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Political Equality, Coalition Formation, and Economic Performance in Autocracies

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Economic performance of an autocracy depends on the inclusiveness of its political and economic institutions, which in turn depend on the nature of the ruling coalition the autocrat relies on to rule the society. To create more rents, the autocrat prefers a larger coalition. In contrast, member groups prefer a smaller coalition to monopolize the privileges extended by the coalition. A stable coalition requires that member groups hold similar levels of political power. Therefore, more political equality in the society leads to a larger ruling coalition. A stronger autocrat fulfills the same purpose because she is more capable of forming an alliance with the disenchanted groups to defeat exclusion. Social output increases when the ruling coalition becomes more inclusive. Three case studies on Kuomintang's land reform in mainland China and Taiwan, the Chinese Communist Party's economic reform and recent anticorruption campaign, and clientelistic politics in the Philippines are provided to validate the theoretical predictions.

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Political Equality, Coalition Formation, and Economic Performance in Autocracies

1. Introduction

Economic performance is more diverse among autocracies than among democracies. In the dataset of Acemoglu and others (2014), which covers 184 countries or regions during 1960–2010, autocracies registered an average output rate of 1.50 percent, but had a standard deviation of 7.34 percent. Democracies, however, reached a higher output rate of 2.16 percent, but had a much smaller standard deviation of 4.41 percent. Why do some autocracies perform better than others? This paper provides a political economy explanation.

A fundamental problem in an autocracy is the lack of credible institutions that simultaneously secure and constrain the autocrat's power. Under this weak institutional environment, the autocrat's survival hangs on her alliance with some sections of society. Although sheer terror may allow military dictators to linger for a while, long-lasting autocrats have to resort to more rational means to support their survival. Forming a ruling coalition with other social groups is one of them. On the other hand, an autocrat extracts rents from her rule. In a modern society, blind looting is unlikely a candidate for extraction because it is costly and undermines the autocrat's legitimacy. Collusion with her allies is a much more convenient and easily-hidden way of extraction. The most common practice in the real world is to set up rents by giving government-controlled resources and regulatory privileges to selected groups. This way, the autocrat not only consolidates political support, but also finds a convenient way to share rents.¹

The nature and scope of the autocrat's alliance thus can play a significant role in determining an autocracy's economic performance. In this paper, I propose a general theory for coalition formation in an autocracy and study its implications for economic performance. The theory emphasizes the role played by the distribution of political power in the society and the suppressive power of the autocrat in shaping her coalition strategy

¹ The Suharto period (1964-1997) in Indonesia is one example. A more recent example is the princelings and their family businesses in China before the Anti-corruption Campaign was started (Chen and Kung, 2017). In both cases, the top leaders enriched themselves and their families by giving political and business privileges to selected business people and local officials.

and economic policy. In a society with an unequal distribution of political power, a few powerful political groups can capture the autocrat. Rents are confined to a small number of groups and the societal economic output is not optimal. A more powerful autocrat—either equipped by superior military power or protected by a strong party—is more able to accommodate more social groups in her ruling coalition, to maximize her rents as well as to secure her rule. Consequently, the society with a more equal distribution of power or a more secure autocrat is more likely to function as if it had become more inclusive. Under certain conditions, the ruling coalition can include all the social groups, and the autocrat would act as if she were disinterested with respect to societal conflicts of interests and would advance the interests of the entire society.

To formalize the above idea, I construct a model of coalition formation to study the strategic interaction between the autocrat and society and its consequence for economic performance. The model considers a society of n social groups and one extant autocrat. The autocrat runs the government (subsequently, I will use *government* and *autocrat* interchangeably). The autocrat and each social group, respectively, possess a fixed amount of political power. A larger political power helps a group (autocrat) defeat other groups with a smaller political power. The country is run by a ruling coalition (RC) comprising the autocrat and some social groups (member groups). The autocrat possesses a fixed amount of resources (either physical and financial resources or regulatory privileges) that she distributes to the member groups in the RC. The allocation is group-specific, so the resources are represented as club goods in the model. Individuals in social groups are engaged in separate production processes using their own stocks of capital and the club good—if their group gets any from the autocrat—to produce a final good. This good can be understood as the extra gains offered by membership in the RC. The autocrat and the member groups share this good. The autocrat and the member groups' shares, determined by political bargaining between the autocrat and the member groups as a whole, are proportional to their political powers.

The autocrat and the member groups have opposite interests in the RC. To the extent that the club good follows the rule of diminishing marginal return in individual production, the autocrat wants to allocate the club good to as many groups as possible and admits groups with larger stocks of capital. This will also increase her survival rate

because a larger coalition is more likely to fence off external challenges. The interests of the member groups are just the opposite: they want to restrict the size of the RC and, whenever possible, to exclude groups with larger stocks of capital so that each of them gets a larger share of the club good. The autocrat and the member groups also have opposite interests in the dimension of political power. The autocrat, given the size of the RC, wants to keep politically weaker groups, while the member groups politically stronger groups.

The member groups have to be able to constrain the autocrat so she distributes the resources only in the RC. For that, they must collectively be more powerful than the autocrat and beat any challenges from other coalitions, including a blind takeover or an invasion by other groups. Therefore, the RC has to be invincible and invasion-proof. On the other hand, the RC has to resist splits, so it is coalition-proof. In this case, given the power of the autocrat, a larger number of groups can stay in the RC if they possess similar levels of political power. When a defecting coalition is formed to exclude some members of the RC, equality of power ensures that those being excluded can always form another sub-coalition—probably stealing some members of the defecting coalition—to defeat the defecting coalition.

It turns out that in a clean society, which is a society that rules out the exchange of direct material payments and political support between social groups, the condition to support a coalition-proof RC is very restrictive. However, in a corrupt society, which is a society that allows the exchange of direct material payments and political support between social groups, the condition becomes quite general. It only requires that the autocrat is no less powerful than the difference of power between any pair of groups in the RC. In the subsequent text, this condition is labeled by Condition (E). Under this condition, there is no sub-coalition of the RC that is invasion-proof because every excluded member can form an alliance with the disenchanted autocrat to steal members out of any defecting sub-coalition. It is ironic that Condition (E) only works in a corrupt political environment. The irony arises because corruption allows weaker groups to buy support from or neutralize stronger groups so the role of political power is reduced.

When the number of ruling groups is smaller than n , the autocrat's allocation of the club good is biased, and the government is called a *biased government*. A more equal society—that is, a society with a larger number of social groups that satisfy Condition (E)—allows a larger RC, which in turn leads to a larger output in the society. In the end, all social groups are included when they all satisfy the condition. In that case, the government is called a *disinterested government* because it is not captured by any partial coalition of the society. The social output is the highest under a disinterested government.

I offer three case studies to validate the empirical predictions of my model. First, the case of land reform of Kuomintang (KMT) in mainland China and Taiwan is presented to show that the reliance of the autocrat on a limited number of political groups can prevent her from carrying out a policy that is in both the society's and her own favor. Second, the case of the economic policy of the Chinese Communist Party (CCP) during China's reform era is presented to emphasize the role of a strong autocrat and a society of an initially equal distribution of political power. The implications of the CCP's recent anticorruption campaign are also discussed to highlight the role of corruption to facilitate coalition formation in an autocracy. Third, the case of clientelistic politics in the Philippines is used to show how a weak autocrat can be easily captured by strong social groups in a society of unequal distribution of political power. Accomplishing those tasks, this paper is well situated in the existing literature and makes some notable contributions.

First of all, it is related to the literature that has attempted to explain how political dynamics within the ruling coalition can sustain the autocrat's rule and explains heterogeneous economic performances among autocracies. Svobik (2009) builds a model to explain how asymmetric information between the autocrat and her allies can help the autocrat maintain an established dictatorship. The model's empirical predictions are supported by the observed survivals and failures of autocracies between 1945 and 2002. Boix and Svobik (2013) further explain how formal institutions, by facilitating power sharing between the autocrat and her allies, are adopted to promote the survival of autocracies. Along this line, Gehlbach and Keefer (2011 and 2012) hypothesize and test that institutionalization (specifically, information sharing) within the ruling party drives better performance. Besley and Kudamatsu (2007) show that when the selectorate's

power does not depend on the leader being in office, then its threat of replacing the leader becomes credible and the leader chooses strategically to adopt output-friendly policies.

My model differs from those works by bringing the societal distribution of political power into the analysis. In doing so, this paper advances the literature by moving one step ahead to study how the ruling coalition is formed and sustained. While political dynamics within the ruling coalition is important, and my model has also tackled it, the role of social groups outside the ruling coalition cannot be ignored. The rule of the autocrat may depend on her allies in the ruling coalition, but the sustainability of the autocracy may well depend on its ability to fence off challenges from the populace. Therefore, the societal distribution of political power can play a critical role to determine how the ruling coalition is formed and whether it helps promote economic output. The most important finding this paper offers is that political equality helps the autocrat form a more inclusive ruling coalition that in turn leads to higher output.²

My work is also an extension of the thesis of inclusive economic and political institutions advanced by Acemoglu and Robinson (2012). Acemoglu and Robinson have observed that elements of inclusive economic institutions could survive for a prolonged period of time in some autocracies. They believe that happened because the elites preferred higher output. While being consistent with this line of argument, my theory emphasizes the role played by a politically more equal society to shape the autocrat's incentive to adopt more inclusive economic policies. To the extent that many successful late-developed societies, notably those in East Asia, started their economic takeoff under dictatorship (Glaeser and others 2004), one must understand why the autocrats in those societies were more willing to promote economic output than autocrats in other countries. Consistent with some existing studies (for example, Woo-Cumings 1997), my study shows that the absence of strong political groups in those societies is an answer.

Methodologically, my work is an extension of selectorate theory (Buono de Mesquita and others 2004), which provides a unified framework for social scientists to understand democracy and autocracy. In selectorate theory, the autocrat has to bend to the pressure

² Because autocrats would pay attention to economic policies only if their tenure were secured, in a sense, my model only studies established dictatorships defined by Svoboda (2009).

of the more powerful groups—those in the winning coalition—and give them more than their economic merits deserve when it comes to resource allocation. As a result, economic performance of an autocracy is inferior to that of a democracy, which, at least in theory, obliges the leader to provide public goods to the general public. My theory follows this line of argument, but extends it by studying how the winning coalition is formed in an autocracy.

There is ongoing literature that studies coalition formation in autocracies. Acemoglu, Egorov, and Kanstantin (2009) provide a general theory of coalition formation in non-democracies in which political commitment is completely absent. One of their key assumptions (axioms) is that individuals (groups) eliminated from the current ruling coalition cannot rejoin it. This assumption is restrictive and may be applied only to a small number of settings (such as the early years of the Soviet Union). In my model, political groups possess the ability to form a new coalition if they are excluded from the current ruling coalition. When the political groups are powerful enough, their new coalition places a credible threat to the current ruling coalition so the latter does not exclude them in the first place. This scenario drastically reduces the complexity of the model and allows for obtaining large coalitions, including one that includes all political groups to support a disinterested government.

