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Koo, Bon Sang

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**Three Essays: Elections, Legislatures, and Ideal
Principles**

A dissertation submitted in partial satisfaction
of the requirements for the degree
Doctor of Philosophy in Political Science

by

Bon Sang Koo

2014

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ABSTRACT OF THE DISSERTATION

Three Essays: Elections, Legislatures, and Ideal Principles

by

Bon Sang Koo

Doctor of Philosophy in Political Science

University of California, Los Angeles, 2014

Professor Barbara Geddes, Chair

Essay I: What differences in public policy can be made by an establishment of a legislature through an election in authoritarian regime? In particular, how high tax rates can be formed in authoritarian regimes with a legislature? Paying attention to a legislature's role of a signal which conveys information about dictator's economic policy preferences to capital owners, this essay revisits Escribà Folch's simple signaling game. By relaxing some restrictive assumptions about dictator types, and considering the dictator's capability of achieving his tax rate through the legislative process, the model gives answers to some empirical puzzles: 1) why some dictators are willing to maintain the legislature formed through elections; and 2) why capital owners would move their mobile assets abroad in some conditions even when a dictator allows a legislature to be established through a competitive election. The model claims that a dictator who is not tax-benevolent has an incentive to misrepresent his actual tax rate, and the probability is inversely associated with his capability in the legislature. After observing the legislature not dissolved, capital owners who believe the dictator is not tax-benevolent are not willing to move their mobile assets away. On the other hand, after observing the legislature maintained by a dictator who is less capable of achieving his tax rate, capital owners consider moving their mobile assets away only when they believe

that the dictator is tax-benevolent. Thus, it is more likely to see relatively low tax rates under capable dictatorships with legislatures. It is ironical that dictators who inherently have low tax rates to invigorate the economy by inducing a higher level of investment cannot enjoy the benefits of maintaining (or creating) a legislature. Case studies of two military regimes in Korea (1961–1987) demonstrate that the predictions made by the theoretical model are empirically supported in the Korean cases.

Essay II: Assuming that electoral incentives of three political actors (individual legislators, a ruling party, and a president) may not be aligned with each other in common institutional settings, this essay attempts to construct an integrated theory about the relationship between the allocation of intergovernmental grants and the political actors. It empirically tests three hypotheses derived from the theory by examining the case of the *Special Local Allocation Grants* in Korea (2005–2006). To properly capture regional variation in the allocation, this essay employs the multilevel linear regression model in the Bayesian framework. First, the individual legislator’s membership of the specific committee to monitor the execution of the intergovernmental grants is positively associated with the amount of the grants, which supports the *Legislators’ capability hypothesis*, as in the classical regression models. Second, vote margin at the district level is positively associated with the amount of the grants, which provides strong evidence against the *Unstable Electoral Districts Hypothesis*, however. The result from Bayesian multilevel linear model supports the *Unstable provinces hypothesis* which states a significant positive association between the amount of intergovernmental grants delivered at the province level and being an electorally unstable province within a broader region in which voters are motivated by their regional identities even after controlling for the need-based criteria. It implies that it is more efficient to target an electorally unstable province even within a supporter region because voters affiliated with a regional (or ethnic) identity in the electorally stable province may

not resent the allocation of grants even if they are not the main beneficiaries. Consequently, the distribution of the grants at the higher level can be decided by the efficient targeting strategy, whereas the grants tend to be delivered to strong supporters at the district level. These statistical results are consistent with the ideas that this essay adopts. During the period under investigation the liberal president who could not be reelected by the constitution intended to secure his key policies after his retirement. To help his successor from his faction to earn more votes in the future presidential election, he was willing to allocate considerable amount of government resources to some opposition districts, which may not be completely aligned with the target strategy of the ruling party who sought to maximize the number of seats in the National Assembly under Single-Member District Plurality rule. Regardless of their respective party lines the specific committee members who wanted to be reelected attempted to deliver more grants to their own districts.

Essay III: Why do some rising powers unilaterally declare an ideal ordering principle against regional powers deeply attached to existing principles although it is not likely to be realized in the near future? Under what circumstances can such an ideal principle be successfully implemented in the region or escalate into an armed conflict? This paper aims to form a game-theoretic model of bargaining between two rival states with potentially incompatible ordering principles, and provide solid evidence from U.S.-Japanese conflicts in Northeast Asia in the early twentieth century. Constructed on two-sided uncertainty, the model coherently explains why the United States, a new external force in Northeast Asia, was deeply attached to the Open-Door principle as a practically efficient option in bargaining with Japan, a regional power, which adhered to the partition principle, but the potential conflict escalated into a war in the end. Fifteen historical cases from 1899 to 1941 strongly support the predictions made by the model.

The dissertation of Bon Sang Koo is approved.

Jeffrey B. Lewis

Patrick Heuveline

Barbara Geddes, Committee Chair

University of California, Los Angeles

2014

To my parents, and Ji Yean

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VITA

1996	B.A. (Political Science & International Studies), Yonsei University, Seoul, Korea.
1996–98	M.A. (Political Science), Yonsei University, Seoul, Korea.
1998–2001	Information and Education Officer, the Korean Air Force, Korea
2005–2007	M.A. (Politics), New York University, New York.
2008–2012	Teaching Assistant, Department of Political Science, UCLA.
2012–2013	M.S. (Statistics), UCLA.
2012–2013	Research Assistant, Department of Political Science, UCLA.

Part I

**A Simple Model of Authoritarian Regime Survival,
Legislatures, and Tax Rates: Evidence from Two Korean
Military Regimes, 1961–1987**

CHAPTER 1

Introduction

We have been witnessing both an increasing trend in democracy and a diminishing tendency of autocracies over the last 20 years. Do these ongoing trends show a convergence toward democracy? Apparently, it seems right, but it is worthwhile to pay attention to an increasing proportion of a subtype of autocracies, *electoral autocracies*, defined as “the regimes do not ban the opposition, but allow it to organize into independent political parties and contest elections” (Magaloni, 2010)¹ Most of the electoral authoritarian regimes also have their own legislatures composed of members chosen by elections (Morse, 2012).²

Now we can raise a series of serious questions as follows: Why do authoritarian leaders create or maintain legislatures that may constrain themselves? Under what circumstances do they have an incentive to establish or maintain a legislature? What differences in public policy can be made by the establishment of a legislature in authoritarian regime? In particular, does a legislature itself make any difference in tax rates in authoritarian regime? This project claims that theoretical models that attempt to answer such questions should begin by considerations of dictators’ concern over their regime survival because losing power is more hazardous in autocracies than in democracies. While changes of chief executives in democracies occur through consequent elections or other regularized procedures,

¹This is shown in Figure 1.1.

²This category includes “hegemonic regimes” in which multiparty elections are little more than window dressing (e.g., Singapore, Uzbekistan, Mexico in the 1960s), as well as “competitive authoritarian” regimes in which elections generate at least some uncertainty (e.g., Malaysia, Kenya, Senegal, Russia, Ukraine, Gabon, Mexico after 1988, among many others (Levitsky and Way, 2002).

FIGURE 1 Electoral Autocracies in the World, 1950–2000

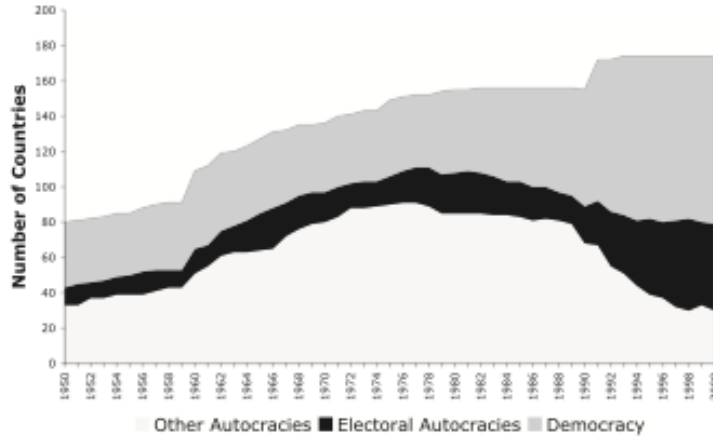


Figure 1.1: This figure displays the number of electoral autocracies in the world from 1950 until 2000 (Source: Magaloni (2010, p.752)). To determine whether a country is democratic or autocratic, she used the update to 2000 of Przeworski et al. (2000) classification of political regime from Golder (2005). Obviously, the proportion of democracy has increased since the early 1990s while that of autocracies has decreased. However, the proportion of electoral autocracies has increased abruptly.

a ruler can be changed under most dictatorships by violent ways such as coup, assassinations, or mass upheavals (Przeworski et al., 2000).³ In other words, since the cost of regime change to rulers in authoritarian regime is much higher than that to incumbents in democratic regime via free and competitive elections, authoritarian leaders would seriously take the risk of regime change into account. Therefore, it is reasonable to conjecture that inherent uncertainty of succession

³Authoritarian leaders may withdraw through negotiated agreements to hold fair, competitive elections. For instance, faced with the steady mass protests, President Chun Doo-hwan allowed his successor, Roh Tae-woo, to pronounce the 6.29 Declaration which promises to revive a direct presidential election in June, 1987.

and the high cost of regime change in autocracies generate an incentive to balance tax rates to possess funds for authoritarian control and economic performances to relieve the ruled. Legislatures may be an efficient tool to provide information about proper tax rates.

Boix and Svolik (2009) explain that institutions such as legislatures help an authoritarian regime survival by promoting power-sharing between a dictator and his allies (p.2). For a dictator faced with the allies with a credible threat of a rebellion, a legislature helps lower the risk of collective actions such as coups, plots, or revolutions by reducing asymmetries of information caused by the secrecy in authoritarian governance (p.1). That is, since a legislature can relieve commitment and monitoring problems, the allies who can credibly threaten the dictator but recognize that a rebellion is costly also prefer the establishment or maintenance of a legislature to nonexistence of such institutions (p.2).⁴

It is noted that Boix and Svolik's model is constructed on the assumption that a dictator is threatened only by a rebellion by his allies or inner circle members. However, it is reasonable to consider the possibility that dictator's choices of public policy are affected by crucial players outside the ruling group (e.g., opposition political parties, militant student movement groups). Escribà Folch (2003) provides an intuitive game-theoretic model regarding the establishment of a legislature and a tax rate as a dictator's choice by introducing capital owners as a main player to the model. His model is characterized as a signaling game that consists of a sender and a receiver who is sent a message from the sender (Banks, 1991; Cho and Kreps, 1987; Sobel, 2007). It is built on an interesting, reasonable assumption that despite asymmetric information capital owners as a key player can credibly threat to move their assets abroad in order to bring more

⁴Due to the secrecy dictator's allies are not informative enough to monitor him. Such information asymmetry provides the dictator with an incentive to violate the power-sharing agreement. The dictator and his allies benefit from establishing political institutions that would alleviate the dictator's moral hazard (p.1). Regular interaction between them in bodies with respected participation and decision rules results in greater transparency among those in power and thus prevents unnecessary rebellions (p.2).

favorable outcomes (e.g., tax exemptions for exporters, favorable taxes on capital gains, lower corporate income tax rates) even under extreme autocracies. In particular, capital owners have a strong leverage to bargain with a dictator who seriously considers anticipated risks of losing office in case massive outflows of capital can seriously hurt the national economy.⁵ Escrià Folch's model predicts that the higher the proportion of mobile capital and dictator's discount factor (or the longer his time-horizon), the higher the probability of creating a legislature, which results in a relatively low tax rate. This model seems more pertinent to authoritarian regime survival in the era of globalization that allows capital owners to be more autonomous.

Nevertheless, Escrià Folch's model is restricted by some basic assumptions. Some of the multiple equilibria that the model provides are not feasible in real cases. His articulate predictions are also derived mainly from the limited assumptions about dictator types. Capital owners are uncertain over a dictator's type specified by his tax rate and his capability of achieving it in the legislature. By relaxing the assumptions and considering such uncertainty, this paper extends his model to authoritarian regime where there exist capital owners who are autonomous enough to affect the authoritarian leader's choice of public policy. Hence the generalized model is expected to show under what circumstances authoritarian leaders faced with strong capital owners have an incentive to maintain the existing legislature formed through free legislative elections, how capital owners respond to dictator's choices under uncertainty, and how macroeconomic indices change by their choices.

This essay proceeds as follows. In chapter 2 I will express the basic logic behind the model after carefully reviewing Escrià Folch's model. I will describe players, payoffs, the structure of the game, and the relaxation of some restrictions given by

⁵Escrià Folch implicitly assumes that the fraction of mobile capital $(1 - \theta)$ is exogenous to authoritarian countries where θ is the proportion of non-mobile capital. However, this assumption can be relaxed in that the proportion of mobile capital may be endogenously affected by dictators.

Escribà Folch (2003). A solution concept of sequential equilibrium provides some salient equilibria. Then, I will derive two testable hypotheses from the multiple equilibria. In chapter 3 I will empirically test the hypotheses, investigating two military regimes in Korea from 1961 to 1987, which provides an interesting case study in that Korean capital owners have been a main actor to play with the military dictators who wanted to compensate for political illegitimacy with economic development for regime survival, and sensitive to even small changes in the effective corporate income tax rate. In chapter 4 and 5 I will discuss implications for electoral authoritarian regime which experiences the emergence of strong capital owners, and present some caveats and issues to be considered in future research.

CHAPTER 2

The Model

Przeworski et al. (2000)’s dichotomous classification of political regime is very useful to understand the minimalist characteristics of democracy, but cannot sufficiently capture a variation within the “residual category” against democracy. Indeed, regime dynamics in the category of dictatorship is obvious. As Levitsky and Way (2006) summarize, non-democratic regimes followed diverse paths. For instance, some of them (e.g., Mexico, Slovakia) allowed oppositions to actually compete incumbents, and have been democratized. Many of them remained stable or became increasingly authoritarian (e.g., Russia, Zimbabwe), however. In some countries (e.g., Georgia, Malawi, Zambia) authoritarian governments fell but were succeeded by new authoritarians. Some regimes (e.g., Albania, Haiti) experienced two or more transitions without democratization. Geddes (2003) classifies authoritarian regime into some nominal categories such as personalist, military, single-party, and hybrid, which helps understand an empirical variation in political party building and regime survival. Such empirical knowledge suggests that more generalized models should consider different types of dictatorship rather than a homogenous type.

Escribà Folch (2003) constructs a creative model of a dictator’s strategic choice of establishing a legislature. His model assumes that there exist two discrete types of dictatorship, and captures information asymmetry which exists between a dictator and capital owners outside the ruling coalition. It is a simple signaling game in that an action taken by a dictator as a sender conveys some information to

other players as a receiver.

Despite the intuitiveness, Escribà Folch's model is constructed on some restrictive assumptions about dictator types. To evaluate how applicable his model is to real cases, we need to carefully examine the assumptions. First, he formalizes discrete types of dictators (short-term vs. long-term horizon). In a conventional signaling game which consists of a sender and a receiver of a message, and types specifies private information about the sender (Sobel, 2007). In his paper a type means private information about a dictator, which is known only to the dictator. Such a classification of dictatorship can be explained by each dictator's subjective probability of regime survival.¹ If a legislature is not created, then a short-term dictator will always expropriate the proportion of capital that he can; instead, a long-term dictator will not expropriate but tax capital at a rate, which is higher than that a legislature may impose (p.6). Based on the assumption, he claims that we can easily distinguish different types of dictators without including discount factors. According to Escribà Folch, Duvalier (Haiti) and Marcos (Philippines) are commonly regarded as short-termed, predatory rulers.² Of course, such a dichotomous classification tells us whether or not authoritarian leaders are an extreme case, but cannot capture wide variations in authoritarian leaders in the real world.

Second, Escribà Folch assumes that a legislature generates a lower tax rate (i.e., $\tau_L < \tau_D$) where τ_L represents a tax rate given by the legislature and τ_D indicates a tax rate imposed by the dictator when there does not exist a legislature. That is, a legislature is regarded as an effective tool to convince taxpayers that their assets will be to some extent protected from theft by others and from ex-

¹In theory, dictators are assumed to know how predatory they will be as long as they are secured from the overthrow of the regime. That is, short-term dictators would exploit the maximum proportion of capital that allows them to survive, whereas long-term dictators would despoil the proportion of capital less than the maximum, which allows the surplus proportion to be invested by capital owners.

²Indeed, Duvalier and Marcos were predatory, but Duvalier and his son together ruled for 29 years, which is longer than average. Marcos also ruled for 14 years.

propriation by the dictator himself (p.6). In theory, this assumption is plausible, but it is not so easily applicable to actual cases in that legislatures more or less accountable for redistribution may tax capital at a less efficient rate (i.e., $\tau_D < \tau_L$) in practice. As Geddes (2006) points out, a dictator would create a political party to counterbalance the power of the military or particular inside factions. Since such political parties may need more resources to appease the military (e.g., an increase in military spendings) and to support themselves than the dictator does, the tax rate formed by the legislature may be less efficient. It is also possible that a tax rate may rise when a legislature is affected by populist or clientelistic politicians within the government party.³ Conversely, voting against the ruling party conveys information about voters' preferences over welfare policy at the national level at the expense of patronage at the local level (Herron, 2011; Miller, 2012; Kinne and Marinov, 2012). As a result the legislature would raise the tax rate higher than the dictator supposed before the election. These all possibilities potentially account for the existence of benevolent dictators in terms of taxation. To justify the possibility, we need to assume that all dictators prefer a higher tax rate because it secures more resources for their regime survival. However, some dictators are willing to accept a lower tax rate because they think that the lower tax rate can induce a higher level of investment and invigorate the national economy. That is, the dictators attempt to raise sustainable tax revenues rather than to plunder the maximum proportion of capital. We call them *tax-benevolent* dictators.

Third, Escribá Folch's simple model implicitly assumes that maintaining an established-legislature is equivalent to creating a new legislature. The former may be regarded as a substantively different signal to capital owners who would update their beliefs about the dictator's type through observing the dictator's

³Of course, dictators can raise tax rates with desire for popularity as a strategy to consolidate his hold on power (e.g., Chavez in Venezuela). On the contrary, dictators who have secured non-taxable resources such as oil can lower tax rates without reducing the budget for welfare (e.g., Nazarbayev in Kazakhstan).

choices, however. Likewise, dissolving an established-legislature and not creating a legislature may also be differently interpreted by capital owners in authoritarian regimes. Indeed, as Gandhi and Lust-Okar (2009) mention, many authoritarian regimes in newly independent countries inherited elections and parliaments at the beginning of independence, since colonial powers had formed legislatures and councils to co-opt and control their subjects (p.407).

To overcome such limitations of Escribà Folch’s model, I attempt to formalize a game 1) in which a dictator is described on the continuous type space and capital owners are uncertain about the dictator type, 2) in which a dictator can be more benevolent in terms of taxation than a legislature formed through a (somewhat) competitive legislative election, and 3) in which capital owners observe the dictator’s capability of achieving his tax rate before they receive a signal from him.

2.1 Relaxation of Assumptions

Here is the basic description of the signaling game. There are two players, called D (dictator, sender) and C (capital owners, receiver). D holds private information over the random variable τ_D in a given set T . D ’s preferred tax rate τ_D characterizes his type. C ’s prior beliefs are given by a probability distribution $F_D(x) = Pr(\tau_D \leq x)$ over T , and these beliefs are common knowledge. D knows his own tax rate τ_D , sends to C a signal s , drawn from a set $S = \{\text{Legislature, No Legislature}\}$. C does not know the dictator’s type τ_D .⁴

⁴We may raise a question about uncertainty about a dictator’s preferred tax rate in the model. A dictator holds a meeting with capital owners and let them know his preferred tax rate, which reduces uncertainty about his type. Dictators may receive a group of capital owners such as the Federation of Korean Industries (FKI). Since overall tax rates do not fluctuate from year to year, dictators’ preferred tax rates seem to be readily found once applied. However, it is notable that such an organization consists of capital owners whose core businesses are different, and effective tax rates by industry may highly variable as illustrated in Figure 3.2. Since a small change in effective tax rates is linked directly to capital owners’ profits, they always want to know exact tax rates applied to them. By differentiating effective corporate tax rates by industry, on the contrary, dictators take an advantage of uncertainty about their own types

Uncertainty can be generated by an incoming (relatively competitive) legislative election. If dictator's party takes a complete control over the legislature, then the newly formed legislature is less likely to be an additional veto player. However, if the party loses the election or wins by close margin, then the legislature can be an additional veto player that constrains the dictator's discretion over the tax rate. C receives the signal, and then takes an action a drawn from a set $A = \{\text{Moves}, \text{Not move}\}$. This ends the game. The payoff to $i \in \{D, C\}$ is given by a function $u^i: T \times S \times A \rightarrow \mathbb{R}$.

Escribà Folch (2003) maintains that the higher a dictator's tax rate is, the closer to a short-term horizon (e.g., with a discount factor lower than the threshold of indifference) his type is. However, there is no clear-cut threshold of τ_D that distinguishes dictators' types in his model. Such a dichotomous specification of dictator types is very odd in the continuous space of τ_D where $\tau_D \in [0, 1]$. For example, while a dictator with $\tau_D = 0.99$ can be classified as one who has a long-term goal, a dictator with $\tau_D = 1$ is regarded as one who has a short-term goal.

Without loss in generality, I would relax his restrictive assumption about dictator types. We can benefit from relaxing the assumption. The extended range of dictators' overall tax rates allows us to consider cases where tax rates preferred by dictators are lower than those influenced by legislatures, which is possible in the case where the legislature is dominated by populist legislators. This relaxed assumption is more appropriate to describe long-term dictators in the real world.

2.2 Description of the Game

The simple framework set by Escribà Folch does not capture the important aspects of real situations such as electoral authoritarian regime. As Myerson (1992)

from asymmetric information.

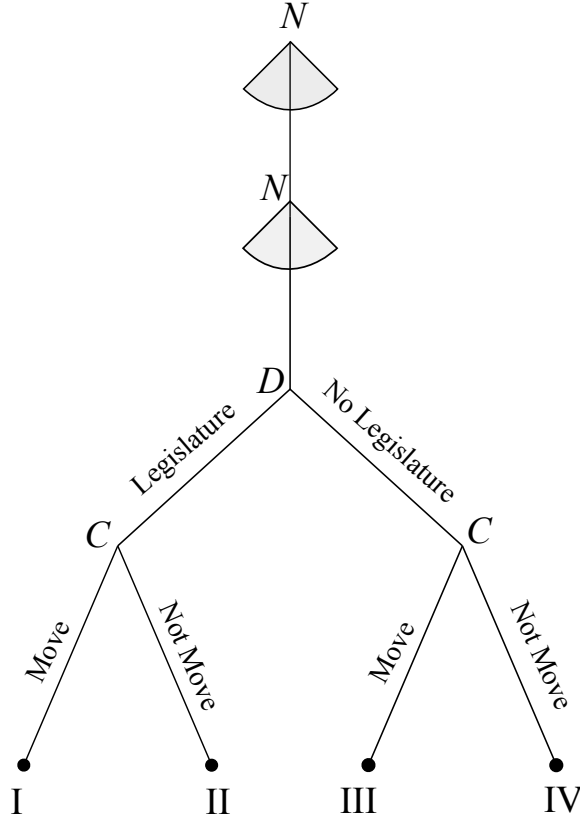


Figure 2.1: This extensive form shows a generalized game between a dictator and capital owners under uncertainty. The shaded areas at Nature's nodes represent uncertainty over a dictator's tax level τ_D and his capability r to achieve the tax level.

advises, insights derived from empirical studies can help construct more generalized game-theoretical models which can be better applied to real situations. As shown in Figure 1.1, we have witnessed the growing fraction of electoral autocracies that allow the opposition to organize into independent political parties and contest elections. Assuming that there exists a chance that the opposition obtains significant fraction of seats in the legislature, we also conjecture that the election result will influence the overall tax rate formed in the legislature, which would be seriously considered by capital owners who want to maximize their profits as

D 's Signal	C 's Action	Outcome	Dictator	Capital Owners
L	M	I	$k_D \theta \{r\tau_D + (1-r)\tau_L\}$	$k_C [\{r\theta(1-\tau_D) + (1-r)\theta(1-\tau_L)\} + (1-\theta)(1-\sigma)]$
	$\sim M$	II	$k_D \{r\tau_D + (1-r)\tau_L\}$	$k_C \{r(1-\tau_D) + (1-r)(1-\tau_L)\}$
$\sim L$	M	III	$k_D \theta \tau_D$	$k_C \{\theta(1-\tau_D) + (1-\theta)(1-\sigma)\}$
	$\sim M$	IV	$k_D \tau_D$	$k_C (1-\tau_D)$

Table 2.1: This table summarizes payoffs in the four outcomes shown in Figure 2.1. θ indicates a proportion of non-mobile capital. σ represents a transaction cost prompted when capital owners move their mobile capital abroad. r indicates the fraction of the government party's seats in the legislature after the election, which is observable. $k_i, i \in \{D, C\}$ indicates a production function for player i . The subscripts C , D , and L indicate capital owners, a dictator, and a legislature, respectively. L , $\sim L$, M , and $\sim M$ represent 'Legislature', 'No Legislature', 'Moves', and 'Not Move', respectively.

well as the dictator who needs resources for regime survival. This game formation displayed in Figure 2.1 looks simpler than Escribà Folch's, but is more applicable to real cases.

N , D , and C indicate Nature, a dictator, and capital owners, respectively. The game is initiated by N 's choice of a dictator's type specified by τ_D which is known only to the dictator himself. Again, N chooses the dictator's capability r to achieve his tax rate, which can be observed by (1) the dictator's power to appoint the highest ranking officials to make the government tax scheme and release them from office without any constraints when there does not exist a legislature, or (2) election results such as the government party's seat share in the legislature. Then D chooses either 'Legislature' (L) or 'No Legislature' ($\sim N$). After observing the D 's choice, C updates its belief about D 's type, and then chooses either 'Moves' (M) or 'Not Move' ($\sim M$). After C 's choice, the game ends.

It is assumed that a dictator's tax rate τ_D is distributed on the closed interval $[0, 1]$ by the cumulative distribution function $F_D(x) = Pr(\tau_D \leq x)$. For computational convenience, the total size of taxable assets is normalized to 1. θ indicates a proportion of non-mobile capital where $\theta \in [0, 1]$, and $1 - \theta$ represents a fraction of the mobile assets. The transaction cost prompted when the fraction of the mobile capital stock is moved to other countries is written as $\sigma \in [0, 1]$. It

includes the rates taxed in other countries, loss of productivity, transfer fees, and the cost for leasing. $k_i, i \in \{D, C\}$ indicates a production function for player i .⁵

Capital owners are uncertain about an expected tax rate influenced by a newly formed legislature (or the current legislature if it remains) as well as a dictator's preferred tax rate in realistic situations. The latter filled with secrecy especially under dictatorship is uncertain.

Since a legislature completely controlled by a capable dictator reflects his policy preferences, the dictator's tax rate is expected to be close to that formed by the legislature. On the contrary, capital owners who have observed a dictator less capable of achieving his tax rate in the legislative process are less certain about his preferred tax rate even if they have obtained highly accurate information about a tax rate formed in a newly formed legislature (or the current legislature). By the logic, I define dictators' preferred tax rates as

$$\tau_D = \begin{cases} \tau_L + \epsilon(r) & \text{if } \tau_D \geq \tau_L \\ \tau_L - \epsilon(r) & \text{otherwise} \end{cases} \quad (2.1)$$

where $\epsilon(r)$ is a decreasing function with regards to r . The function must be positive where $r \in (0, 1]$. In other words, $\epsilon(r)$ decreases with a dictator's capability of achieving his preferred tax rate in the legislative process.⁶

In comparison with Escribà Folch (2003)'s model my model assumes that all dictators inherently like high tax rates which give more resources to secure their regime survival, but *some* dictators believe that lower taxes can stimulate investment and revive the national economy, and thus they are willing to reject excessively high tax rates. The existence of tax-benevolent dictators is empiri-

⁵It is assumed that the dictator's production function k_D is lower than capital owners' k_C , which is general in the real world. However, these parameters do not affect the decision-making itself in this game.

⁶For example, suppose $\epsilon(r) = \frac{1}{5r^2+5r+1}$ where $r \in (0, 1]$. In case a government party completely controls the legislature by earning the total legislative seats in a dictatorship (i.e., $r = 1$), $\epsilon(r)$ should be close to zero, which implies that the new tax rate formed in a legislature reflects the dictator's preferred tax rate.

cally supported as shown in developmental dictatorships.

