}^C = \frac{\lambda_p \nu_{peT}}{\lambda_p \nu_{peT} + \lambda_e} \left(\frac{\lambda_p + \lambda_e/k_{peT}}{\lambda_p} \right)^{1-\sigma} (\Psi k_{pT})^{1-\sigma}.$$

Group **E**'s expected utility of political competition can be defined in a similar way.

Comparing U_{pT}^C and $U_{pT}^0 = (\Psi k_{pT})^{1-\sigma}$, it is then easy to show that $\bar{\varphi}_T$ is the upper bound for ν_{peT} to satisfy $U_{pT}^C < U_p^0(k_{pT})$. Similarly, $\underline{\varphi}_T$ is the lower bound for ν_{peT} to satisfy $U_{eT}^C < U_e^0(k_{eT})$ and

$$\nu_{peT} < \bar{\varphi} \Leftrightarrow U_{pT}^C < U_p^0(k_{pT}), \text{ and } \nu_{peT} > \underline{\varphi} \Leftrightarrow U_{eT}^C < U_e^0(k_{eT}).$$

Then we have the following proposition for the existence of the disinterested government and the policy it would adopt.

Proposition 2. Suppose the economy starts in period $T \in [0, \infty]$. The autocrat is a disinterested government in any period $t \geq T$ as long as $\nu_{peT} \in [\underline{\varphi}_T, \bar{\varphi}_T]$. The autocrat's

policy is $\tau_{it}^* = 1 - 2^{-\frac{1}{\gamma}}$, $g_{it}^* = 2^{-\frac{1}{\gamma}} k_{it}$, $i = P, E$.

Proof. The autocrat's policy is the solution to the optimization problem (15). The remaining task is to show that $U_{it}^C < U_i^0(k_{it})$, or $\nu_{pet} \in [\underline{\varphi}_t, \bar{\varphi}_t]$ for all $t > T$. First, from Proposition 1 we know that neither group invests in political capital on the

equilibrium path, so each group keeps its stock of political capital constant. Second, the two groups maintain the same rate of growth in physical capital and income from

period T , so we have $\frac{k_{pt+1}}{k_{et+1}} = \frac{k_{pt}}{k_{et}}$, $\forall t \geq T$. Those two results establish $v_{pet} \in [\underline{\varphi}_t, \bar{\varphi}_t]$

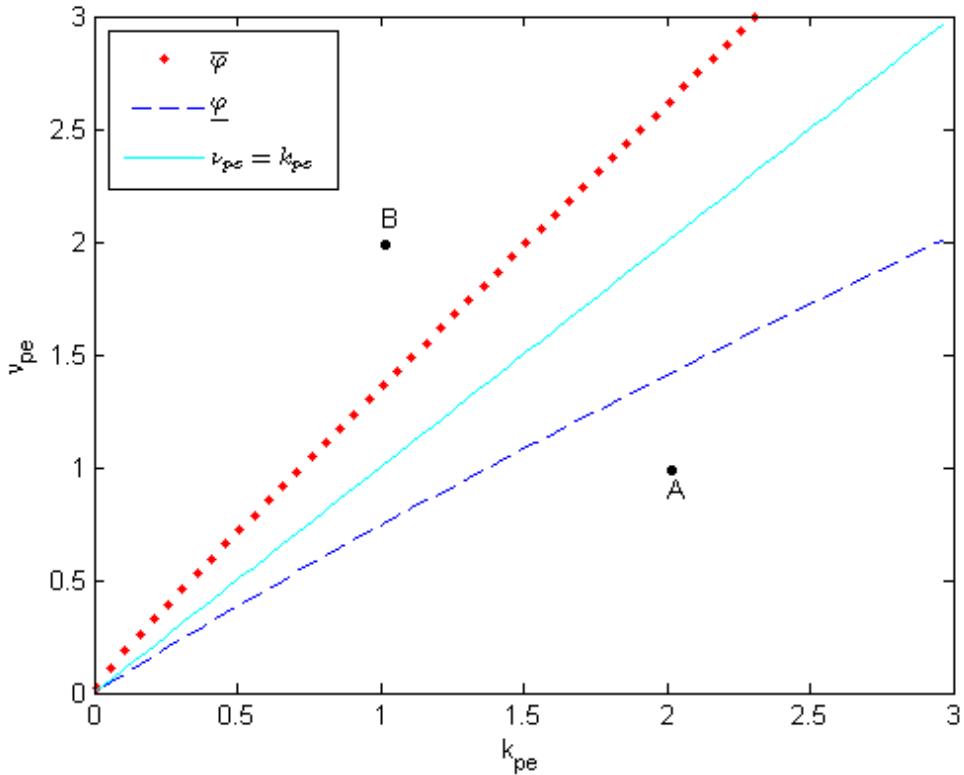
for all $t > T$. **Q.E.D.**

One of the implications of Proposition 2 is that the autocrat can be disinterested since the first period. To be precise, let $v_{pe} = v_p / v_e$, $k_{pe} = k_{p0} / k_{e0}$, and

$$\underline{\varphi} = \frac{\lambda_e}{\lambda_p} \left[\left(1 + \frac{\lambda_p k_{pe}}{\lambda_e} \right)^{1-\sigma} - 1 \right], \quad \bar{\varphi} = \frac{\lambda_e}{\lambda_p} \left[\left(1 + \frac{\lambda_e}{\lambda_p k_{pe}} \right)^{1-\sigma} - 1 \right]^{-1}.$$

Then the autocrat is disinterested in the first period and stays so in all subsequent periods if $v_{pe} \in [\underline{\varphi}, \bar{\varphi}]$. Figure 2 shows the parameter region of the disinterested government in the (k_{pe}, v_{pe}) space when the two social groups have an equal share of population. It is a cone with its vertex at the origin. We call it “the equality cone”. Two observations about this cone are worth mentioning.

Figure 2. The existence of the disinterested government



Notes: The parameter values are $\lambda_p = \lambda_E = 0.5$, $\gamma = 0.9$, $\beta = 0.6$, $\sigma = 0.2$.