My study is also linked to the theoretical modeling that relates slow economic output to inequality through negative government policies. Most of this literature, however, studies the mechanisms in democracies. For instance, Alesina and Rodrik (1994), Benabou (2000), and Hassler and others (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; and Renzo (2007) focuses on how asymmetric political powers may lead to short-sighted government policies. In contrast, I provide a mechanism for political equality to lead to better economic performance in autocracies. Autocracy differs from democracy by the lack of credible institutions. As a result, good economic performance can only emerge as an equilibrium result of strategic interactions among concerned parties.

Finally, the notion of disinterested governments is related to several theories of the state in political economy literature. First, Skocpol (1979) constructs the notion of the autonomous state that she believes has its own purposes and logic of actions. The disinterested government certainly is autonomous, but it bears more structure than the autonomous state. In particular, its economic policy is identity-blind when it comes to resource allocation. Second, Olson (1982) studies how the existence of social groups with diverse interests can slow a country's economic output and argues that countries ruled by an encompassing organization whose interests largely overlap with societal interests are more likely to grow. Third, McGuire and Olson (1996) distinguish stationary bandits from roving bandits and show that an autocrat would advance long-term output if she monopolized power over the country—just like a band of stationary bandits would do. Like an encompassing organization or a band of stationary bandits, a disinterested government promotes higher economic output as a by-product of its pursuit for its own interests. However, a disinterested government does not necessarily hold interests that overlap with society's interests; it produces higher economic output relative to a biased government by guarding its policy from the influence of nonproductive factors. In addition, I provide the conditions for a disinterested government to emerge, whereas McGuire and Olson (1996) do not tell us when bandits would become stationary. Last, a disinterested government is different from a developmental state. A developmental state places a positive requirement on the government to set economic development as its top priority; in contrast, a disinterested government places a negative constraint on the government to have policies that cannot be influenced by nonproductive factors.

2. Coalition Formation in a Clean Political Environment

2.1 The setup

The society I consider comprises an autocrat and n (social-) political groups. A political group is defined as an organization that is capable of forming and taking coherent collective actions. Let $N = \{1, 2, \dots, n\}$ be the set of the political groups. I will also use it to denote the society. For simplicity, I assume that the size of population is equal in each group and normalize its measure to 1. The autocrat, indexed by 0, controls the government. So $I = N \cup \{0\}$ is the set of all social groups and the autocrat. Because

my theory focuses on the conditions of the society that define political coalition, I abstract from intragroup dynamics that could lead to the classic problems associated with collective action. In addition, I make the following assumption:

A1. The autocrat cannot be replaced by any political group in N .

This assumption allows me to focus on the main question of this paper: what kinds of economic and political conditions are needed to induce an autocrat to pay more attention to raise a country's economic output? Allowing for the possibility that the autocrat would be displaced will certainly require more stringent conditions, so strictly speaking, my analysis will only find the necessary conditions. However, allowing for the possibility that the autocrat would be displaced will also introduce much more indeterminacy and will potentially make the model intractable. In social sciences, pinning down the necessary conditions often allows the researcher to reach substantial conclusions.³ As the reader will see, the results of my model are sufficient to explain the three cases to be presented in Section 4 and potentially other cases around the world.

The ability of forming collective action can be different between groups. I define *political power* as a group's ability to organize collective action, such as maintaining coherence within the group, exerting influence on others, conducting propaganda, waging protests and upheavals, and, in the case of the autocrat, suppressing revolts. Let v_i denote the political power of group $i \in I$. A group with a larger power can defeat a group with a smaller power when conflicts arise between them.

Note that the autocrat is not necessarily more powerful than other social groups. To rule, she can form a coalition with other social groups.

D1. A coalition is a collection of social groups and the autocrat that is able to take collective actions. It is a non-empty subset of I .

By that definition, a coalition acts as if it were just one political group. Because groups in a coalition can take uniform actions, it is meaningful to define the political power of a coalition. In subsequent text, the power of a coalition A is denoted by $P(A)$.

³ For example, in the study of the so-called middle-income trap, a country must meet a set of necessary conditions to overcome the trap. Countries that were trapped often only failed on one of the conditions (Feng and Yao 2015).

A coalition that includes both political groups and the autocrat is called a *ruling coalition* (RC). A RC controls the government and, thus, is able to rule. In the case of an autocrat possessing superior power, such that $v_0 > P(N)$, a personal dictatorship emerges. In that case, this paper's analysis is rendered useless. To a lesser extent, the autocrat can still do whatever she wants in a RC if the other members cannot jointly constrain her. Member groups have to constrain the autocrat to make their participation in the coalition meaningful. To illustrate this idea, I make the following assumption:

A2. The autocrat can only allocate resources to member groups in the RC.

Essentially, A2 says that the autocrat is captured by the member groups in the RC. In return, the autocrat is protected by the coalition and is able to extract rents from its member groups. So there is an implicit exchange of support and rent extraction. With A2, I proceed to provide a formal definition of RCs:

D2. A coalition RC is a ruling coalition if it satisfies the following three conditions: (1) $0 \in RC$, (2) $C = RC \cap N \neq \emptyset$, and (3) $P(C) \geq v_0$.

In subsequent text, I will use RC to denote a generic ruling coalition and $C = RC \cap N \neq \emptyset$ to denote its members other than the autocrat. There can be many RCs in I because the autocrat can choose among many coalitions in N . The set of all feasible RCs is denoted by \mathcal{RC} . A RC can form through political interactions or explicit material exchanges (briberies). In this section, I study the case that material exchanges are not allowed to buy political support.

D3. A clean political environment is an I in which explicit briberies are absent.

In reality, corruption is widely observed in autocracies. I study a clean political environment to highlight some of the tradeoffs facing the autocrat when she forms coalitions and makes decisions about resource allocation. In the next section, I will extend the model to the more realistic case that bribery is allowed.

On the economic side, only citizens are engaged in production while the autocrat is not. People in the same political group are endowed with the same amount of physical capital. Let it be K_i for people in group $i \in N$. Note that K_i can be different in different groups. Its

relationship with political power is complicated in reality. While it is often the case that politically more powerful groups have larger stocks of capital, it is not uncommon to find that less wealthier groups can be politically powerful (think about the revolutions in Europe and Asia), or vice versa. This paper thus makes a neutrality assumption:

A3. Capital stock and political power are independently distributed among political groups.

The autocrat controls a certain amount of resources, G , which she will transform into club goods and will allocate to people in her ruling coalition. As mentioned above, let RC denote that coalition and C denote its member groups other than the autocrat. Further, let G_i be the amount of club goods received by each individual in group $i \in C$.⁴ Obviously, $\sum_{i \in RC} G_i = G$. The production technology of each person in group $i \in N$, regardless whether the person belongs to RC , takes the following form of constant elasticity of substitution (CES):

$$(1) Y_i = A \left[K_i^\alpha + (G_i \times D\{i \in C\})^\alpha \right]^{\frac{1}{\alpha}}, A > 0, 0 < \alpha < 1, i \in N,$$

where $D\{i \in C\}$ is a dichotomous variable (taking values 0 and 1) that indicates whether group i belongs to C . That is, people in RC use both their own capital and the club good allocated by the autocrat to produce output, whereas people outside RC only use their own capital to produce. Indeed, the production technology used by people outside RC degenerates into the so-called AK technology. Given his own stock of capital, an individual prefers being included by RC , and naturally, members of RC prefer more club goods, although the marginal product of club goods declines.

The autocrat's extraction is modeled as a tax on the output of RC . While other ways can be taken to model the tax rate, it is more sensible to model it as an outcome of political bargaining between the autocrat and the member groups as a whole, because maintaining the RC is in both the autocrat's and member groups' interests. Assuming that the outside option (i.e., when no agreement is reached and the RC is broken) gives zero

⁴ Because each person is endowed with the same amount of capital and, as will shortly be introduced, has the same production technology, it is easy to envision that each person in the same group should have the same amount of club goods.

income to the autocrat and the member groups, the Nash bargaining model then immediately gives us the following result about the tax rate s :

$$s = \frac{v_0}{v_0 + P(C)}.$$

Naturally, the share given to the member groups is $1 - s$. After the distribution, the final product is consumed by the autocrat and member groups.

2.2 Allocation of club goods in RCs

At this point, I define the order of events as follows. First, nature chooses the autocrat and allots her political power and resources. Nature also allots every citizen political power and capital. Second, coalitions in N are formed and compete to form a RC with the autocrat. Third, once a stable RC is formed, the autocrat transforms her resources into club goods and allocates them to the other member groups of her RC. Fourth, individuals make independent production using their own capital and club goods received by their group. Fifth, once production is finished, the autocrat and the other members of her RC share the output of that RC. People not included in the RC retain all of their output.

Note that coalition formation is affected by how the autocrat allocates club goods in her RC and how the output is shared in that RC. Therefore, I first study the allocation of club goods in a given RC. I start by noting that both the autocrat and the member groups want to see a larger output. Thus the autocrat solves the following constrained maximization problem when she allocates the club good in RC:

$$(2) \quad \underset{\{G_i\}_{i \in C}}{\text{Max}} \sum_{i \in C} Y_i$$

$$\text{s.t. } Y_i = A \left[K_i^\alpha + G_i^\alpha \right]^{\frac{1}{\alpha}}, \quad \sum_{i \in C} G_i = G.$$

Solving this problem, it is straightforward to obtain the following result:

$$(3) \quad G_i = (K_i / K_C) G, \quad \text{where } K_C = \sum_{i \in C} K_i.$$

This result is very intuitive. To maximize the total output, the autocrat wants to equalize the marginal product of the club good among individuals. Because capital and

the club good are symmetric in the production technology, this result is only achieved when a person's share of the club good is equal to her share of capital.

Individual income in RC is:

$$(4) Y_i = (1-s)AK_i \left[1 + (G/K_C)^\alpha \right]^{\frac{1}{\alpha}}, \forall i \in C.$$

Obviously, a person's income increases in his own capital stock. However, at the collective level, there are two countervailing forces. A larger collective power $P(C)$ raises everyone's income by suppressing s , but a larger sum of capital K_C reduces a given person's income. The second result is derived from the proportionality between a person's share of the club good and his share of capital stock.

Individual output outside RC is AK_i , which is smaller than the individual output in RC for given K_i . To fix the idea, I make the following assumption:

A4. An individual's output outside a RC is *much smaller* than his or her output in the RC .