As Figure 2.1 displays, the game has the four possible outcomes. The payoff to each player can be described in Table 2.1.

2.3 Sequential Equilibria and Refinement

To solve this signaling game, we can use sequential equilibrium as a solution concept. The sequential equilibrium is equivalent to the weak Perfect Bayesian Equilibrium (wPBE) (Gibbons, 1992). Suppose a pair (s, μ) of a strategy profile s and a system of beliefs μ . (s, μ) is sequentially rational if at each information set h , playing according to $s_{i(h)}$ in the sequential game is a best response for $i(h)$ to belief $\mu(\cdot|h)$ and the belief that the other player will play according to $s_{-i(h)}$ in the game (Osborne, 2004). For any strategy $s'_{i(h)}$,

$$\int u_i(s_i, s_{-i})d\mu(\cdot|h) \geq \int u_i(s'_i, s_{-i})d\mu(\cdot|h). \quad (2.2)$$

Since a dictator type is continuous, the definition (2.2) is applied to this game. Each player has discrete options. A dictator has two strategies: ‘Legislature’, and ‘No Legislature’. He knows his own tax rate, and always prefers ‘Not Move’ to ‘Move’, which secures the budget for regime survival. C has four possible pure strategies as follows:

- (1) (‘Move’|‘Legislature’, ‘Move’|‘No Legislature’)
- (2) (‘Move’|‘Legislature’, ‘Not Move’|‘No Legislature’)
- (3) (‘Not Move’|‘Legislature’, ‘Move’|‘No Legislature’)
- (4) (‘Not Move’|‘Legislature’, ‘Not Move’|‘No Legislature’)

The solution is initiated by comparing C 's utility when she observes D 's signal: L or $\sim L$. After seeing L , C would choose M if

$$\tau_D \geq \sigma + (1 - r)\epsilon(r)\{1 - 2F_D(\tau_L)\} \equiv \alpha, \quad (2.3)$$

$\sim M$ otherwise where τ_D is the dictator's preferred tax rate, and σ is the transaction cost associated with moving her mobile capital abroad. Recall $\epsilon(r)$ is a decreasing function with regards to r .

After observing $\sim L$, C would choose M if

$$\tau_D \geq \sigma \equiv \beta, \quad (2.4)$$

$\sim M$ otherwise.

The cut point configuration between α and β varies by $1 - 2F_D(\tau_L)$. Recall that $F_D(\tau_L)$ is interpreted as the probability of a tax-benevolent dictator, which is common knowledge. If $1 - 2F_D(\tau_L) \geq 0$, which is simplified to $F_D(\tau_L) \leq 1/2$, we derive the cut point configuration $\alpha \geq \beta$; $\alpha < \beta$ otherwise.

Case 1: $F_D(\tau_L) \leq 1/2$

The equilibrium strategies for both players are specified by the cut points on τ_D . For $\tau_D \in [\alpha, 1]$, D who is not tax-benevolent would choose $\sim L$. By contrast, a tax-benevolent D would choose L regardless of his capability of achieving his tax rate in the legislature.

For $\tau_D \in [\beta, \alpha)$, D 's strategies vary by his type. A dictator who is not tax-benevolent would choose L if

$$\tau_D \geq \frac{1 - r}{1 - \theta}\epsilon(r) \equiv \gamma, \quad (2.5)$$

$\sim L$ otherwise. By contrast, a tax-benevolent dictator would choose L if

$$\tau_D \geq -\frac{1-r}{1-\theta}\epsilon(r) \equiv -\gamma, \quad (2.6)$$

$\sim L$ otherwise. If $\theta > r$, then the cut point $-\gamma < 0$, which predicts that a tax-benevolent dictator will choose L for sure under the circumstance.

For $\tau_L \in [0, \beta)$, D who is not tax-benevolent would choose $\sim L$, whereas a tax-benevolent D would opt L regardless of his capability r which has been observable through an election. In sum, both dictator types would separate their choices to avoid capital flight only when $\tau_D \in [\beta, \alpha)$ and $F_D(\tau_L) \leq 1/2$. Outside the range they would choose their preferred choices.

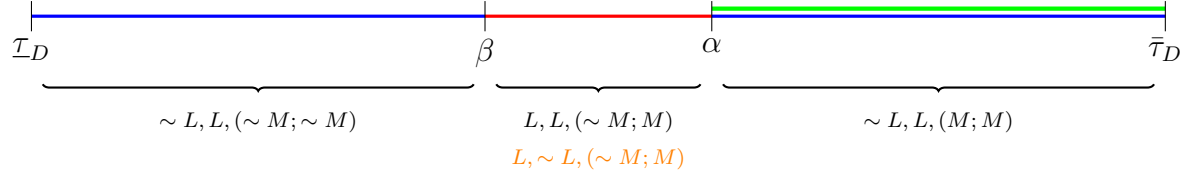
We can restrict the set of sequential equilibria to sensible behavior by using the Intuitive Criterion (Cho and Kreps, 1987). According to the refinement, we remove sequential equilibria. For $\tau_L \in (\beta, \alpha)$ the sequential equilibria $(L, \sim L, (\sim M; M), \mu(\tau_D \geq \tau_L|L)=1, \mu(\tau_D < \tau_L|\sim L) = 1)$ and $(L, L, (\sim M; M), \mu(\tau_D \geq \tau_L|L)=1 - F_D(\tau_L), \mu(\tau_D \geq \tau_L|\sim L)=1 - F_D(\tau_L))$ where $F_D(\tau_L) \leq 1/2$ violate the criterion.⁷

Case 2: $F_D(\tau_L) > 1/2$

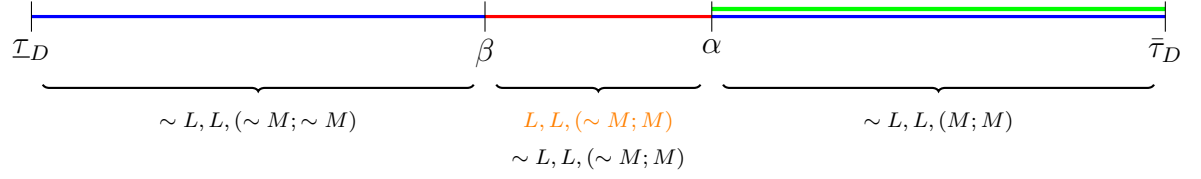
As in **Case 1**, the equilibrium strategies for both players can be specified by the cut points on τ_D . For $\tau_D \in [\beta, 1]$, a non-benevolent D would choose $\sim L$, whereas a tax-benevolent D would choose L regardless of $r \in (0, 1]$.

⁷The criterion follows the two-step process. Here is an example. Let $U_D^*(L|\tau_D > \tau_L)$ be the tax-benevolent D 's equilibrium payoff. $\max U_D(\sim L|\tau_D > \tau_L)$ is the tax-benevolent D 's highest payoff from deviating to $\sim L$. In the first step, if $U_D^*(L|\tau_D > \tau_L) < \max U_D(\sim L|\tau_D > \tau_L)$, then the dictator's type with $\tau_D > \tau_L$ has an incentive to deviate to $\sim L$ from L . If deviations can only come from the dictator type identified in the first step, then we move to the next step. Check that the lowest payoff from deviating is higher than their equilibrium payoff in the second step. If it is true, then the equilibrium violates the Intuitive Criterion. If it is not, then the equilibrium survives the criterion.

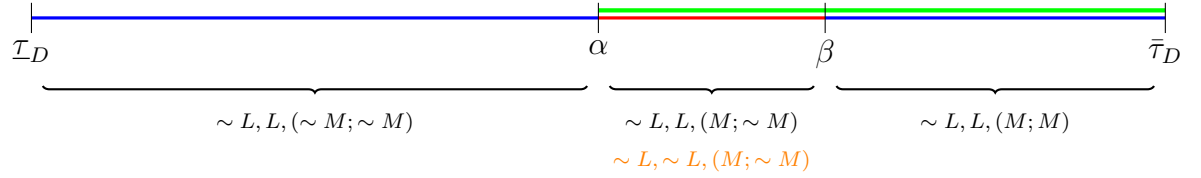
Scenario 1: $F_D(\tau_L) \leq 1/2$, $\tau_D \geq \gamma$



Scenario 2: $F_D(\tau_L) \leq 1/2$, $\tau_D < \gamma$



Scenario 3: $F_D(\tau_L) > 1/2$, $\tau_D \leq \delta$



Scenario 4: $F_D(\tau_L) > 1/2$, $\tau_D > \delta$

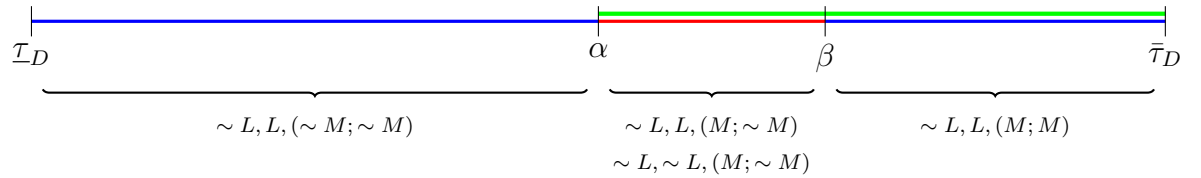


Figure 2.2: This figure shows four possible scenarios by the probability of a tax-benevolent dictator, $F_D(\tau_L)$, and dictator's preferred tax rate. Note that $\alpha \geq \beta$ if $F_D(\tau_L) \leq 1/2$; $\alpha < \beta$ otherwise. While the blue intervals represent separating equilibria, the red intervals indicate the ranges in which pooling equilibria can occur. Hence, D 's signals convey full information about D 's type in the blue intervals. The green intervals represent the ranges in which capital owners would choose M in equilibrium after observing L . The equilibrium strategies which violate the Intuitive Criterion are written in orange.

For $\tau_L \in [\alpha, \beta)$, D who is not tax-benevolent has only one option $\sim L$ where $\theta \in (0, 1]$ and $r \in (0, 1]$. By contrast, a tax-benevolent D has two options. He would choose L if

$$\tau_D \leq \frac{\theta(1-r)}{1-\theta}\epsilon(r) \equiv \delta, \quad (2.7)$$

$\sim L$ otherwise.

For $\tau_L \in [0, \alpha)$, whereas D who is not tax-benevolent would choose $\sim L$, a tax-benevolent D would choose L for sure. As in **Case 1**, both dictator types would separate their choices to avoid capital flight only when $\tau_L \in [\alpha, \beta)$ and $F_D(\tau_L) > 1/2$. Outside the range they would choose their preferred choices.

By the Intuitive Criterion, we remove a sequential equilibrium in this case. For $\tau_L \in (\beta, \alpha)$, the pooling equilibrium $(\sim L, \sim L, (M; \sim M), \mu(\tau_D \geq \tau_L|L) = 1 - F_D(\tau_L), \mu(\tau_D \geq \tau_L|\sim L) = 1 - F_D(\tau_L))$ where $F_D(\tau_L) > 1/2$ and $\tau_D \leq \delta$ violates the criterion. However, the two sequential equilibria pass the criterion if $F_D(\tau_L) > 1/2$ and $\tau_D > \delta$ (see **Scenario 3** and **Scenario 4** in Figure 2.2)

2.4 Predictions and Testable Hypotheses

The game assumes that a dictator has private information about his own value for a tax rate. Capital owners do not know his preferred tax rate itself. Instead, they can estimate the dictator's capability to achieve it by observing the legislative election outcome or other events before a signal sent by the dictator. After observing the signal, they update their beliefs about the dictator's preferred tax rate.

Figure 2.2 summarizes the multiple equilibria by scenarios. Since a legislature completely controlled by a capable dictator reflects his policy preferences, the dictator's tax rate is expected to be close to the new tax rate. On the contrary, capital owners who have observed a dictator who is less capable of achieving his

tax rate in the legislative process are less certain about his preferred tax rate. In other words, as dictators become capable, uncertainty about tax rates formed in a new legislature will reduce. By contrast, such uncertainty increases with dictators' legislative capabilities.

Proposition 1 (Tax-Benevolent Dictator's Legislature). *Tax-benevolent dictators are expected to create a legislature (or sustain the current legislature) in equilibrium unless the three following conditions are satisfied: (1) it is more likely that a dictator is not tax-benevolent, (2) the tax rates given a legislature is expected to be located in the range $[\alpha, \beta]$, and (3) the rates are higher than the cut point $\delta = \frac{\theta(1-r)}{1-\theta} \epsilon(r)$.*

After applying the Intuitive Criterion (Cho and Kreps, 1987) to the multiple sequential equilibria derived from the game, we can exclude some equilibria such that tax-benevolent dictators do not create a legislature (or sustain the current legislature after a legislative election). Thus, it is readily shown that tax benevolent dictators would create a legislature (or maintain the current legislature) regardless of their legislative capabilities if $F_D(\tau_L) < 1/2$ (**Scenario 1 and Scenario 2**).

For $\tau_D \in (\alpha, \beta)$ there may exist an equilibrium such that regardless of dictator types a legislature is not created (or the current legislature is dissolved) in **Scenario 4**, which implies that the signal $\sim L$ is not informative. The equilibrium survives the Intuitive Criterion when the first condition, $F_D(\tau_L) > 1/2$, is satisfied. Because the cut point δ is negatively associated with r , it becomes more difficult to satisfy the second condition, however.⁸ Thus, we predict that unless

⁸Note $\frac{\partial}{\partial r}(\beta - \alpha) = \frac{\partial}{\partial r} \epsilon(r)(1 - 2F_D(\tau_L))(1 - r) = -\frac{(2F_D(\tau_L)-1)(-a(r-2)r+b+1)}{(ar^2+br+1)^2}$ where $\epsilon(r) = \frac{1}{ar^2+br+1}$, $a > 0$, and $b > 0$. Since $-a(r-2)r+b+1 > 0$ where $r \in [0, 1]$, $\frac{\partial}{\partial r}(\beta - \alpha) < 0$ if $F_D(\tau_L) \geq 1/2$. Note $\frac{\partial}{\partial r} \delta = \frac{\partial}{\partial r} \frac{1-r\theta}{1-\theta} \epsilon(r) = \frac{ar(2-r\theta)+b+\theta}{(\theta-1)(ar^2+br+1)^2} < 0$ where $\epsilon(r) = \frac{1}{ar^2+br+1}$, and

the cut point δ is less than α , tax-benevolent dictators will create a legislature (or sustain the current legislature after an election) for sure.

Proposition 1 states that a tax-benevolent dictator's choice of $\sim L$ is feasible only under the highly restrictive circumstances. That is, tax-benevolent dictators would create a legislature (or sustain the current legislature) unless their overwhelming legislative capabilities are observed. It provides a theoretical explanation of why not a small number of dictators who are not predatory are willing to create a legislature (or maintain the current legislature even after unexpected election outcomes) in real-world situations.

Corollary 1.1 (Conditions for Tax-Benevolent Dictator's Legislature).

Suppose that dictators are more likely to be tax-benevolent. Tax-benevolent dictators are less likely to create a legislature (or sustain the current legislature after an election) in equilibrium, (1) as they demonstrate that they overpower the legislature through an election, (2) as the fraction of mobile assets increases, or (3) as the transaction cost for capital owners rises.

As demonstrated in **Proposition 1**, some tax-benevolent dictators do not have an incentive to create a legislature (or sustain the current legislature after an election). Recall that such an equilibrium occurs only when (1) it is more likely that a dictator is tax-benevolent, (2) the dictator's legislative capability is greater than the fraction of non-mobile assets, and (3) their preferred tax rates τ_D are between the cut points α and β .

From these conditions we derive three claims. First, we can claim that some tax-benevolent dictators would not create a legislature (or maintain the current legislature) if election outcomes reveal their overwhelmingly high capabilities. In

a, $b > 0$. Thus, the cut point function δ decreases with r , but is positive where $\theta \in [0, 1]$.

other words, tax-benevolent dictators are willing to create a legislature if they fail to demonstrate their overwhelming legislative capabilities.⁹

Second, if the fraction of non-mobile assets is positively associated with the cut point δ which specifies the dictator's signal where $F_D(\tau_L) > 1/2$, other things being equal.¹⁰ When the cut point $-\gamma$ exceeds the cut point α , there may exist an equilibrium such that tax-benevolent dictators do not create a legislature (or dissolve the current legislature after an election).

Third, as a transaction cost to move mobile assets abroad increases, tax-benevolent dictators are less likely to create a legislature (or dissolve the current legislature after an election), other things being equal. Intuitively, capital owners have a disincentive to move their mobile assets away due to a high transaction cost. Hence we can infer that dictatorial countries with high transaction costs inevitably incurred by some reason (e.g., underdeveloped banking systems, inland areas) are less likely to establish a legislature (or maintain the current legislature) even if the dictators are not so depredatory. However, it is less meaningful for real world cases because capital owners are not influential enough to independently bargain with dictators in such dictatorial countries.

Corollary 1.2 (No Legislature/Not Move Equilibrium). *The pooling equilibrium such that both dictator types send the same signal $\sim L$ but capital owners choose $\sim M$ is feasible only when it is more likely that a dictator is tax-benevolent. The separating equilibrium such that only non-benevolent dictators send $\sim L$ can occur regardless of the prior beliefs about dictator types.*

Corollary 1.2 shows two sequential equilibria such that capital owners do

⁹ $\frac{\partial}{\partial r} \gamma = \frac{\partial}{\partial r} \frac{\theta-r}{1-\theta} \epsilon(r) = \frac{-ar(r-2\theta)+b\theta+1}{(\theta-1)(ar^2+br+1)^2}$ where $\epsilon(r) = \frac{1}{ar^2+br+1}$, and $a, b > 0$. $\frac{\partial}{\partial \theta} \gamma = \frac{1-r}{(\theta-1)^2(ar^2+br+1)} > 0$ where $r \in [0, 1]$.

¹⁰ For $\tau_L \in (\alpha, \beta)$ tax-benevolent dictators would send L if $\tau_L \geq -\gamma$; $\sim L$ otherwise.

not move their mobile assets abroad even after observing no legislature. Suppose that it is more likely that a dictator is tax-benevolent (**Scenario 3** and **Scenario 4**). **Proposition 1** has already showed that $\sim L$ can be sent by tax-benevolent dictators in equilibrium under highly restrictive circumstances, which creates the unique pooling equilibrium.¹¹ Put differently, some tax-benevolent dictators with very high legislative capabilities may not create a legislature (or sustain the current legislature after an election). After the signal $\sim L$, capital owners would not move their mobile assets away only if the highly restrictive conditions are satisfied.

Now suppose that it is less likely that a dictator is tax-benevolent (**Scenario 1** and **Scenario 2**). The outcome $(\sim L, \sim M)$ can be observed only in the separating equilibrium which conveys full information about each dictator type.¹² That is, if dictators preferred tax rates are less than the transaction cost, dictators who are not tax-benevolent would not create a legislature (or would dissolve the current legislature), whereas tax-benevolent dictators would create (or sustain the current legislature). Regardless of signals, capital owners would not move their mobile assets abroad in equilibrium.

Proposition 2 (Non-Benevolent Dictator's Legislature). *Suppose that dictators are less likely to be tax-benevolent. Some non-benevolent dictators with $\tau_D > \gamma$ would create a legislature (or sustain the current legislature after an election) in equilibrium, and thus enjoy better payoffs from capital owners' uncertainty about dictators' preferred tax rates.*

Proposition 2 is intuitively straightforward. For $\tau_L \in (\beta, \alpha)$, there may exist a pooling equilibrium such that a dictator who is not tax-benevolent creates

¹¹The pooling equilibrium can be written as $(\sim L, \sim L, (M; \sim M), \mu(\tau_D \geq \tau_L | \sim L) = \frac{F_D(\beta) - F_D(\delta)}{F_D(\beta) - F_D(\alpha)}, \mu(\tau_D < \tau_L | L) = F_D(\tau_L))$ where $\delta \in (\alpha, \beta)$ and $\tau_D \in (\alpha, \beta)$.

¹²The separating equilibrium can be written as $(\sim L, L, (\sim M; \sim M), \mu(\tau_D \geq \tau_L | \sim L) = 1, \mu(\tau_D < \tau_L | L) = 1)$ for $\tau_D \in [\underline{\tau}_D, \beta]$.

a legislature (or maintain the current legislature after a legislative election) to avoid capital flight only when capital owners believe that it is less likely that the dictator is tax-benevolent, which is a sufficient condition. Besides, non-benevolent dictators who have $\tau_D > \frac{1-r}{1-\theta}\epsilon(r) \equiv \gamma$ are willing to create a legislature. In other words, we cannot observe that a non-benevolent dictator creates a new legislature (or sustain the current legislature after an election) in equilibrium if capital owners believe that he is more likely to be tax-benevolent, which implies that some dictators who are not tax-benevolent take advantage of uncertainty about dictators' preferred tax rates. In sum, non-benevolent dictators would create a legislature (or maintain the current legislature after an election) if $\tau_D \geq \gamma$; they would not create a legislature (or dissolve the current legislature after an election) otherwise.

Corollary 2.1 (Informative Signal). *Suppose an expected tax rate formed in a new legislature (or the current legislature) is outside the interval between the two cut point functions, α and β . Since dictators would choose the separating equilibrium strategies under the circumstance, both signals L and $\sim L$ sent by dictators are completely informative.*

Corollary 2.1 explains the separating equilibrium outside the interval between the two cut points α and β . With the capital owners' beliefs outside the range they choose their preferred options regardless of dictator's signals. Dictators know it so that they can send their preferred signals which convey full information about their types. This means that after observing L and $\sim L$, capital owners update their beliefs such that $\mu(\tau_D < \tau_L | L) = 1$ and $\mu(\tau_D \geq \tau_L | \sim L) = 1$, respectively.

By contrast, the pooling strategies are feasible within the interval between the two cut points α and β . Dictator's signals convey less information, and separate

capital owners' choices within the range. It is associated with the probability that a dictator is tax-benevolent and the dictator's legislative capability. When capital owners believe that it is more likely that a dictator is tax-benevolent, the range $[\beta, \alpha]$ decreases with the dictator's legislative capability.¹³ On the contrary, when they believe that a dictator is less likely to be tax-benevolent, the gap between α and β widens with the dictator's legislative capability. We also infer that as the probability of a tax-benevolent dictator grows, the pooling equilibrium strategies are less likely to exist.¹⁴

Proposition 3 (Legislature/Move Equilibrium). *There exist the multiple equilibria such that a dictator creates a legislature (or sustains the current legislature after an election), but capital owners move their mobile assets away given a legislature only when the legislature was created by a tax-benevolent dictator.*

Proposition 3 distinguishes this model from Escribà Folch (2003)'s original model. As demonstrated in **Corollary 2.1**, capital owners' uncertainty about the dictator's preferred tax rate grows as the dictator's legislative capability drops, other things being equal. Thus, with a decline in the dictator's capability capital owners are less likely to move their mobile capital away given a legislature. Once capital flight observed in the existence of a legislature, we can infer that the capital owners believed that the dictator was tax-benevolent in equilibrium. This proposition will be used in explaining the Korean case from 1985 to 1986 in the empirical chapter.

We can observe changes in tax rates by legislature, transaction costs measured

¹³Note $\frac{\partial}{\partial r}(\alpha - \beta) = \frac{\partial}{\partial r}\epsilon(r)(1 - 2F_D(\tau_L))(1 - r) = \frac{(2F_D(\tau_L)-1)(-a(r-2)r+b+1)}{(ar^2+br+1)^2}$ where $\epsilon(r) = \frac{1}{ar^2+br+1}$, $a > 0$, and $b > 0$. Since $-a(r-2)r+b+1 > 0$ where $r \in [0, 1]$, $\frac{\partial}{\partial r}(\alpha - \beta) < 0$ if $F_D(\tau_L) \geq 1/2$.

¹⁴This claim can be readily proved by $\frac{\partial}{\partial F_D(\tau_L)}(\alpha - \beta) = \frac{2(r-1)}{ar^2+br+1} \leq 0$ where $r \in [0, 1]$.

by tax rates in other countries, government parties' political strength in the legislature measured by their seat shares, and changes in the fraction of the mobile capital stock over time. This paper empirically tests that predictions of both players' choices in equilibrium are supported in real cases.

From the multiple sequential equilibria refined by the Intuitive Criterion I derive a straightforward hypothesis to be empirically tested.

Hypothesis 1: *Suppose that capital owners do not move their mobile assets away after observing the dictator's capability of achieving his tax rate. The existence of a legislature in the authoritarian regime entails a relatively low tax rate. If the dictator is more likely to be tax-benevolent, the tax rate must be lower than the transaction cost.*

Hypothesis 1 looks equivalent to Escribà Folch's fourth hypothesis: the existence of a legislature in a dictatorial regime will entail a lower tax level (tax revenue as a percentage of GDP), and therefore a smaller size of the public sector is formed (Escribà Folch 2003, p.12). However, this hypothesis is more generalized than Escribà Folch's hypothesis which is valid only in non-benevolent dictatorships. As illustrated in Figure 2.2, the equilibrium outcomes such that capital owners do not move their mobile assets abroad after observing a legislature created (or the current legislature sustained after an election) are feasible only when an expected tax rate is less than the cut point α . If capital owners are most uncertain whether or not the dictator who they are facing is tax-benevolent, $F_D(\tau_L) = 1/2$, the maximum value of α can be the transaction cost σ . Given that a dictator is more likely to be tax-benevolent, the maximum value of α must be less than $\beta = \sigma$.¹⁵

¹⁵Since $\alpha = \sigma + (1-r)\epsilon(r)\{1 - 2F_D(\tau_L)\}$, the maximum value α contingent on the prior beliefs $F_D(\tau_L)$ where $r \in (0, 1)$. As the dictator's capability r rises, the cut point α tends to converge on the transaction cost σ . The dictators' capabilities are not so low in real-world situations in

Consequently, we claim that given that capital owners do not move their mobile assets abroad after observing the dictator's legislative capability via election results, the existence of a legislature induces a relatively low tax rate; and the tax rate will converge on the transaction cost as the dictator's capability increases.

From **Proposition 1** to **Proposition 3** I derive another hypothesis to be tested.

***Hypothesis 2:** After observing a legislature, the capital owners will move their mobile capital away only if they believe that the dictator is tax-benevolent, but the tax rate will be raised by the legislature newly formed after an unexpected election outcome. As a result, we will observe (1) a decline in the investment level as a percentage of the GDP, (2) an growth of outward foreign direct investment or (3) an increase in unrecorded capital outflows.¹⁶*

A dictator who is not tax-benevolent is more likely to create a legislature (or maintain the current legislature after an election) (1) as he is less capable of achieving his tax rate in the legislature, or (2) as the transaction cost drops. It is notable that as shown in the difference between the two cut points α and β , the probability of players' separate choices is very sensitive to changes in dictator's capability in the legislature rather than to those in the transaction cost.

By contrast, a tax-benevolent dictator is less likely to build a legislature (or maintain the current legislature after an election) (1) as he is capable enough to accomplish his preferred tax rate, or (2) as the transaction cost rises. The latter case is not normally observed in the real world because it is not common that a

that dictators who are sufficiently capable are willing to allow relatively competitive elections to be held.

¹⁶It includes capital outflows to offshore financial centers.

tax-benevolent dictator succeeds in keeping control over the legislature under the circumstance where transaction costs have gradually lowered worldwide. It is feasible in equilibrium that a dictator creates a legislature (or maintains the current legislature), but capital owners start moving their mobile capital stock away only if capital owners believe that the dictator is tax-benevolent, as **Proposition 3** claims. In sum, the outcome such that M follows L cannot occur in equilibrium if a dictator who is not tax-benevolent would strategically misrepresent his actual tax rate. Escribà Folch (2003)'s simple model cannot theoretically explain why the equilibrium does not occur uncommonly in the real world.

It is worthwhile to note that a dictator's capability of achieving his preferred tax rate is inversely associated with uncertainty over the dictator's type. This implies that capital owners can take the burden of strategic choices under uncertainty off in consolidated authoritarian regimes.