First, equality of political or physical capital alone cannot guarantee the existence of a disinterested government. Take point **A** = (2, 1) in the figure as an example. This point is below the cone although it implies complete equality of political power. While Group **P** has no incentive to start political competition, Group **E** does want to start it. This is because Group **P** has a disproportionately large stock of physical capital so the gain from redistribution is large for Group **E** once it wins the political competition. As a matter of fact, Group **E** has an incentive for political competition even if it is politically weaker than Group **P** as long as the latter group's stock of physical capital is extremely large. Conversely, at point **B** = (1, 2) where the two groups have the same amount of physical capital, but Group **P** has a stock of political capital twice the stock of Group **E**, Group **P** has incentive to start political competition simply because it is more politically powerful. In fact, Group **P** has incentive to start political competition even if its stock of physical capital is much larger than Group **E**'s as long as it is much disproportionately more politically

powerful than Group E.

Second, the equality cone imposes a rule of proportionality on the initial stocks of physical and political capital. When the two groups have an equal share of population, it is obvious that complete equality of the initial stocks of physical and political capital, i.e., $(k_{pe} = 1, v_{pe} = 1)$, is in the cone. As a result, the ray $v_{pe} = k_{pe}$ is also in the cone. That is, neither group has incentive to start political competition as long as their stocks of physical capital are exactly balanced off by their stocks of political power. However, the permissible combinations of physical and political capital are much more than those on the ray. The equality cone allows us to avoid a “knife-edge” equilibrium for the disinterested government.

Note that under the disinterested government, individuals in the two groups get their autarkic income, and the autocrat gets an amount of consumption $\left(1 - 2^{-\frac{1-\gamma}{\gamma}}\right) \Psi k_t$. In addition, the disinterested government applies a constant tax rate to both groups and provides a local public good to each group that is not only independent of the two groups' political capital, but also independent of the other group's stock of physical capital. The disinterested government needs to provide each person his autarkic utility. It needs to weigh between the amount of capital left to a person and the amount of local public good kicked back to that person in order to fulfill this constraint. The most efficient way then is to make those two amounts equal to each other. So the autocrat can just fix one instrument, here the tax rate, and then maneuver the other instrument, the local public good, to make it equal to the amount of capital left to a person. Because the latter now only depends on the individual stock of capital, the amount of local public good has to also only depend on individual stock of capital.

It is clear, though, that the tax rate of the disinterested government, τ_{it}^* , is larger than the socially optimal tax rate of 0.5 and the amount of local public good it provides, g_{it}^* , is smaller than the socially optimal amount of $0.5k_{it}$ unless γ

approaches 1 (i.e., when individual capital and the local public good are perfect substitutes to each other). However, compared with other kinds of self-interested government, the disinterested government yields the highest social output, a result we state in the following proposition:

Proposition 3. *Assuming that the autocrat is self-interested, the social output and its growth rate are the highest when the autocrat is disinterested.*

Proof. When the autocrat is disinterested, each person gets his autarkic utility. By the indirect utility function defined in (3), his income (output) must be Ψk_{it} . The social output in period t thus is $y_t = \Psi k_t$ and its growth rate is constant at $\frac{k_{t+1}}{k_t} = \theta\Psi$. When the autocrat is biased, whose problem is shown in (18), the income of a person in group i is Ψk_{it} , but the income of a person in group j is $2^{\frac{1-\gamma}{\gamma}} \beta \Psi k_{jt}$, so the social output is $y_t' = \Psi \left[\lambda_i k_{it} + \lambda_j (2^{\frac{1-\gamma}{\gamma}} \beta k_{jt}) \right]$ which is smaller than Ψk_t by the assumption stated in (9). It is then straightforward to show that the economic growth rate y_{t+1}'/y_t' is also lower than $\theta\Psi$. **Q.E.D.**

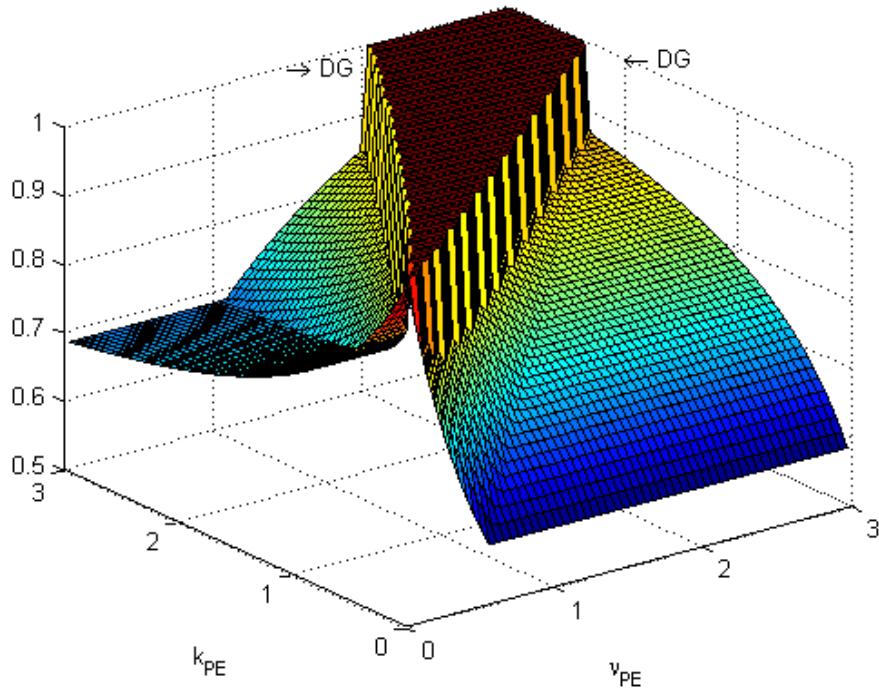
Note that even under the disinterested government, the social output and its growth rate are both lower than what can be achieved under the socially optimal tax rate,

which are $2^{\frac{1-\gamma}{\gamma}} \Psi k_t$ and $2^{\frac{1-\gamma}{\gamma}} \theta\Psi$, respectively. This happens because a disinterested autocrat is not a benevolent government, but instead self-interested and tends to overtax people to finance his own consumption.