Individual income in RC (including the income of the autocrat) will be denoted by $Y_i(RC)$, $\forall i \in RC$, and the distribution of income will be denoted by $\{Y_i(RC)\}_{i \in RC}$. The total output of RC is the sum of individual output:

$$(5) Y_C = AK_C \left[1 + (G/K_C)^\alpha \right]^{\frac{1}{\alpha}},$$

which can be easily shown to increase in K_C . The autocrat then receives the following:

$$(6) Y_0 = sY_C.$$

It increases in K_C , but decreases in $P(C)$.

2.3 The contract curve

The above analysis has shown that the income of individual members of RC critically depends on two aggregate variables, K_C and $P(C)$. Subsequently, I call the combination $(K_C, P(C))$ "the characteristic of RC ." The analysis in the previous subsection showed

that the autocrat and the member groups have opposite interests regarding the characteristic of RC . Now the results are stated in the following lemma:

Lemma 1. In a $RC \in \mathcal{RC}$, (1) given $P(C)$, a larger K_C increases RC 's total output and the autocrat's income, but makes the members in C worse off; and (2) given K_C , a larger $P(C)$ reduces the autocrat's income, but makes the members in C better off.

For a given RC , its characteristic is unique. Changes happen when the RC (1) admits new members so its size increases, (2) kicks out some of its members so its size decreases, or (3) replaces some of its members with outsiders. In the last case, the RC is said to be "invaded" and the outsiders are called "invaders" in the subsequent text. Any change to the characteristic results in a new RC . According to the analysis in Section 2.2, the remaining member groups are either all better off or all worse off.

Lemma 2. For two ruling coalitions, $RC, RC' \in \mathcal{RC}$, suppose $C \cap C' \neq \emptyset$, $C \neq C'$. Then $\forall i \in C \cap C'$, only one of the three cases will happen: (a) $Y_i(RC') > Y_i(RC)$, (b) $Y_i(RC') < Y_i(RC)$, or (c) $Y_i(RC') = Y_i(RC)$.

Proof. Given its capital stock, a member group's income is only related to the characteristic of RC , as stated by Equation (4). Therefore, in terms of the direction of effect, members in $C \cap C'$ are equally affected by any change happening to RC . Q.E.D.

In addition to make every member in $C \cap C'$ better off, the new RC may also make the autocrat better off. In this case, a Pareto improvement has occurred.

D4. For two ruling coalitions, $RC, RC' \in \mathcal{RC}$, suppose $C \cap C' \neq \emptyset$, $C \neq C'$. RC' is a Pareto improvement of RC if (a) $Y_i(RC') \geq Y_i(RC)$, $\forall i \in RC \cap RC'$ and (b) $\exists j \in RC \cap RC', Y_j(RC') > Y_j(RC)$.⁵

According to Lemma 2, Condition (b) holds in one of the following three scenarios: i) $Y_0(RC') > Y_0(RC)$; ii) $Y_j(RC') > Y_j(RC)$, $\forall j \in C \cap C'$; or iii) both. According to Lemma 1, whether a Pareto improvement happens depends solely on the changes happening to

⁵ D4 does not define global Pareto improvement because members in $RC \setminus (RC \cap RC')$ are worse off. The concept of Pareto optimum is borrowed here to describe a situation when mutual improvements of the autocrats and member groups are exhausted in coalition formation.

the characteristics of the two RCs. Figure 1 illustrates the situation. In the $(P(C), K_C)$ space, the figure presents the (income) indifference curves of the autocrat and a specific group, $i \in C$, in RC based on Equations (6) and (4), respectively. Because of Lemma 2, group i represents all the member groups in $C \cap C'$. The autocrat's indifference curves bend toward northwest of larger K_C and smaller $P(C)$; group i 's indifference curves bend toward southeast of larger $P(C)$ and smaller K_C . So their interests conflict with each other. However, there could be room for Pareto improvement if C 's membership changes, but group i is kept. For example, suppose RC 's characteristic is x in the figure. Then the shaded area defined by the autocrat and group i 's indifference curves going through x is the area of Pareto improvement. That is, a new ruling coalition RC' , $C' \cap C \neq \emptyset$ can be constructed such that $i \in C'$ and the characteristic of RC' $(P(C'), K_{C'})$ falls in the area of Pareto improvement. Improvement only disappears at the points where one of the autocrat's indifference curves is tangent with one of group i 's. The line linking all the tangent points is the contract curve between the autocrat and group i on which Pareto optimum is obtained, just like one can get in the Edgeworth box.

[Figure 1 about here]

D5. A ruling coalition $RC \in \mathcal{RC}$ reaches Pareto optimum in a sub-society $A \subseteq I$ if there is no other ruling coalition $RC' \subset A$ such that $C' \cap C \neq \emptyset$, $C \neq C'$ and RC' is a Pareto improvement of RC .

Simply put, a RC is Pareto optimal if it cannot improve the welfare of its existing members by altering its membership. By construction, a RC implies a contract between the autocrat and an existing coalition of political groups. It is intuitive to reason that the contract should be Pareto optimal. It turns out that the situation is more complicated than this simple reasoning. However, it is useful to state the definition of the contract curve here:

D6. The contract curve of a sub-society $A \subseteq I$ is the set of all Pareto-optimal RCs in A .⁶

⁶ The contract curve can be "thick" in the sense that it has a width, because N is countable and the distribution of $(P(C), K_C)$ is discrete.

2.4 Invasion-proof RCs

There can be many potential RCs in a society; however, they may not be stable. A RC faces challenges from both outside and inside. Outside a RC, the threat is that politically more powerful coalitions may replace the entire RC or invade it by replacing some of its groups. Inside a RC, member groups may form smaller coalitions to exclude some members, thus threatening internal stability. To prevent splits, a RC cannot be too big or too diverse, which generally sets the maximum size of a RC. To defeat external threats, a RC cannot be too small or too weak. For a given distribution of political power in the society, external stability then generally sets the minimum size of a RC. This subsection studies external stability, while the next subsection studies internal stability.

To fence off external threats, a RC has to be stronger than any other coalition in the society. Clearly, the RC comprising N and the autocrat is invincible. In a society of a very unequal distribution of political power, a RC comprising the autocrat, the strongest group and perhaps a small number of weaker groups may also be invincible. In a society of completely equal distribution of political power, any coalition comprising the autocrat and half of the social groups is invincible. In societies that fall in-between, anything can happen. Worse than that, invincibility does not guarantee stability for a RC because its members may defect if an alliance of outsiders, or invaders, offers them a higher income. Obviously, the invaders also benefit if their coalition with the defectors can become a new RC (by capturing the autocrat). A RC can only survive if it can resist invasion. In that case, such a RC is invasion-proof.

D7. A ruling coalition $RC \in \mathcal{RC}$ is invasion-proof with respect to $A \subseteq I$ if there is not a $C' \subset A \cap N$ with its corresponding ruling coalition $RC' \in \mathcal{RC}$, such that

- (a) $C' \not\subset C$, $C \not\subset C'$, $C' \neq C$;
- (b) $Y_i(RC') \geq Y_i(RC)$, $\forall i \in S = RC' \cap RC$;
- (c) Let $W \subseteq S$, such that $\forall i \in W$, $Y_i(RC') > Y_i(RC)$, then

$$P(C \setminus C' \cap C) + P(W) > P(RC \setminus S).$$

Condition (a) states that C' contains at least one invader who replaces at least one member of C .⁷ Condition (b) says that none of the remaining members of RC , including the autocrat, should be made worse off. Then, by Condition (c), the parties that are made strictly better off by C' —the invaders ($C' \setminus C \cap C$) and whatever groups, including the autocrat, whose income is increased—should be able to defeat the excluded groups ($RC \setminus S$). The autocrat never belongs to $RC \setminus S$ because she is always needed. Not all the old members of RC need to be made better off. In particular, the autocrat's income may decline in C' , but she is willing to stay because she would end up with nothing when she quit. It is possible that the invaders are the only groups whose income is increased, in which case W is empty.

A RC can be invincible but not invasion-proof; but it is definitely not invasion-proof if it is not invincible. In fact, $C' \cap C$ can be empty in D7, in which case invasion-proofness becomes invincibility. Therefore, invasion-proofness fully describes external stability. To illustrate invasion-proof RCs, let us study two examples.

Example 1. A society comprises four social groups whose political powers are $\{v_1, v_2, v_3, v_4\} = \{4, 5, 10, 16\}$ and whose stocks of capital are $\{K_1, K_2, K_3, K_4\} = \{32, 20, 10, 8\}$. The autocrat possesses a political power of 12. There are many invincible RCs, but the number of invasion-proof RCs is limited. Any RC that excludes the politically strongest and economically poorest group, group 4, is not invasion-proof. Take as example the RC comprising the other three groups and the autocrat, denoted by $\{4, 5, 10; 12\}$, where the numbers are the powers of the parties. Then, group 4 can replace any group in this RC to benefit the remaining two groups. The autocrat is hurt and may want to form alliance with the ousted group against the invasion. However, this alliance is less powerful than the alliance of group 4 and the other two groups. So $\{4, 5, 10; 12\}$ is not invasion-proof. It is easy to check that any RC that includes the politically weakest and economically wealthiest group, group 1, is not invasion-proof either. The only invasion-proof RC with

⁷ The definition excludes the case that C' is formed by merely adding some new groups to C . As one will see, a RC of larger size increases its total output. Therefore, new members would always be allowed to join the RC if they were allowed to bribe its old members regardless what kind of political structure existed in the society. Later on, I will extend the model to allow for bribery. Forming C' by adding some groups to C then becomes a trivial case. Therefore, it is excluded from the very beginning.

three political groups is the RC excluding group 1.⁸ Because this group has the smallest political power but the largest capital stock, its invasion will benefit the autocrat and hurt any other remaining group. However, the sum of its political power and the autocrat's political power is smaller than the sum of political power of the other three groups, so invasion is impossible.

The reader may notice that in Example 1, more powerful groups have smaller stocks of capital, so excluding the wealthiest and least powerful group, group 1, is feasible. If group 1's political power is at least as large as 19 so that the sum of political power of its alliance with the autocrat is at least 31, which is the sum of political power of the other three groups, then the invasion-proof RC in Example 1 is no longer invasion-proof.

It is also possible to construct examples in which invasion-proof RCs are not Pareto optimal because the potential losers are very powerful. The following example is a case at point.

Example 2. A society comprises four social groups whose political powers are $\{v_1, v_2, v_3, v_4\} = \{4, 4, 4, 25\}$ and whose stocks of capital are $\{K_1, K_2, K_3, K_4\} = \{8, 8, 8, 50\}$. The autocrat still possesses a political power of 12. To fix the idea, let A be 1 and α be 0.5 in the production technology. Because group 4 is more powerful than the alliance of the autocrat and all the other three groups, any RC containing group 4 is invasion-proof. However, a Pareto improvement can be obtained if group 4 is replaced by any other group outside the RC. Take $\{4, 4, 25; 12\}$ as an example. Table 1, taking group 1 as the group initially excluded, shows that it can be improved by $\{4, 4, 4; 12\}$. When group 4 is replaced by group 1, $P(C)$ declines so the autocrat is improved but the remaining two groups are hurt; but K_C also declines so the autocrat is hurt and the remaining two groups are improved. The net outcome, though, is that both the autocrat and the remaining two groups are improved. The autocrat's loss due to a smaller K_C is more than compensated by his gain due to a smaller $P(C)$; the reverse is true for the remaining two groups. This example shows that a politically powerful group can block Pareto improvements of the autocrat and the other groups.