CHAPTER 3

Evidence: Military Dictators vs. Capital Owners in Korea, 1961-87

This chapter investigates Korean experiences of military dictatorships by focusing on changes in tax rates, transaction costs, dictators' legislative capabilities, and capital owners' investment levels. Military regimes in Korea may be a good case to test hypotheses regarding authoritarian leaders, legislature and capital owners in that the Korean economy was led mainly by both the central government and the largest manufacturing conglomerates (e.g., *Samsung*, *Hyundai*) known as *chaebol*. For instance, the top forty six *chaebol* produced 9.8 percent of GDP in 1973, but 17.1 percent of GDP in 1978. Their value-added in manufacturing accounts for 31.8 percent, and 43 percent in 1978 (Jones, 1987; SaKong, 1980). While the economy's real compound annual growth rate (1973–1978) was 9.9%, the top forty-six's growth rate reached 22.8%. By 1980, the *chaebol* dominated the economy, accounting for 24 percent of total sales, 18 percent of manufacturing employment, and over half of Korea's total exports (Haggard and Moon, 1990). All these numbers reveal the concentration of economic power in Korean development during the high-growth period, and *chaebol* could be a main actor to play with the military dictators who wanted to compensate for political illegitimacy with economic development for regime survival.

To test the two hypotheses provided in the previous chapter, I employ qualitative evidence from two military regimes in Korea from 1961 to 1987 rather than quantitative one from cross-national analysis. Figure 3.1 shows changes in the to-

tal tax revenues as well as the annual economic growth rates in Korea from 1972 to 2000.¹ We find an upward trend in the overall tax rate measured by the total tax revenue as a percentage of GDP. During the second half of the first military regime, the Fourth Republic (1972–1979), led by former general Park Chung-hee, the overall tax rate grew steadily despite fluctuations in the annual growth rate (the average growth rate = 8.28%). By contrast, while the overall tax rate has steadily increased, the annual economic growth rate has been on the decline (the average growth rate = 6.80%) since the democratization of 1987.

In terms of tax revenue as a percent of GDP, the second military regime, the Fifth Republic (1980–1988), led by former general Chun Doo-hwan is distinguishable from the first military regime as well as the following democratic regime. While the economic growth rate was, on average, on the rising trend (the average growth rate 7.42%), the tax revenue (as a percent of GDP) was slightly on the downtrend under the Chun’s regime. Continuous economic development can be reasonable evidence that both dictators would not attempt to expropriate the proportion of capital that they could, but it is an *ex post* evaluation. From Escribà Folch’s perspective, both Park Chung-hee and Chun Doo-hwan are classified not as dictators with a short-term horizon but as those with a long-term horizon, and the two military regimes are indistinguishable in his model. This tells us that Escribà Folch (2003)’s model is limited to capture variants in dictator types in real world.²

¹The OECD data on total tax revenues before 1972 are not available. See <http://www.oecd.org/ctp/tax-policy/revenue-statistics-ratio-change-all-years.htm>.

²Geddes’ dataset considers the Park’s regime (the third and fourth Republics) and the Chun’s regime (the fifth Republic) as one military regime. However, these two military regimes had led by different military factions. Kim Jae-kyu, director of the Korean Central Intelligence Agency (KCIA), assassinated President Park on October 26, 1979, and subsequently executed by hanging in May 1980 by the new military regime. Indeed, the coup of December 1979 was staged by a new faction in the Army. After the successful coup, Chun Doo-hwan amended the constitution, and dissolved the existing political parties including the Democratic Republican Party which was the ruling party established by the former president Park. In sum, it is unjustifiable to incorporate Chun’s regime into Park’s regime, and to assume that an overall tax rate imposed in the new regime would be the same as that in the old military regime. Chun ruled in an authoritarian manner, but was far less than Park. Indeed, for the most part his rule was somewhat milder

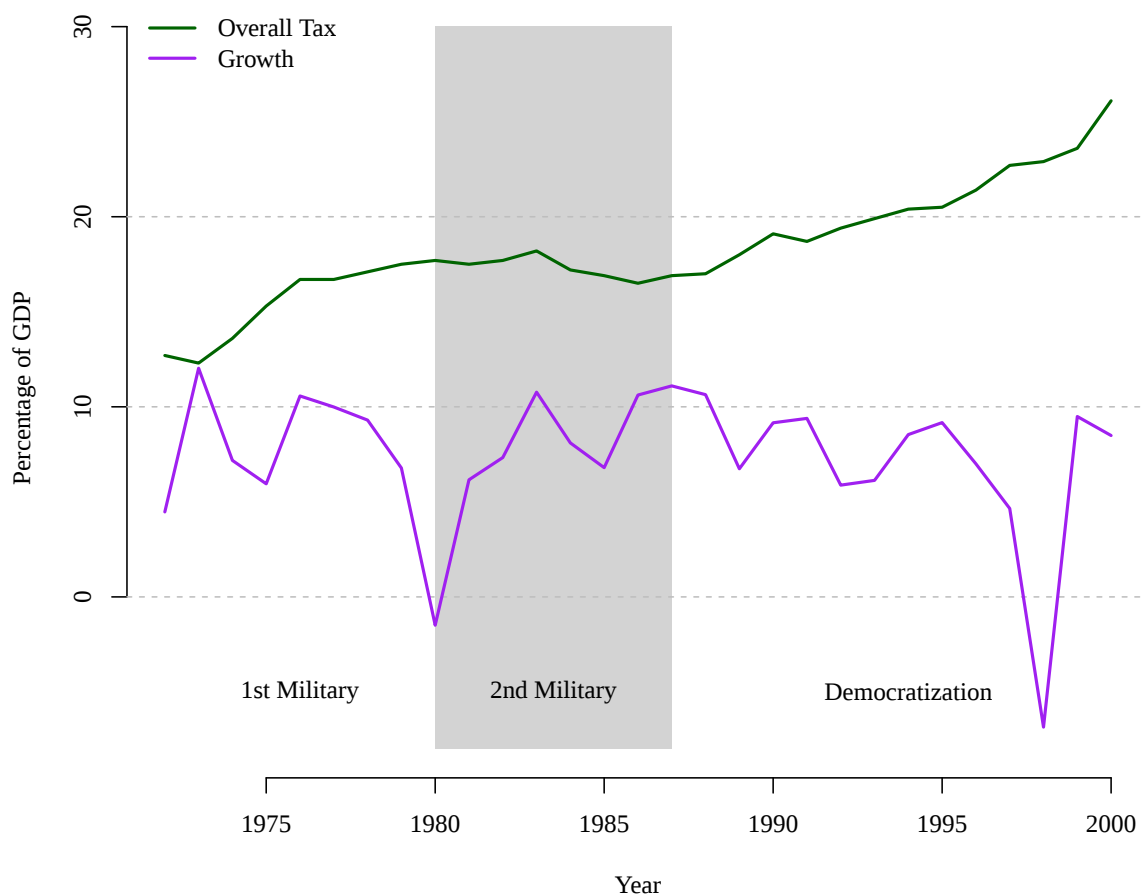


Figure 3.1: These time-series plots illustrate different patterns in total tax revenues and economic growth rates by regime. The shaded area indicates the second military regime (1980–1987). **Source:** *Revenue statistics: Comparative tables, OECD Tax Statistics(database)*

Chun Doo-hwan temporarily shut down the existing legislature in May 1980, officially dissolved it in October 1980, and then formed a new legislature again in ten months. He seems to have intended to create a new legislature because it is believed to be a sufficient condition for a legitimate government. He knew that his regime could not win in the following election without eradicating the former military factions as well as the political opponents the new military regime could than Park's rule.

have secured its victory in the following legislative election, however.

During that time, capital owners who had grown up through politics-business collusion were highly uncertain about the new authoritarian leader. After the unexpected military coup (December 1979), they received mixed signals such as the Gwangju massacre (May 1980), the constitutional amendment (October 1980), the introduction of a new tax scheme as well as the fair trade law, and an increase in the top corporate income tax rate to 33%, which was higher than the rate 32% passed by the legislature in 1978. They were not concerned that the new authoritarian leader would be a predatory dictator, as Escribà Folch (2003) frames. Instead, capital owners may pay more attention to differences in tax rates preferred by the two dictators, Chun Doo-hwan and Park Chung-hee, when they had an exit option.

3.1 Games in the 1970s

Since the military coup in 1961, President Park had successfully completed the two Five-Year Plans made by the Economic Planning Board (EPB). Based on economic success, the National Assembly led by the Democratic Republican Party amended the constitution which allowed the incumbent president to run for three consecutive terms. Despite an incumbent advantage including incomparable campaign funds Park Chung-hee won the presidency by a small margin (53.2% vs. 45.2%) in the presidential election of 1971, however. Park had the power to punish capital owners who had supported the opposition candidate Kim Dae-joong. For instance, *Samhak*, one of the largest companies in the late 1960s, which supported Kim in the election was declared guilty of tax evasion by the court controlled by the president after the election, and ended up with bankruptcy (Lie, 1998). To secure his regime he declared martial law, dissolved the National Assembly, banned

all political activities, and then adopted the Yushin constitution (“Restoration constitution”) in October 1972. The constitution is summarized as a strong president, a weak legislature and judicial system, limitations on political activity, and the restricted press. It allowed Park to be elected president for six years, with no limits on reelection, and also gave him the authority to appoint a large portion of the National Assembly, which guaranteed a legislative majority.

From the *chaebol*’s perspective the transaction cost to move their mobile assets away was much higher than the top corporate income tax rate imposed by the legislature controlled by the president in the 1970s. The government tightly controlled foreign currency transactions and monopolized the foreign currency borrowing channels (Abiad and Mody, 2003), which raised the transaction costs perceived by capital owners who heavily depend on external borrowing. Before the dissolution of the National Assembly, President Park issued an emergency order for economic stability and growth in August 1972. It allowed temporary tax breaks for investment using domestic equipment by 10%. Special depreciation (40% to 80%) was applied to fixed investment for key industries such as basic metal, chemical and electrical and electronics industries (Kim, 1991).³ Figure 3.2 clearly illustrates a few *chaebol* which dominated the key industries enjoyed very low effective corporate income tax rates even when the legislature did not exist. The revision of tax scheme by presidential decree before the dissolution of the National Assembly provided capital owners valuable information about the dictator’s preferred tax rate as well as his legislative capability.

A game was initiated when the Yushin constitution scheduled the ninth legislature in October 1972. After observing the legislative election result in February 1973 and the dictator’s signal L , capital owners did not move their mobile capital

³The government guided private commercial banks to strategically make loans to key industries. By the late 1970s, the policy loans had increased to 60 percent of the total (Yoo, 1994). As a result, the annual interest subsidy increased from about 3 percent of gross national product during the Third Republic (1962–1971) to about 10 percent during the Fourth Republic (1972–1979) (Pyo, 1989). However, various sources report different figures on the interest subsidy as a GNP, as Noland (2007) mentions (p.487).

stocks away. Indeed, the government party, the Democratic Republican Party, won 73 seats out of 146 seats in the nominal tier, but one third of the total seats, 73 seats, were appointed by *Yushin Jeong-woo-hoe*, the pseudo-party Yushin Political Comrades Association. As a result, President Park won two thirds of the total seats ($r=0.667$) which could control the legislature. The seat share allowed him to make the tax rate converge to his preferred level with legal means, if needed.⁴

A new game started in 1978 when a new legislative election was held. The political environment was against President Park. Due to continuous inflation without an increase in real wages the government had lost popular support. In particular, Park introduced the value-added tax in 1977 after a six and a half year struggle, which incited a negative public sentiment because the indirect tax was considered a tax which falls capital owners' tax burden on individuals. Despite the Yushin constitution which definitely favors the government party, the party earned 31.7% of the total votes in the election of 1978. The opposition party, the New Democratic Party won 32.8%, and the independent candidates got 20.8%. The district-level election result revealed that the majority of the voters began to reject Park's military dictatorship (Lee, 2003). Despite the unpopularity the DRP won 68 seats out of 154 seats, and 77 seats were appointed by the Yushin Political Comrades Association again. In sum, the president controlled 145 seats out of the total 231 seats, which tells us $r=0.63$ in 1978. This evidently shows that the dictator could not completely control over the legislature afterward.⁵

However, President Park attempted to demonstrate his capability of achieving

⁴The special clauses were contained in the Regulation of Tax Reduction and Exemption Act, 1974.

⁵It has the symbolic meaning whether the government party holds a supermajority (two-thirds of the total seats) in the legislature in Korea. For example, two-thirds of the registered members of the National Assembly were required for submission of an important bill such as amendment of the Constitution. The strange rule to form a legislature allowed the proportional representation to secure the majority to the government party. In practice, it was impossible that the ruling party lost a simple legislative majority. A meaningful change in the opposition parties' vote share, even if it is an increase of 20%, could be considered severe damage to the dictator's capability. Of course, the Constitution allowed President to arbitrarily issue emergency decrees, but he has to risk hurting his legitimacy.

Country	Year											
	1975	1978	1980	1981	1982	1983	1984	1985	1986	1987	1991	1995
France	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	45.0	34.0	33.3
Germany	51.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	50.0	45.0
Hong Kong	16.5	17.0	17.0	17.0	16.5	16.5	16.5	18.5	18.5	18.5	16.5	16.5
Japan	40.0	40.0	40.0	42.0	42.0	42.0	43.3	43.3	43.3	42.0	37.5	37.5
Korea	27.0	32.0	33.0	33.0	30.0	30.0	30.0	30.0	30.0	30.0	34.0	30.0
Singapore	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	33.0	31.0	27.0
Switzerland	–	–	–	11.5	11.5	11.5	11.5	11.5	11.5	11.5	9.8	9.8
Taiwan	35.0	–	35.0	35.0	35.0	35.0	35.0	30.0	25.0	25.0	25.0	25.0
United Kingdom	–	52.0	52.0	52.0	52.0	50.0	45.0	40.0	35.0	35.0	33.0	33.0
United States	48.0	48.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	40.0	34.0	35.0

Table 3.1: This table summarizes the (nominal) top corporate income tax rates of some countries from 1981 to 1995. The figures are measured as the basic combined central and sub-central (statutory) corporate income tax rates given by the adjusted central government rate plus the sub-central rate, which are applicable on domestic companies. Note that different rates apply non-resident/foreign-owned companies. The effective corporate tax rate may be higher due to the imposition of corporate level taxes on dividend or other distributions. The tax rates in other countries can be a proxy for transaction costs. Korea shows the lowest level of corporate income tax rates (30%). We see the downward trend in the corporate income tax rate across countries over time, and they tend to converge. The deviation from the mean has also declined over time. **Sources:** *OECD Tax Database* <http://www.oecd.org/tax/taxpolicyanalysis/oecdtaxdatabase.htm>. The data on Asian countries (Hong Kong, South Korea, Taiwan) can be gathered from the OTPR <http://www.bus.umich.edu/otpr/otpr/default.asp>, and show the nominal top corporate income tax rates. Numbers for Japan represent the central government corporate income tax rates. Note that the rate in 1975 was applicable to companies whose stocks were listed on the Korean stock exchange. The rate in 1980–1983 was the tax rate on non-listed companies. The rates in Hong Kong (1978) were applicable to the Profit tax, charged on assessable profits which were the profits as computed in accordance with the allowable exemptions, deductions and set-off losses. It is also noted that the basic federal tax on profit ranged from 3.45 percent to 11.5 percent in Switzerland (1980–1989). In addition, each canton had its own tax rate. Cantonal and communal taxes ranged from 5-30 percent based on the ratio of profit to capital and reserves.

his policy preferences by using different measures. He abruptly raised the nominal top corporate income tax rate from 27% to 32% in December 1978. He also imposed a new tax on investment in affiliates of *chaebol* by shaping a tax policy that excludes deduction of dividend incomes between affiliates and interest expenses

on debt for investment in affiliates (Hwang and Kim, 2012). After observing a series of measures *chaebol* felt that the dictator was capable of arbitrarily changing the tax rates for his regime survival to overcome severe economic crises (e.g., foreign debt problem, inflation) or citizens' dissatisfaction. Such sudden changes in effective corporate income tax rates was considered an actual threat. A gradual decline in differences between nominal and effective tax rates also amplified capital owners' uncertainty about President Park's ultimately preferred tax rate. Nevertheless, capital owners chose $\sim M$ given the legislature L in this game.

Uncertainty about the dictator's economic policy preferences may stimulate capital owners to move their mobile assets away. It was reflected in political instability caused by the assassination of President Park in December 1979. Capital owners believed that the interim government was less capable of maintaining the current corporate income tax rates. Indeed, there existed the very short period of Korean (unrecorded) capital flight in 1979 after the assassination of Park (Henry, 2012).

Some argue against the nominal corporate income tax rates in that it cannot capture potential variance among industries in Korea.⁶ Table 3.2) depicts that there existed huge differences in the effective corporate income tax rates among industries, which were induced by Park Chung-hee who had pursued the heavy chemical industry policy since the late 1960s. To a few *chaebol* which dominated heavy chemical and electric and electronics industries, Park was still considered a tax-benevolent dictator who offered the favored corporate income tax rates even after the new tax policy was applied in 1975. To some *chaebol* who were not

⁶The effective corporate income tax rate applied to *chaebol* has still been a sensitive issue in Korea. For example, the effective corporate income tax imposed to *Samsung Electronics*, the biggest company in Korea was estimated as 6.5% in 2008, which is much lower than the statutory top corporate income tax rate of 22% in the year (http://www.pressian.com/article/article.asp?article_num=60090707171220). The Federation of Korean Industries (FKI) which consists of Korea's major conglomerates and associated members has advocated to additionally lower the corporate income tax, which induces a higher level of investment and overall economic growth. By contrast, many civic organizations such as Citizens' Coalition for Economic Justice (CCEJ) have requested a revision of the tax law, arguing that the current tax law passes the biggest companies' burden onto medium and small sized-business.

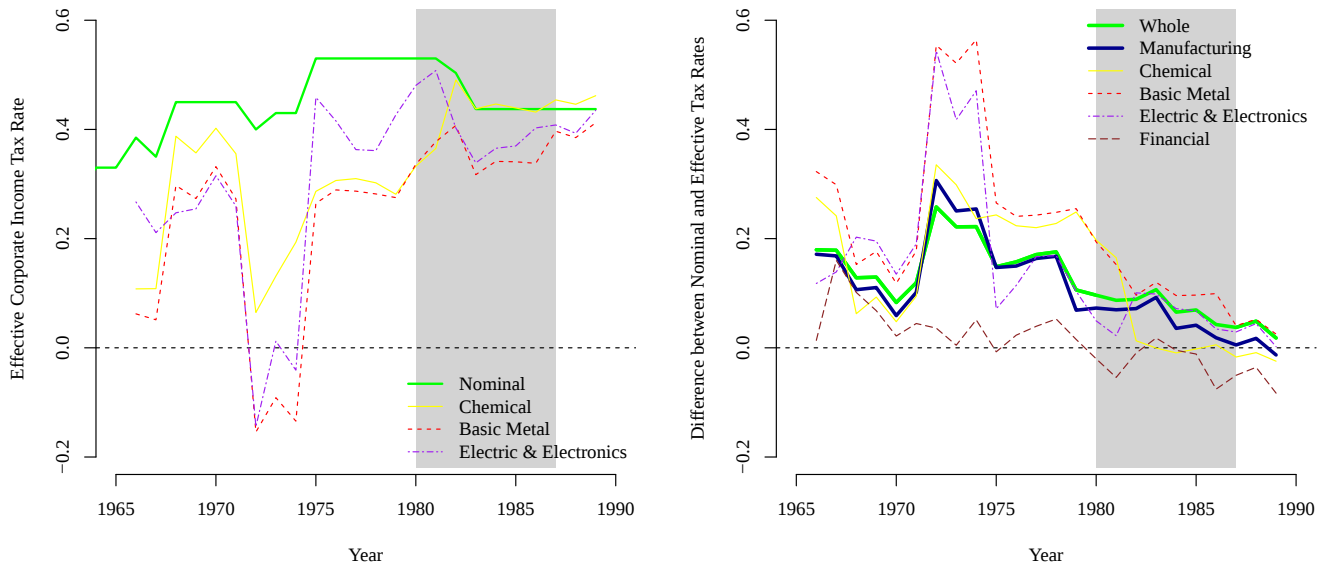


Figure 3.2: The left panel shows time-series data on the effective corporate income tax rates on non-listed companies in Korea from 1966 to 1989, estimated by (Kim, 1991). The shaded areas indicate the second military regime (1980–1987). The right panel illustrates the difference between nominal corporate income tax rate and the effective corporate income tax rates by industry. Kim (1991) classifies Korean corporations into 26 industries, and estimates the effective corporate income tax rates. The panel shows the three industries (Chemical, Basic metal, and Electric and Electronics industries) on which the relatively low corporate income tax rates were applied (p.42). Note that the nominal corporate income tax rates include the surtax such as the defense tax and residence tax. For example, the nominal corporate income tax rate (43.725%) in 1984 can be decomposed into the statutory tax (33%), the defense tax (8.25%), and the residence tax (2.475%). The left panel illustrates changes in the gaps between the nominal corporate income tax rates and the effective tax rates by industry from 1966 to 1989. The higher the gap is, the more favored the industry is. In comparison with other industries such as financial institutions, chemical, basic metal, and electric and electronics industries were favored by the Park’s regime which had pursued the heavy chemical industry policy.

convinced that their core businesses would not be beneficiaries of preferential tax incentives any longer the Park’s ultimate tax rates by industry were the major concern, however.

Most of all, the transaction cost of moving their mobile assets abroad was

perceived substantially high by capital owners during the dictatorship of Park Chung-hee. Before the introduction of the multi-currency basket system in February 1980 by the interim government, the Park administration adopted the unitary floating foreign exchange system, and strictly controlled over all foreign currency transactions made by both Koreans and foreigners under the supervision of the Ministry of Finance and the Bank of Korea, based on the Foreign Exchange Control Law.⁷

Under the circumstances there were only two effective measures for capital owners to move their mobile assets with minimizing financial losses: (1) outward foreign direct investment and (2) capital outflows to offshore financial centers through misinvoicing, which are not recorded in the official data. However, capital owners did not use any of them in the 1970s. Figure 3.3 shows that outward foreign direct investment was not made before 1980. We can hardly trace capital flight missing in the data during the first military regime. Figure 3.5 depicts that the investment level coupled with the gross saving rate in the 1970s.⁸

In sum, games played by the dictator and capital owners in the 1970s can be characterized by the transaction costs substantially higher than the tax rates imposed by the dictator, which lead to capital owners' choice of 'Not Move' given a legislature. As *Hypothesis 1* states, given the legislature capital owners did not move their mobile assets away, and we observe corporate income tax rates much lower than the transaction costs in the 1970s.

⁷It is the reason why we observed the capital flight from Korea only when President Park was assassinated in 1979, which made a few capital owners considered the risk of a new authoritarian leader who would plunder their capital.

⁸Before 1985, the gross capital formation had outnumbered the domestic saving rates, which implies that there had existed overinvestment. After the democratization, we see that savings coupled with capital formation again. It is notable that the gross saving rate is higher than the gross capital formation as a percentage of GDP after the Asian financial crisis in 1997. It coincided with a massive rise in unrecorded capital outflows from Korea to offshore financial centers coincided (Henry, 2012). Of course, it may be induced by increasing capital reserves to cope with future financial crises.

3.2 The New Military Regime after the Coup, 1979

A new game was initiated by the new military faction's coup in December 1979, which can be interpreted by Nature's choice. General Chun Doo-hwan successfully removed the Army Chief of Staff Jeong Seung-hwa, and became the *de facto* leader of the country. However, President Choi Kyu-hah who succeeded to former president Park Chung-hee and the 10th National Assembly formed via the general election of 1978 still had the official power to form policies, which made capital owners highly uncertain about the military leader's preferred tax rate. Chun did not attempt to change any tax rates until he dissolved the National Assembly in May 1980, which made capital owners believe that he was not so predatory as dictators in other developing countries.

Before the special session of the National Assembly opened, Chun, both Deputy Chief of Special Committee for National Security Measures and Deputy Director of KCIA, promptly made the potential challengers such as Kim Young-sam and Kim Dae-joong under house arrest. He temporarily shut down the legislature, and then expand martial law to the whole country on the 17th of May 1980. The martial law banned all political activities. The influential legislators including Kim Jong-pil, the former ruling party leader, were also compulsorily resigned from the National Assembly on charge of influence-peddling (*The Dong-A Ilbo*, July 3, 1980). The government had their properties confiscated. He gave the order to fire in Gwangju on the 20th, and he cruelly suppressed the Gwangju democratic movement by May 1980. In the course of suppression 165 civilians were killed and 65 civilians were missing, which was the worst suppression under military dictatorship in Korea. In June 1980 Chun officially dissolved the National Assembly. This was a clear signal 'No Legislature'.

When capital observed the signal, they were still uncertain about the new strong man's type. Despite uncertainty capital owners updated their beliefs such that Chun was not so predatory as the dictators observed in other underdevel-

oped countries. Indeed, the interim government also held the corporate income tax rate at 33% until October in which the Yushin constitution was amended. The nominal top corporate income tax rate 33% seems to be still the lowest level. In terms of effective corporate income tax rates by industry, a few *chaebol* still enjoyed favored tax rates until the inauguration of the Chun's administration in September 1980.

In **Scenario 1** or **Scenario 2**, capital owners are convinced that the dictator is not tax-benevolent after observing the signal $\sim L$.⁹ Given the situation, their choices depend only on their beliefs about an expected tax rate in a legislature. If the tax rate is believed to be higher than the cut point β , then they will move their mobile assets away; they will keep them otherwise.

In **Scenario 4** a pooling equilibrium is feasible, which implies that even a tax-benevolent dictator would dissolve the legislature under a highly restricted circumstance.¹⁰ According to **Corollary 1.2**, we predict that capital owners with the belief $\tau_L \in [\alpha, \beta]$ will not move their mobile assets away even when it is probable that the dictator is tax-benevolent. Put differently, even after observing the current legislature dissolved, capital owners may not move their mobile capital abroad under the condition of the high transaction cost.¹¹

It is not evident what scenario was believed by the capital owners. However, we can infer a more probable scenario from transaction cost moves. Park Chung-hee, the former dictator, extensively controlled domestic financial institutions and international capital flows during his regime (Abiad and Mody, 2003). The financial liberalization index from 1973 to 1980 shows the Korean economy was fully repressed during the period, which was less liberalized than Japan, Malaysia and Indonesia (see Figure 3.6). Under the circumstance the transaction cost to move

⁹The outcome $(\sim L, \sim M)$ can be explained by the separating equilibrium $(\sim L, L, (\sim M; \sim M), \mu(\tau_D \geq \tau_L | \sim L) = 1, \mu(\tau_D < \tau_L | L) = 1)$.

¹⁰Recall the pooling equilibrium $(\sim L, \sim L, (M; \sim M), \mu(\tau_D \geq \tau_L | \sim L) = 1 - F_D(\beta) + F_D(\delta), \mu(\tau_D < \tau_L | L) = F_D(\beta) - F_D(\delta))$.

¹¹Recall that the cut point $\beta = \sigma - \epsilon(r)\{1 - 2F_D(\tau_L)\}$ is positively associated with the transaction cost σ , other things being equal. Thus, the belief range $[\tau_L, \beta]$ widens with σ .

mobile assets away was considered extremely high.

The cost slightly declined after the government adopted the multi-currency basket system which contains a few foreign currency in February 1980. Nevertheless, the government still supervised all foreign exchange transactions and could intervene the foreign exchange market if needed. After reflecting policy variables such as difference in interest rates, the Bank of Korea determined an exchange rate daily, which means that the government could raise the transaction cost on a daily basis. Shortly, the actual transaction cost was perceived higher than the nominal tax rate in 1980.

After observing the legislature dissolved by Chun, capital owners did not move their assets away until he was inaugurated the 11th President in September 1980. Thus, we cannot see any outward foreign direct investment although both the gross saving rate and the gross capital formation fell off (see Figure 3.3 to Figure 3.5).