Figure 3 presents a 3-D graph of social output under different combinations of (v_{pe}, k_{pe}) . Social output is normalized by the output under the disinterested government. In the parameter region for the disinterested government, social output reaches a high “table” that has a flat surface and vertical edges. These edges are formed because the disinterested government faces a different constraint than the one faced by biased

governments. Beyond this high “table”, social output increases as one moves closer to it.

Figure 3. The disinterested government’s dominance of social output



Notes: The output is normalized by the output under the disinterested government.

The parameter values are $\lambda_p = \lambda_E = 0.5$, $\gamma = 0.9$, $\beta = 0.6$, $\sigma = 0.2$.

4. The Stability and Evolution of Social Structure under the Disinterested Government

One question we did not tackle in the previous analysis is whether a biased government could become disinterested as time goes by. This is also a question related to the stability of the disinterested government: if a temporary external shock kicks the society out of the equality cone, will it move back to the cone? In addition, we assumed that the two social groups are equally efficient in production. Then, what if they have different levels of efficiency? Those are questions that this section will try to answer.

4.1 The stability of the disinterested government

Because the three players' off-equilibrium path behavior can be in numerous forms and hard to describe, here we only study the case in which the society moves on the equilibrium path once it is driven out of the equality cone by a temporary shock. In this case, we know from Proposition 1 that neither group conducts political investment. Therefore, our question becomes: starting with a given political and economic structure outside the equality cone, will the economic structure evolves into the equality cone under a constant political structure? Formally, for any political structure v_{pe} , define

$$\underline{k}_{pe} = \bar{\varphi}^{-1}(v_{pe}) = \frac{\lambda_E}{\lambda_p} \left(p_p^{-\frac{1}{1-\sigma}} - 1 \right)^{-1}, \quad \bar{k}_{pe} = \underline{\varphi}^{-1}(v_{pe}) = \frac{\lambda_E}{\lambda_p} \left(p_e^{-\frac{1}{1-\sigma}} - 1 \right), \quad (17)$$

where $p_p = \frac{v_{pe}}{v_{pe} + 1}$ and $p_e = \frac{1}{v_{pe} + 1}$. Then, for a society (v_{pe}, k_{pet}) such that $k_{pet} > \bar{k}_{pe}$ or

$k_{pet} < \underline{k}_{pe}$ in period t , will its economic structure evolves into a state such that

$\underline{k}_{pe} < k_{pet} < \bar{k}_{pe}$?

From the optimization problem (16) of the biased government, we know that $U_{it}^* = U_{it}^0(k_{it})$ if $U_{it}^C \geq U_i^0(k_{it})$, i.e., if Group i is politically more powerful, and $U_{it}^* = \max \{U_{it}^C, U_i^\nabla(k_{it})\}$ if $U_{it}^C < U_i^0(k_{it})$, i.e., if Group i is politically less powerful.

Note from our previous discussions that $U_i^\nabla(k_{it})$ is smaller than $U_i^0(k_{it})$ in the latter case. Therefore, a biased government always favors the politically more powerful group.¹⁵ Then let

$$\Upsilon_{it} = \max \left\{ \frac{U_{it}^C}{U_{it}^0(k_{it})}, \frac{U_i^\nabla(k_{it})}{U_{it}^0(k_{it})} \right\}.$$

Recall that $v_{pet} > \bar{\varphi}$ implies $U_{pt}^C \geq U_p^0(k_{pt})$ and $U_{et}^C < U_e^0(k_{et})$. The case of $v_{pet} < \underline{\varphi}$ is symmetric so we will skip the discussion of it. We can describe individual utility

¹⁵ More accurately, a biased government always discriminates the politically less powerful group because the politically more powerful group can only get what it gets under a disinterested government.

under a biased government with $v_{pet} > \bar{\varphi}$ as the follows:

$$U_{pt}^* = U_{pt}^0(k_{pt}) = (\Psi k_{pt})^{1-\sigma}, \quad U_{et}^* = \Upsilon_{et} U_{et}^0(k_{et}) = \Upsilon_{et} (\Psi k_{et})^{1-\sigma}.$$

Correspondingly, individual income is:

$$y_{pt}^* = \Psi k_{pt}, \quad y_{et}^* = (\Upsilon_{et})^{\frac{1}{1-\sigma}} \Psi k_{et}.$$

From the law of the physical capital formation described in (3), we know that the economic structure in the next period is:

$$k_{pet+1} = (\Upsilon_{et+1})^{\frac{1}{1-\sigma}} k_{pet}, \quad (18)$$

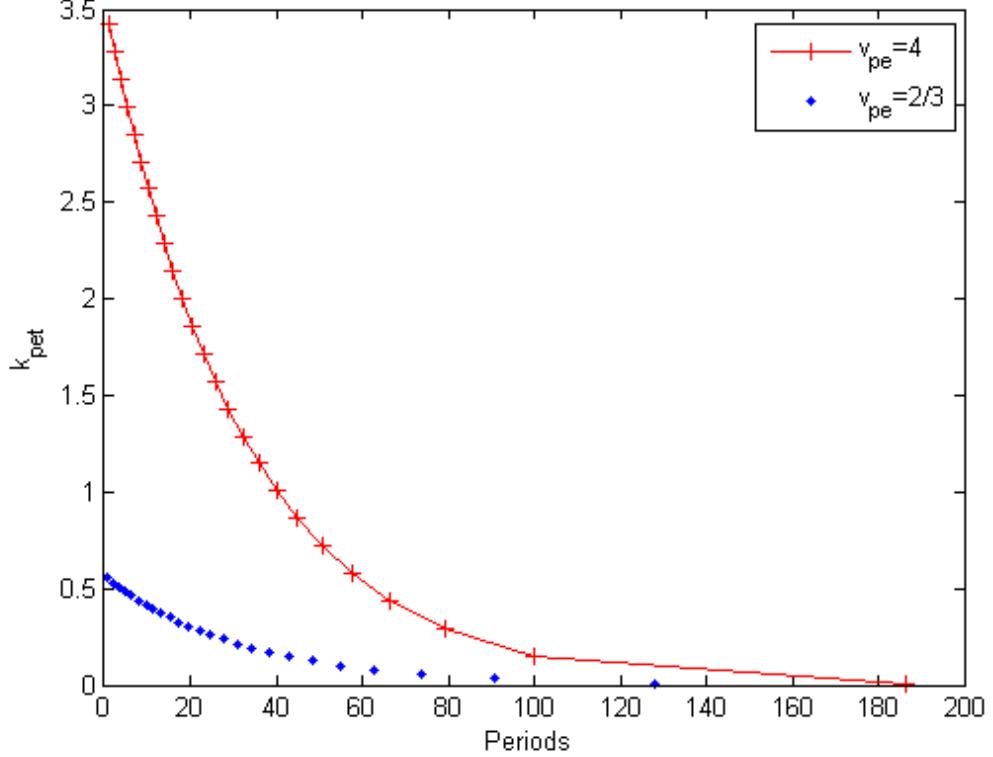
which is larger than k_{pet} because $\Upsilon_{et+1} < 1$. Therefore, the society will eventually evolve into the equality cone. The matter is the speed of the evolution. Based on the transition function (18), we know that the number of periods taken for a society starting at (v_{pe}, k_{pet}) to evolve into the equality cone is