⁸ It remains a question whether it can be split. This is the concern when we study coalition-proof RCs.

Table 1. The distribution of income for Example 2

	RC: {4, 4, 25; 12} Wealth: {8, 8, 50}	RC: {4, 4, 4; 12} Wealth: {8, 8, 8}
Y_0	42.31	43.91
Y_1		14.63
Y_2	14.10	14.63
Y_3	14.10	14.63
Y_4	88.15	
Y_C	158.66	87.82

The example hints that in a society with relative political equality, Pareto optimum is always obtained. The following theorem gives the exact result:

Theorem 1. Every invasion-proof $RC \in \mathcal{RC}$ is on the contract curve of $A \subseteq I$ if and only if $\forall i, k \in A \cap N$

$$(E) \ v_0 > |v_i - v_k|.$$

Proof. To prove the sufficiency of Condition (E), suppose $RC \in \mathcal{RC}$ is invasion-proof, but is not on the contract curve. Then let its characteristic be x in Figure 1. By Condition (E), we can always find $k \in C$ and $j \notin C$ such that $v_j + v_0 > v_k$ and the characteristic of the new ruling coalition $RC' = \{j\} \cup (RC \setminus k)$ moves along the indifference curves of its members, to x' in the case of a generic group i . So $Y_i(RC') = Y_i(RC)$, $\forall i \in RC \cap RC'$, but the autocrat enjoys a higher income and is willing to form an alliance with group j to defeat group k . This contradicts that RC is invasion-proof. To prove the necessity of Condition (E), it suffices to prove the inverse negative proposition. Suppose that there are $k \in C$ and $j \notin C$ such that $v_j + v_0 \leq v_k$. But it is possible that group k is the only group that group j can replace to improve the income of the autocrat and the other groups in C , and $v_j + v_0 \leq v_k$ prevent the replacement from happening. Q.E.D.

Therefore, under Condition (E), Pareto optimum is always obtained, so the autocrat and the member groups always have conflicting interests in an invasion-proof RC. If replacing a member by a new member or adding a new member benefits one party, it has to hurt the other party.

[Figure 2 about here]

Obviously, Condition (E) holds if the autocrat is more powerful than any social group. When he is not, Condition (E) implies a certain degree of political equality among political groups. Figure 2 illustrates the point in a society with only two political groups (indexed by 1 and 2). Condition (E) defines the shaded area. But to make $\{v_1, v_2; v_0\}$ a ruling coalition, we have to have $v_1 + v_2 \geq v_0$. So the heavily shaded area of the tube is excluded. The lightly shaded area then is the permissible region for (v_1, v_2) that guarantees all the defection-proof RCs are on the contract curve. It is a tube along the 45^o line. A more powerful autocrat (a larger v_0) permits a higher degree of inequality (i.e., the tube becomes wider). Conversely, a less powerful autocrat requires a more equal society to complement. Subsequently, the lightly shaded area is called “the Equality Tube”.

2.5 Coalition-proof RCs

Let’s now turn to internal stability. In game theory literature, “strong equilibrium” was the first solution concept proposed for coalition-proof Nash equilibrium (Aumann 1959). A strong equilibrium is a Nash equilibrium in which no coalition can make every player better off. However, studies have found that it is very difficult to obtain strong equilibria because they do not require that the coalitions be stable. A weaker concept of coalition-proof Nash equilibrium then is introduced to require that coalitions themselves be equilibrium outcomes (Bernheim, Peleg, and Whinston 1987). Following this weaker concept, I define a coalition-proof RC as the following:

D8. A ruling coalition $RC \in \mathcal{RC}$ is coalition-proof if there is no $RC' \subset RC$ that is invasion-proof with respect to RC .

Groups form a sub-coalition C' to obtain a larger income for each of its members. Therefore, C' prefers excluding members of C who have larger capital stocks but smaller political powers. However, the autocrat may also want to exclude some members of C who have larger political powers but small capital stocks. The following lemma shows that the autocrat will be hurt when the size of C is reduced.

Lemma 3. In a ruling coalition $RC \in \mathcal{RC}$, there is no ruling coalition $RC' \subset RC$ that makes the autocrat strictly better off.

Proof. Let $C' \subset C$ be a strict subset of C , and let $RC' = C' \cup \{0\}$ be its associated RC. According to Lemma 1, $Y_{C'}$ is definitely smaller than Y_C . Therefore, either the autocrat or the members of C will be hurt. RC' makes the members of C' strictly worse off if it makes the autocrat strictly better off. Of course, the members in $C \setminus C'$ strictly lose because they are expelled from the ruling coalition. So the only winner is the autocrat. But for RC to qualify as a ruling coalition, $P(C) > v_0$ has to hold, which means that RC' will be blocked by C from the very beginning. Q.E.D.

As a result, only members of C have the incentive to split RC . For RC to be coalition-proof, a coalition must exist between the autocrat and $C'' \subseteq C \setminus C'$ that can defeat or invade a tempting $C' \subset C$. This coalition requires a certain degree of political equality in C . Consider the following example:

Example 3. The original RC is $RC = \{4, 10, 12; 15\}$. The capital stocks of the three social groups are $\{10, 8, 4\}$. Group 1 has the smallest political power and the largest capital stock, so groups 2 and 3 prefer a new ruling coalition $RC' = \{10, 12; 15\}$. Because the sum of capital K_C declines substantially and $P(C')$ does not decline much, the reader can verify that the autocrat loses. However, $P(C')$ is larger than the sum of power of the autocrat and group 1. Therefore, RC is not coalition-proof. This failure occurs because group 1 is politically too weak compared with the other two groups.

However, a RC with groups of more or less equal political powers can be coalition-proof. The following example illustrates this point.

Example 4. A society comprises an autocrat whose political power is 15 and seven social groups whose political powers are $\{10, 6, 4, 3, 3, 3, 2\}$. There are many RCs, but some of them are not coalition-proof. For example, $\{10, 6, 3, 2; 15\}$ is a RC, but it is not coalition-proof because $\{10, 6, 3\}$ is invincible. There are also many coalition-proof RCs. For example, $\{6, 3, 3, 3; 15\}$, $\{6, 4, 3, 3; 15\}$, and $\{6, 4, 3, 2; 15\}$ are all coalition-proof. An interesting feature of those three RCs is that they do not include group 1, the most powerful group, because once group 1 is included, it has the incentive to set up a viable sub-coalition.

For a general result, I have the following theorem:

Theorem 2. A $RC \in \mathcal{RC}$ is coalition-proof if and only if $\forall i \in C$, such that

$$(D) \ v_i + v_0 > P(C \setminus i).$$

Proof. To prove the sufficiency of Condition (D), let $C' \subset C$ be a strict subset of C . By Lemma 3 and Corollary 1, the RC built by C' , RC' only benefits the members of C' and hurts the autocrat. As a result, the autocrat is willing to form an alliance with $C \setminus C'$ against C' . Condition (D) then ensures that the alliance can always defeat C' . That is, RC' is not invasion-proof. The necessity of Condition (D) is simple to prove once one realizes that C' can exclude any one group to dissolve RC . Condition (D) is necessary for the expelled group to join with the autocrat to defeat C' . Q.E.D.

3.6 *The society and the disinterested government*

The results obtained so far enable me to describe a stable ruling coalition, which will be called the ultimate ruling coalition (URC), in a society.

D9. A URC is a ruling coalition that is invasion-proof and coalition-proof.

There are still many potential URCs in a society. The primary interest of this paper is under what condition the whole society can be a URC. The following theorem, which is an immediate result of Theorem 1, specifies the condition:

Theorem 3. Let $RC = N \cup \{0\}$. It is the only URC if and only if Condition (D) holds for $\forall i \in N$.

Proof. Because RC includes all members of N , it is obviously invincible and invasion-proof. According to Theorem 1, Condition (D) guarantees that RC is coalition-proof. So RC is the only URC. Q.E.D.

When $RC = N \cup \{0\}$ is a URC, the government led by the autocrat is a disinterested government in that it is not captured by any subset of social groups so it would behave as if it were disinterested with respect to society. In contrast, a government is biased when the URC contains a strictly subset of N .

Theorem 4. Under the disinterested government, society produces the highest output.

Proof. Because individual output outside the URC is strictly smaller than individual output in the URC, by Lemma 1, a society with a larger URC produces higher total output. The URC under the disinterested government contains the largest number of social groups, so the society reaches the highest output. Q.E.D.

Condition (D) first of all requires a very powerful autocrat despite it also implies a certain degree of equality among political groups. Theorem 3 demands that the condition hold with respect to the entire society. This is a highly stringent demand. It is needed because direct material incentives are not allowed to win political support. In the next section, the condition can be drastically relaxed when bribery is allowed in political transactions.

3. Coalition Formation in a Corrupt Political Environment

A political environment is corrupt if material payments (briberies) are allowed to gain political support. Technically, bribery in a RC results in a perturbation of its income distribution. Obviously, for bribery to be feasible, the sum of the perturbed income cannot be higher than the original sum of income. Formally, for RC , let $\{\tilde{Y}_i(RC)\}_{i \in RC}$ be a perturbation of $\{Y_i(RC)\}_{i \in RC}$.

D10. For a ruling coalition $RC \in \mathcal{RC}$, a perturbation of income $\{\tilde{Y}_i(RC)\}_{i \in RC}$ is feasible if and only if $\sum_{i \in RC} \tilde{Y}_i(RC) \leq Y_C$.

Compared with a clean political environment, defection becomes harder in a corrupt political environment because defectors can be bought out. This buyout makes it easier for a RC to remain coalition-proof. The following definition modifies D8:

D7'. In a corrupt political environment, a ruling coalition $RC \in \mathcal{RC}$ is invasion-proof with respect to $A \subseteq I$ if there is not a $C' \subset A \cap N$ with its corresponding ruling coalition $RC' \in \mathcal{RC}$ and a feasible perturbation of income in RC' , $\{\tilde{Y}_i(RC')\}_{i \in RC'}$, such that for any feasible perturbation of income in RC , $\{\tilde{Y}_i(RC)\}_{i \in RC}$

- (a) $C' \not\subset C$, $C \not\subset C'$, $C' \neq C$;

(b) $\tilde{Y}_i(RC') \geq \tilde{Y}_i(RC)$, $\forall i \in S = RC' \cap RC$;

(c) Let $W \subseteq S$, such that $\forall i \in W$, $Y_i(RC') > Y_i(RC)$, then

$$P(C \setminus C' \cap C) + P(W) > P(RC \setminus S).$$

The changes happen in condition (b). The invaders can make offers of bribery to certain members of RC , and the potential losers of RC can make counter offers. For the invaders to win, their final and feasible offer has to win over any feasible counter offer made by the potential losers of RC .⁹

The three lemmas and theorem 1 still hold in a corrupt political environment. The condition for coalition-proof RCs, however, is drastically reduced to Condition (E) in the RCs themselves.