3.3 The 11th National Assembly, 1981

Uncertainty about Chun Doo-hwan's economic policy preferences was surging after he was officially inaugurated as President. Actions taken by him conveyed information about his policy preferences, but were highly mixed signals. The existing political parties including the Democratic Republican Party established by former President Park were forced to be dissolved in October 1980. The new constitution which replaced the Yushin constitution was promulgated in ten days. It abolished the practice of running for more than one presidential term, and stipulated the single seven-year term presidential tenure. The constitutional amendment provided capital owners with information about the president's preferred tax rate in that the single seven-year term limit could be regarded as indirect

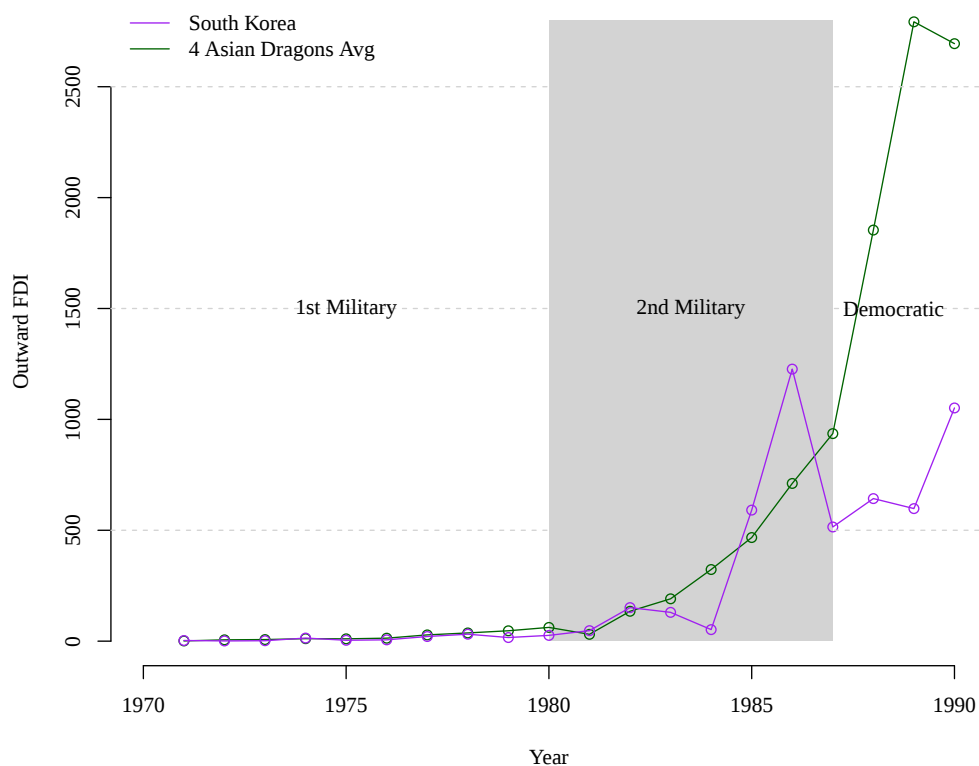


Figure 3.3: This figure shows time-series data on outward foreign direct investment flows (U.S. Dollars at current prices and current exchange rates in millions). The purple line indicates the South Korea's outward FDI over time. The dark green line shows the average FDI of four Asian dragons (Singapore, Taiwan, South Korea, and Hong Kong), which helps check that South Korea's outward FDI has a unique pattern. These data refer to *UNCTADstat* (<http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx>) and the author's calculation.

evidence for a short-term horizon.¹²

President Chun also signaled that the close relationship that existed between government and the *chaebol* was subject to revision. introduced a new tax scheme as well as the fair trade law. He also publicly announced rescuing social welfare programs as one of his main goals including stabilizing prices, stamping out crime,

¹²President Chun officially gave up being a long-serving authoritarian leader by accepting the single term limit. Instead, he attempted to retain power through the consolidated ruling party. However, his real intention was not revealed in the initial stages of his administration.

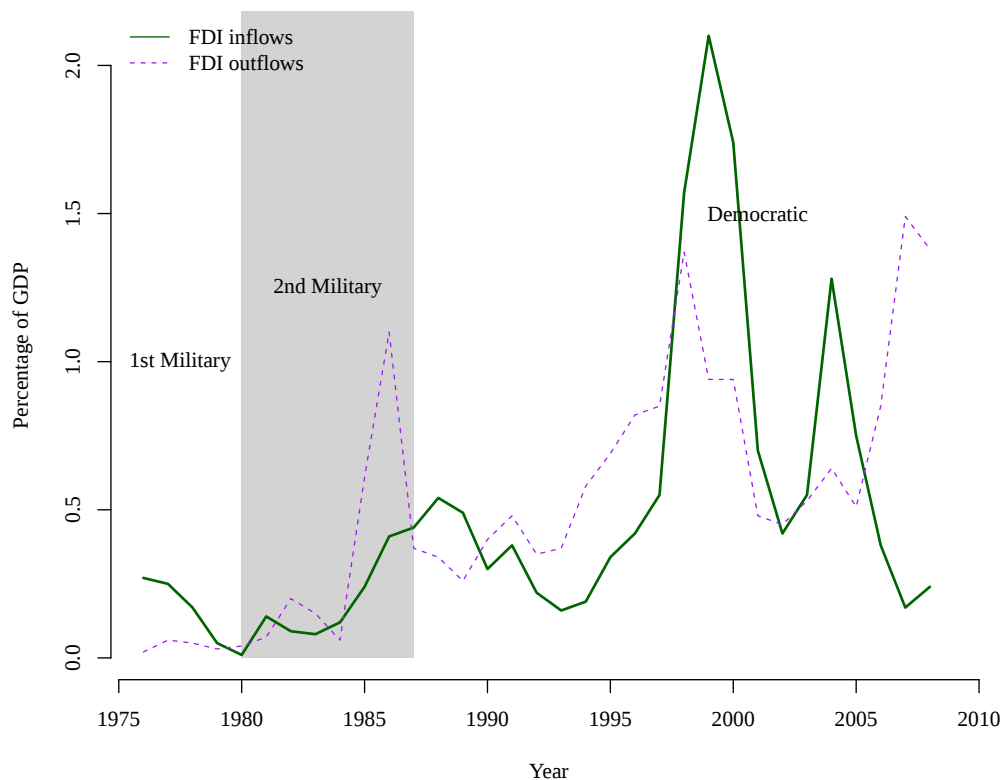


Figure 3.4: This figure shows time-series data on outward and inward foreign direct investment flows as percentage of GDP from 1976 to 2008. The purple dashed-line indicates the Korea’s outward FDI over time. The dark green solid line shows the Korea’s inward FDI over time.

and economic development. Under the new dictatorial leadership, the Economic Planning Board (EPB) forged a policy census within the bureaucracy by drawing on the work of a group of young, foreign-trained economists including Kim Jai-Ik, senior secretary for economic affairs (KDI, 2012; Lee, 2008). He had been regarded as the economic policy decision maker until he was killed in Rangoon (“the Rangoon bombing of 1983”).¹³ The economic policies led by Kim could be

¹³According to (Lee, 2008), President Chun said to Kim, “No need to say anything else. You are the President when it comes to economic policies.” (recited in (KDI, 2012), p.48) when he requested Kim to lead his economic cabinet. Kim publicly criticized the high economic growth policy centered on *chaebol* by claiming that the government should abolish tax incentives and preferential financing for a few largest *chaebol*. He also insisted on drastic deregulations and

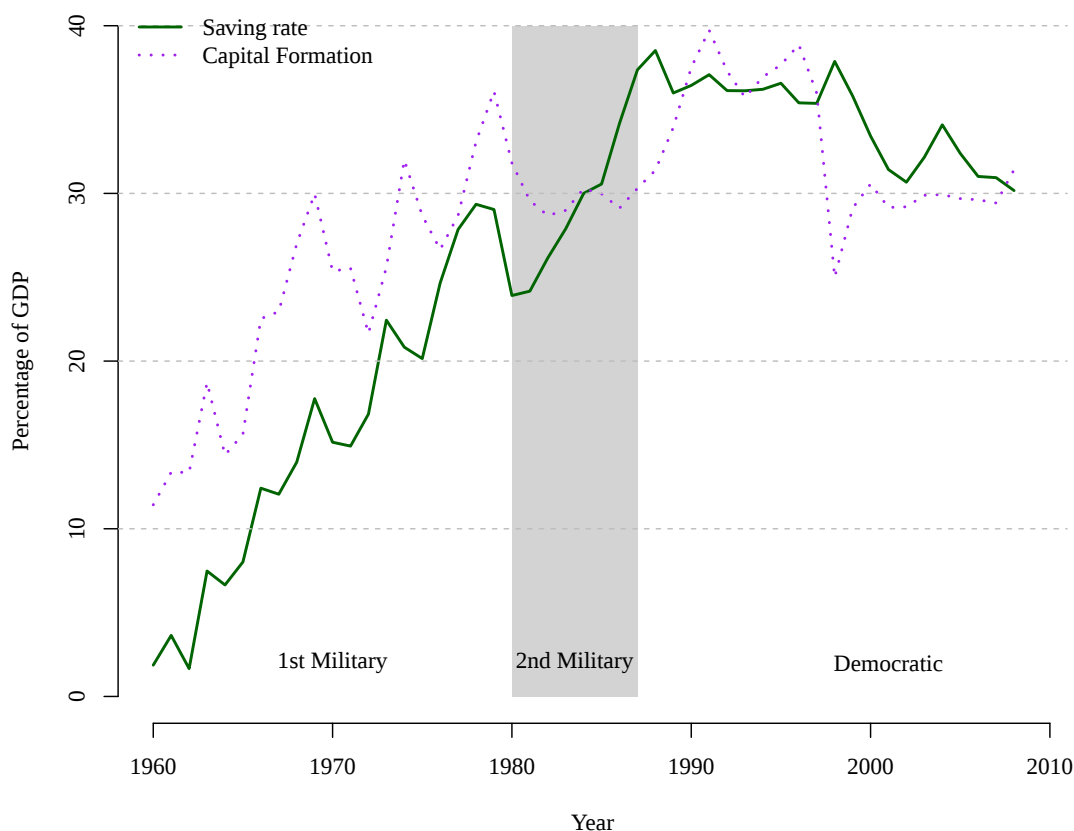


Figure 3.5: These time-series data on the gross domestic saving rate and the gross capital formation as a percentage of GDP clearly show different patterns by regime. Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories (<http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS>). Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption) (<http://data.worldbank.org/indicator/NY.GDS.TOTL.ZS>).

considered an actual threat to the largest *chaebol*.¹⁴

antitrust law.

¹⁴Indeed, the new economic cabinet outlined a strategy that implied a fundamental break with the style of economic management of the past: 1) emphasis on comparative advantage rather than industrial targeting and import substitution; 2) transition toward an economy led by the private set; 3) a general reduction of state intervention and wider play for market forces; 4) emphasis on social development; and 5) vigorous pursuit of macroeconomic stabilization (Haggard and Moon, 1990).

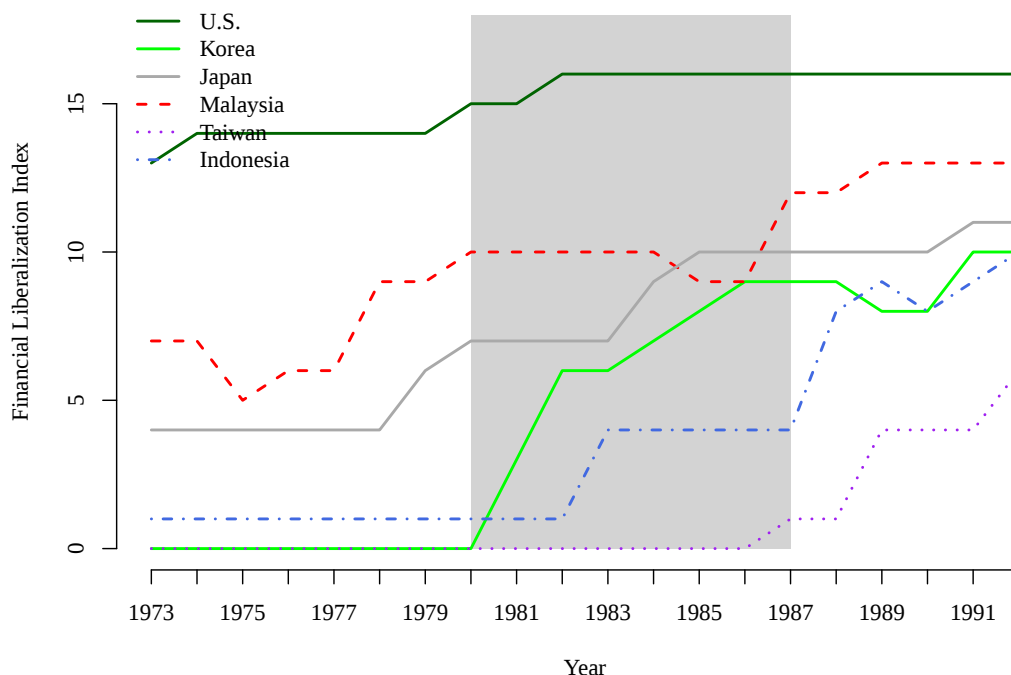


Figure 3.6: This figure shows time-series data on the Financial Liberalization Index for some countries constructed by Abiad and Mody (2003). The index include six policy dimensions: credit controls, interest rate controls, entry barriers, regulations and securities markets, privatization in the financial sector, and restrictions on international financial transactions. Three points can be given at maximum in each dimension. The score of zero indicates a fully repressed economy and the score of eighteen represents a fully liberalized economy. The shaded area indicates the second military regime in Korea (1980–1987). This clearly illustrates the degree of financial liberalization rose during the second military regime in Korea, which enabled capital owners to move their mobile assets in some conditions. It did not increased monotonically as shown in the democratization period (1987–).

It is clear that capital owners were highly uncertain about the taxation level that Chun actually intended, and were concerned that he would impose a tax rate higher than before, or suspend preferential financing provided by the former government. However, the top corporate income tax rate on listed companies rose by only 1% (from 32% to 33%) after his inauguration. It made capital owners

believe that President Chun was not so predatory.¹⁵ All these actions could be mixed signals which raised uncertainty about the dictator's actual policy preferences to capital owners.

A new game started as President Chun decided to establish a new legislature via a free election.¹⁶ Spending a huge amount of money, the president formed the Democratic Justice Party (DJP) in January 1981, and supported government-controlled parties. As the game formalizes, capital owners observed the legislative election result before Chun sent a signal. In the election DJP won 151 seats (55%) out of 276 seats and the Democratic Korea Party (DKP), a government-controlled party, earned 81 seats (29.3%). Since the Korean People's Party (KPP), the third party which obtained 25 seats (9%), was also practically influenced by the government, the newly established legislature was nearly completely controlled by the dictator.

Indeed, uncertainty about president Chun's economic policy preferences was surging before the election of 1981. Chun's regime often chose shock therapy for the economy. For instance, the government suddenly raised the bank-loan rate by 6 percent points, saving deposit rate by 5.4 percent points at once on January 12, 1981.

The satisfactory election outcome ($r=0.933$) provided President Chun with good reason to maintain the new National Assembly. He could completely control it, and thus form public policies that he desired. After observing the election outcome and Chun's signal L , capital owners updated their beliefs about Chun's

¹⁵Differential taxation had been applied to corporate income tax rates until 1982. For instance, the top corporation income tax rate on listed (or open) companies was 27%, but the rate of 33% was applied on open companies whose major shareholders have more than 35% stake. For non-listed companies the rate rose up to 40% in 1978.

¹⁶The electoral process were stained by government's interference and malpractice. The new president's party (DJP) was covertly supported by the Agency for National Security Planning, the successor of the Korean Central Intelligence Agency. Before the election newspaper and broadcasting organizations were forcefully merged by the government. Behind the cause of national security 64 media companies were shut down by the military law in November 1980. 567 opposition politicians' political activities were banned by urgent actions. In this sense, the 11th legislative election was relatively free, but not fair.

preferred tax rate. That is, capital owners believed that as he could completely control the legislature (i.e., $r \approx 1$, and $\epsilon(r) \approx 0$), the tax rate made by the legislature would represent his preferred tax rate.¹⁷ They also believed that Chun did not have an incentive to dissolve the legislature, and his choice of L was sincere.

There are additional conditions to be looked into. Note that the fraction of non-mobile capital stocks can be proxied by the fraction of agriculture or exports of ores and metals. As Figure 4.3 depicts, the fraction of non-mobile assets have decreased nationwide since the early 1960s. The sum of the two fractions is smaller than 20% of GDP in 1980. Given $r \gg \theta$ and the legislature, the dictator would not make a strategic choice to misrepresent his preferred tax rate. Comparing the transaction cost with an estimated tax rate imposed in the newly formed legislature, capital owners can choose either move their assets away or not. Indeed, the transaction cost was still high in 1981, considering the low effective corporate income tax applied to *chaebol*. Consequently, information from the election result and the subsequent signal sent by Chun helped capital owners form more informative beliefs about Chun's preferred policy preferences. As a result, they did not move their mobile assets abroad.

Hypothesis 1 is supported during the early years of the Chun's regime. After the end of the game, the 11th National Assembly completely controlled by President Chun passed the bill to change the corporate income tax rate. In 1981 the top corporation income tax rate on listed companies stayed the same at 33%, but the rate on first KRW 50 million of income dropped from 25% to 22%. The top corporation income tax rate on non-listed companies declined from 40% to 38%, and the rate on first KRW 50 million of income dropped from 25% to 22%. Such changes in corporate income tax rates did not affect capital owners' choice in the current game, but formed more informative prior beliefs about the dictator type in a future game.

¹⁷Recall that a dictator's legislative capability is inversely associated with uncertainty about his preferred tax rate

3.4 The 12th National Assembly, 1985

A new game started in 1985. This case tests *Hypothesis 2*. For the test, we need a more careful examination of political and economic circumstances before the 12th general election was held.

Gross capital formation as a % GDP is frequently employed as a measure of total domestic investment.¹⁸ In general, capital is said to be formed when savings are used for investment purposes. In this sense, we can expect that without capital outflows the rate of gross capital formation would go along with the domestic saving rate.¹⁹

Figure 3.5 shows the expected pattern for the first military regime (1961–1979). Such overinvestment tells us that savings were regularly used for investment purposes during the period. The persistently increasing tax revenues as a % of GDP under the first military regime made capital owners believe that the overall tax rate could rise in the future. The president did not raise the top corporate income tax rate itself, but attempted to sustain high levels of direct taxes such as individual income tax and inheritance tax in internal taxes. For instance, the ratios of direct taxes to total internal taxes were 0.599 and 0.605 in 1970 and 1975, respectively.²⁰

Interestingly, we see a different pattern occurred under the Chun's regime. Although the domestic saving rate rebounded rapidly, the gross capital formation rate remained at a certain level. This implies that although corporates as well as

¹⁸The World Bank data catalog also mentions that gross capital formation is formerly called gross domestic investment. <http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS>.

¹⁹As Collins and Park (1989b) explain, almost all of the additional foreign borrowing was used to finance current account deficits under dictatorship. In that domestic investment must be financed by some combination of domestic and foreign savings, foreign savings is exactly equal to the imbalance between domestic savings and investment (p.234).

²⁰By contrast, the ratio abruptly fell under the second military regime. For instance, the ratios of direct taxes to total internal taxes were 0.329 and 0.366 in 1980 and 1985, respectively.

households could form capital, they hesitated to invest domestically. In particular, the positive gap between the savings and investment became striking from 1985 to 1987. We can guess that the investment levels lower than domestic saving rates could occur by capital owners' choice of not moving their mobile assets away after observing that the dictator sustained the legislature formed by an unexpected election result.

Despite the disappointing election result President Chun chose to maintain the legislature, which was a signal L to capital owners. Indeed, the legislative election of February 1985 was a crucial test for the military regime in that it was the first legislative election after lifting the ban on potential challengers' political activities in December 1984. To secure the victory in the election the government attempted to engineer it. For example, the election day was move up to February from April in order to hinder an organized opposition.

Nevertheless, the ruling party (DJP) received only 35.2% of the popular vote. It retained its control of the National Assembly by earning 148 out of 276 seats ($r=0.54$) due to the peculiar system of proportional representation that grants the two-thirds of the seats elected from the national constituency to the largest party. By contrast, the main opposition party, the New Korean Democratic Party (NKDP), which was established only one month before the election, earned 29.3% of the popular vote, and obtained 67 seats. After the election, legislators who defected from the second largest but government-controlled opposition party (DKP) joined the NKDP. As a result, the NKDP became a stronger opposition party with 104 out of 276 seats (37.7%). It was *ex post* revealed as a totally unexpected result to the dictator. The Agency for National Security Planning (the former Korean Central Intelligence Agency) predicted that the NKDP could earn at maximum 13 seats.

Despite the unexpected election result President Chun decided to maintain the

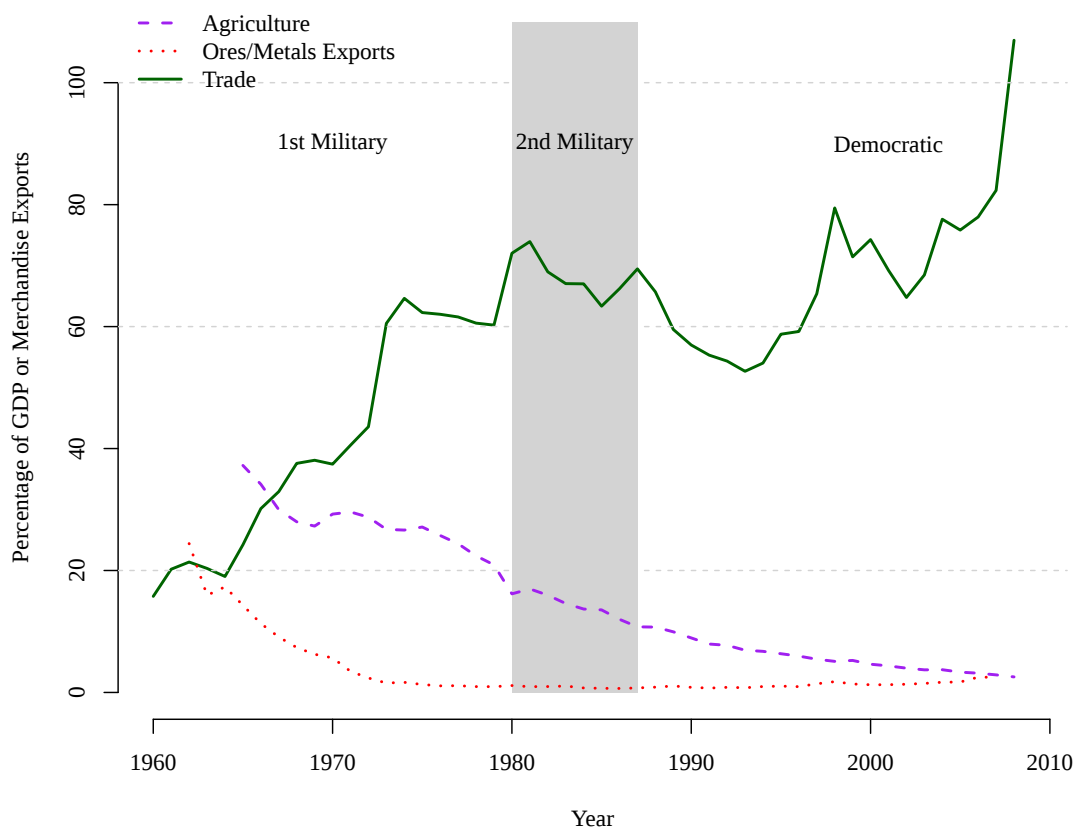


Figure 3.7: This figure shows time-series data on agriculture (value added as a percentage of GDP), trade (as a percentage of GDP), and exports of ores and metals (% of merchandise exports). Agriculture and exports of ores and metals can be proxies to measure the proportion of non-mobile capital or the probability of reallocation (Escribà Folch 2003, p.13). Trade as a percentage of GDP is used as a proxy for globalization. We can hypothesize that as an economy is more globalized, the transaction cost will be lower.

legislature.²¹

²¹The seventh largest *chaebol*, Kookje whose debt ratio was 965% was dissolved right after the legislative election of 1985. It is well known that the exit of Kookje was intended by President Chun who wanted to showcase his capacity to punish any *chaebol* if needed (Park, 2007). After the collapse of Kookje the profitable affiliates were taken over to other *chaebol* which had a close relationship with the government. However, it was decided by the finance minister on 7th of February, 1985, which was before the election (February 12, 1985). Therefore, we can hardly conclude that the unexpected election result brought about the dissolution of Kookje, but it is evident that the case made capital owners less certain about the dictator's type.

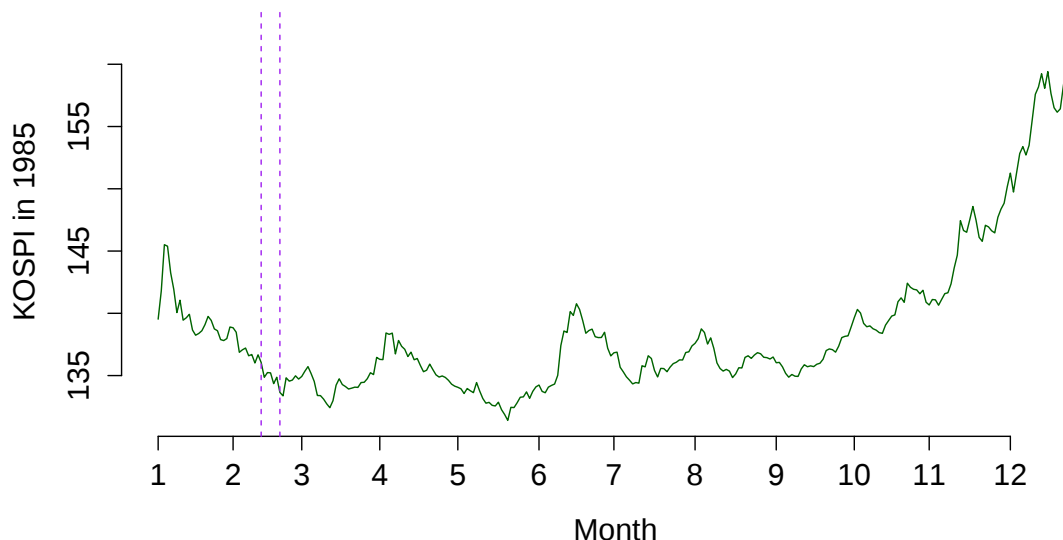


Figure 3.8: This figure shows time-series data on the Korea Composite Stock Price Index (KOSPI) in 1985. The purple dotted-lines indicate the two events that could potentially affect stock prices: the general election (February 12) and the dissolution of the seventh largest conglomerate, Kookje, by the government (February 21). The time-series plot displays the two events did not seriously affect the stock prices. The day after the election (February 13) the KOSPI dropped by only 0.45 percent. On 21st of February the index shed 1.22 percent to 133.65.

After observing the dictator's signal following the election result capital owners believed either (1) the dictator who was not tax-benevolent strategically chose to sustain the legislature or (2) the tax-benevolent dictator was not strong enough to completely control the legislature. In the first case, Chun had a stronger incentive to misrepresent his preferred tax rate under the circumstances where the government party's seat share in the legislature fell sharply and the transaction cost had gradually declined. **Proposition 2** predicts that given a legislature capital owners are not willing to move their mobile assets away in equilibrium when they believe that President Chun is not tax-benevolent.

In the second case, capital owners could move their mobile assets away in equilibrium because the new legislature influenced by the opposition parties who must

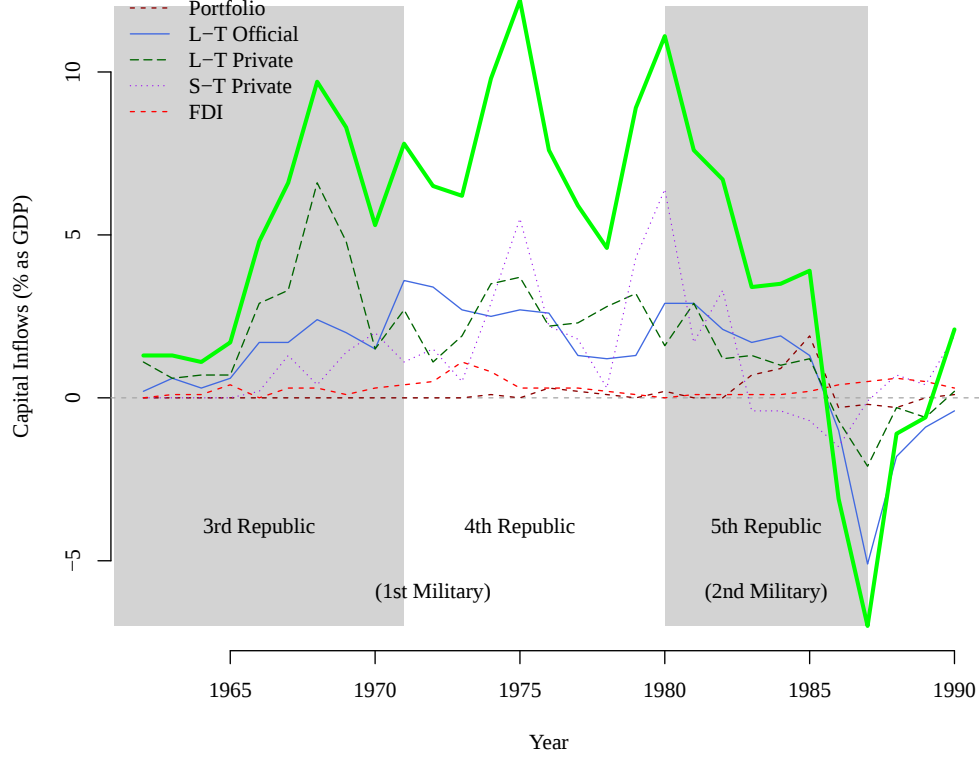


Figure 3.9: This figure shows time-series data on composition capital inflows to Korea. The negative sign indicates capital outflows from Korea. The thick green line indicates the sum of compositional capital inflows. **Source:** Park (1984), IMF Balance of Payments Statistics; Collins and Park (1989a), Bank of Korea Economic Statistics System, World Development Indicators, and Noland (2007)

redistribute government resources to their own districts which had been excluded from beneficiaries would raise an overall tax rate, but the government party could not entirely constrain it. Recall that the probability that both players make a strategic choice is very sensitive to changes in dictator's legislative capability.²²

This paper supports the second case for some reason. First, a series of actions taken by Chun before the new game started had provided meaningful informa-

²²The probability of both players' strategic choices is conditional on the dictator's legislative capability r , the decreasing function $\epsilon(r)$ with regards to r , and the prior beliefs $F_D(\tau_L)$. The probability exponentially grows as the dictator's capability decreases.