$$T^* = (1-\sigma) \ln\left(\bar{k}_{pe} / k_{pet}\right) / \ln\left(1 / 2^{\frac{1-\gamma}{\gamma}} \beta\right). \quad (19)$$

Figure 4 illustrates the relationship between k_{pet} and T^* for two values of v_{pe} for a society starts at a point to the left of the equality cone (i.e., when the autocrat initially favors Group **P**). From (19), it is clear that for a given political structure (thus a given v_{pe} and a given \bar{k}_{pe} for that matter), it takes longer time for the society to move into the equality cone when the society starts at a point further away from the cone, i.e., when k_{pet} is small. From (17) and (19), we know that a larger v_{pe} implies longer time for the society to move into the equality cone. The two curves in Figure 4 represent, respectively, $v_{pe} = 4$ and $v_{pe} = 2/3$. While the periods of time required are quite different on the two curves for a given starting economic structure k_{pet} , it is the starting economic structure that matters more, especially when the initial inequality is high (i.e., k_{pet} is small). For a larger k_{pet} , which means that the society is very close to the equality cone, it takes a short time for the society to move into the cone. That is, the equality cone is resilient to a small external shock. On the other hand, it takes a long time for a society to move into the equality cone if it starts with large economic

inequality. If we interpret one period as one generation of people, it is then virtually impossible for an extremely unequal society to move into the equality cone.

Figure 4. Time taken to converge to the equality cone



Notes: The parameter values are $\beta = 0.9, \gamma = 0.9, \sigma = 0.1, \lambda_p = \lambda_e = 0.5$.

Summarizing the results of this section, we then have the following proposition:

Proposition 4. *It takes longer time for a society outside the equality cone to converge to the cone if the group initially favored is politically more powerful or if its wealth is smaller relative to the other group.*

The first part of the proposition is paradoxical because it seems to mean that a politically more powerful group will stay longer as an economically subordinate group. However, it is no longer a paradox when one realizes that the equality cone is defined on a relative term requiring a positive match between a group's political prowess and economic power. A politically more powerful group would remain a

threat to the autocrat until it gets enough favors from him so its political power is matched by its higher economic status.

4.2 Dynamism with efficiency gaps

When the two social groups have different levels of efficiency in their production, income distribution could be worsened even when the autocrat is disinterested because the efficiency differentials will have accumulative effects as time passes. To proceed, let us revise the individual production as the follows:

$$y_{it} = \Psi_i \left[(1 - \tau_{it})^\gamma k_{it}^\gamma + g_{it}^\gamma \right]^\frac{1}{\gamma}. \quad (20)$$

Its only difference from the previous production function defined in (1) is that individuals now have their own efficiency parameters instead of sharing the same parameter. The relative size of U_{it}^C and $U_{it}^0(k_{it})$ does not change for each individual, so our previous results in Section 3 all continue to hold; in particular, the equality cone does not have any change. However, the stability of the disinterested government may change.

Let us then take a short cut to consider the case when there is no political investment and $\nu_{pe} \in [\underline{\phi}, \bar{\phi}]$. Then the equality cone can be redefined only on the economic structure such that $k_{pet} \in [\underline{k}_{pe}, \bar{k}_{pe}]$. The transition function of the economic structure in the equality cone now is

$$k_{pet+1} = \frac{\Psi_p}{\Psi_e} k_{pet}. \quad (21)$$

Obviously, the society stays in the equality cone if $\Psi_p = \Psi_e$, the case we considered before. We also have $\lim_{t \rightarrow \infty} k_{pet+1} = \infty$ if $\Psi_p > \Psi_e$ and $\lim_{t \rightarrow \infty} k_{pet+1} = 0$ if $\Psi_p < \Psi_e$. That is, inequality increases under the disinterested government when the two social groups have different levels of production efficiency. Also, it seems that the society will eventually moves out of the equality cone in both cases. However, our analysis below

shows that it may not be the case.

To continue, suppose that an external shock kicks the society out of the equality cone and into the region $\nu_{pet} > \bar{\phi}_t$, so the autocrat has to favor Group **P**. Now for a constant political structure, the transition function of economic structure becomes

$$k_{pet+1} = \frac{\Psi_p}{\Psi_e} \Upsilon_e^{-\frac{1}{1-\sigma}} k_{pet}. \quad (22)$$

If $\Psi_p > \Psi_e$, the society will move back into the equality cone. This is an understandable result because Group **P** is economically more efficient and politically more powerful than Group **E**.

The case of $\Psi_p < \Psi_e$ is more complicated and there are three cases to consider.