Theorem 5. In a corrupt political environment, a $RC \in \mathcal{RC}$ is coalition-proof if and only if $\forall i, k \in C$

$$(E) \quad v_0 > |v_i - v_k|.$$

Proof. I first prove the sufficiency of Condition (E) by way of contradiction. Suppose there is $RC' \subset RC$ that is invasion-proof. To show the contradiction, I proceed in two steps.

First, I show that there exist group $i \in C \setminus C'$ and group $k \in C'$ such that $K_i > K_k$. Because RC' is invasion-proof, it is on the contract curve of C , accordingly to Theorem 1. In Figure 3, a, b, \dots, z are the possible characteristics of RC' . At a , the autocrat receives the highest income and the member groups in C' get the lowest income; at z , the opposite happens. However, all the characteristics other than z will be defeated by a sub-coalition of C' . For example, suppose characteristic a is realized when group m is excluded from C and characteristic b is realized when group q is excluded from C . Then group m can talk with the groups other than q to replace the latter by itself to raise those groups' income. Group m can also bribe the autocrat and, because of Condition (E), the alliance of group m and the autocrat can beat group q . Therefore, the only possible characteristic of C' is z

⁹ I abstract from the organization and the distribution of the costs of bribery because they are secondary to the current analysis.

and any change to the membership of C' will hurt its remaining members. Then, if for every $i \in C \setminus C'$ and every $k \in C'$, $K_i \leq K_k$, then it must be the case for $i \in C \setminus C'$ and $k \in C'$, $v_i \leq v_k$, because otherwise a replacement of a group $k \in C'$ by a group $i \in C \setminus C'$ will increase the income of the other groups in C' . However, the case $v_i \leq v_k$ and $K_i \leq K_k$ for every $i \in C \setminus C'$ and every $k \in C'$ violates A3 because it imposes a correlation relationship between political power and capital stock. Therefore, there must be at least an $i \in C \setminus C'$ and a $k \in C'$ such that $K_i > K_k$.

Next, I show that RC' is not invasion-proof. For that, identify $i \in C \setminus C'$ and a $k \in C'$ such that $K_i > K_k$ and replace group k by group i . Let the new RC be denoted by $RC'' = \{i\} \cup RC' \setminus \{k\}$. Its characteristic moves up along the contract curve toward a . The autocrat's income automatically increases, that is, $Y_0(RC'') > Y_0(RC')$. Because $K_i > K_k$, Lemma 1 guarantees that the sum of output also increases, that is, $Y_{C''} > Y_{C'}$. Therefore, for any perturbation $\{\tilde{Y}_j(RC')\}_{j \in RC'}$ of RC' , there is a perturbation of RC'' , for example, $\{\tilde{Y}_j(RC'')\}_{j \in RC''}$, such that $\tilde{Y}_j(RC'') \geq \tilde{Y}_j(RC')$, $\forall j \in C \setminus \{k\}$. This means that the alliance of group i and the autocrat, under Condition (E), can invade RC' , thus the contradiction.

To prove the necessity of Condition (E), assume that there are two groups $i, m \in C$, such that $v_i + v_0 \leq v_m$. Also, suppose $K_i > K_m$. Then, if group i is excluded by C' , group m can be the only group that group i can replace to build $RC'' = \{i\} \cup RC' \setminus \{m\}$, such that $Y_0(RC'') > Y_0(RC')$ (all other members of RC'' lose naturally). But $v_i + v_0 \leq v_m$ means that the alliance of group i and the autocrat cannot replace group m . Q.E.D.

[Figure 3 about here]

Similar to Theorem 3, a direct corollary of Theorem 5 is the following:

Theorem 6. In a corrupt political environment, $RC = N \cup \{0\}$ is the only URC if and only if Condition (E) holds for $\forall i, k \in N$.

The proof is similar to that of Theorem 3. Because Condition (E) is less stringent than Condition (D), a disinterested government can more easily emerge in a corrupt political environment than in a clean political environment. Apparently, Theorem 4 still holds. So

it is easier to obtain optimal economic output in a corrupt environment than in a clean environment. This result is paradoxical in light of the conventional wisdom that often advocates a cleaner political environment. The root cause is the lack of constitutional commitment in an autocracy. The autocrat has to rely on his or her coalition to rule. In a clean environment, the coalition has to solely rely on its political power to maintain stability, whereas in a corrupt environment, bribery allows for buying support from potential deviators. So politically, the coalition does not need to be as strong as in a clean environment.

One may think that a politically more equal society tends to produce a more inclusive URC and, thus, a higher economic output. The difficulty, though, is how to define political equality beyond Condition (E). The share of the pairs of political groups falling in the Equality Tube is a likely candidate for the measure of political equality. Subsequently, it will be called the Equality Index, or *EI*. However, a larger *EI* does not guarantee a more inclusive URC. For example, a society $N_1 = \{30, 3, 3, 3, 3, 3\}$ is more equal than a society $N_2 = \{30, 30, 25, 3, 3, 3\}$ because N_1 has an *EI* of 0.67 and N_2 has an *EI* of 0.40. In fact, two sub-societies in N_2 , $\{30, 30, 25\}$ and $\{3, 3, 3\}$ have members who satisfy Condition (E) only within their respective sub-societies. However, the URC for N_1 is $\{30; 10\}$, that is, the autocrat is captured by only one group, but the URC for N_2 is $\{30, 30, 25; 10\}$, which is obviously more inclusive. The problem with N_1 is that group 1 is overly strong in that none of its pairs with other groups falls in the Equality Tube. The following lemma strengthens the role of the strongest group:

Lemma 4. In a corrupt political environment, the strongest political group has to be in the URC unless it is the least wealthy group in the society.

Proof. By way of contradiction, suppose the strongest group, group m , is not in the URC. Then group m can pick up a group, group j , in the URC, such that K_j is smaller than K_m , and replace it. When that occurs, the total output in the coalition increases. Therefore, group m can offer a bribery scheme that beats any counter offer by the old URC. That is, the URC is not invasion-proof, which is a contradiction. Q.E.D.

To continue, I define sub-societies of equals as the following:

D11. In society N , $E \subset N$ is a sub-society of equals if every pair of its members satisfies Condition (E).

The number of all possible pairs in N is C_n^2 . Let E_M be the sub-society of equals that includes the strongest group of N , and let m be the number of its members. The ratio $EI = C_m^2 / C_n^2 = m(m-1) / n(n-1)$ increases in m/n for a fixed n and, therefore, can serve as an index of inclusiveness. Lemma 4 and the following theorem show that a larger EI implies a larger economic output for N .

Theorem 7. With a corrupt political environment, a society N will obtain a larger output if its EI increases.

Proof. According to Lemma 4, a URC has to include the strongest group; and according to Theorem 5, that URC includes all and only the members of E_M . Because a larger EI implies that more political groups are included in the URC, the total output of N increases. Q.E.D.

4. Case Studies

To test the theorems obtained in the two previous sections by rigorous multivariate analysis, one needs to obtain data about political power, wealth, coalition formation and output in many countries. To my best knowledge, there are no data measuring the distribution of political power and coalition formation. One of the reasons is that they are difficult to measure. As an alternative, I offer three cases studies to validate three most significant empirical predictions of the theorems: (T1) a more equal social-political structure is more likely to produce a more inclusive government that is able to adopt output-enhancing policies; (T2) a stronger government—up to the limit constrained by the society as a whole—is more likely to act in a disinterested fashion to advance societal interests even when that would hurt some social groups; and (T3) it is easier for the government to become more disinterested in a corrupt political environment than in a clean political environment for a given distribution of political power in the society. Those predictions are the most relevant in terms of the aim of the paper although they are not all the predictions that can be deduced from the theorems. While other cases are possible, I choose three cases that fit into my own regional expertise. KMT's land reform

in mainland China and Taiwan is intended to validate (T1); the CCP's economic reform in China is intended to validate (T1) and (T2), and its recent anticorruption campaign provides support to (T3); finally, clientelistic politics in the Philippines again validates (T1) and (T2).

4.1 The KMT's land reform in mainland China and Taiwan

The Kuomintang (KMT), or nationalist party, was the successor of Tong-meng-hui, the revolutionary organization led by Sun Yat-Sen against Imperial Qing. After the fall of Qing in 1911 and after more than a decade of chaotic rule by various warlords, Sun reorganized the KMT in 1924 to adopt the strategy of “allying with the Soviet Union and accommodating the communists” (*lian-e-rong-gong*) to defeat the warlords and to establish a true republic. Consistent with this strategy, he advocated the “land to tillers” policy. For that, he established the Department of Peasants in his party and allowed members of the CCP to dominate the department. In July 1924, the Academy of Peasant Movements was opened in Guangzhou with the aim to train leaders of peasant movements from all over the country. The academy was effectively controlled by the CCP, and Mao Zedong was the director of its sixth (and last) session (May–September 1926). However, Sun did not like the CCP's radical call for peasant movements to eradicate the landlord class by confiscating land and, if necessary, eliminating the class members physically. Instead, he advocated a peaceful approach to redistribute land from landlords to peasants. Unfortunately, he died one year after his *lian-e-rong-gong* policy was announced. The power of the KMT was shifted to its military commander, Chiang Kai-Shek, who led the Northern Expedition, the massive military campaign to defeat the warlords in northern China. Chiang held a conservative view about China. In the spring of 1927 when the Northern Expedition was about to succeed, he began to “clean up” CCP members in the KMT. As a result, he also alienated himself from the CCP sympathizers in his own party.