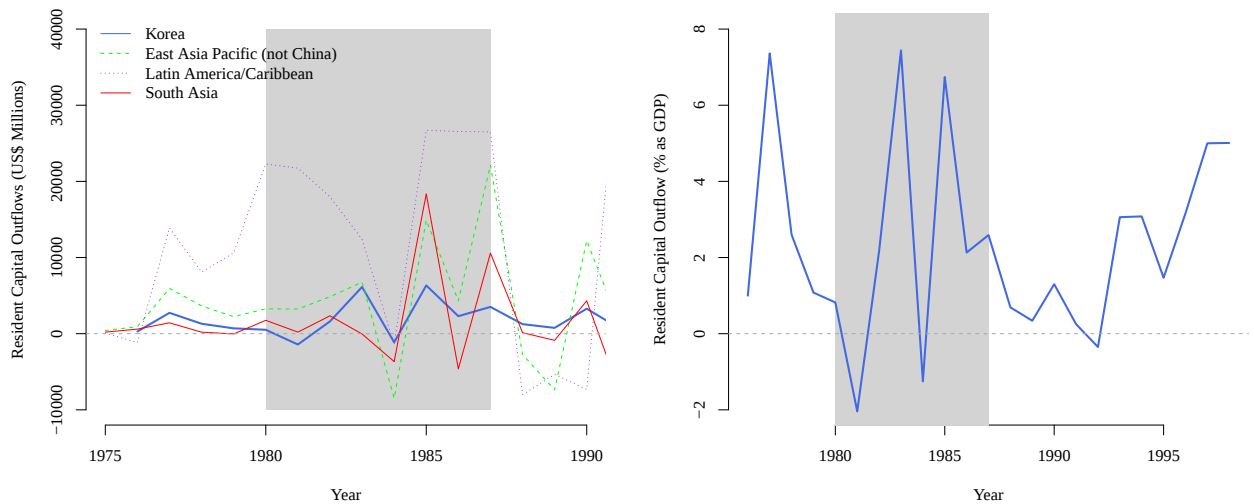


Figure 3.10: This figure shows time-series data on resident capital outflows in some developing countries. The left panel displays net resident capital outflows in Korea and some regions (East Asia Pacific (excluding China), South Asia, and Latin America). The right panel illustrates resident capital outflows as a percent of GDP in Korea during 1975 to 1998. Resident capital outflows capture not only capital flight but other influences as well (Schneider, 2001). Resident capital outflows soared in all countries in 1985, which can be explained by the adjustment phase in the world economic condition. However, resident capital outflows varied across regions. Thus the estimates of resident capital outflows tell us only that considerable capital outflows occurred in Korea from 1985 to 1986. **Source:** Schneider (2001)

tion about his preferred tax rate. He already revised the corporate tax law in 1982. In accordance with the revised law, the top corporation income tax rate on companies decreased from 33% to 30%, and the tax rate on first KRW 50 million of income also dropped from 22% to 20%.²³ The revised tax rates were lower than those formed in the legislature in 1978. In addition, Chun doubled the public spending on education as a percentage of government expenditure from 14.12% in 1980 to 28.7% in 1985, which is higher than that after the democratization (22.43% in 1990). A dictator with a low discount factor (or short-term time

²³The top corporation income tax rate on non-listed companies whose major shareholders owned more than a 35% of stake and turned income above KRW 50 million declined from 38% to 33%.

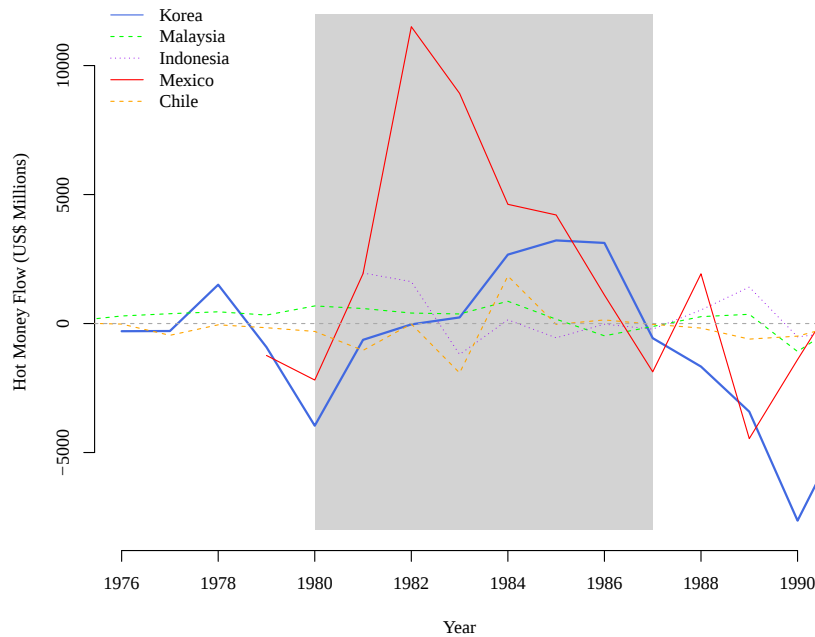


Figure 3.11: This figure shows time-series data on hot money flows (US\$ Millions) in some developing countries. The positive sign indicates hot money outflows. Hot money flows can be earned by errors and omissions plus short-term capital, other sectors. Estimates of hot money flows capture the minimum capital movement of resident capital in developing countries (Schneider, 2001). Hot money outflows occurred in Korea from 1984 to 1986 under the second military regime. Hot money outflows are very sensitive to world economic conditions and national financial soundness. It is worthwhile to note that hot money flows may be induced not by domestic capital owners but by foreign investors, especially global speculative funds. **Source:** Schneider (2001)

horizon) would not invest in education because the investment is not expected to induce an immediate effect to enlarge the taxables.²⁴ Hence, such public policies

²⁴It is assumed that dictators with high discount factors are willing to invest in education and population health because they believe that better education and population health will develop human capital and improve labor productivity in the long run. By contrast, by spending on social security including employment and labor remuneration the government can gain immediate support from prospective beneficiary groups. Despite the 7-year single term restriction Chun was suspected to extend his reign (1) by amending the constitution again or (2) by nominating his agent in the next presidential election. Note that the constitution stipulated that president should be elected through an indirect election. Winning the nomination for President practically guaranteed getting elected President under the rule. For instance, Chun earned 90.2% of the electoral college in the former presidential election. Chun nominated Roh Tae-woo, his long-

provided more informative prior beliefs about his economic policy preferences. At least, they may believe that President Chun was less likely to disarray economic policy by abruptly raising the tax rate again.

Second, although the dictator's legislative capability weakened, the chance of tax-benevolent dictator's sincere choice of maintaining the legislature was still higher than that of non-benevolent's strategic choice. The government party's seat share was 0.54 in 1985, which is much lower than 0.93 in 1981. Given a fixed transaction cost the cut point α rises exponentially as r decreases. The probability of the pooling equilibrium was still not high at $r=0.54$. Although some countries such as United Kingdom and Taiwan lowered the top corporate income tax rates in 1985, it was still lower in Korea than those in most comparable countries, considering the exchange rates and extra costs. From the model we can infer that the capital owners were more likely to believe the second possibility (i.e., less capable tax-benevolent dictator) rather than the first possibility (i.e., strategic non-benevolent dictator), and thus started moving their mobile assets away given the transaction cost in 1985. This is the first case that capital owners chose the exit option in Korea. This supports **Proposition 3**.

The capital owners' choice of $M|L$ can be captured by several indicators. We find an abrupt change in the outward foreign direct investment from 1985 to 1986, first. Figure 3.3 illustrates that the outward foreign direct investment rose unexpectedly from 1985 to 1986. After the democratization of 1987 it was moderated. Such a spike is exceptional in comparison with the average outward foreign direct investment in so-called 'Four Asian Dragons'. It is obvious that the capital outflow was not caused by external shocks such as a financial crisis. Figure 4.3 shows that trade as a percentage of GDP was very high but stable (62% to 70%) during the Chun's regime. Figure 3.8 also demonstrates that the Korean stock market

time friend and his accomplice in the coup, as presidential candidate of the Democratic Justice Party. Recently, Chun noted, "I was the president for seven years, but originally planned to two seven-year terms as the president." at the meeting with Yale MBA students in March 2012 (*Yonhapnews*, March 14, 2012).

was quite normal, and there was no single negative event to incite unexpected capital outflows. For instance, even on 21st of February when the government dissolved the seventh largest conglomerate, Kookje, the Korea Composite Stock Price Index (KOSPI) shed only 1.22 percent to 133.65.

In general, foreign direct investment inflows tend to be coupled with foreign direct investment outflows. However, the outward foreign direct investment were exceptionally high compared to the inward counterparts for the two years (1985–1986) as shown in Figure 3.4. This is evidence for the capital outflows predicted by *Hypothesis 2*.

Noland (2007) shows that capital outflows from Korea occurred from 1985 to 1989 (see Figure 3.9). Other measures of capital flight support capital outflows from Korea after the general election of 1985. Resident capital outflows show that capital moved abroad from Korea from 1985 to 1987 (see Figure 3.10). Hot money outflows also demonstrate capital flight occurred from 1985 to 1986, which was not common in Korea (see Figure 3.11). However, it is worthwhile to note that these estimates of several measures of capital flight are not direct evidence for capital owners' moving their mobile assets abroad.

It may be a coincidence caused by a weak dollar, low oil prices, and low global interest rates in the mid 1980s. Indeed, initial liberalization of restrictions on outward foreign direct investment began (Noland, 2007). Domestic firms were allowed to earn foreign capital by issuing convertible bonds, bonds with warrants and depository receipts (Park, 1996). However, whereas the good macroeconomic conditions initiated by the Plaza Agreement in September 1985 were held from 1986 to 1989, the unprecedented capital outflows occurred only from 1985 to 1987, and whereafter the outward foreign direct investment returned to an apprehensible level.

There is another evidence which supports part of *Hypothesis 2*. As shown in Figure 4.3, the proportion of non-mobile capital proxied by agriculture and

exports of ores and metals (as a percentage of GDP of merchandise exports) has gradually decreased. It can be interpreted as a decrease in non-mobile assets during the whole military regimes, which may create a condition favorable to capital owners' choice of moving their mobile assets away.

Here is an alternative explanation of capital flight from 1985 to 1986. Such an exceptional capital flight was caused by political uncertainty in the time leading to democratization. Potential investors began moving their money abroad because they feared that Korea's business-friendly policies would be reversed after the regime. However, the democracy protests were not launched before June 1987, when a college student Park Jong-chul died from waterboarding in the middle of an interrogation. Despite the disappointing election result, the Chun regime could easily lengthen its power through an indirect election of the National Council for Unification which was stipulated by the Constitution.

In general, as an economy is globalized, the transaction cost associated with moving their assets abroad becomes lower. Ironically the transaction cost rapidly fell in Korea as a result of the dictator's economic strategies: liberalization of the financial market, privatization of the commercial banks, and liberalization of imports and of previous restrictions on foreign direct investment (Haggard and Moon, 1990).

Nevertheless, we still have unexplained capital outflows from 1985 to 1986. While the gap between the gross investment level and the gross saving rate for the two years was about 8% of GDP as displayed in Figure 3.5, the difference between the FDI outflows and the FDI inflows for the same period was less than 1% of GDP as illustrated in Figure 3.4. Even considering the government's repayment of foreign debt (Collins and Park, 1989a) or an increase in internal reserve in some *chaebol*, a non-negligible amount of money is still unexplained.

Here is a new source to support the capital outflows from Korea. According to *Tax Justice Network* (TJN), unrecorded capital flows from Korea to offshore

financial centers from 1970 to 2010 account for 779.3 billion U.S. dollars which are foreign debt adjusted for currency changes, reschedulings, and arrears. The huge figure is the third largest amount following China (\$1,189 billion) and Russia (\$798 billion) (Henry, 2012). Unfortunately, it has not been revealed when and who flew the huge amounts of money to tax haven countries to avoid taxes, and the organization provides only the aggregate data for forty years. However, the new estimation of missing capital flows by *TJN* can be an alternative explanation of capital outflows 1985 to 1986.

CHAPTER 4

Discussion

The Korean case is evidence for the hypotheses derived from the game-theoretic model, but may be a special case where capital owners who had been raised in the export-oriented economy were powerful enough to bargain effectively with authoritarian leaders. The two Korean authoritarian governments provided huge tax favors for private manufacturing companies which had colluded with the government but not been owned by dictators' family members, which is commonly observed in authoritarian countries. Both governments also had the well-disciplined tax collection system so that they could secure stable tax revenues.

The extent to which dictators need for cooperation from private investors varies across countries. Both economically self-sufficient and politically consolidated dictatorships such as Kazakhstan specified by high fraction of non-mobile assets and an extremely high dictator's capability are less susceptible to globalization than the export-oriented economies. Such resource-abundant authoritarian regimes may readily change their tax policy including corporate income taxation, and be directly engaged in the process of modifying financial laws against the global standards.¹ Hence evidence from one or two cases is not sufficient to state that the hypotheses are widely supported in most authoritarian cases.

To construct a more persuasive empirical model, we need to consider some

¹For instance, KazMunaiGaz is the state-owned oil and gas company in Kazakhstan. It has a subsidiary, Tenizchevroil (TCO), oil joint venture with foreign companies such as Chevron which holds a 50-percent stake. KazMunaiGaz holds 20% of share. However, President Nazarbayev's family and his men completely control KazMunaiGaz, the parent company. For instance, Timur Kulibaev, son-in-law, was president of it.

points. First, authoritarian regime's responses to globalization are not identical. Authoritarian regimes with few resources (or cash cow) which heavily depend on foreign aids are susceptible to donor countries' (or international organizations') intentions. In such authoritarian regimes tax policy can be formed through games played by dictators and external forces. By contrast, dictators in countries with economic self-sufficiency are much more independent of international players, but may be challenged by domestic players such as capital owners who have grown up through politics-business collusion. Once capital owners form sufficient amount of capital, massive outflows of capital can seriously hurt the national economy. In this sense, capital owners have a strong leverage to bargain with authoritarian leaders.

Second, we may cast doubt on whether or not even consolidated authoritarian leaders are willing to utilize uncertainty about dictators' preferred policy preferences caused by asymmetric information. It is reasonable to think that repeated games may provide more informative priors so that dictators can hardly take advantage of asymmetric information. Some consolidated-dictators may prefer directly communicating capital owners to playing games under uncertainty. Thus, the model may be more appropriate to (1) nascent dictatorships in which new dictators' policy preferences are little known or (2) authoritarian regimes in which dictators' legislative capabilities are revealed by highly competitive elections.

Third, it is reasonable to expect that the higher the dictator's discount factor (or the longer time-horizon), the higher the probability of lowering the tax rate that can increase tax revenues by generating an incentive to invest more money to domestic economy (Olson, 1993). Despite its logical importance of the dictators' personal factor, however, it has often been ignored in most empirical quantitative studies due to difficulties in measuring and weighting it while some idiosyncratic choices by dictators have been exaggerated in most qualitative case studies. We may employ time horizons (i.e., the probability of regime failure)

carefully estimated as a proxy for the dictators' discount factors (Wright, 2008*a,b*; Escribà Folch, 2008).

Fourth, we also need to consider left legacies in authoritarian regimes. This factor seems to be striking in the former communist countries. Despite suffering from economic troubles these authoritarian governments are willing to assume large burdens of public provision of merit goods, and maintain relatively high overall tax rates in comparison with other authoritarian countries with no left legacies even after controlling for economic development.

CHAPTER 5

Conclusion

This paper has examined authoritarian leaders' taxation, capital owners who have the exit option, and legislatures. The model revisited Escribà Folch (2003)'s theoretical framework regarding authoritarian leaders, legislatures and capital owners, and constructed a generalized model by relaxing its restrictive assumptions about dictator types and considering a dictator's capability of achieving his tax rate which is observed before he sends a signal to capital owners.

The model provides important theoretical implications for the reason why some dictators are willing to maintain the legislature formed through elections, and the reason why capital owners would move their mobile assets abroad in some conditions even when a dictator allows a legislature to be established through somewhat competitive elections. It is common knowledge that a non-benevolent dictator's incentive to misrepresent his actual tax rate is inversely associated with his capability of achieving it through the legislative process. Capital owners would not move their mobile capital away after observing the legislature sustained if they believe that the dictator can potentially increase the tax rate if favorable conditions are created. By contrast, capital owners would move their mobile assets away in equilibrium after observing the less capable dictator's maintaining the legislature only when they believe that the dictator is tax-benevolent in comparison to the newly-formed legislature.

Without assuming the possibility of tax-benevolent dictators who inherently have low tax rates to induce higher investment the signaling model cannot ac-

count for the equilibrium outcome such that capital outflows occur in the existence of a legislature. Non-benevolent dictators can utilize the possibility of a tax-benevolent dictator under uncertainty. It is ironical that tax-benevolent dictators cannot enjoy the benefit from sustaining a legislature. This equilibrium cannot be theoretically explained by the Escribà Folch (2003)'s original signaling model with discrete types of dictators (short-term vs. long-term horizons). Put differently, his model predicts that capital owners will not move their assets abroad given a legislature in equilibrium.

The theoretical model provides an empirical implication for electoral authoritarian regimes in the highly globalized world. Capital owners can be replaced with foreign investors who are much more capable of moving their assets away (i.e., low fraction of non-mobile capital stocks) than domestic investors constrained by dictators with strong discretionary power in the real world. By delaying capital inflows already scheduled, foreign investors can also threaten authoritarian leaders who want their regime survival. It implies that tax-benevolent dictators who are sincerely engaged in foreign investments for development are more likely to be threatened when they are not successful in domestic politics.

I have empirically tested two hypotheses derived from the theoretical model through a case study of two military regimes in Korea from 1961 to 1987 whose economy was strongly determined by both military dictators and a small number of large manufacturing conglomerates known as *chaebol* (e.g., *Samsung*, *Hyundai*).

My empirical findings are straightforward. First, before the 1980s, the gap between the transaction cost and the effective corporate income tax rates by industry was so wide that capital owners could not choose the exit option regardless of other conditions such as the fraction of non-mobile capital. Since government control over all foreign exchange transactions induced high transaction costs to move mobile assets abroad, President Park Chung-hee did not have an incentive to misrepresent his preferred tax rate in order to avoid massive outflows of capi-

tal from Korea. Instead, he continuously increased an overall tax rate when the Korean economy was in trouble. For instance, faced with popular dissatisfaction he introduced the value-added tax in 1977 after six and a half year struggles. He suddenly set a new tax policy for large-sized companies, and abruptly revised the corporate income tax rates in 1978. Nevertheless, the effective corporate income tax rates for key industries dominated by a few capital owners were much lower than the nominal rates so that the capital owners could enjoy them, and invested domestically during the first military regime.

Second, uncertainty over the *de facto* leader's tax rate was raised by a series of actions taken by him before the inauguration. After the military coup in December 1979 Chun Doo-hwan was the *de facto* leader of the country, but President Choi Kyu-hah and the former legislature had the official power to make public policies. Chun promptly made the potential challengers under house arrest, banned all political activities, temporarily shut down the legislature, and expand martial law to the entire country on the 17th of May 1980. The dictator's high resolution was observed in the course of suppression of the Gwangju democratization movement.¹ However, there were some mixed messages were sent to capital owners at the same time. The former General did not attempt to change any tax rates until May 1980, which made capital owners believe that he was not so predatory as dictators in other authoritarian regimes.

After observing the current legislature dissolved, capital owners updated their beliefs about the new leader's tax rate. It is worthwhile to note that to the capital owners dissolving the legislature itself did not necessarily mean that the dictator must be predatory. Put differently, they already experienced a tax-benevolent dictator in the 1970s. The former president lowered the effective corporate income tax rates for key industries even after dissolving the National Assembly, which was believed as his sincere choice. Likewise they may believe that given no legis-

¹Giving the order to fire, he completed to suppress the Gwangju democratization movement, and then he had control over the entire country by the end of May.

lature the highly resolved dictator was less likely to strategically misrepresent his tax rate. Considering the high transaction cost as well, they chose not to move their mobile assets away. As expected, there was no change in tax rates including corporate income tax in the interim government.

Third, the prior uncertainty about the new president's tax rate was worsened by the new constitution adopted in October 1980. The new constitution set the presidential term limit to a single seven-year term. Before the legislative election, the new government introduced a new tax for large-sized companies, raised the nominal top corporate income tax rate from 32% to 33%, and reduced the gap in effective corporate income tax rates between key industries and others by the Regulation of Tax Reduction and Exemption Act. All these actions were new to capital owners, which increased uncertainty over the dictator's tax rate.

However, such an uncertainty was offset by his legislative capability observed by the general election outcome. By practically controlling 93% of the total seats through a free election, President Chun demonstrated his legislative capability, which reduced the probability of strategic choices (i.e., the pooling equilibrium). After observing the legislature completely controlled by the capable dictator, capital owners did not move their mobile capital stocks away. As *Hypothesis 1* states, such an equilibrium entailed the corporate income tax rate lower than the transaction cost.

Fourth, the unexpected result of the legislative election of 1985 provides two feasible scenarios about capital owners' beliefs: 1) tax-benevolent Chun was not strong enough to completely control the legislature, and thus uncertainty over the future tax rate would increase; or 2) non-benevolent Chun made a strategic choice in the condition where the transaction cost gradually declined. From a series of actions taken by Chun's regime such as the revision of the corporate tax income rate which lowered the top corporate income tax rate from 33% to 30% in 1982, capital owners obtained the informative prior belief about the dictator type on

the continuous space. It is notable that the posterior belief in a current game will be used as the prior belief in the next game. That is, before the new game started, they had believed that Chun was more likely to be tax-benevolent. After observing the legislature maintained in spite of the unexpected election result, they would move their mobile assets away because the new legislature influenced by the opposition parties could raise the tax rate, which would be higher than what the dictator inherently intended. This is the first case that capital owners chose the exit option under uncertainty.

Of course, capital owners might believe that Chun could suddenly raise the tax rate if needed, and he had a stronger incentive to misrepresent his preferred tax rate in the condition where he was less capable of controlling over tax policy in the legislature, and the transaction cost to move assets abroad had gradually decreased.

However, the equilibrium such that less capable tax-benevolent dictator sincerely chose to sustaining the legislature is more feasible than the equilibrium such that non-benevolent dictator strategically maintained the legislature after the unexpected election outcome. Indeed, the corporate income tax rates as well as an overall tax rate remained, but rose right after the democratization.² In sum, after observing that the legislature unfavorable to Chun was formed, but Chun did not dissolve it, capital owners started moving their mobile assets away with the decreasing transaction cost, which resulted in (1) non-increasing domestic investment despite rapidly increasing savings, (2) an unexceptional spike in the outward foreign direct investment, and (3) an increase in unrecorded capital outflows for the two years, 1985–1986. Both players choices in 1985 empirically supports *Hypothesis 2*.

Since existing political theories have focused on fragmented information about

²Indeed, the top corporate income tax rate (30%) as well as the overall tax revenue (about 17% of GDP) were still lower than those in other comparable countries such as the Asian Four Dragons in 1985.

Korean dictators' arbitrary decision-making (e.g., the rapid dissolution of the seventh largest *chaebol*) or power struggles among key members of an informal military circle called *Hanahoe*, they could not link choices of the dictators who wanted reasonable tax rates to macroeconomic changes made by capital owners as an influential player. On the other hand, undue emphasis on politics-business collusion under dictatorship may mislead the potential tension between capital owners who would maximize their profits by avoiding taxes and a dictator who wants to gather more resources to secure his regime. By contrast, this model can coherently explain such Korean capital owners' different choices given the military dictator's choices with some exogenous parameters such as an uncertainty over the dictator's inherently preferred tax rate and his capability of achieving it in the legislative process. An increasing fraction of electoral authoritarian regime coupled with decreasing transaction costs induced by globalization is expected to provide more appropriate cases to which this model is applicable beyond the Korean case.

Despite such findings and implications, there are caveats. First, it is often claimed that risky capital owners tend to prefer predictable circumstances regardless of corporate income tax rates. Even in countries where the governments tax capital at high rates, capital owners can earn profits if the circumstances are sufficiently predictable. In this sense, my empirical evidence may be created by capital owners' responses to fluctuations in predictability of economic policies affected by unexamined political and economic circumstances rather than to income tax rates.

Second, like Escribà Folch's simple model, this model also implicitly assumes that maintaining the legislature already established is equivalent to creating a new legislature. The former may be regarded as a substantively different signal to capital owners who would update their beliefs about the dictator type through observing the dictator's choices in incomplete information games, however. Likewise, abolishing the current legislature and not creating a legislature may also

be differently interpreted by capital owners in authoritarian regimes. Despite the strength in theoretical parsimony the simple setting may weaken its validity. To improve predictability we can add different signals sent by a dictator to models in future research.

Part II

Distributive Politics in Korea: Regionalism, Electoral Incentives and the President's Discretion in the Case of Special Local Allocation Grants, 2005–2006

CHAPTER 1

Introduction

How do electoral incentives affect the allocation of intergovernmental grants when it is believed that voters' choices are mainly motivated by their regional identities? The answer to this question has profound implications for decentralized democratic governments that have observed legislative elections outcomes influenced by regional (or ethnic) identities. Some theoretical models which link electoral competition to the allocation of public spending (Alessandro and Persico, 2001; Cox and McCubbins, 1986; Dixit and Londregan, 1996, 1998; Lindbeck and Weibull, 1987) can provide logics behind governments' (or government parties') tactical apportionment of targetable goods at the district level. For instance, emphasizing the machine-core constituent link that guarantees voters' response to rewards, Cox and McCubbins (1986) predict that political parties will distribute targetable goods to core supporters (or the electoral districts of their supporters).

From a comparative perspective, these theoretical models have limitations, however. First, the models treat the ruling party as a unitary actor, suggesting a decision by party leaders about where to spend. However, how individual legislators are influential can be a major predictor of the actual allocation process in some countries. Second, these models lack an appropriate logic that can capture broader regional variation in the allocation coordinated by electoral incentives of three different actors. Considering the common feature that regional (or ethnic) identities are usually shared by voters beyond electoral district boundaries, the government's (or the government party's) targeting strategy at the broader re-

gional level is not necessarily identical to that at the district level. To identify targeting strategies which differ by the relevant level is more interesting to comparative politics research, but it can be more complicated in some institutional settings. For example, in a country where the president has great budgetary discretion, but cannot seek reelection, he or she may have a different targeting strategy. Without including assumptions about regionalism and different electoral incentives of political actors, implications from the existing theoretical models could be misleading.

Beside the theoretical limitations, the results of empirical research on this issue can be distorted by inappropriate data. With a few exceptions (Dahlberg and Johansson, 2002; Magaloni, Díaz-Cayeros and Estevez, 2007), most earlier empirical works used data sets that are incapable of capturing any possible tactical use of intergovernmental grants. As Dahlberg and Johansson point out, in most countries the systems for intergovernmental grants are prescribed by laws that cannot be easily altered. In general, intergovernmental grants are set up based on the equity and efficiency purpose. Unless the equity and efficiency variables are controlled for, we may exaggerate the political impact of such grants. On the other hand, if we include these variables, we may fail to identify strategic aspects of grants given that it is cheaper to buy the votes of the poor (Levitt and Snyder, 1997). In this sense, it is a prerequisite for an investigation of this issue to find data suitable to show that intergovernmental grants allocation is determined less by the equity and efficient purpose.