The first case is $\frac{\Psi_p}{\Psi_e} \Upsilon_e^{-\frac{1}{1-\sigma}} = 1$. The social structure will never change and the autocrat

remains favoring Group **P**. The second case is $\frac{\Psi_p}{\Psi_e} \Upsilon_e^{-\frac{1}{1-\sigma}} < 1$. This case happens when

Group **P** is trailed by Group **E** by a large efficiency gap. In this case, we have $\lim_{t \rightarrow \infty} k_{pet+1} = 0$. That is, once the autocrat mistakenly favors the less efficient but

politically stronger group one time, he will continue to do so forever. However, because the politically more powerful group is so inefficient compared with the politically weaker group, the economic structure will evolve to become completely

skewed in favor of the more efficient group. The third case is $\frac{\Psi_p}{\Psi_e} \Upsilon_e^{-\frac{1}{1-\sigma}} > 1$, which

happens when the efficiency gap is not large between the two social groups. We then have more interesting results. The society will first move back to the equality cone after a finite number of periods. However, according to our previous discussion about the dynamism in the equality cone, the two groups are now treated equally, so k_{pet} will shrink immediately until the society hits back to the boundary of the equality cone. From then on, the society will tremble around a point on the boundary, and the autocrat will alternate his role between a disinterested government and a biased

government.

Then, coming back to the stability of a society starting in the equality cone, we can draw two conclusions from the above analysis. First, the society will tremble around a point on the boundary of the equality cone if the efficiency gap is not large between the two social groups; and second, the society will converge to a state in which the less efficient group becomes more politically powerful yet its stock of physical capital becomes infinitesimally small compared with the stock of the other group if the efficiency gap is large. Therefore, to maintain a social structure supporting the disinterested government, it is imperative to improve the productivity of the economically weaker group.

To summarize, we have the following proposition for this section:

Proposition 5. *When the two social groups have different levels of production efficiency, the society converges to one of the following two states regardless where it starts with: (1) if the efficiency gap is small, the society converges to a small region centered at a point on the boundary of the equality cone; and (2) if the efficiency gap is large, the economically less efficient group becomes more politically powerful, but its stock of physical capital becomes infinitesimally small compared with the stock of the other group .*

5. Evidence from China, Korea and Taiwan

In this section, we first use China of the period 1978-2012 as a case study to illustrate our theoretical model. In particular, we will focus on the following three questions: (1) How did a relative social structure at the beginning of this period help the Chinese Communist Party (CCP) to become disinterested? (2) What kinds of evidence do we have to show that the CCP has been disinterested? (3) How has economic inequality emerged under the disinterested government in China? These questions are closely linked with Propositions 2, 3, and 5 in our theoretical model. In addition to answering these questions, we will also link our theory to the experiences of Korea and Taiwan, highlighting the positive role of an equal society in their early stage of economic development.

Before proceeding, we first define our unit of analysis. Our focus is the central government, or more specifically, the politburo of the Chinese Communist Party (CCP). On fiscal terms, China is a decentralized country and local governments have much freedom to decide what they want to do with their local economies. Nevertheless, the central government can largely control local governments through the centralized political system (Xu, 2011). The current politburo consists of 25 members who occupy the top positions in the party, the central government, and the four major cities, Beijing, Shanghai, Tianjin, and Chongqing. Within the politburo, the standing committee of seven people is the most powerful and makes the final decisions, but the other members, with various degrees of capacity, also have considerable discretionary power and can influence the decisions of the standing committee. For the ease of narrative, we will often refer to the politburo just by the CCP. On the other hand, social groups can be delineated by geography (e.g., rural versus urban and coastal versus inland), sectors (e.g., state-owned enterprises versus private firms, natural monopolistic sectors versus competitive sectors, etc.), occupations (e.g., workers versus managers, migrants versus locals), income (the rich versus the poor), and other factors that assign benefits and costs to the population in certain government policies and reform measures. Lastly, to apply our theory to the

Chinese case, we need the assumption that the CCP is as pragmatic as the autocrat assumed in our model. The first thirty years of the CCP's rule were mostly characterized by political turmoil and economic disasters. Although there were many causes leading to those dire consequences, Mao's radicalism was by and large the most important cause. The CCP dropped its radicalism under the leadership of Deng Xiaoping when reform started at the end of the 1970s and began --- in Deng Xiaoping's words --- "to let some people get rich first". Since then, pragmatism has been the main philosophy directing its policy moves.

5.1 Equality and its consequences in the early stage of reform

China's modernization drive started in the mid-1800s when the imperial China had to open its door to foreign powers. The 1911 Xinhai Revolution ended the Manchurian rule and established a republic. However, the social structure was more or less kept intact. In particular, the landed class still dominated the vast countryside, and the warlords and their crony industrialists monopolized the economy. It took the revolution of 1949 led by the CCP to level out the Chinese society. Through a thorough yet in many cases brutal land reform, the landed class was effectively eliminated and land distribution was equalized. Large monopoly businesses originally tied to the Kuomintang government were nationalized. Later in the Socialist Transformation Movement of 1956, the remaining private businesses were either nationalized or forced into state-private joint ventures. In the next twenty years, the Chinese society was further equalized. Peasants were organized into communes and urban dwellers were employed either by state-owned enterprises (SOEs) or collective enterprises. Accumulation of productive wealth was made virtually impossible. As a result, the Gini coefficient of per-capita income was only 0.28 by 1978 (Riskin, Zhao, and Li, 2002). Despite a high barrier between the countryside and the city, social mobility existed within the countryside and within the city, respectively.

The first thirty years of the People's Republic were mainly characterized by economic failures, political turmoil, and human tragedies. Nevertheless, the equal

social structure, although it was largely a result of ill-conceived social engineering plans, had laid a foundation for the pragmatic CCP leadership in the reform era to become disinterested relative to the society. Most importantly, the absence of clear social classes reduced the CCP's incentives to rely on any classes to maintain its power. In its long struggle with the Kuomintang, the CCP gained power by relying on the working class, especially the landless peasantry. It continued to emphasize its class roots, and class struggle poisoned every corner of the country and every aspect of people's life in the first thirty years of the CCP's rule. The new pragmatic leadership in the reform era realized the dire consequences of class struggle, and in the course of reform has totally changed its political outlook from a revolutionary party to a party with no clear political convictions (Wang, 2006). In the meantime, the party's membership has increased from 35 million in the early 1980s to 78 million today. Economic liberalization has not weakened, like some theorists would predict (e.g., Nee, 1989; Nee and Lian, 1994), but has strengthened the party's rule. This has been made possible because the party has aligned its own interests with, and tied its rule to economic growth.