The period from 1927 to 1937 is often called the Golden Decade of the Republic of China because the country managed to reach remarkable economic output during that time. However, land ownership was concentrated, and by custom, tenants had to hand more than 50 percent of their crops to their landlords. According to surveys administered

by the KMT government, tiller-owners accounted for 41.7 percent of the country's farm households; in the south, the number was only 27.2 percent. The rest, 31.1 percent, were either landless farmhands or tenants (including half-tenants).¹⁰ Under the leadership of Chiang, the KMT government was willing to conduct a mild form of land reform. The Land Law, enacted in 1930, was set to reduce the rent paid by tenants by 25 percent, a pledge actually made by the KMT before 1927. Because tenants usually paid half of their harvest to their landlords, the law in effect put a ceiling of 37.5 percent on rent. However, nationwide implementation of the law had to wait until 1936, mostly because of the strong resistance from the landlords. For example, Zhejiang province tried to enforce the rent ceiling in 1932. The local landed gentry organized strong resistance (in a few cases even killed the government officials who tried to implement the law) and wrote a petition letter to Chiang, who had to cancel the effort on the basis that it had caused "unnecessary troubles" (Jia 2016). Implementation after 1936 was no better. After the Japanese armies invaded Shanghai in 1938, the entire country was involved in war; attempts of land reform were only confined to a limited number of localities, and none of them was long-lived (Chu 2017). After the surrender of Japan in August 1945, land reform efforts were resumed, but went nowhere again because of the approaching Civil War.

The best time for the KMT to implement land reform in mainland China was the Golden Decade. Historians have consensus views for the failure of land reform in this period. First, the KMT became a military and elitist party during this period. Chiang's clean-up disillusioned many faithful and progressive members of the KMT. After consolidating power, he banned mass movements. As a result, the number of ordinary members of the KMT declined by two-thirds in the initial several years after the clean-up, and military officers began to dominate the KMT (Chu 2017, 100). Many of the officers came from wealthier families in the countryside and, thus, were naturally against land reform. Second, local governments were dominated by the landed gentry. According to a study led by Chen Hansheng, a famous agricultural economist at that time, 91.3 percent of the 104 villages studied in Wuxi, Jiangsu province were headed by a landlord. (Gao, 1990). An official survey carried out in 1933 found similar patterns at the district level. For example, 70 percent of the districts surveyed in Shannxi and Henan provinces were

¹⁰ Yan (1955), pp. 262, 263.

headed by a landlord, and that number reached 89.9 percent in Wuxi, Jiangsu province (Gao 1990). Thus, land reform could be easily defeated at the grassroots level. Third, in so-called *su-qu* (Soviet Districts), the CCP maintained military resistance and carried out radical land redistributions. The KMT denounced this effort and called it a conduct of bandits. Its armies gave the redistributed land back to landlords whenever they regained control over a region. Its competition with the CCP prevented the KMT from taking quick moves on any meaningful land reform.

In summary, the KMT had the will to conduct at least a mild land reform during its rule in mainland China, but the country's social structure and the party's competition with the CCP prevented it from carrying out any meaningful reform. The purpose of Sun Yat-sen's reorganization of the KMT in 1924 was to remake the party into a truly revolutionary party that could lead China's transformation from a feudal society to a modern society, as well as free the country from any foreign repression. However, this course was abandoned by Chiang Kai-Shek after he controlled the party in 1927. The Chinese society was left intact. The old landed gentry entered the new government and effectively controlled local politics. Together with their family members and supporters in the KMT, particularly in the army, they could swing Chiang's decisions on land reform even if he still had the will to carry it out.

Taking the failure of land reform as one of the causes for its defeat in the mainland, the KMT began a thorough land reform in Taiwan soon after Chiang decided to retreat to the island in early 1949. The reform took three phases and lasted for four years. In the first phase, the rent ceiling of 37.5 percent was enforced. A total of 294,000 farm households, or 74.7 percent of tenants or half-tenants, were covered. In the second phase, *gong-di-fang-ling*, 61,104 hectares of land was confiscated from Japanese colonists and given to 121,953 farmers with a price of 2.5 times the annual harvest. Finally, in the third phase, the land to tillers policy was carried out. A total of 139,247 hectares of land was taken from landlords and given to 194,823 farmers by a price of 2.5 times the annual harvest. Landlords were compensated by the same price, but in the form of public utility bonds. In total, farm households that obtained land in the reform accounted for 45 percent

of all farm households on the island; and 243,803 hectares, or 35.5 percent of all private land, were given to tillers.¹¹

Land reform brought significant productivity gains to the Taiwanese agriculture. Between 1952 and 1968, agricultural output grew by an annual rate of 4.8 percent; 45 percent of this remarkable output came from total factor productivity.¹² Land reform also allowed the government to forge a new implicit contract with the farmers so it could extract much-needed capital from agricultural surplus. According to Lee (1971), 40 percent of Taiwan's industrial capital accumulation in the 1950s came from price scissors imposed on agriculture.

Because of its peaceful nature and significant results, land reform in Taiwan has been widely regarded as the most successful land reform in the world. Why was the KMT able to carry out such a thorough land reform in Taiwan despite its failure on the mainland? Chu (2017) provides an explanation based on the KMT-CCP competition. The KMT failed to take up the reform in mainland China because it was fully occupied by its military and ideological competition with the CCP. It took the reform in Taiwan, first, as a response to the lesson learned from its defeat in the mainland and, second, as a preemptive move to uproot the grassroots support that the CCP's sabotage efforts in Taiwan relied on.¹³

However, this explanation is inconsistent with the views of most historians about the failure of the KMT to conduct a mild land reform in the mainland during the Golden Decade. As for its reform in Taiwan, a competing explanation is the so-called foreign power hypothesis: the KMT government was a foreign power in Taiwan, and because it had no ties with the Taiwanese population, it then could conduct the reform against the will of the landed gentry (for example, Winkler and Greenhalgh 1988). The landed class did resist the reform, mostly through the provincial government and parliament that were largely staffed by local elites (Liao and Chu 2015). However, the brutal repression of the 2.28 Upheaval reminded the locals that the KMT still had iron teeth despite its defeat in

¹¹ Numbers in this paragraph are quoted from Table 3.1 in Chu (2017), p. 129.

¹² *Ibid.*, p. 131.

¹³ The CCP dispatched more than 1,000 cadres to Taiwan together with the KMT's retreating armies. Most of them were later captured and executed by the KMT government (Chu 2017, p. 101).

the mainland.¹⁴ In the end, land reform was carried out only with minor compromises (Liao and Chu 2015). Complementing the foreign power hypothesis, Woo-Cumings (1997) goes a step further to point out the role played by an amiable social structure in Taiwan (and in South Korea), paradoxically created by the Japanese colonial rule. The Japanese colonists intentionally restricted the output of the landed class in Taiwan (and South Korea) because they feared that this class would become a brewer for nationalist sentiments and would organize upheavals against colonial rule. According to Woo-Cumings (1997), “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” (p. 331). The absence of strong resistance from the population, together with its disconnection from the locals, enabled the KMT to behave in a truly disinterested fashion in its push for land reform in Taiwan. In contrast, it was deeply entrenched by local interests that supported its competition with the CCP in mainland China. Therefore, KMT’s will to conduct land reform could not be carried out in the mainland.

4.2 The CCP’s economic policy in the reform era

The first thirty years of the People’s Republic of China were mainly characterized by economic failures, political turmoil, and human tragedies. Nevertheless, through large and often ill-conceived social engineering projects—a brutal land reform, dismantlement of the capitalist economy in the city, and finally the Cultural Revolution—this period completely leveled out Chinese society both physically and psychologically. By 1978, the income Gini coefficient was only 0.28 (Riskin, Zhao, and Li 2002), and egalitarianism had been firmly accepted by people as a principle of distribution, which had to wait for the introduction of the market economy to gradually erode. The absence of strong social classes reduced the CCP’s incentives to rely on any social group to defend its power. In addition, it allowed the pragmatic leadership, led by Deng Xiaoping, to forge a grand ruling coalition within the party that departed from Mao’s radicalism and redirected the

¹⁴ On February 28, 1947, people in Taipei staged a large-scale protest against the police’s killing of a merchant in a local market the day before. The protest shortly became a popular upheaval. The KMT dispatched armies from the mainland and brutally crushed it. The incident became a scar in Taiwan’s modern history.

party's course toward economic output. Its disinterestedness toward society, fostered by an equalized social structure, allowed the CCP to adopt selective but output-enhancing policies. It is beyond the scope of this paper, though, to provide a full account and analysis of those policies. Instead, this paper reviews two significant examples in which audacious policies defined China's course of extraordinary output before the Global Financial Crisis.

The first example is China's open-door policy. It 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 it was vital for China to reach the outside world and to learn to run a market economy. The export-led output 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 output of the coast. The coast's share of the central government's investment increased from 39.5 percent in 1953–1978 to 53.5 percent in 1979–1991. It dropped a bit in the 1990s, but picked up again to 52.9 percent in 1999–2005 (Yao 2008). In China's heydays of export, nearly 90 percent came 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 World Trade Organization (WTO). It was widely believed before China's accession that it would have to undergo painful structural adjustments in agriculture, automobile industry, and services if it joined the WTO. Amid the debate, the central government actually sped up its negotiations with WTO members, especially the United States. Accession to the WTO greatly accelerated China's output of exports, which was one of the most important engines for the country's output and employment before the Global Financial Crisis. Exports grew by an annual rate of 28.9 percent between 2001 and 2008, whereas the rate was 14.5 percent in the previous decade (Tong 2008).

The second example is the privatization of state-owned enterprises (SOEs) in the late 1990s and early 2000s. Between 1995 and 2005, when privatization was at its highest, the SOE sector reduced 40 percent of its employment. Nearly 50 million SOE workers lost

their jobs, with more than 20 million workers losing their jobs in 1998 alone.¹⁵ Although this large-scale unemployment was not caused by privatization but rather a result of worker redundancy in the SOEs,¹⁶ both public protests and academic debates pointed fingers at privatization. This put the CCP in a conundrum: if it supported privatization, it would lose the support of its own power base—the working class—but if it gave up privatization, transition to the market would come to a halt. So, the CCP quietly continued privatization and, in the meantime, did everything it could to reemploy laid-off workers. This strategy 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.

Accompanying high economic output, Chinese society has been inevitably differentiated. The income Gini coefficient has increased dramatically. It reached 0.52 in 2010, although it has begun to decline slightly in more recent years. Wealth has been more unevenly distributed; the 10 percent richest families had 60 percent of the country's wealth in 2014. China now only trails the United States in terms of the number of billionaires, while close to one-third of its population still lives on less than \$2 per day.¹⁷ Together with social differentiation, business–political alliances also emerged, particularly in the two decades before China's current president and the general party secretary Xi Jinping took power in 2012. Factions emerged within the party, each with its own political and business bases, which made a ruling coalition within the party much more difficult than before. The strategy adopted by Xi's two predecessors, Jiang Zemin (1989–2002) and Hu Jintao (2002–2012), was to tolerate corruption in the party. Corruption allowed weak factions to stay in the ruling coalition, which enhanced the top leaders' ruling position. The new problem, however, was that the factions had diverse interests and resisted any reform that could take their privileges away. One of the factions was the SOEs (including state-owned banks and other financial institutions) left over from the last round of the privatization program. During China's last round of

¹⁵ All figures come from Shen and Yao (2008), Chapter 4.

¹⁶ Huang and Yao (2007) even find that privatization slowed down employment retrenchment because of privatized firms' better performance than SOEs.