Another challenge comes from methodological limitations in the existing literature. Traditional qualitative research emphasized either legislators' personal attributes such as seniority proxied for the degree of influential power or voters' choices motivated by ethnic identities. Their arguments were supported by stylized episodes rather than by rigorous statistical methods. Even recent studies with quantitative methods ignore potentially valuable information from different

nested-levels by focusing on either general patterns or distinctive features in some regions.

By utilizing Bayesian multilevel linear regression models, this essay attempts to shed light on how the allocation of intergovernmental grants are coordinated by electoral incentives of three different actors when voters are motivated by regional favoritism. The Bayesian approach allows researchers to take advantage of our substantive information from previous qualitative as well as quantitative studies in the process of prior specification. For this purpose, I will examine a specific case of intergovernmental grants, the *Special Local Allocation Grants*, in Korea at two nested levels (districts and provinces) from 2005 to 2006.

From a comparative constitutional perspective, Korea provides an interesting case. First, the Korean Constitution allows the president to have a strong discretionary power in the allocation of government resources, but it forbids the president to run for reelection. This institutional setting forces us to consider the possibility that the president may have an incentive structure which is different from that of legislators who can be reelected. This essay assumes that the main motivation of the president's targeting strategy is to secure his own policies even after he steps down from his post. We also need an assumption about the president's targeting strategy which may be distinct from his party's strategy to maximize seats in the legislature. In particular, such a potential discordance between the president's and the ruling party's incentives may grow under Single-Member District Plurality (SMDP) rule which may create dead votes. Second, it is Korean conventional wisdom that the voters' regional identities are a main predictor of voting behavior in Korea. Regionalism has a substantive meaning in Korean politics, but the same hypotheses are also applicable to other countries where regional (or ethnic) voting is clearly observed.

This essay proceeds as follows. In chapter 2, I will provide background information about distributive politics in Korea. In chapter 3, I will present a brief

review of existing explanations of distributive politics regarding the *Special Local Allocation Grants*, and then introduce new ideas to construct an integrated theory about the relationship between intergovernmental grants and political actors. Based on the theoretical framework, I will specify three testable hypotheses. In chapter 4, I will describe the dataset that I collected and measures of predictors for the apportionment of the intergovernmental grants. In chapter 5, I will present empirical models to test the hypotheses by employing a variety of statistical techniques including Bayesian multilevel modeling, and demonstrate the modeling technique can capture important features which are overlooked in traditional regression models. In chapter 6, I will present the results, discuss the substantial meaning of them, and then conduct a brief sensitivity analysis as well. In chapter 7, I will summarize my findings from the data analysis and discuss limitations of this essay.

CHAPTER 2

A Brief Review

2.1 Background Information about Korea

Korea consists of six broad regions (Seoul-Metro, Chungcheong, Gangwon, Jeolla, Gyeongsang, and Jeju). It is worthwhile to note that two regions have long been political rivals. The Jeolla region is located in the southwest of Korea, and consists of two provinces: the northern Jeolla (Jeonbuk) and the southern Jeolla (Jeonam). The Gyeongsang region is situated in the southeast of Korea, and also comprised of two provinces: the northern Gyeongsang (Gyeongbuk) and the southern Gyeongsang (Gyeongnam).¹ The rivalry has clearly been revealed in presidential elections since the 1970s. For example, Kim Dae-jung, a native of the Jeolla region, won an 89% of the Jeolla vote but only 9% of the Gyeongsang vote in the presidential election of 1992. On the other hand, his main opponent, Kim Young-sam, who was born in the Gyeongsang region, won 69% of the Gyeongsang vote but only 5% of the Jeolla vote. Indeed, such a regional affinity to a particular political leader with the same regional background has been found to be the best predictor for Korean voters' behavior (Cho, 2000; Lee, 1998).

Under the political circumstance it has been widely believed that a president would allocate a disproportionately larger amount of intergovernmental transfers to regions with more loyal supporters (Horiuchi and Lee, 2008). From the 1960s to late 1990s, all of the presidents (both before and after the transition to democracy)

¹Historically, both the Gyeongsang and the Jeolla Regions have formed as administrative regions since 1018 when King Hyeonjong ruled during the Goryeo dynasty.

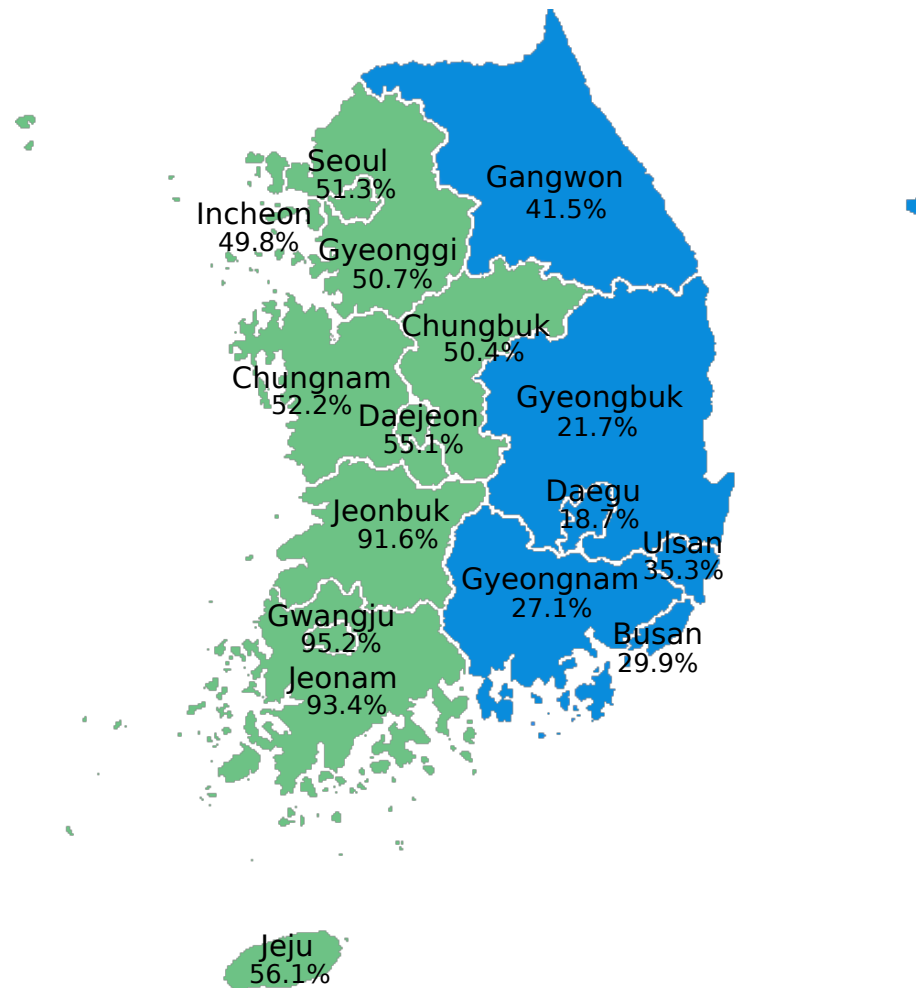


Figure 2.1: This figure shows the result of the Korean presidential election of 2002 by province. Blue areas represent provinces (or special or metropolitan cities) where Lee Hoi-chang, a candidate of the main conservative party, the Grand National Party, earned the majority of the vote. Green areas indicate provinces (or special or metropolitan cities) where Roh Moo-hyun, a candidate of the ruling party, the Unified New Democratic Party, won the majority of the vote. Roh Moo-hyun won the election (48.9% vs. 46.6%) nationwide. The percentages below provinces (or metropolitan cities) represent Roh's vote share in the provinces (ROKNEC, 2003).

came from one of the Gyeongsang provinces, which were the major beneficiaries of unfair economic policy. This belief was fortified even after the peaceful change of political power in 1997 by Kim Dae-jung, the long-term opposition leader. Due to his political indebtedness to his supporter region, the Jeolla region, which

had experienced unequal economic development during the presidencies of presidents from the Gyeongsang region, President Kim Dae-jung would compensate “his” provinces by disproportionately allocating central government expenditures for geographically concentrated public projects during his presidency, 1998–2003. Therefore, most of the literature mainly investigates a link between presidential election outcomes and the allocation of public expenditures (Kwon, 2005; Horiuchi and Lee, 2004).

The long-lasting belief has been steadily weakening since former human rights lawyer Roh Moo-hyun won the presidential election of 2002, however. First, since President Roh started his career as a politician after the transition to democracy, he was relatively free of such political indebtedness to his supporter provinces than his predecessors. Second, although his hometown is in one of the Gyeongsang provinces, he was ironically supported by the rival provinces, the Jeolla provinces. In this sense, we may raise a general question about his preferences as to targeting regions: his hometown, the main supporter provinces, the electoral districts of his close circle, or swing provinces that could secure votes for his key policies. Third, his non-authoritative leadership style made it more difficult to observe his preferences regarding targeting regions. President Roh attempted to break from the convention, declaring that he would not be involved in the allocation process of *Special Local Allocation Grants*, which had been regarded as a main resource to secure president’s influence in politics. It is true that the amount of the *Special Local Allocation Grants* in 2006 was gradually reduced to the half of what it was before. These new aspects of the Roh administration lead to recent approaches that focus on either individual legislators’ or major political parties’ roles in the allocation (Hur and Kwon, 2009; Choi and Kim, 2008) rather than on president’s discretion.

CHAPTER 3

Theoretical Framework and Hypotheses

3.1 Existing Explanations and New Ideas

Many Korean scholars have focused on the president's role in the processes of intergovernmental transfers under the theoretical framework of so-called *imperial presidency*. For instance, Horiuchi and Lee (2004) argue that government expenditures are disproportionally allocated to regions affiliated with the president. They implicitly set the president as a final decision-maker in the allocation process. Indeed, it was a Korean political tradition that presidents have implicitly or explicitly influenced the nomination of candidates in legislative elections, and placed their confidants on key positions in the party organization. As part of disclosing some political scandals, social activist organizations (e.g. the Citizens' Coalition for Economic Justice) pointed out that legislators' personal connection to the president has played an important role in the allocation processes in the institutional setting. Such fragmentary evidence, however, is not sufficient to prove the causal link between a personal connection with the president and the distribution of public expenditures itself.

Moreover, it is difficult to apply well-established theories in political science (Cox and McCubbins, 1986; Dixit and Londregan, 1998; Lindbeck and Weibull, 1987) to analyses that set a president as a key actor in distributive politics because such theories are constructed with one underlying assumption: an actor who can decide who are targeted has an electoral incentive to be reelected. It is important to note that a president cannot seek reelection but still has the implicit

discretionary power on the allocation process in Korea. Without any additional assumptions about the president incentive structure, empirical tests as well as the theoretical logic at work might be flawed. That is, in order to consider the presidential role within the context of legislative politics and the allocation of government expenditures, we need to specify an assumption about the president's incentive structure when an incentive to be reelected is not involved.

This essay assumes that the main motivation of the president's targeting strategy is *to secure his key policies even after his retirement*. Challenges to the policies may come from other factions within the ruling party as well as the opposition parties. A president would consider effective countermeasures against the challenges. First, he would go all-out to nominate his successor from his faction as a presidential candidate in the primary. If the successor is elected president after winning presidential primaries, then the president can retain his influence over key policies after his retirement, which is the best scenario for him.

Second, a president may attempt to help his party to obtain a majority in the legislature, which is the most reasonable measure. However, it can be frustrated by competitors in the ruling party. It is more likely to occur if the president's faction does not hold a majority in the ruling party, and his policies are not popular. Competitors from other factions often draw a distinct line between themselves and their predecessor by opposing the unpopular policies. In particular, such a split in the ruling party is more likely to occur if there exists a wide ideological spectrum within the party.¹

Third, a president may allocate government resources to some opposition districts to draw support from legislators of the opposition parties. This measure can be described by "the enemy of my enemy is my friend." But more importantly,

¹It is notable that there exists a wider ideological spectrum within liberals. In reality, changing alignment of political parties has been characterized as one of the typical features of Korean liberal politics. By contrast, an ambiguous ideological spectrum has been observed within conservatives. No ultra-rightist party has been established in Korea, and self-placed conservatives tend to enlist under the flag of the constitutional values: a liberal democracy, market economy, and rule of law.

it can help his successor to earn votes in the next presidential election. Voters in the opposition region fear that they would be disadvantaged if a candidate supported by the rival region wins the presidency. Believing that the president is well-disposed toward their region, they alleviate fears of his successor.

Under the assumption that a president's motivation is not necessarily in accord with the ruling party's electoral incentive, a rational president can consider allocating more discretionary resources to a swing province within each region in which voters are strongly affiliated with a regional identity because voters in a less-swing province may be satisfied (or may not be angry) with the allocation of more grants to a more-swing province which shares the same regional identity even if they are not a main beneficiary.

Now turn our eyes to political reality in Korea. It is worthwhile to note that under the plurality system presidential election outcomes may not be equivalent to legislative election outcomes under Single-Member District Plurality rule, which implies that the president's strategy may be not aligned with the strategy of the ruling party. For instance, 30% of the votes in the opposition region will be crucial in a presidential election. In contrast, the same amount of vote share in legislative elections under the SMDP system may result in no seat from the opposition region due to dead votes in each district. Therefore, compared to the ruling party, a president who wants his policies to be secured by his successor even after a changing alignment of political parties (or defeats in legislative elections) is more likely to have an incentive to allocate a considerable proportion of government resources to some opposition districts.²

²In theory, as the proportion of seats chosen in the list tier increases, a president's incentive is more likely to be aligned with party leaders' incentives, other things being equal. Korea has adopted a mixed-member majoritarian (MMM) system by using supplementary PR system to moderate disproportionality under the plurality system. About 25% of the total seats (75 out of 299 seats) were allocated proportionally, and the district seats (75%) were added to them in 1988. However, the allocation rule was absolutely advantageous to the largest party. The rule dictates that if a largest party wins over 50% of the total votes, seats are allocated to the party by its seat share in the nominal tier. If a largest party wins less than 50% of the total vote share, then it obtains one-half of the total seats. Thus, the largest party was guaranteed to obtain at least 38 out of 75 seats under the rule. The new allocation of 1996 states that the seats are

Empirically, no liberal parties have won presidential elections without support of centrist (and center-right) swing voters. This provides an explanation of why liberal presidents, Kim Dae-joong and Roh Moo-hyun, ceaselessly attempted to bring centrists into their embrace. For instance, *soon after* the ruling party won in the legislative election of 2004, President Roh proposed a “Grand Coalition” to the conservative Grand National Party. The proposal was severely criticized by other factions in his party, and turned down by the opposition leader Park Geun-hye in the end. Nevertheless, it signaled voters in the opposition region, Gyeongsang, that he and his faction would not give disadvantages to them.

It is also noted that a ruling party’s electoral incentive may discord with individual legislators’ incentives to be reelected in Korea. Put differently, all individual incumbents desire to be reelected in their districts, whereas political parties want to obtain seats as many as they can at the national level. Ruling parties are willing to sacrifice some individual legislators in an attempt to earn more seats. Here, individual capabilities can make some difference. Regardless of the ruling party’s strategy powerful legislators can apportion more government resources to their own districts by directly influencing the allocation process, but less influential legislators fail to do it.

The individual legislator’s capability can be proxied by senior status in the National Assembly. It can be measured by how many terms a legislator has been elected. By convention legislators elected for many terms hold the main positions such as the Speaker in the National Assembly of Korea. Also, influential legislators are assigned to the significant committees which give the members dis-

allocated by proportion, but to earn seats it is required to obtain at least 5 seats or at least 5% of the total votes in the nominal tier. The electoral reform in 2004 allowed each voter to cast two separate ballots: one for a candidate in the district, and the other for a party-list. The PR seats take account 18.7% (56 out of 299 seats). The minimum threshold was slightly lowered from 5% to 3% of the party-list votes to allow minor parties to win seats, and to encourage non-partisan candidates as well as independent voters to participate in election process. The two ballot system was sustained, but the PR seats slightly reduced to 54 out of 300 seats (18%) in 2012. In sum, Korea has adopted an element of the PR system, but the proportion is still limited.

cretion over the allocation of specific government resources.³ Regardless of their respective party lines, powerful individual legislators in the specific committees can apportion more resources to their own districts.

Even after we theoretically specify the assumption about president's incentive structure, we will still be faced with an empirical challenge: we cannot observe the actual role of the president in the allocation process. Instead, we can only infer the president's role in the unexplained variance in statistical models. As an alternative way to statistically infer the president's influence over the allocation of intergovernmental grants in Korea, I attempt to integrate hypotheses constructed at different levels, which is illustrated in Figure 3.1. I will test those hypotheses by employing a more suitable dataset on the *Special Local Allocation Grants* as well as appropriate statistical models.

3.2 Why the Special Local Allocation Grants?

Why are *the special local allocation grants* a good source to capture the possible association between different electoral incentives and the allocation of intergovernmental grants in Korea? To put it simply, why are the data on the intergovernmental grants suitable as an outcome variable of this analysis?

These grants are designed to supplement general local allocation grants motivated by efficiency and equity reasons. Since general local allocation grants are calculated by the standardized formulas and programmatically distributed, specific local financial conditions such as unexpected financial demands for recovery

³Some committees consist of most influential politicians, which changes over time. For instance, as of 2014, the Education, Culture, Sports & Tourism Committee is the most popular because the membership helps invite cultural events to their districts, and earn the budget for cultural (or sports) facilities. The Land Infrastructure & Transport Committee is also considered the committee which the members can snatch a budget or allocate social overhead capital to their districts. (*Asia Today*, 5/15/2014, <http://www.asiatoday.co.kr/view.php?key=20140515010005772>)

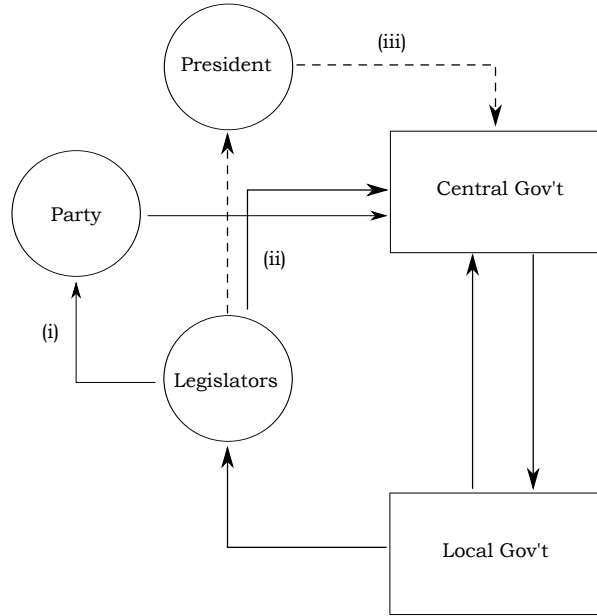


Figure 3.1: This figure shows an integrated theory about the relationship between intergovernmental grants and political actors (represented as circles) who have potentially different electoral incentives. We can either observe or proxy the solid lines. For instance, local governments directly request to favorably allocate the grants to their regions, or ask legislators elected in districts that belong to their regions to influence the allocation process. Individual legislators may make a request to their party organizations for the allocation (path (i)). Members of the committee related to the allocation can directly influence the process (path (ii)). Legislators avowedly claim credit for successful allocation of the grants. Unlike legislators, the president has strong discretion over allocation of all kinds of government resources, but tends to evade being engaged in the allocation process. Therefore, it is not observed whether or not he has influenced the allocation process (path (iii)). It is also not observable whether or not legislators who have a personal relationship with the president ask him to influence the process (dashed lines).

from natural disasters can hardly be considered. Therefore, all administrative units can apply for the special local allocation grants when unexpected financial demands (e.g., recovery from natural disasters, the establishment of local cultural amenities) occur. The applications are sent to the Ministry of Public Adminis-

tration and Security (MPAS), and the minister decides which local governments (administrative districts) should be granted. Unlike other public expenditures, the application requirements are not strict, and the execution of these grants is little constrained by budgetary items. Once an application is accepted by the MPAS, the actual distribution is implemented with little restraint. Even when a local government did not apply for it, the minister can apportion these grants to the local government according to his or her arbitrary judgment.

Officially the minister of Public Administration and Security has the final say in the allocation of the *Special Local Allocation Grants*. However, it does not mean great ministerial discretion. It is worthwhile to note that the president has the authority to appoint the minister. Since the minister also takes charge of the administration of elections at the national level, the president would choose one of his closest followers. In this sense, the minister can often be regarded as an agent of the president. In practice, the *Special Local Allocation Grants* have been utilized by former presidents in order to construct policy coalitions or make some legislators obedient to them. Thus, the grants are often called 'president's pocket money' (*Kukmin Ilbo*, September 20, 2007).

Most of all, the allocation is not mandatorily inspected by the legislature, and the central government would not release any source on it without the legislature's request. With use of informal methods (e.g., lobby, personal connection with members of the public administration and security committee, the minister of MPAS, or the President) local governments under poor financial conditions pour their efforts into obtaining the grants (*Chosun Ilbo*, May 30, 2008). These distinct features of the special local allocation grants may induce political actors to strategically use them.

3.3 Hypotheses

This essay tests three hypotheses based on different levels. The hypothesis built at the lowest level is as follows:

Legislators' capability hypothesis: *Legislators who are able to influence the allocation process are likely to deliver more grants to their districts.*

The logic behind this hypothesis is straightforward, and often raised by journalists and social activists who criticize Korean pork-barrel politics. Legislators who (i) are a member of the Public Administration and Security Committee which monitors the ministry of Public Administration and Security (MPAS) in charge of the execution of the *Special Local Allocation Grants*, (ii) take senior status in the legislature, (iii) have a personal connection to the President, or (iv) a member of the government party, are able to allocate more grants to their districts.

Unstable [Swing] electoral districts hypothesis: *Parties are likely to deliver more grants to electorally unstable districts in order to maximize their seat shares in the legislature.*

The second hypothesis is based on electoral incentives of political parties (or party leaders). Electoral stability refers to the situation in which the number of supporters is much larger than those of oppositions and swing voters. This can be empirically measured by a district-level vote margin (%) between the top two candidates under the single member district plurality (SMDP) system. The logic behind this hypothesis is similar to the well-known *swing voter hypothesis* (Dixit and Londregan, 1998; Lindbeck and Weibull, 1987). That is, parties tend to allocate resources to swing groups when these groups have a relatively large number

of moderate voters who are ideologically indifferent between parties. However, it is notable that this hypothesis is distinguished from the swing voter hypothesis put forward by Lindbeck and Weibull. While the swing voter hypothesis is derived from theories to analyze redistribution *within districts*, the unstable electoral districts hypothesis focuses on geographical distribution *between districts*.

Unstable [Swing] provinces hypothesis: *Considering voting behavior based on regional identities in Korea, the president is likely to allocate more discretionary resources to an electorally unstable [potentially swing] province within a broader region than its stable counterpart. This is applicable to supporter, swing, and opposition regions that have experienced regional voting.*

As mentioned in the theory chapter, what motivates president's decision is not necessarily aligned with his party's motivation. A ruling party (or party leaders) who seeks to maximize the seat share at the national level is assumed to be interested only in the aggregation of seats in the nominal tier. By contrast, provincial-level swing matters to a president who has an incentive to secure his policies through his successor in the prevalence of regional voting patterns. This also implies that the president (or the government party) is likely to allocate relatively less resources to regions that do not show regional voting.⁴ Therefore, this hypothesis is expected to demonstrate president's strategic choices under the plurality system.

To test the third hypothesis, we need to carefully examine provincial variations in the allocation pattern. Methodologically, this motivates us to use the

⁴We are convinced that more grants would be delivered to an electorally unstable province than its counterpart within each broader region in which voters are motivated by their regional identities. However, we are not certain how to rank the allocation of intergovernmental grants in the order of priority for the sixteen metropolitan cities and provinces, which can be another theory.

multilevel modeling techniques considering both fixed-effects and random effects. As Gelman and Hill (2006) point out, the multilevel modeling is effective when it is close to complete-pooling (e.g., the ordinary least squares) assuming that each individual level unit (district level in this case) are homogenous regardless of regions, and ineffective when it is close to no-pooling (e.g., fixed-effects models often called in political science literature). When the partially pooling estimate is close to complete-pooling one, it can still capture variation between groups, which can be substantially more important to comparative politics research.⁵

⁵Besides, the partially pooling estimate can be close to complete-pooling for groups with small sample size and close to no-pooling for groups with large sample size, automatically performing well for both kinds of group (Gelman & Hill 2006, p. 270-1).

CHAPTER 4

Data and Measures

To test these hypotheses with a complete dataset, I gathered information from various reliable sources (Korean Statistical Information Service, and Korean Public Servants Union’s white paper on special local allocation grants from 2005 to 2006). The first thing to be considered is the discrepancy between electoral district units and local government units. To match units (243 electoral districts to 234 administrative units), I used Hur and Kwon (2009)’s criteria. In cases where several administrative districts were embedded in an electoral district, I imputed the average of allocated grants in the administrative districts. In cases where several electoral districts were embedded in an administrative district, I selected the one electoral district with the smallest vote margin among them and seniority in the legislature. This is based on the underlying assumptions that (i) an incumbent legislator who won with the closest vote margin has a stronger incentive to deliver resources to his or her district than others and (ii) other things being equal, a senior legislator is more likely to be influential in the allocation process than others.

It is noted that in order to examine the government party’s targeting strategy Hur and Kwon excluded 28 administrative districts that have multiple electoral districts won by legislators affiliated to different parties. By deleting 28 cases ($\approx 12\%$) we may lose much information about electoral competition. Thus, I restored the 28 districts deleted in Hur and Kwon’s dataset.

The outcome variable is the grants allocated to each local government (ad-

	(1)+(2)+(3)+(4)	(1)	(2)+(3)	(4)
Predictor				
Financial Autonomy	-27.475* (8.888)	-10.840 (7.326)	-15.539** (3.672)	-1.096 (1.705)
Population	0.002* (0.001)	-0.001 (0.001)	0.002** (0.001)	0.001** (0.000)
Population Density	-0.098** (0.019)	-0.041* (0.016)	-0.048** (0.008)	-0.009* (0.004)
Vote margin	1.287 (7.487)	-5.912 (6.171)	5.897 (3.093)	1.302 (1.436)
Connection	137.919 (358.143)	162.472 (295.179)	81.453 (147.963)	-106.006 (68.692)
Committee	-59.705 (355.765)	-403.300 (293.219)	333.437* (146.981)	10.158 (68.236)
Seniority	-2.216 (90.807)	-19.924 (74.843)	14.672 (37.516)	3.037 (17.417)
Government Party	208.628 (168.119)	136.950 (178.739)	10.744 (89.596)	60.935 (41.595)
Intercept	2625.639** (348.902)	1150.410** (287.562)	1295.071** (144.145)	180.159** (66.919)
Observations	234	234	234	234
R^2	0.18	0.09	0.29	0.11

Note: ** and * indicate significance at $p < 0.01$, and $p < 0.05$, respectively.

The numbers in parentheses represent standard errors.

Table 4.1: This table presents different results of a complete-pooling model by dependent variable: four components of the special local allocation grants. (1), (2), (3), and (4) represent natural disasters, regional needs, pilot projects, and financial incentives to well-performed local units, respectively. (1)+(2)+(3)+(4) means the average total grants distributed to districts for the two years (2005-6). Likewise, (2)+(3) also means the average grants allocated for regional needs plus pilot projects, and (4) indicates the average grants allocated for financial incentives to well-performed administrative units. It is notable that the component of pilot projects was created in 2006.

ministrative unit). The special local allocation grants consist of four components: (1) special needs by natural disasters, (2) regional needs, (3) pilot projects, and (4) financial incentives to well-performed local governments. I checked for four possible outcome variables: the average of total grants ((1)+(2)+(3)+(4)), the average grants allocated for recovery from natural disasters ((1)), the average grants allocated for regional needs and pilot projects ((2)+(3)), and the average

grants allocated for financial incentives to well-performed local governments ((4)). Figure 7.1 (see **Appendix**) shows the possible pairwise scatterplots of the components. The scatterplot between the grants allocated for natural disasters shows that (i) the allocation for this component in 2005 is not correlated with that in 2006, which reflects the uncontrollable characteristic of natural disasters, and (ii) the fitted line is strongly affected by some influential points. These imply that the component (1) can hardly be a suitable outcome variable.