5.2 Evidence for a disinterested government

We realize that a book may be needed to provide a full account on what the CCP has done to promote economic growth since 1978. In this section, we will use several examples to reflect two aspects of the CCP's disinterestedness. One is that it tends to adopt selective and growth-enhancing policies, and the other is that it is willing to correct mismatches between its policies and the levels of productivity of social groups. Both aspects are implied by Proposition 2.

We start with China's open-door policy to illustrate how selective policies are adopted. China's opening to the outside world started with the creation of the Special Economic Zones (SEZs). This move was selective because the SEZs enjoyed many preferential treatments that other parts of the country could not even imagine (Ge, 1999). But the SEZs were critical for China to reach the outside world and learn to

run a market economy at that time. The export-led growth model was adopted in the mid-1980s and led China away from the even development strategy in the planning period to an uneven development strategy that focused on the growth of the coast. The coast's share of the central government's investment increased from 39.5% in the period 1953-1978 to 53.5% in 1979-1991. It dropped a bit in the 1990s, but picked up again to 52.9% in the period 1999-2005 (Yao, 2008). Today, nearly 90% of China's exports come from the nine coastal provinces (Tong, 2008). The coast enjoys geographical, historical, and technological advantages over inland provinces and the central government's choice conforms to the logic of the new economic geography. China's integration into the world system culminated in 2001 when China, after 13 years of Marathon negotiations, finally joined the WTO. It was widely believed before China's accession that China would have to undergo painful structural adjustments in agriculture, automobile industry, and services if it joined the WTO. Amidst the debate, the central government actually sped up China's negotiations with the WTO members, especially the United States. Accession to the WTO has greatly accelerated China's growth of exports, which is one of the most important engines for the country's growth and employment. Exports grew by an annual rate of 28.9% between 2002 and 2007 whereas the rate was 14.5% in the previous decade (Tong, 2008).

The privatization of SOEs is another example of selective policy. Between 1995 and 2004, the period when privatization was at its highest tide, the SOE sector reduced 40% of its employment. Nearly 50 million SOE workers lost their jobs; more than 20 million workers lost their jobs in 1998 alone.¹⁶ Although large-scale unemployment was not caused by privatization, but rather came as a result of worker redundancy in the SOEs,¹⁷ both public protests and academic debates pointed fingers at privatization. This put the CCP in a conundrum: if it supported privatization, it would lose support from its own power base --- the working class; if it gave up

¹⁶ All figures come from Shen and Yao (2008), Chapter 4.

¹⁷ Huang and Yao (2007) even find that privatization slowed down employment retrenchment due to privatized firms' better performance than SOEs.

privatization, transition to the market would come to a halt and China would lose the chance to catch up with the developed world. The solution the CCP adopted to solve this conundrum was to quietly continue privatization and in the meantime to do everything possible to reemploy laid-off workers. This strategy has worked. By the mid-2000s when SOE privatization moved to its end, most of the unemployed workers had found new jobs or had been put on government welfare programs.

Next, we provide two examples to show that the CCP is willing to correct mismatches between its policies and group productivity. One example is the dual-track price system. This system was a compromise reached in 1984 between radical abandonment of and continuous adherence to socialist planning. Under this system, SOEs were given the opportunity to sell their products and buy inputs in the free market after they fulfilled their planned quotas. The market prices were higher than the quota prices. The dual-track price system had opened up a wide door for economic incentives to play a role in SOEs' decision making. Lau, Qian, and Roland (2000) believe that this system brought Pareto improvements to China. However, the dual-track system also had serious downsides. One of them was that the gaps between the market prices and the quota prices, sometimes extraordinarily high, created huge leeway for rent seeking. Enterprises and government officials who controlled the quotas of key inputs could easily get rich by selling their quotas to other enterprises and individuals. That is, a strong interest group comprised mostly of top CCP members and SOE managers was created by the system. However, the dual-track system also created, though unintentionally, new elements that were a result of the market track only. The township and village enterprises (TVEs) and private firms were among these elements. They did not have access to planned resources such as bank credits and key inputs, and solely relied on the market to survive. Nevertheless, they became important players in the Chinese economy by the early 1990s. For example, TVEs contributed 40% to China's industrial growth and 40% of its exports (Lin and Yao, 2001). That is, the new elements and the old elites were not treated equitably in terms of their contributions to the national economy. Our model then

predicts that this would not persist under a disinterested government. This was indeed what happened in reality; the dual-track price system was abandoned in 1994, noticeably a time when the beneficiaries of the dual-track price system were mostly insiders of the CCP, i.e. the incumbent group.

Government policy toward migrant workers is another example. Free mobility of labor was hampered by various barriers created by the central and local governments in the 1990s. The household registration, or *hukou* system, has been in place since 1958.¹⁸ Many local governments had set up rules to protect the jobs of local workers,¹⁹, while migrant workers were often treated as second-rate citizens deprived of basic medical and safety protections. They had to work long hours but were not guaranteed to get their due salaries. However, it had become more and more clear that migrant workers were indispensable in the national economy after China became “the world’s factory” at the end of the 1990s. In the meantime, grassroots rights movements had joined hands with the intelligentsia to fight for better treatment for migrant workers. Here the two social groups in the dispute were urban dwellers and rural migrant workers. Urban dwellers gained undue benefits by the government’s suppression on migrant workers’ rights, and migrant workers got less than what they had contributed to the national economy. Grassroots rights movements and intellectuals’ petitions were equivalent to the revolution in our theoretical model. They were perceived by the CCP as elements leading to social unrests that would undermine its legitimacy. Against this background, the Hu Jintao-Wen Jiabao government, upon its institution in 2003, began to abandon most of the discriminatory policies toward migrants. This policy change can be viewed as being forced by migrant workers’ equal political power to threaten the CCP’s rule as urban dwellers’ power to protect its rule.

5.3 Economic inequality in the reform era

¹⁸ The first constitution of the People’s Republic of China, announced in 1954, stipulated that the citizen has the freedom of migration (Article 90). The current constitution, announced in 1982, eliminates this article.