¹⁷ Income and wealth figures come from the authors' own calculations based on the survey data provided by the China Family Panel Studies, which are available at www.iSSS.edu.cn.

macroeconomic booming cycle (2003–2010), SOEs became stronger and, through their alliance with their supporters within the party, were able to swing the party's decisions. The resistance within the party was one of the major obstacles that stalled the reform process in the first decade of the new century.

After assuming power in 2012, Xi started a massive anticorruption campaign in the party. Its purpose was not just to deter corruption, but also to get rid of the factions and to break up the business–political alliances. While it seems that he has succeeded in fulfilling that purpose, the old problem of his predecessors has emerged again: can he forge and sustain a grand coalition in the party when high rents are present but not allowed to be shared by members of that coalition? Xi's strategy has been to strengthen top-down disciplines in the party. However, that plan may suffocate the more vibrant elements in the party apparatus that at times have been innovative in solving China's hard problems. Indeed, evidence shows that the anticorruption campaign itself has eliminated more capable officials while protecting officials who are closer to the current members of the standing committee (Xi, Yao, and Zhang 2017). While it is probably an overstatement that China's recent economic slowdown has been one of the consequences of the anticorruption campaign, Xi's rigid leadership style perhaps is defeating some of his own ambitions, such as to reach a more balanced and sufficient development, as stated in his opening speech to the 19th party congress held in October 2017. The classical dilemma facing an autocracy is still unsolved by the CCP: how does it sustain a grand ruling coalition in a diverse society without resorting to corrupt politics?

4.3 Clientelism in the Philippines

Compared with the tremendous economic success of its East Asian neighbors, the output records of the Philippines in the last half century have to be described as a tragedy. In the early 1960s, its per capita income was 5 times that of China's; by 2010, the fortune was reversed by 12.5 times—China's per capita income became 2.5 times that of the Philippines'.¹⁸ Some of the usual culprits for stagnant output in developing countries cannot explain the Philippines' failure. Unlike many countries that have been plagued by the resource curse, the Philippines is not a particularly resource-rich country. It is not

¹⁸ Penn World Table 9.0.

ethnically divided either; except in Mindanao, which hosts a Muslim population, the country is homogenously Catholic, thanks to an early Spanish colonial rule. The Marcos dictatorship (1965–1986) did cause damages to the Philippine economy, but except during its past several years, output during this period was not particularly worse than in other periods. The fundamental political economy cause for slow output in the Philippines has to be found in its social structure and the patron–client politics stemming from it. Clientelism has been long identified as one of the defining features of Philippine politics (Sidel 1989; Quimpo 2009; Teehankee 2013; Cruz, Labonne, and Querubín 2017), and its root can be traced back to Spanish colonial rule.

As in their colonies in Latin America, Spanish colonists also established large plantations in the Philippines. This created a strong class of large land owners. American authorities wanted to make a change to the class when the United States took the Philippines from the Spanish in 1901. The Philippine Bill of 1902 introduced a fixed private ownership limit of 16 hectares for individuals and 1,024 hectares for corporations. However, this restriction was not seriously enforced (Elvinia 2011). Under the doctrine of self-governance, the American authorities introduced local elections to the country and later limited the power of the presidency when the Philippine Commonwealth was created. However, local elections were very much crippled by the landowner-dominated social structure. Large landowners became powerful political patrons; personal ties and favor exchanges defined local politics. This political structure has survived to the present day; local elections are still dominated by family ties (Cruz, Labonne, and Querubín 2017). However, political decentralization has left the president in a weak position; clientelism also dominates national politics. For that reason, some authors dub the Philippine political system as petty sultanism (Sidel 1989). Except in a few cases (such as Joseph Estrada), presidents after Ferdinand Marcos all came from powerful political families. Political parties are loosely organized; many legislators switch to the party of the winning president when election results are confirmed (Teehankee 2013). It is not surprising to find that corruption has become an endemic problem in Philippine politics. However, unlike in China where corruption is often believed to “grease the wheels” for faster economic output, corruption in the Philippines only serves to cement the patron–client networks.

Clientelism is detrimental to economic output because it entails that politicians are tied to a small fraction of the population—basically their clients who can provide political and financial support—so they are unable to adopt policies that foster overall output. That is, they are biased. In the Philippines, the most telling example is the prolonged history of land reform. The first attempt of land reform was the 1933 Rice Tenancy Act, which stipulated a 50-50 sharing arrangement between the tenant and the landlord, a 10 percent interest ceiling on loans issued to tenants, and the prohibition of dismissal of tenants on tenuous grounds (Elvinia 2011). However, the adoption of the act was deferred to the decision of municipal authorities, which were heavily influenced by landowners. As a result, the act failed to get implemented. True land reform had to wait until 1955 when the Land Reform Act was passed. The act created the Land Tenure Administration, which acquired and distributed land exceeding 144 hectares. However, only limited progress was made in the Marcos period. Serious land reform only began after the Aquino administration introduced the Comprehensive Agrarian Reform Program (CARP) in 1988. The initial plan for CARP was to transfer 10.3 million hectares, or one-third of the country's total amount of land, to landless farmers, who accounted for 56 percent of the population dependent on agriculture (Elvinia 2011). Later on, the target was reduced to 8.169 million hectares because of some technical reasons. Close to 3 million hectares would be taken from private owners. The target was missed after ten years of implementation, and the program was extended for another ten years to 2008 when 1 million hectares were still waiting for redistribution. In 2009, the program was extended again to 2014 and renamed Comprehensive Agrarian Reform Program Extension with Reforms.

Compared with the land reform carried out in Taiwan, land reform in the Philippines has not only progressed very slowly, but it has also put the tenant in an unfavorable position under the guise of a market-based approach to land transfers. The tenant has to negotiate the price with the landlord, to provide a down payment of 25 percent of the price, and to carry a 6 percent interest rate on the remaining payment for the next 30 years. For landless and poor farmers, getting the land entails a huge burden. No wonder CARP has had a mixed record of poverty reduction (Fuwa 2000).

Researchers have almost unanimously pointed out that a strong landed class and the political dynasty associated with it has been the major reason for the failures of land reform in the Philippines. Even the strongest advocates of land reform could not break away from it. For example, President Maria Corazon Aquino, a strong supporter for land reform, had to take care of her extended family when the family's estate, Hacienda Luisita, was targeted for land redistribution. Captured by strong patron-client networks, electoral politics is powerless to advance the interests of the poor, let alone the interests of society at large. As stated by Bello and others (2005), "Thus has emerged the great Philippine paradox: an extremely lively play of electoral politics unfolding above an immobile class structure that is one of the worst in Asia" (p. xvi). Opposite its East Asian neighbors, the Philippines has become an "anti-development state" (Bello and others 2005).

In summary, the three cases reviewed in this section have well illuminated the three predictions of my model. First, skewed social-political structure prohibits the state from taking actions conducive for long-term development even if the state has the will to take the actions. The state is easily captured by the stronger social-political groups when long-term development needs to sacrifice interests. This is manifested by the inability of the KMT in mainland China and the Philippines throughout its history to take serious land reform. However, a more equal social-political structure is more conducive for the state to behave as if it were disinterested. The CCP in the early period of China's reform era provides an example. Second, a more autonomous state whose personnel have no personal ties with the society is more likely to act in a disinterested manner to push for long-term output. The KMT in Taiwan is an example. Third, a stronger state is more likely to seek to stay disinterested. The CCP under the leadership of Xi Jinping provides an affirmative example for this claim, while the Philippines provides proof of the inverse. On the one hand, despite its failure to address the ultimate challenge facing an autocracy, Xi's anti-corruption campaign, backed by the CCP's strong hold of power, was able to break the political-business alliances in the party. On the other hand, the Philippine states, featured by a weak presidency dependent on patronage to gain support, can only move slowly on reforms that often target strong political families. Fourth, in a society featured by high rents—either created by high economic output or complex regulations—even a

strong state, without resorting to corrupt politics, may not be able to sustain a grand coalition that can fulfill all its purposes. The CCP's history in the past twenty years has attested it.

5. Conclusion

This paper studies how political equality in a society can lead to inclusive political and economic institutions in autocracies. Its results highlight the role of social revolutions in paving the way for sustainable output in a country. The high performers after World War II are concentrated in East Asia, where revolution either happened endogenously (in the case of mainland China) or was imposed by outsiders (Taiwan, South Korea, and to some extent Japan). Notwithstanding their colorful ideological faces, revolutions in East Asia have accomplished the same thing, that is, to get rid of the old social-political structure that was rooted in the agrarian economy and to set up a new, and often more equal, social-political structure that is friendly to industrial output. Revolutions in East Asia have been an integral part of the modernization process that started in Europe in the 17th century. Many European countries had revolutions. Historical studies have found that those revolutions played a critical role in promoting capitalist output in Europe. The classical work by North and Weingast (1989) shows that the Glorious Revolution ignited England's capitalist output by establishing constitutional rules that served as a commitment device for the king to protect the interests of the commercial class. Acemoglu and others (2009) provide an interesting study about the consequences of the French invasion in the aftermath of the French Revolution, "French invasion removed the legal and economic barriers that had protected the nobility, clergy, guilds, and urban oligarchies and established the principle of equality before the law." (abstract) Consequently, the areas once occupied by the French armies experienced a faster pace of urbanization and economic output in later years.

In contrast, none of the low performers in Asia had a genuine revolution. The case study of the Philippines presented in Section 4 offers one example. Without revolution, the old social-political structure survived and continued to protect strong social groups whose interests are in the agrarian economy. In addition, personalized and status-based social relations have been brought into and crippled modern political life; the resulted

clientelistic politics hinders the expansion of the capitalist economy. A seeming outlier is India, which did not have a social revolution, but has managed to reach respectable output in the past three decades. However, India's output has been more brought about by its vibrant states and much less by the federal government, which many commentators believe is dysfunctional. Political fragmentation, often delineated by religion and caste, has prevented India from acting on a more meritocratic basis.¹⁹ The hidden costs of India's old social structure probably are underestimated. India will have a brighter future if this old structure is displaced by a modern structure.

¹⁹ For example, when commenting on the difference between China and India, two leading Indian scholars, Devesh Kapur and Avind Subramanian (who is the current economic advisor to the Indian Prime Minister) said, "It is well worth remembering that the difference in the economic performance between China and India is not the extent to which each has turned to markets, because both have. Rather, the Chinese Communist Party-state, as an economic institution, is more responsive, more meritocratic, and more skilled in human capital than the Indian state. Rebuilding the Indian state on firmer foundations may well determine not just what future India will have, but whether it has a future." *Business Standard*, September 6, 2013.