As Choi and Kim (2008) argue, the actual allocation for the two components (2) and (3) are more likely to be affected by political, subjective evaluations than other components decided by relatively objective evaluations. The scatterplot between the grants allocated for regional needs and pilot projects ((2)+(3)) also shows a meaningful pattern between years. Hence, this paper focuses on these two components as an outcome variable.

Electoral stability is measured by a district-level vote margin in the list tier (PR rule) in the legislative election of 2004. In fact, Korea has adopted a mixed-member majoritarian electoral system (Shugart and Wattenberg, 2001). The 2004 electoral reform adopted the double ballot system and lowered the threshold to earn a seat in the legislature from 5% to 3%. Hur and Kwon (2009) use a district-level vote margin in the nominal tier (SMDP rule) as a measure of electoral stability. It is calculated by a difference between in vote shares obtained by the top two political parties, which must be positive. However, it is conventional wisdom that voters are less likely to vote strategically under PR than under SMDP (Clark, Golder and Golder, 2009). From the parties' perspective, a vote margin in the list tier is a better measure to capture electoral stability. The correlation between the two different vote margins is quite high ($=0.79$), but there exist some differences between them.

To measure legislators' personal connection with the president, I carefully examine the president's faction. As in Japan (Persico, Rodriguez-Pueblita and

Silverman, 2007), factions can be a good predictor for distribution of public expenditures in Korea. Indeed, when most presidents would form a policy coalition, they utilized special local allocation grants as a tool to lure maverick legislators from the opposition parties. Before the electoral reform of 2004, it was convention for the president to seize control of the party organization including the authority to nominate legislative candidates. This dummy variable is measured by whether or not legislators belong to *Chin-Roh-Jikkye*, the political faction affiliated with the President Roh, who have personal access to him.¹

Seniority is measured by counting how many times a legislator has been elected in legislative elections. This ranges from 1 to 5. The government party is measured by whether or not an incumbent legislator is affiliated with the government party (0–1).

¹I classified legislators who belong to the *Cham-jeong-yeon* (Solidarity for True Participatory Politics) as *chin-Roh-Jikkye* (the closest circle). Most of them were former presidential secretaries.

CHAPTER 5

Statistical Models

5.1 Complete-Pooling and No-pooling Regression Models

The simplest regression model can be written as

$$\begin{aligned} \text{Average Grants} = & \gamma_0 + \gamma_1 \text{vote margin} + \gamma_2 \text{connection} + \gamma_3 \text{government party} \\ & + \gamma_4 \text{committee} + \gamma_5 \text{seniority} + \eta \text{Controls} + \epsilon \end{aligned} \tag{5.1}$$

where Controls include financial autonomy (0–100%), population (million), and population density (million/ km^2).¹ These control variables are intended to check that the allocation of special local allocation grants were carried out based on districts' need. We expect that while financial autonomy is negatively associated with the allocation, population is positively associated with it. As a proxy for urbanization, population density is expected to be negatively associated with the grant distribution.² In case of no-pooling regression, so-called, fixed-effects model, additional sixteen dummies which represent provinces are included in the model.

However, such complete-pooling models cannot capture feasible omitted variables within regions as well as regional variations, which are substantively of

¹The index of financial autonomy of local governments is calculated by $\frac{\text{Own-source revenues}}{\text{Own-source revenues} + \text{Dependent revenues}} \times 100$. Own-source revenues consist of local taxes and non-tax revenues, whereas as Dependent revenues are composed of revenue sharing and categorical grants from the central government.

²Allocation per capita is negligible in densely populated urban districts.

Dependent Variable: Average amount of component (2) and (3)				
	OLS	Robust OLS	FE	FE
Predictor			(Regions)	(Provinces)
Financial Autonomy	−15.539** (3.672)	−17.661** (3.043)	−7.922 (4.062)	−5.788 (4.243)
Population	0.002** (0.001)	0.002** (0.000)	0.002** (0.000)	0.002** (0.000)
Population Density	−0.048** (0.008)	−0.044** (0.007)	−0.040** (0.008)	−0.025 (0.014)
Vote margin	5.897 (3.093)	4.463 (2.563)	0.581 (3.564)	0.959 (6.157)
Connection	81.453 (147.963)	87.799 (122.615)	156.119 (148.523)	207.553 (148.599)
Committee	333.437* (146.963)	390.585** (121.801)	410.891** (145.359)	528.756** (147.948)
Seniority	14.672 (37.516)	−1.751 (58.605)	27.113 (37.081)	21.636 (36.604)
Government Party	10.744 (89.596)	−12.023 (139.961)	24.541 (418.491)	47.998 (114.513)
Intercept	1295.071** (144.145)	1271.478** (119.451)	735.932** (213.159)	369.358 (345.258)
Observations	234	234	234	234
R^2	0.29	—	0.35	0.42

Note: ** and * indicate significance at $p < 0.01$, and $p < 0.05$, respectively.
The numbers in parentheses represent standard errors.

Table 5.1: This table presents results of complete-pooling and no-pooling models.

interest to researchers. Considering the importance of regionalism in Korean politics, these findings from complete-pooling models which assume that each region (or province) is homogenous may lead to misunderstanding.

To test whether or not the hypotheses are still valid even when considering unobserved regional factors, we can utilize so-called “no-pooling models” or “fixed-effects” models (Gelman and Hill, 2006). The third column in Table 5.1 represents the fixed-effects model with six broad region-dummies (Seoul-Metro, Chungcheong, Gyeongsang, Jeolla, Gangwon, and Jeju). The result still supports most of the associations obtained from complete-pooling models. However, the positive association between a district-level vote margin and the allocation of the

grants disappears. We find a strong association between the committee membership and the allocation, which is robust to no-pooling models (see the third and fourth columns in Table 5.1).³

What can we observe after controlling for provincial characteristics that are not observed? The fourth column in Table 5.1 shows that although R^2 improves to 0.42, all the political predictors except for committee membership lose their significance when including dummies for sixteen provinces. In particular, the negligible estimate of a vote margin with inflated standard errors indicates that electoral stability is not generally associated with the allocation after controlling for province-dummies. This implies that the link between allocation of the grants and electoral stability in legislative elections may vary across provinces.

5.2 Multilevel Linear Models in the Bayesian Framework

Without checking over regional variations in the allocation of government resources, on the one hand, we cannot understand nuanced distributive politics in Korea. On the other hand, we may risk exaggerate the effect of regionalism if we do not control for variations within a broader region. Until now empirical studies on distributive politics in Korea have failed to consider both a variation between regions and variations within a region at the same time Hur and Kwon (2009); Horiuchi and Lee (2008). This provides a sufficient justification for using multilevel models that consider *between group variation* as well as *within group variation* where the groups are provinces.

The sampling density of the outcome variable (i.e., the average grants allocated for regional needs and pilot projects) can be t -distribution with some outliers on

³This essay deals only with the committee members elected in the nominal tier. Lawmakers elected by the list tier cannot be renominated in Korea. To be reelected, they should run for the National Assembly in the nominal tier.

the right side. This paper employs a simple multilevel model that allows intercepts to vary across groups (16 provinces) as follows.

$$\begin{aligned}
y_i &= t(\mu_i + \alpha_{j[i]}, \sigma_y^2, \text{df}_y), \quad \text{for } i = 1, \dots, 234. \\
\mu_i &\sim \mathcal{N}(\mathbf{Z}_i \boldsymbol{\beta}, v) \\
\sigma_y^2 &\sim \text{Inverse Gamma}(a, b) \\
1/\text{df}_y &\sim \text{Unif}(c, d) \\
\alpha_j &\sim \mathcal{N}(\mu_\alpha, \sigma_\alpha^2), \quad \text{for } j = 1, \dots, 16 \\
\sigma_\alpha^2 &\sim \text{Inverse Gamma}(e, f)
\end{aligned} \tag{5.2}$$

where $\mathbf{Z}$ is the matrix with five district-level predictors (financial autonomy, population, population density, vote margin and membership of the committee), $\boldsymbol{\beta}$ is the matrix of the regression coefficients of the predictors, and μ_α is a group-level average value of the intercept. v , a , b , c , d , e and f are specified by using information from Hur and Kwon's Hur and Kwon (2009), Horiuchi and Lee's Horiuchi and Lee (2008) and Choi and Kim's Choi and Kim (2008) studies as well as Hoff (2009)'s way of specification of parameters in a inverse-gamma distribution (p.75).⁴

As Gelman and Hill Gelman and Hill (2006) suggest, I also construct another multilevel model considering a group-level predictor. Hence, the second model

⁴The prior for $\boldsymbol{\beta}$ is $(-16.5295, 0.002538, -0.06048, 5.87006, 207.57627)'$. The prior for the precision is $(0.0802386, 6968849, 1366.924, 0.0875, 0.0000519)'$. a and b are specified as 108 and 510731, respectively. The degrees of freedom df_y which must be positive as a normal distribution in this thesis. Considering that BUGS restricts a degrees of freedom greater than 2, Gelman and Hill Gelman and Hill (2006) suggest a practical method to specify a degrees of freedom: $1/\text{df}_y \sim \text{Unif}(0, 0.5)$. e and f are specified as 2 and 200, respectively. It is note that the flat prior is used as the reference prior.

changes the varying intercept $\alpha_j \sim \mathcal{N}(\mu_\alpha, \sigma_\alpha^2)$, for $j = 1, \dots, 16$ as follows:

$$\begin{aligned}
\alpha_j &\sim \mathcal{N}(\gamma_0 + \gamma_1 u_j, \sigma_\alpha^2), \quad \text{for } j = 1, \dots, 16 \\
\sigma_\alpha^2 &\sim \text{Inverse Gamma}(e, f) \\
\gamma_0 &\sim \mathcal{N}(\mu_{\gamma_0}, \sigma_{\gamma_0}^2) \\
\gamma_1 &\sim \mathcal{N}(\mu_{\gamma_1}, \sigma_{\gamma_1}^2)
\end{aligned} \tag{5.3}$$

where u_j is a province-level predictor, the swing index by province. I constructed the swing index by summing up absolute values of differences in vote shares earned by two major parties between 2000 and 2004 legislative elections.⁵ It captures the swing of voters' choices in the two elections. γ_0 and γ_1 are the intercept and the slope of the regression line α_j , respectively, and μ_{γ_0} , $\sigma_{\gamma_0}^2$, μ_{γ_1} , and $\sigma_{\gamma_1}^2$ are the hyper-parameters.

As Bafumi and Gelman Bafumi and Gelman (2006) point out, social scientists tend to avoid simple regression with varying intercepts when they suspect that predictors are correlated with units or groups (p.3). Following Bafumi and Gelman's suggestion, I also construct a multilevel model including the average of each district-level predictors in the province-level regression to avoid problems of bias and uncertainty caused by potential correlation between district-level predictors and group effects. Hence, the new multilevel model writes the varying intercept

⁵The reason why I employ absolute values is that both major parties can lose their vote shares in the multi-party system. For instance, the conservative party, the Grand National Party (GNP) and the liberal party, the New Millennium Democratic Party (NMDP) earned 43.27% and 45.06% in Seoul in 2000. the GNP and the Uri Party, a newly established major party, obtained 36.67% and 37.71% in Seoul in 2004. In this case the swing index of Seoul is calculated as $|-6.60| + |-7.35| = 13.95$.

$\alpha_j \sim \mathcal{N}(\mu_\alpha, \sigma_\alpha^2)$, for $j = 1, \dots, 16$ as follows:

$$\begin{aligned}
\alpha_j &\sim \mathcal{N}(\gamma_0 + \gamma_1 u_j + \bar{\mathbf{Z}}_j \gamma_2, \sigma_\alpha^2), \quad \text{for } j = 1, \dots, 16 \\
\sigma_\alpha^2 &\sim \text{Inverse Gamma}(e, f) \\
\gamma_0 &\sim \mathcal{N}(\mu_{\gamma_0}, \sigma_{\gamma_0}^2) \\
\gamma_1 &\sim \mathcal{N}(\mu_{\gamma_1}, \sigma_{\gamma_1}^2) \\
\gamma_2 &\sim \mathcal{N}(\mu_{\gamma_2}, \sigma_{\gamma_2}^2)
\end{aligned} \tag{5.4}$$

where u_j is a province-level predictor (the swing index by province), and $\bar{\mathbf{Z}}_j$ is a matrix of the average of each district-level predictor in j -th province.

Compared to normal distribution models, an implementation of t -distribution models with low degrees of freedom through the MCMC sampling may need heavy computations to obtain convergence. To evaluate whether the posterior distributions converge I use the Geweke's convergence diagnostic as well as basic trace plots.⁶

⁶Besides JAGS, I also use STAN which is based on Hamiltonian Monte Carlo (HMC) sampling. HMC is expected to "accelerate both convergence to the stationary distribution and subsequent parameter exploration by using the gradient of the log probability function." Stan Development Team (2013) (p.3).

CHAPTER 6

Results

I would carefully examine partially pooling regression models because random effects may include political actors' influence at the higher level that cannot be included in no-pooling models. The result is given not as point estimates but as posterior distributions. Not only do all the posterior distributions converge smoothly, but are also bell-shaped when it iterates greater than 500,000 times when employing the normal sampling model instead of t -distribution (see **Appendix**). By contrast, the posterior distributions given by t -distribution sampling model are not always bell-shaped, and we need to implement the MCMC sampling with iterations greater than 1,000,000.

Figure 6.1 shows that control variables that represent the need-based criteria are associated with the distribution of the *Special Local Allocation Grants*, as expected.¹ This means that the allocation has not been carried out arbitrarily as journalists or social activists criticize.

The result also provides evidence against the second hypothesis (*Unstable [Swing] Electoral Districts Hypothesis*). The posterior distribution of vote margins that represent electoral stability at the district level has a positive mean (=9.513), and the 95% confidence interval [5.176, 13.840] is greater than zero. That is, we are 95% confident that a district-level vote margin is positively associated with the allocation. Focusing on the mean value, we can say that an increase of 1% in the vote margin is associated with 9.5 million won on average. The average of vote margins was about 17% in the election of 2004. This can make substantial

¹This is illustrated in Figure 7.3 (see **Appendix**).

Predictor	Normal Distribution model				<i>t</i> -Distribution Model			
	Mean	Sd	2.5%	97.5%	Mean	Sd	2.5%	97.5%
Financial Autonomy	−9.694	2.127	−13.882	−5.550	−14.600	1.496	−17.460	−11.570
Population	0.002	0.000	0.002	0.003	0.003	0.000	0.002	0.003
Population Density	−0.045	0.006	−0.057	−0.033	−0.031	0.005	−0.040	−0.022
Vote margin	8.397	2.597	3.225	13.400	9.513	2.196	5.196	13.830
Committee	413.600	82.570	251.098	574.948	367.200	81.220	220.900	543.800

Table 6.1: This table presents the posterior distributions of coefficients for district-level predictors by two different sampling models (normal and *t*-distribution models without the province-level predictor, the swing index by province), the informative priors, and 1,000,000 iterations including the 10,000 burn-in period. All the posterior distributions pass the Geweke’s convergence diagnostic for Markov chains. It is noted that the 95% confidence interval for the posterior distribution of the degrees of freedom (df_y) is [2.00, 2.05]. As the precision of the degrees of freedom df_y increases, the posterior means become closer to those obtained by normal distribution models.

differences in the allocation, 161.5 million won per year, on average. Put simply, more grants was delivered to less swing districts. It is notable that the amount of grants are positively associated with a vote margin regardless of which party wins. Recall that vote margins were calculated by subtracting the second highest vote share from the highest vote share in each unit, which must be positive.

In contrast, the first hypothesis (*Legislators’ Capability Hypothesis*) is supported by the result. Based on the confidence interval, we are 95% confident that legislators who belong to the special committee (the Public Administration and Security Committee) delivered the substantive amount of money to their own districts.

Now let us compare this with the results from the complete-pooling regressions (see the first and second columns in Figure 5.1). Since the 95% confidence intervals for population, population density and committee membership include the point estimates obtained by the complete-pooling regressions, the multilevel model in the Bayesian framework is not distant from the complete-pooling models. However, the point estimate of the coefficient for vote margin is smaller than the

Predictor	Government Party Won (N=107)				Other Parties Won (N=127)			
	Mean	Sd	2.5%	97.5%	Mean	Sd	2.5%	97.5%
Financial Autonomy	-11.790	2.028	-15.570	-7.716	-15.450	1.870	-18.970	-11.810
Population	0.003	0.000	0.003	0.004	0.002	0.000	0.002	0.002
Population Density	-0.041	0.005	-0.051	-0.032	-0.012	0.006	-0.025	0.000
Vote margin	5.314	2.672	1.423	10.650	-5.667	3.767	-13.430	1.052
Committee	289.800	36.980	214.500	360.700	691.000	74.830	554.500	851.700

Table 6.2: This table presents the posterior distributions of coefficients for district-level predictors by data (the government party wins vs other parties win). Note that 234 *administrative districts* are analyzed, but not equivalent to 243 *electoral districts*. The ruling party, the Uri Party, earned 129 out of 243 seats in the nominal tier in 2004. In case the government party won, vote margins have positive values. By contrast, vote margins are negative when other parties won. It uses a *t*-distribution sampling model, the informative priors (Hur and Kwon, 2009), and 100,000 iterations including the 10,000 burn-in period. All the posterior distributions pass the Geweke’s convergence diagnostic for Markov chains. It is noted that the 95% confidence interval for the posterior distribution of the degrees of freedom (df_y) is [2.00, 2.04].

posterior mean of it. That is, the multilevel model provides a stronger evidence against the *Unstable Electoral Districts Hypothesis* than do the complete-pooling regression models.

Why were more grants delivered to electorally stable districts? One reasonable possibility is that risk-averse parties have accurate knowledge about the quantities of core supporters needed to guarantee reelections at the district level Cox and McCubbins (1986). To test that the data support the core voter logic, I recalculated vote margins by which party won the election of 2004. Vote margins calculated by differences in vote shares obtained by the top two political parties must have positive values if the president’s party wins. By contrast, the measure of vote margins become negative if other parties win. Since the government party, the Uri Party, took a majority in the National Assembly, the party leaders are assumed to have gathered accurate information about the amount of core supporters. Table 6.2 shows that the posterior mean of vote margin reduces from 9.513

to 5.314, but still remains positive in districts where the government party won. The 95% confidence interval [1.423, 10.650] is also located above zero. However, it is not applicable to the cases in which other parties won. The posterior mean becomes negative, and the 95% confidence interval $[-13.430, 1.052]$ also contains zero. Therefore, we can infer that the party leaders attempted to apportion more grants to its core supporter districts, but not to the opposition districts, which supports the core voter hypothesis.

Now return to the analysis from the whole data ($N = 234$). The most interesting result is found in random effects. The figure 6.1 displays random effects of sixteen provinces as varying intercepts. We see the provinces (Chungnam, Gyeongnam, and Jeonam) whose intercepts are obviously above the average intercept (the red dashed-line). These provinces are electorally more unstable than their counterparts (Chungbuk, Gyeongbuk, and Jeonbuk, respectively) within the swing (Chungcheong), the supporter (Jeolla), and the opposition (Gyeongsang) regions, respectively. As the *Unstable Provinces Hypothesis* states, a president who seeks to secure his policies against challenges from inside and outside has an incentive to allocate government resources even to opposition regions in the prevalence of regional voting patterns. We are convinced that more discretionary resources would be allocated to an electorally unstable province than its stable counterpart within each broader region in which voters are motivated by their regional identities.

The coefficient plot also illustrates that less grants were allocated to provinces little affected by regional voting (e.g., Seoul, Gyeonggi, Incheon) even though the size and the number of units belong to the provinces are much larger than the three unstable provinces (Chungnam, Jeonam, and Gyeongnam). However, to completely rank the allocation in the order of priority for such provinces can be justified by another theory.

This essay also tested two varying intercept, varying slope models with the

same district level predictors as displayed in Figure 6.2. The left panel illustrates how intercepts and slopes vary when we believe no correlation between them. The right panel displays how intercepts and slopes vary when we believe that they are not completely independent of each other so that the prior for the correlation is specified as $\rho \sim U[0.1, 0.6]$. The 95% confidence interval for posterior distribution of ρ is $[0.1023, 0.3187]$. We see that both figures are substantially identical, which tells us that it is not necessary to add a more parameter ρ to the current model. Purple lines show how intercepts and slopes in electorally unstable provinces (Chungnam, Jeonam, and Gyeongnam) change across vote margins (%). Despite the different levels of slope the intercepts are higher than others (gray lines), which is consistent with the result from the simple varying intercept model (5.2).

The BIC (Bayesian Information Criterion) for the random intercept, random slope model is 3713 while that for the random intercept model is 3703. The log-likelihood is -1829 in both models, which implies the varying intercept, varying slope model does not improve the fit by adding variables.

The DIC (Deviance Information Criterion) for the varying intercept, varying slope model is 10037.800, which is much larger than that of the simple varying intercept model ($DIC = 3702$).² Since the effective number of parameters (pD) estimated by subtracting $-2 \cdot \log\text{-likelihood}$ from the posterior mean of the deviance also is much larger than the number of observations in this case, the much lower value of DIC for the simpler model is more adequate to predict the distribution of the special local allocation grants in Korea.³

The result from the multilevel linear regression model that considers degree

²This was implemented via `rjags` in JAGS. It is noted that the posterior mean of the deviance ($\bar{D}$) is not a measure of fit but a measure of adequacy (<http://www.mrc-bsu.cam.ac.uk/bugs/winbugs/dicpage.shtml>).

³The DIC is valid only when the effective number of parameters in the model is much smaller than the number of observations Plummer (2008). In order to use the DIC without any problem, all the posterior distributions obtained by Gibbs-sampler should be bell-shaped (i.e., close to normal).

Province-Level Predictor	Mean	Sd	2.5%	50.0%	97.5%
Intercept (g_0)	514.10	31.27	452.70	514.00	575.20
Slope (g_1)	20.54	6.25	8.32	20.57	32.72

Table 6.3: This table presents the posterior distributions of coefficients for a province-level predictor by using the t -distribution model with a province-level predictor, the swing index by province. I used the informative priors, and 1,000,000 iterations including the 10,000 burn-in period.

of province-level swing measured by the sum of absolute values of differences in vote shares earned by the two major parties in the legislative elections (2000 and 2004).⁴ It is rational that president (or a government party) would allocate more grants to provinces which tend to swing across elections. The positive posterior mean of g_1 means that more grants are more likely to be allocated to electorally unstable provinces. Table 6.3 shows that the posterior distribution of g_1 are between 8.32 and 32.72.

Figure 6.3 shows varying intercepts across provinces when we use the multilevel linear regression models. The implementation of Gibbs samplers with informative priors confirms that despite some differences the intercepts of three electorally unstable provinces (Chungnam, Jeonam, and Gyeongnam) are greater than their relatively stable counterparts (Chungbuk, Jeonbuk, and Gyeongbuk, respectively), and they are main beneficiaries of the allocation, other things being equal, in both models.

I also tested 5.3 suggested by Bafumi and Gelman Bafumi and Gelman (2006), but an inclusion of the average values of predictors in the model for varying intercept does not make any meaningful differences.⁵

⁴The two major parties are the Grand National Party (GNP) and the New Millennium Democratic Party (NMDP) in the election of 2000, and the GNP and the Uri Party (Uri) in the election of 2004.

⁵The figures are available at my website (<https://github.com/bsk245>).

6.1 Sensitivity Analysis

How sensitive is the model's performance to changes in prior? This sensitivity analysis is expected to show how my model fits the data Gelman et al. (2004). I used an identical prior for the hierarchical part. In other words, priors are distinguishable only in parameters for the district-level predictors.⁶ I found that the posterior distributions of control variables (β_1 , β_2 , β_3 and β_4) do not vary with the priors except for the mean of committee membership (β_5).

We see that 5.2 is sensitive to the variance (or the precision) of the vote margin variable (β_4) as shown in Figure 6.4 and Figure 6.5. For example, Gyeongbuk (region 10) and Jeonbuk (region 13) show that variance of the district-level vote margin can make huge differences in the posterior distribution of intercepts. From the president's perspective, Gyeongbuk and Jeonbuk have been electorally stable over elections in the opposition region (Gyeongsang) and the supporter region (Jeolla), respectively. This sensitiveness can be explained in that a provincial vote margin is the accumulation of district-level vote margins. As uncertainty about the coefficient for vote margin at the district level reduces, province-level random effects expressed as varying intercepts are more likely to resemble the district-level coefficient. In particular, it is more appropriate in electorally stable provinces where election outcomes are less variable across districts. By the same logic, we do not find such sensitiveness in Chungbuk (region 2), the electorally stable province within the swing region (Chungcheong). In comparison with the opposition and supporter regions (Gyeongsang and Jeolla, respectively), a province-level vote margin is less likely to be the simple accumulation of district-level vote margins in the swing region filled with mixed election outcomes across districts.

⁶I did the analysis for all parameters, but I do not include the results in this paper.

	Opposition Region (Gyeongsang)	Swing Region (Chungcheong)	Supporter Region (Jeolla)
Electorally Stable Province	Gyeongbuk (7th, 23.0%)	Chungbuk (10th, 44.7%)	Jeonbuk (11th, 67.4%)
Electorally Unstable Province	Gyeongnam (4th, 31.8%)	Chungnam (2st, 37.5%)	Jeonam (3rd, 46.8%)

Table 6.4: This table summarizes three broad regions and six provinces where regional identities are prominently found in Korea. The figures in parentheses indicate the rankings of posterior medians of random effects represented as varying intercepts across 16 provinces including Special City and Metropolitan cities, and the government party’s vote shares in the party-list, respectively (ROKNEC, 2004). As Figure 6.1 illustrates, more *Special Local Allocation Grants* were allocated to electorally unstable [swing] provinces (Chungnam, Gyeongnam, and Jeonam) in comparison to the counterparts (Chungbuk, Gyeongbuk, and Jeonbuk). We also find the president’s (or the government party’s) targeting strategy that focuses on electorally unstable province (Jeonam) within his (or its) supporter region (the Jeolla region), considering Gwangju, a metropolitan city geographically located within the Jeonam province, is at the 1st in the Figure 6.1. By contrast, Daejeon metropolitan city placed within the Chungcheong region is at the bottom, and Daegu metropolitan city located within the Gyeongsang region, is ranked 15th out of 16 provinces.

6.2 Discussion

How consistent are these statistical findings on the three electorally unstable provinces with substantive knowledge? First, look into the opposition region, the Gyeongsang region. It consists of two provinces: Gyeongbuk and Gyeongnam. While Gyeongbuk is northern part of the Gyeongsang region, Gyeongnam is southern part of it. Both Gyeongsang provinces supported the strongest rival party, the Grand National Party, against President Roh and the ruling party, the Uri Party, in the general election of 2004. However, the Uri Party competed unexpectedly well with the Grand National Party in the Gyeongnam province (31.8% vs. 47.6% in the party-list tier). The party put up a better fight than expected even in the Gyeongbuk province, the strongest opposition province (23.0% vs. 58.4%). Considering the fact that the Gyeongsang region is the most populated region in Korea, except for the Metropolitan area, the vote share of 31.8% was

shocking to the opposition party. The Uri Party earned two out of the seventeen seats in the nominal tier in the Gyeongnam province, whereas it failed to earn a seat in the Gyeongbuk province. The opposition parties' impeachment of President Roh one month before the election may incited potentially swing voters in the province, as in other regions. Voters who sympathized with the president cast ballots to candidates of his party, especially in his hometown districts (*Kimhae Kap* and *Kimhae Eul*). Vote margins in these two districts (9.7%) are far smaller than the provincial average (18.46%).⁷ The Gyeongnam province was electorally less stable than its counterpart, the Gyeongbuk province, and the result can be evidence for the *Unstable Provinces Hypothesis*: for the president who sought to secure his reform policies in the future, the Gyeongnam province was regarded as a region from which his successor can draw considerable support.⁸ Therefore, it is more efficient to target an electorally unstable province *even within an opposition region*. Grants delivered to the unstable province are also expected to alleviate resentment against him from the stable province voters strongly affiliated with a regional identity.