¹⁹ See Zhao (2005) for a review of China’s migration policy.

After more than 30 years of fast growth, China is no longer an economically equal society. The Gini coefficient of personal disposable income has reached 0.48 by official statistics and over 0.5 by some scholarly studies (Yao, forthcoming). While there are many causes for this enlarging inequality, diverging levels of productivity in the population is one of the most important. While the return to education has increased dramatically,²⁰ large gaps of educational achievement exist across regions and across age groups. Under this situation, as Proposition 5 predicts, economic inequality would increase to the limit that a disinterested government could tolerate. In the remaining part of this subsection, we will take the urban-rural divide as an example and show how it has emerged since 1978. In addition, we will also show how the political demand of the farmers has curbed the government's single-minded drive of economic growth and forced it to seriously address the urban-rural divide.

With urban per-capita income standing at 3.2 times rural per-capita income in 2012,²¹ China has the largest urban-rural income differential in the world. There are many causes for this large urban-rural divide,²² among which the *hukou* system instituted by the government definitely is one of the most important. However, given the historical burdens, the most significant cause for the divide has to do with the productivity gap between the city and the countryside. The growth potential of the countryside is arguably much smaller than that of the city. The nature of agriculture does not allow its production to register buoyant growth. On the other hand, rural industrialization, after its heydays in the 1980s and early 1990s, has reached a limit. Many rural enterprises have been relocated to nearby cities due to the many advantages that cities have over the countryside: better infrastructure, easier access to markets and information and other cost savings due to agglomeration. Moreover, educational achievements of rural residents are lower than those of city dwellers. The gap has persisted between two to four years of schooling on average across age

²⁰ It is estimated that in the high school and college stage, one more year of schooling increases a person's income by 10% (Li, Liu, and Zhang, 2012).

²¹ Unless otherwise indicated, figures in this paragraph are from the official website of the National Statistical Bureau of China: www.stat.gov.cn.

²² For a comprehensive treatment of this issue, see Riskin, Zhao, and Li (2002).

groups (Yao, forthcoming). This can be easily translated into a productivity gap of 20 to 40% if the recent estimates of the return to education are correct (e.g., Li, Liu and Zhang, 2012). Against this background, it is understandable for the CCP to adopt an urban-centered growth policy. Here, the lack of democracy does enable the CCP to ignore rural people's numerical advantage, which perhaps is one of the critical factors that distinguish China from a democratic country such as India where the urban-rural divide is moderate.

Yet this neglect cannot last forever. After the 1997 Asian Financial Crisis, the growth of rural income was further slowed down and the urban-rural gap approached a historical record of 3.5 times. Since 2003, the CCP began to take several measures to improve the living conditions in the countryside. The first move was to abolish all the taxes levied on agriculture. This move on average increased about 100 yuan of income for each rural resident, which was close to 4% of rural per-capita net income in 2003. A more substantial move was to establish a new rural health care system that is heavily subsidized by the government. By 2006, over 90% of the counties were covered by the system. In the meantime, the government has initiated the New Countryside Movement, a project similar to the Korean Saemaul Undong of the 1970s, but mainly aiming at improving public infrastructure in the countryside. In more recent years, compensation to farmers has been increased substantially by many cities in their development projects.

While the institution of a new government in 2003 played a role to bring about the new policies, equally important was farmers' own resistance and rebellions. As implied by Proposition 5, the economically less productive group would grow stronger on the political front after economic inequality forces the society move out of equality cone. In reality, farmers resisted the government by evading taxes, moving into the city, staging collective protests and even open rebellions, many of which hit headlines of the international media.

5.4 Related evidence from Taiwan and South Korea

The linkage between an equal social structure and the government's neutrality with regard to the society is not confined to China. As Woo-Cumings (1997) notes, governments in Taiwan and South Korea were relatively free to adopt economic policies that enhanced the two economies' long-term growth prospects in their early stage of economic development because the two societies were made relatively equal by the Japanese colonists between 1895 and 1945. On the one hand, Taiwan and Korea were designated as suppliers of agricultural goods in imperial Japan's version of the Great East Asian Commonwealth so urban industrialists were suppressed in those two places. On the other hand, the Japanese colonists intentionally restricted the growth of the landed class in both places because they feared that this class would become a brewer for nationalist sentiments and organized upheavals against their colonial rule. "This discontinuity had a powerful leveling effect, equalizing incomes more than in most developing countries and providing a fertile ground for instituting effective interventionist states, which were given a relatively free hand to forge a developmental coalition as they saw fit." (Woo-Cumings, 1997; p. 331).

The contrast between what Chiang Kai-shek could do in mainland China and Taiwan shows clearly how an equal social structure can be conducive for a ruler to adopt selective but growth-enhancing policies. When he was in the Mainland, Chiang had to rely on the landed class, large industrialists and warlords to maintain his rule, especially in his fights with the communists who represented landless peasants and industrial workers. As a result, his policies were constrained. Land reform is a case at point. As soon as Chiang consolidated power in the spring of 1927, the Kuomintang government began to enact two laws, the *Tenant Protection Law* and the *Tentative Regulations on Tenancy*, both aiming at restricting rents and protecting tenant rights in tenancy contracts. However, they were put into effect only in 1932. There were two waves of government efforts trying to implement those two laws in the 1930s, but both failed. While the laws set an upper limit of 37.5% of output for land rents and outlawed fixed contracts and prepayments, a nationwide survey found that the rent in most tenancy contracts was higher than 50% and fixed contracts and prepayments

were common (Yang, 2005).