References

- Acemoglu, Daron, Gregory Egorov, Kanstantin Sonin. 2009. "Coalition Formation in Non-Democracies." *Review of Economic Studies* 75 (4): 987–1009.
- Acemoglu, Daron, Davide Cantoni, Simon Johnson, and James Robinson. 2009. "The Consequences of Radical Reform: The French Revolution." *NBER Working Paper* 14831. National Bureau of Economic Research, Cambridge, MA.
- Acemoglu, Daron, Suresh Naidu, Pascual Restrepo, and James Robinson. 2014. "Democracy Does Cause Output." *NBER Working Paper* 20004. National Bureau of Economic Research, Cambridge, MA.
- Acemoglu, Daron, and James Robinson. 2012. *Why Nations Fail?* New York: Crown Business.
- Alesina, Alberto, and Dani Rodrik. 1994. "Distributive Politics and Economic Output." *Quarterly Journal of Economics* 109 (2): 465–90.
- Aumann, Robert. 1959. "Acceptable Points in General Cooperative n -Person Games." In *Contributions to the Theory of Games IV*, edited by Albert William Tucker and Robert Duncan Luce. Princeton, NJ: Princeton University Press.
- Bello, Walden, Marissa de Guzman, Mary Lou Malig, and Herbert Docena. 2005. *The Anti-Development State: The Political Economy of Permanent Crisis in the Philippines*. London: Zed Books.
- Benabou, Roland. 2000. "Unequal Societies: Income Distribution and the Social Contract." *American Economic Review* 90 (1): 96–129.
- Bernheim, Douglas, Bezalel Peleg, and Michael Whinston. 1987. "Coalition-Proof Nash Equilibria: I. Concepts." *Journal of Economic Theory* 42: 1–12.
- Besley, Timothy, and Masayuki Kudamatsu. 2007. "Making Autocracy Work." London School of Economics and Political Science Suntory and Toyota International Centre for Economics and Related Disciplines Research Paper No. DEDPS 48, London.

- Boix, Carles, and Milan Svoblik. 2013. "The Foundations of Limited Authoritarian Government: Institutions, Commitment, and Power-Sharing in Dictatorships." *Journal of Politics* 75 (2): 300–16.
- Bueno de Mesquita, Bruce, Alastair Smith, Randolph Siverson, James Morrow. 2004. *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- Chen, Ting, James Kung. 2017. "Busting the 'Princelings': The Campaign against Corruption in China's Primary Land Market." Social Science Division, Hong Kong University of Science and Technology.
- Chu, Wan-wen. 2017. *The Origin of Taiwan's Post-War Economic Development* (in Chinese). Taipei: Academia Sinica.
- Cruz, Cesi, Julien Labonne, and Pablo Querubín. 2017. "Politician Family Networks and Electoral Outcomes: Evidence from the Philippines." *American Economic Review* 107 (10): 3006–37.
- Elvinia, Jose. 2011. "Is Land Reform a Failure in the Philippines? An Assessment on CARP." In *The Limit of Good Governance in Developing Countries*, edited by Hirotsumi Kimmura, Aser Javier, and Ake Tangsupvattana. Yogyakarta, Indonesia: Gadjah Mada University Press.
- Esteban, Joan, and Debraj Ray. 2006. "Inequality, Lobbying, and Resource Allocation." *American Economic Review* 96 (1): 257–79.
- Feng, Yingjie, and Yang Yao. 2015. "The Middle-Income Trap and China's Output Prospect." Chapter 6, In *Deepening Reform for China's Long-Term Output and Development*, edited by Ross Garnaut, Cai Fang, and Ligang Song, chapter 6. Acton: Australian National University Press.
- Fuwa, Nobuhiko. 2000. "Politics and Economics of Land Reform in the Philippines." Background paper prepared for *Dynamism of Rural Sector Output: Policy Lessons from East Asian Countries*, World Bank, Washington, DC.
- Gao, Lu. 1990. "On the Fundamental Causes of Kuomintang's Failure of Land Reform in the Mainland" (in Chinese). *Anhui Shixue* 3: 80–83.

- Ge, Wei. 1999. *Special Economic Zones and the Economic Transition in China*. Singapore, New Jersey, London, and Hong Kong: World Scientific.
- Gehlbach, Scott; and Phillip Keefer. 2011. “Investment without Democracy: Ruling-Party Institutionalization and Credible Commitment in Autocracies.” *Journal of Comparative Economics* 39 (2): 123–39.
- . 2012. “Private Investment and the Institutionalization of Collective Action in Autocracies: Ruling Parties and Legislatures.” *The Journal of Politics* 74 (2): 621–35.
- Glaeser, Edward, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2004. “Do Institutions Cause Output?” *Journal of Economic Output* 9: 271–303.
- Hassler, John, José V. Rodríguez Mora, Kjetil Storesletten, and Fabrizio Zilibotti. 2003. “The Survival of the Welfare State.” *American Economic Review* 93 (1): 87–112.
- Huang, Lingwen, and Yang Yao. 2007. “SOE Restructuring and Employment: Evidence from 11 Cities” (in Chinese). *Journal of Economic Research* 42 (3): 57–69.
- Jia, Qinhan. 2016. “The Formation of the Gradual Land Reform Policy of the Nanjing Nationalist Government” (in Chinese). *Jianghai Xuekan* 4: 177–83.
- Lee, Teng-hui. 1971. *Intersectoral Capital Flows in the Economic Development of Taiwan, 1895–1960*. Ithaca, NY: Cornell University Press.
- Liao, Yen-Hao, and Wan-Wen Chu. 2015. “A Middle-of-the-Road Land Reform—How Taiwan Implemented ‘Land-to-the-Tillers’ Program?” (in Chinese). *Taiwan Social Science Research Quarterly* 98: 69–145.
- McGuire, Martin, and Mancur Olson. 1996. “The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force.” *Journal of Economic Literature* 34 (1): 72–96.
- North, Douglass, and Barry Weingast. 1989. “Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth Century England.” *Journal of Economic History* 49 (4): 803–32.
- Olson, Mancur. 1982. *The Rise and Decline of Nations*. New Haven, CT, and London: Yale University Press.

- Quimpo, Nathan. 2009. "The Philippines: Predatory Regime, Growing Authoritarian Features." *The Pacific Review* 22 (3): 335–53.
- Renzo, Marina Azzimonti. 2007. "On the Dynamic Inefficiency of Governments." Manuscript.
- Riskin, Carl, Renwei Zhao, and Shi Li. 2002. *China's Retreat from Equality*. Ann Arbor, MI: The University of Michigan Press.
- Shen, Yan, and Yang Yao. 2008. *CSR and Competitiveness in China*. Beijing: Foreign Languages Press.
- Sidel, John. 1989. "Beyond Patron-Client Relation: Warlordism and Local Politics in the Philippines." *Kasarinlan: Philippine Journal of Third World Studies* 4 (3): 19–30.
- Skocpol, Theda. 1979. *States and Social Revolutions*. New York: Cambridge University Press.
- Svolik, Milan. 2009. "Power Sharing and Leadership Dynamics in Authoritarian Regimes." *American Journal of Political Science* 53 (2): 477–94.
- Teehankee, Julio. 2013. "Clientelism and Party Politics in the Philippines." In *Party Politics in Southeast Asia: Clientelism and Electoral Competition in Indonesia, Thailand, and the Philippines*, edited by Dirk Tomsa and Andreas Ufen, chapter 10. London and New York: Routledge.
- Tong, Jiadong. 2008. "Exports and Economic Output in China." Paper presented at the Globalization and the Chinese Economy conference, Ningbo, China, November 17.
- Winkler, Edwin A., and Susan Greenhalgh, eds. 1988. *Contending Approaches to the Political Economy of Taiwan*. New York: M.E. Sharpe.
- Woo-Cumings, Meredith. 1997. "The Political Economy of Output in East Asia: A Perspective on the State, Market, and Ideology." In *The Role of Government in East Asian Economic Development: Comparative Institutional Analysis*, edited by Masahiko Aoki, Hyung-Ki Kim, and Masahiro Okuno-Fujiwara. Oxford: Clarendon Press.

Xi, Tianyang, Yang Yao, and Qian Zhang. 2017. "Capability versus Loyalty: The Dilemma of China's Anti-Corruption Campaign." Manuscript.

Yan, Zhongping. 1955. *Selected Statistical Materials of China's Modern Economic History* (in Chinese). Beijing: Science Press.

Yao, Yang. 2008. "The Political Economy of Government Policies toward Regional Inequality in China." In *Reshaping Economic Geography in East Asia*, edited by Yukon Huang and Alessandro Magnoli Bocchi. Washington, DC: World Bank.

Figure 1. Conflicts and mutual improvements in a RC

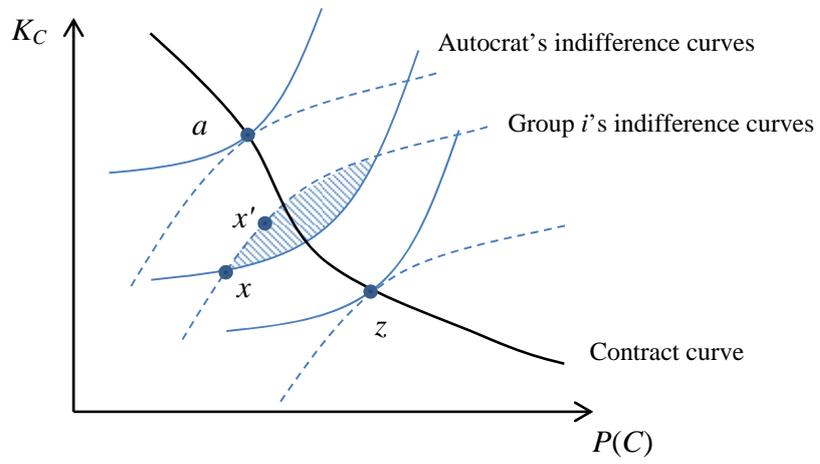


Figure 2. The Equality Tube

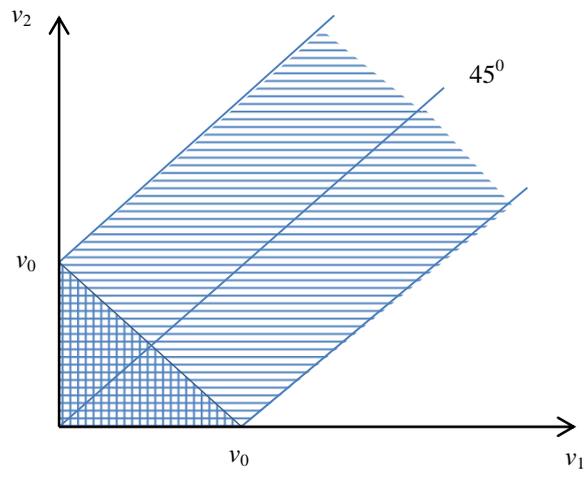


Figure 3. Invasion-proof Sub-Coalitions