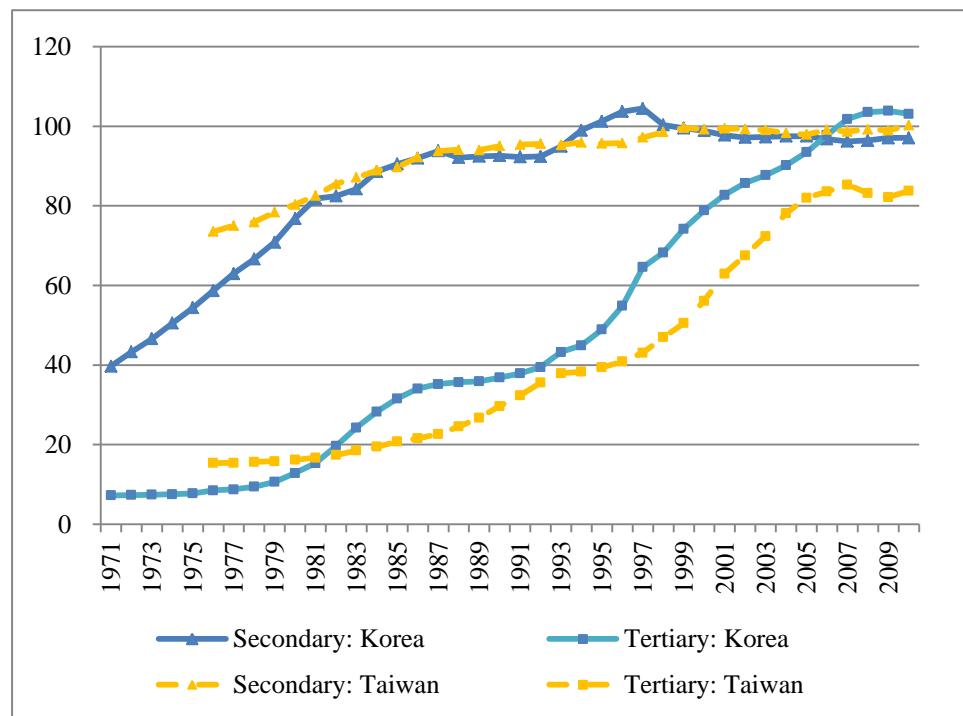
Taiwan was different from the Mainland in two key regards. One was that Chiang and his Mainland followers were outsiders who did not have any social ties with Taiwanese people. This allowed the Kuomintang government to stay free of the interference of special interests. The other was that the Taiwanese society was more equal than the Mainland, which rendered unnecessary Chiang's attempt to rely on any groups for supports. One of the indicators that Chiang was unconstrained in Taiwan was that he ordered Chen Cheng, the governor of Taiwan, to start land reform even before he moved to Taiwan in early 1949. In addition, the Kuomintang government, like its communist counterpart in the Mainland, adopted a policy of accumulating initial industrial capital by extracting from agriculture after the land reform. Indeed, the Taiwanese industrial sector extracted more surpluses from agriculture through the price scissors than its Mainland counterpart in the 1950s. Between 1951 and 1960, 27% of Taiwan's capital formation was contributed by net capital outflow from agriculture in the form of price scissors.²³ In the same period, however, the Mainland government was actually paying higher prices for agricultural products than the market (Wu, 2001).

One remarkable achievement in Korea and Taiwan is that they have maintained economic equality throughout their process of high economic growth. The reason may have a lot to do with their emphasis on equal access to education. Primary school enrollment already reached 100% in the 1960s in both places. Figure 5 then shows their rapid growth of secondary and tertiary enrollments in the period 1971-2010. Taiwan's secondary enrollment rate started higher than Korea's, but Korea's increased drastically in the 1970s. Tertiary enrollment experienced two waves of fast growth in both places, one in the period of mid-1970s to mid-1980s and the other since the early 1990's. Today, virtually every young person in both places get higher education (Taiwan's tertiary enrollment does not include postgraduates). As a comparison, China's educational achievement has kept pace with Korea and Taiwan. China's

²³ Calculated from estimates provided by Table 3 in Lee (1971), p. 29.

per-capita income today is equivalent to that of Korea and Taiwan in the early 1980s, and both its secondary and tertiary enrollment rates catch up with the corresponding figures in Korea and Taiwan at that time. The spread of education, hopefully, would reverse China's large economic inequality.

Figure 5. Gross secondary and tertiary enrollment rates in Korea and Taiwan (%)



Notes: For tertiary enrollment, Korean data include postgraduate students whereas Taiwanese data do not.

Sources: Korean data are from UNISCO Institute for Statistics; Taiwanese data are from the Department of Statistics, Ministry of Education, Republic of China.

6. Conclusions

We provide a dynamic model to show how initial political and economic equality can provide an explanation for the diverse economic performance of autocracies. Unlike leaders in democracies who are bounded by majority popular support, an autocrat can take preemptive actions to avoid resistance from the populace. However, there is a limit for him to do it in a cheap way. When there exist strong social groups that have the ability to overthrow him, the autocrat has to extend extra favors to these groups. However, these groups may not be economically more productive than other

groups, so a mismatch between productivity and resources emerges and economic growth is sacrificed. In a society that satisfies the conditions set in the equality cone, the autocrat is freed of the fear of being thrown down by any single social group because he can now form an alliance with other groups to successfully defend his rule. Consequently, he can then act as if he were disinterested regarding the society; his policies only take into account each group's economic productivity. Economic growth therefore can be faster than autocracies outside the equality cone. In the equality cone, the autocrat is neutral toward economic inequality. This can lead to increasing economic inequality when social groups have different levels of production efficiency. The economically less efficient groups will become a larger and larger threat to the autocrat because their discontent about the inequality increases. The autocrat will have to extend favors to these groups. This will prevent the society from moving away from the equality cone if the efficiency gaps are small. However, the society will move permanently out of the equality cone if the efficiency gap is large enough.

We then use the case of China to illustrate the implications of our theory. We also provide brief evidence from Korea and Taiwan to show how initial social equality gave their governments a free hand to form their desired economic policies. Our theory then provides an alternative explanation to the role of government in the East Asian Miracle. Our explanation does not rely on the assumption that the ruler is development-minded, like the developmental state theory assumes; instead, economic growth is only a by-product of the ruler's pursuit of his own interests when he acts as if he were disinterested in the society. As a result, the success factor implied by our theory --- the disinterestedness of the autocrat --- can be more transferrable across countries. Our theory identifies political and economic equality as a sufficient condition for a disinterested government to emerge; it is a worthy topic to find whether there are other sufficient conditions.

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