Like the Gyeongsang region, the Jeolla region consists of two provinces: Jeonbuk and Jeonam. Jeonbuk is northern part of the Jeolla region, and Jeonam is the southern part of it. It is evident that both Jeolla provinces are the strongest supporter provinces to President Roh. However, the government party struggled with another opposition party (New Millennium Democratic Party, NMDP) in the Jeonam province (46.7% vs. 33.8% in the party-list tier) in compared with the Jeonbuk province (67.3% vs. 13.6%). In the nominal tiers, the Uri Party swept in seats in the Jeonbuk province, whereas it obtained eight out of thirteen seats in

⁷The ruling party candidates defeated the opposition candidates by 9.7% in the two districts, whereas the ruling party candidates were defeated by 18.46% on average in the Gyeongnam province.

⁸In the presidential election of 2007, Chung Dong-young the unpopular ruling party candidate earned 12.3% and 6.8% in the Gyeongnam and the Gyeongbuk provinces, respectively. Presidential candidate Moon Jae-in who served as the chief secretary of Roh obtained 36.3% and 18.6% in the Gyeongnam and the Gyeongbuk provinces, respectively in the presidential election of 2012.

the Jeonam province. The difference in vote margins in the list tier between the two supporter provinces was striking (52.45% in Jeonbuk vs. 13.76% in Jeonam). We conclude that the Jeonam province was electorally more unstable than its counterpart, the Jeonbuk province, and thus the result can be also evidence for the *Unstable Provinces Hypothesis*, which suggests that it is efficient to allocate more resources to an electorally unstable province within a supporter region.

What happened in a swing but pivotal region, the Chungcheong region? Like the Gyeongsang and the Jeolla regions, the Chungcheong region is divided into two provinces: Chungbuk and Chungnam. The Chungnam province, western part of the swing region, can be considered the unstable province within the swing region. The vote choices motivated by their regional identities in the Chungnam province have been evidently observed in presidential elections since 1987 in which a direct presidential election was revived. Chungcheong voters supported Kim Jong-pil who is a native of the Chungnam province in the election of 1987. He earned only 8.1% nationwide, but obtained 45.0% in Chungnam. In 1992 no native presidential candidate ran for president, and three candidates (Kim Young-sam, Kim Dae-joong, and Chung Joo-young) shared the vote (36.9%, 28.5%, 25.2%, respectively) in the province. With an alliance with Kim Jong-pil, Kim Dae-jung earned 48.3% in the region in the presidential election of 1997. However, many people in the region still supported two native candidates. The ruling party candidate Lee Hoi-chang and the third party candidate Lee In-je obtained 23.5%, and 26.2% of votes, respectively.⁹

It was exceptional that Roh Moo-hyun earned 52.2% in the Chungnam province in the election of 2002, which helped him elected. Pledging to build a new administrative capital in the Chungcheong region, he received enormous support from

⁹President Lee Myung-bak earned 48.7% nationwide in the presidential election of 2007, but obtained 34.3% in the Chungnam province. Although Lee Hoi-chang declared he would run for president on the 7th of November—42 days before the election day, he earned 33.2% in the province. It demonstrates that a regional identity still motivated vote choices in the region.

Chungcheong voters.¹⁰ However, the Constitutional Court declared unconstitutional a law for capital relocation in October 2004, which immediately invalidated the law. He was not convinced that he could sustain support from the results of previous presidential election shows that Chungnam has tended to support native candidates, but swung by election. President Roh who sought to secure his policies had an incentive to draw sustainable support from Chungnam voters. As mentioned in the theory chapter, the president may make an effort to nominate his successor from his faction as a presidential candidate. Indeed, he attempted to support his men by designating for main positions in his government. For instance, Lee Hae-chan, the alleged leader of a group loyal to President Roh was appointed Prime Minister in 2003. Former Environment Minister Han Myeong-sook was named for Prime Minister in 2006. Rhyu Shi-min, the inheritor of the so-called Roh Moo-hyun spirit, was designated for the Health and Welfare Minister.¹¹ Delivering more grants to the Chungnam province could help draw support for him and his successor in the future. As *Unstable Province Hypothesis* states, the president also expected the favorable allocation to the Chungnam province to alleviate Chungbuk voters' long grievances—the Chungcheong region had been marginalized by previous administrations.

Assuming that the ruling party, the Uri Party, desired to maximize their seats in the National Assembly, we can also explain the incentive to allocate more inter-governmental transfers to the electorally unstable province. Only 47 lawmakers belonged to the government party before the general election of 2004, but the party won a narrow majority (152 out of 299 seats) due to victories in the metropolitan areas and the Chungnam province. It was the first time that a centrist (econom-

¹⁰The liberal candidate Kim Dae-joong supported by Kim Jong-pil gained 48.3% in 1997. The ruling candidate Chung Dong-young obtained 21.1% in 2007. As a unified candidate of the opposition party, Moon Jae-in, who was a closest ally of President Roh earned 42.8% in 2012, which shows that it is exceptional that nonnative liberal candidates gain more than 50% of votes in the Chungnam province.

¹¹Lee, native Chungnam, was chosen as a unified candidate among them, but he finished in third place in presidential primaries of 2007.

ically left-of-center but politically liberal) party won a majority since the 1963 general election under military dictatorship. It was obvious that support from the Chungnam province was crucial to take a majority in the National Assembly.

To win a legislative election in the swing region, the president and the ruling party employed a more efficient strategy to allocate government resources. The ruling party competed with two different opposition parties (GNP and the United Liberal Democrats, ULD) in the Chungnam province in 2004. The races were closer in Chungnam, compared to those in Chungbuk. In the list tier, vote shares by these three parties (Uri, GNP, and ULD) were 37.5%, 20.8%, and 25.5%, respectively. The three political parties earned 44.7%, 30.0%, and 6.5% in the Chungbuk province, respectively. In the nominal tiers, the Uri Party gained all the eight seats in the Chungbuk province, whereas it earned only six out of ten seats in the Chungnam province. While the average vote margin in the nominal tier was 18.4% in the Chungbuk province, that was only 5.2% in the Chungnam province. Consequently, since the Chungnam province is electorally more unstable than its counterpart, for the ruling party who sought to maximize its seats in the National Assembly it was the efficient targeting strategy to allocate more intergovernmental transfers to the Chungnam province rather than the Chungbuk province. In this sense, President Roh's motivation was well aligned with the ruling party's electoral incentive in the swing region, Chungcheong. Thus, it consistently supports the *Unstable Provinces Hypothesis*.

Figure 6.1 depicts significantly positive intercept in the Chungnam province. In this sense, previous studies (Horiuchi and Lee, 2004, 2008) based on traditional statistical models and presidential election outcomes fail to capture the significant association found in the Chungnam province. Hur and Kwon (2009) and Choi and Kim (2008) who pay attention to political parties' electoral incentives rather than president's role do not find the association with rigorous statistical ways by focusing on only two broad regions (Gyeongsang and Jeolla).

The president's (and the government party's) strategy to target an electorally unstable province even within a supporter region can be partially justified. In practice, the disproportional allocations of central government grants to electorally unstable province within its supporter region, Jeolla, from 2005 to 2008 helped the government party to increase its vote share in the unstable province, Jeonam, by 20% in 2008. The vote share in the electorally stable province, Jeonbuk, reduced only by 2.9% in comparison with that in the previous election. It was a noteworthy outcome, considering that the government party was defeated by the wide margin 13% nationwide and experienced a swing against it by 20.3% across the country in the election.

Can we find such an allocation of government resources coordinated by different players' incentives in recent distributive politics in Korea?¹² The most serious challenge to validation of the findings comes from the data themselves. The government will not release the detailed data on the *Special Local Allocation Grants* by component because they may provide the press or politicians with an opportunity to criticize the allocation.¹³

I personally obtained the recent grant allocation from 2008 to 2011, which are summation of four components: (1) special needs by natural disasters, (2) regional needs, (3) pilot projects, and (4) financial incentives to well-performed local governments.¹⁴ As discussed in the data and measures chapter, the first component itself can hardly be an appropriate outcome variable. The allocation

¹²The conservative regime followed the two consecutive liberal regimes from 1998 to 2007. Lee Myung-bak, former Mayor of Seoul Metropolis, who ran as a candidate of the Grand National Party was elected President in December 2007, and the conservative party won a landslide victory in the legislative election of 2008.

¹³For instance, a leading Korean daily, *Joongang Ilbo*, criticized that the *Special Local Allocation Grants* were delivered to influential politicians' distributions in 2009, analyzing the top 10 beneficiaries of the grants (April 6, 2010). In return, the Ministry of Public Administration and Security explained for the allocation in 2009 (http://www.mospa.go.kr/frt/bbs/type001/commonSelectBoardArticle.do?bbsId=BBSMSTR_000000000009&nttId=30466).

¹⁴Note that the average grants from 2008 to 2012 were calculated by $(\frac{2}{3} \times \text{grant}_{2008} + \text{grant}_{2009} + \text{grant}_{2010} + \text{grant}_{2011} + \frac{1}{3} \times \text{grant}_{2012})/4$ because a new legislative election was held in April 2012, and newly-elected legislators began their activities in June.

Predictor	Normal Distribution model				<i>t</i> -Distribution Model			
	Mean	Sd	2.5%	97.5%	Mean	Sd	2.5%	97.5%
Financial Autonomy	-12.510	2.992	-18.380	-6.646	-23.194	3.055	-28.946	-16.997
Population	0.003	0.000	0.002	0.003	0.002	0.000	0.002	0.003
Population Density	-0.021	0.004	-0.029	-0.012	-0.049	0.006	-0.060	-0.038
Vote margin	7.832	3.202	1.566	14.110	8.451	2.915	2.760	14.164
Committee	165.800	115.200	-59.720	391.800	230.315	112.089	13.415	450.614

Table 6.5: This table presents the posterior distributions of coefficients for district-level predictors by two different sampling models (normal and *t*-distribution models without the province-level predictor, the swing index by province), the average grants (2008-2012), and the informative priors from Hur and Kwon (2009)’s data. 1,000,000 iterations including the 10,000 burn-in period were implemented in **Stan**. All the posterior distributions pass the Geweke’s convergence diagnostic for Markov chains. It is noted that the 95% confidence interval for the posterior distribution of the degrees of freedom (df_y) is [2.00, 2.05].

for the first component in one year may not be correlated to that in the next year, which implies the uncontrollable characteristics of unexpected incidents including natural disasters.

The district-level predictors (financial autonomy, population, and population density) as control variables are associated with the actual grant allocation in the conservative administration even though the grant allocation data include all the components (see Table 6.5). A district-level vote margin is also positively associated with the grant allocation.¹⁵ The *Legislators’ capability hypothesis* that states that the related-committee (the Public Administration and Security Committee) members are more likely to allocate more resources to their own districts is still valid, but weakens during the conservative regime. While the lower confidence interval is less than zero in the normal distribution model, it is slightly greater than zero in the *t*-distribution model. By contrast, the committee membership was strongly associated with arbitrary allocation of the grants in the former lib-

¹⁵Here a district-level vote margin was measured by differences in vote shares obtained by the top two political parties, and then weighted $\frac{v_{1st} - v_{2nd}}{v_{1st} + v_{2nd}}$ where v_k indicates vote share earned by a party ranked k -th. Using a raw margin calculated by a difference in vote shares between the top two parties does not make any difference in my results.

eral administration regardless of models (see Table 6.1).

The grant allocation is not strongly associated with the group-level predictor, the swing index during the conservative regime.¹⁶ We observe an election-specific effect such that voters were by far favorable to the conservative party nationwide. However, we are not convinced that the leaning toward the conservative party brought more grants at the province level. The confidence intervals of the group-level predictors $g.0$ and $g.1$ for u_j where j is the province index ($j = 1, \dots, 16$) contains zero. That is, the provincial swingness calculated by the swing index can hardly be associated with the actual grant allocation in the conservative administration.

Do these results suggest that we should *return to conventional wisdom* assuming that the recent data are appropriate? It is evident that during the conservative administration more resources were delivered to the supporter region in which voters are motivated by a regional identity: the Gyeongsang region (Gyeongnam and Gyeongbuk), and Daegu (the core supporter metropolitan city located within Gyeongbuk). We also find an abrupt decline in the distribution of the intergovernmental grants to Gwangju (the core opposition metropolitan city located in Jeonam), highly oscillated only within liberal political parties, so that was less likely to swing to the conservative Grand National Party. The posterior mean of the intercept for Gwangju is still high, but the lower confidence interval is less than the median of the intercepts across provinces, which is contrasted with the results drawn from the former data.

It is worthwhile to note that the posterior intercept for Chungnam, the elec-

¹⁶To calculate the group-level swing index, I combine vote shares earned by the two conservative parties, the Grand National Party and Pro-Park Coalition and Solidarity for Pro-Park Independents (*Chin Park Yeondae*) because the twenty six elected legislators belonged to the solidarity had been the Grand National Party members and rejoined it soon after the 2008 election. It is ironic that Park Geun-hye herself did not withdraw from GNP, and was elected. By contrast, the legislators who belonged to the New Millennium Democratic Party (NMDP) did not rejoin the new ruling party, Uri, after the 2004 election because they had supported the impeachment of President Roh. Therefore, I did not combine the vote shares obtained by the two central-liberal parties (NMDP and Uri) to calculate the swing index in the data from 2005 to 2006.

torally unstable province in the swing region, is distinguished with others after controlling for the district-level predictors (see Figure 6.6). Indeed, the average grants allocated to districts within the Chungnam province are 3679.9 million won, which is less than those delivered to districts within the Gyeongnam province (the electorally unstable province in the supporter region), 4061.4 million won, and nearly identical to those distributed to districts within the Jeonbuk province (the electorally stable province in the opposition region), 3676.2 million won.¹⁷ Recall that the posterior intercept for Chungnam ranks 2nd in the former liberal administration. In short, even after controlling for district-level predictors (and a group-level predictor), we find such a large intercept for the electorally unstable province within the swing region regardless of the government's ideological inclination. It implies that the swing-province-within-swing-region strategy can be chosen by a president as well as party leaders.

The existing literature on the allocation of government resources have emphasized the two rival regions (Gyeongsang and Jeolla) which have produced presidents (Horiuchi and Lee, 2008; Hur and Kwon, 2009), but paid little attention to the swing region. It may be because vote choice in the Chungcheong region has been motivated by the regional identity, and historically swung over time, but never produced a president nor won a legislative majority.

Is there any chance that some influential districts could pull the intercept of Chungnam? Recall that the recent data include the component, *special needs by natural disasters*. One plausible explanation is that unexpected incidents may cause more grants to the Chungnam province. For instance, it was reported that a huge amount of intergovernmental grants including the *Special Local Allocation Grants* were distributed to Taean, located in Chungnam, a victim of the Korea's

¹⁷The average grants to districts in the Gyeongbuk province (the electorally stable province within the supporter region) and Jeonam (the electorally unstable province within the opposition region) are 3583.2 and 3517.9 million won, respectively.

worst oil spill, in 2008.¹⁸ Indeed, 10,014 million won, which is extremely large annual grants, were allocated to Taean in 2008, but only 728 million won were distributed next year. The average grants distributed to Taean from 2008 to 2012 are 4023.7 million won, which ranks 6th out of sixteen administrative districts in the Chungnam province. This tells us that averages may cancel out such a sharp rise in grants caused by unexpected incidents. Consequently, the distinctive posterior distribution of the intercept for the Chungnam province can be interpreted as that when the conservative president and the ruling party whose incentive was well aligned with the president's motivation more grants strategically targeted the swing province within the swing region.

We must be aware that the new data are sensitive to modeling itself, however. The *t*-distribution model with informative priors show that a definitely large amount of grants were allocated to Chungnam, the swing-province in the swing region. It is evident that Daegu, a metropolitan city, located in the Gyeongbuk province, ranked 6th during the conservative regime, whereas it was at the bottom during the former liberal regime. It is also noted that Gwangju, a metropolitan city, located within Jeonam, the swing province within the opposition region, was the chief beneficiary from 2005 to 2006, but was not from 2008 to 2012. It is also notable that the intercept of Gyeonggi province ranks 3rd in the result from the *t*-distribution model, which open to further discussion.¹⁹ By contrast, the normal distribution model illustrates that the conservative regime would allocate more resources to the two rival regions, Gyeongsang and Jeolla.²⁰ These clearly support conventional wisdom which emphasizes the two rival regions.

¹⁸More than 12,000 tons of crude oil was spilt into the West Sea near the costal county of Taean in December 2007 (<http://www.koreaherald.com/view.php?ud=20130602000047>).

¹⁹The Gyeonggi province, part of the National Capital region, has swung over elections, but vote choice has not been motivated by regional identities. However, the probability that the average grants allocated to the Gyeonggi province are greater than those delivered to Jeonam (the opposition region) is 0.99, other things being equal, by using the posterior distributions.

²⁰The normal distribution model shows that Gyeongnam, Gyeongbuk, Jeonbuk, and Jeonam rank 1st, 3rd, 4th, and 5th, respectively. The lower confidence intervals of the four provinces are greater than the median of the sixteen intercepts in the normal distribution model (the right panel in Figure 6.6).

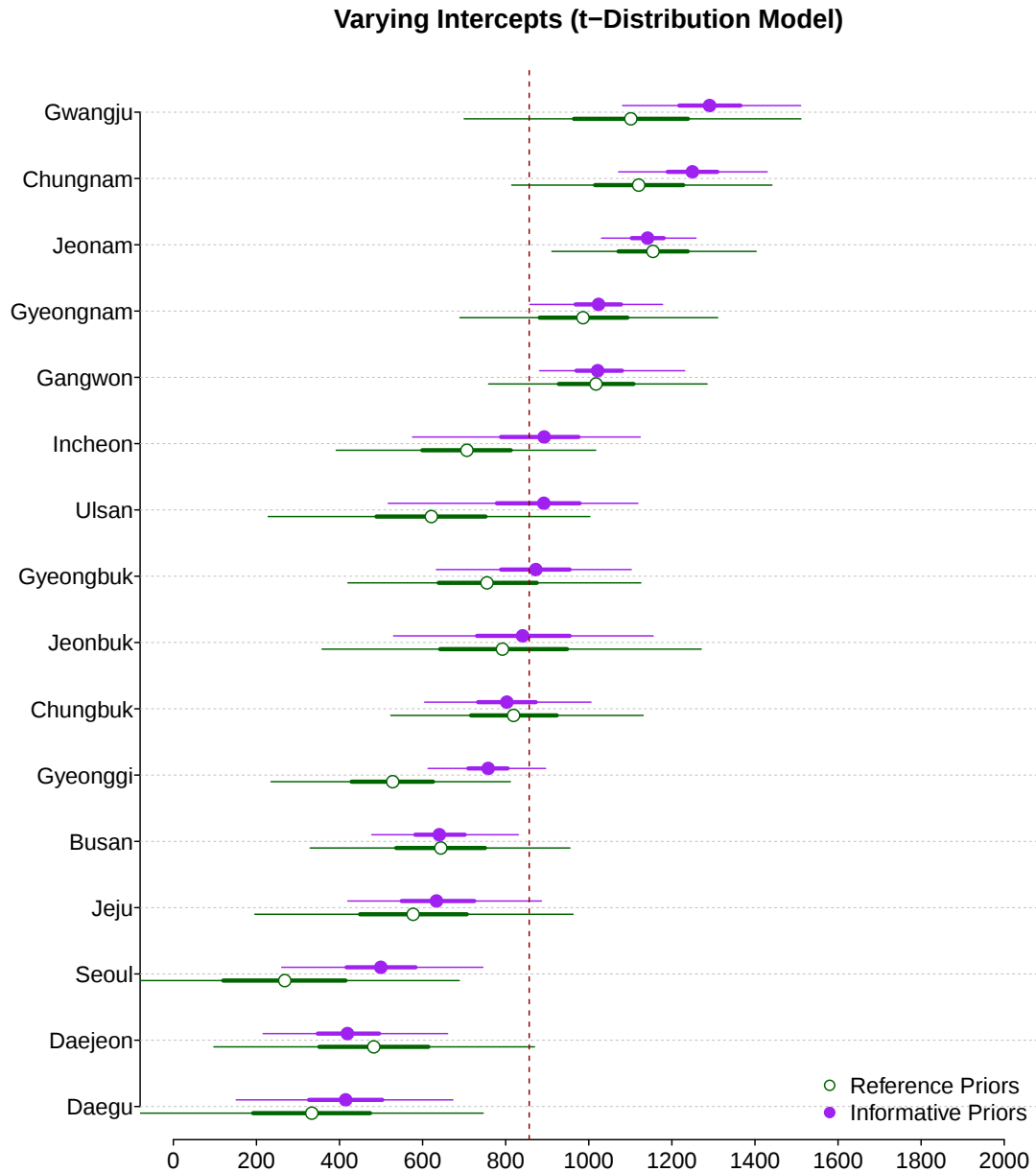


Figure 6.1: This plot illustrates random effects represented as varying intercepts across provinces. Purple solid dots indicate the posterior medians of intercepts obtained by the informative priors. Dark green hollow dots represent the posterior medians of intercepts obtained by reference priors (i.e., uninformative priors). While thick lines represent 50% confidence intervals, thin lines indicate 95% confidence intervals. The dark red dashed-line indicates the median of intercepts that vary across provinces. The intercepts of three electorally unstable provinces (Chungnam, Jeonam, and Gyeongnam) are greater than their stable counterparts (Chungbuk, Jeonbuk, and Gyeongbuk, respectively).

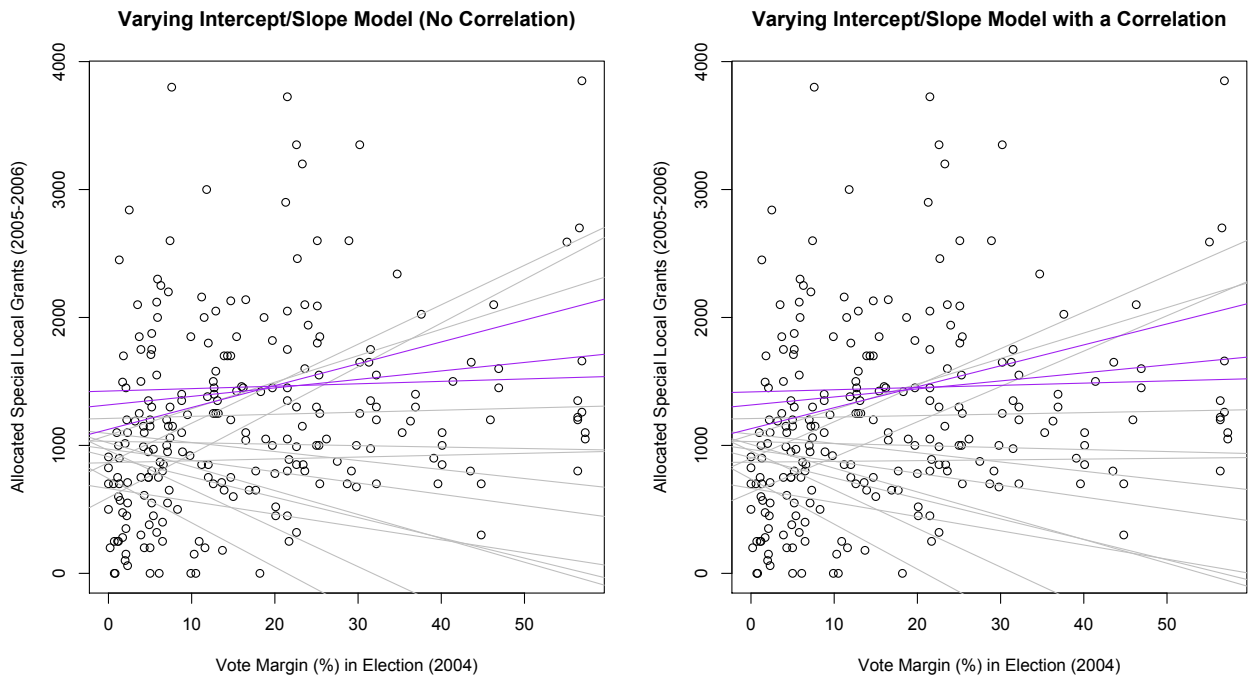


Figure 6.2: This figure illustrates the results from the multilevel model that allows both intercepts and slopes to vary across provinces. Here intercepts and slopes used in this figure represent the mean values of posterior distributions obtained from 1,000,000 iterations including the 10,000 burn-in period.

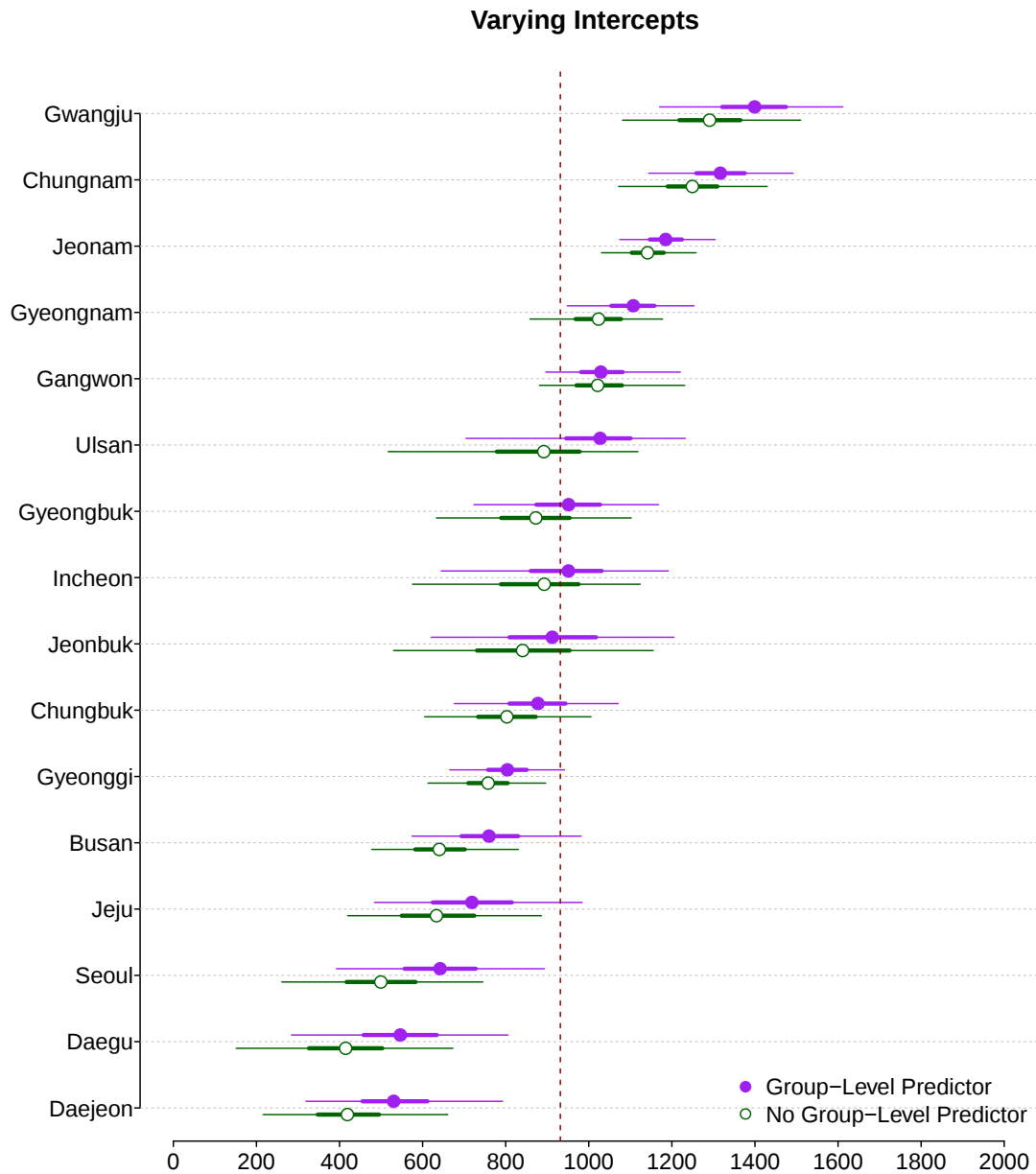


Figure 6.3: This figure illustrates random effects represented as varying intercepts across provinces when we use two models shown in 5.2 and 5.3. Purple solid dots indicate the posterior medians of intercepts obtained by the multilevel linear regression with the group predictor. Dark green hollow dots represent the posterior medians of intercepts obtained by the multilevel linear regression without any group predictor. While thick lines represent 50% confidence intervals, thin lines indicate 95% confidence intervals. The dark red dashed-line indicates the median of intercepts that vary across provinces. The intercepts of three electorally unstable provinces (Chungnam, Jeonam, and Gyeongnam) are greater than their stable counterparts (Chungbuk, Jeonbuk, and Gyeongbuk, respectively).

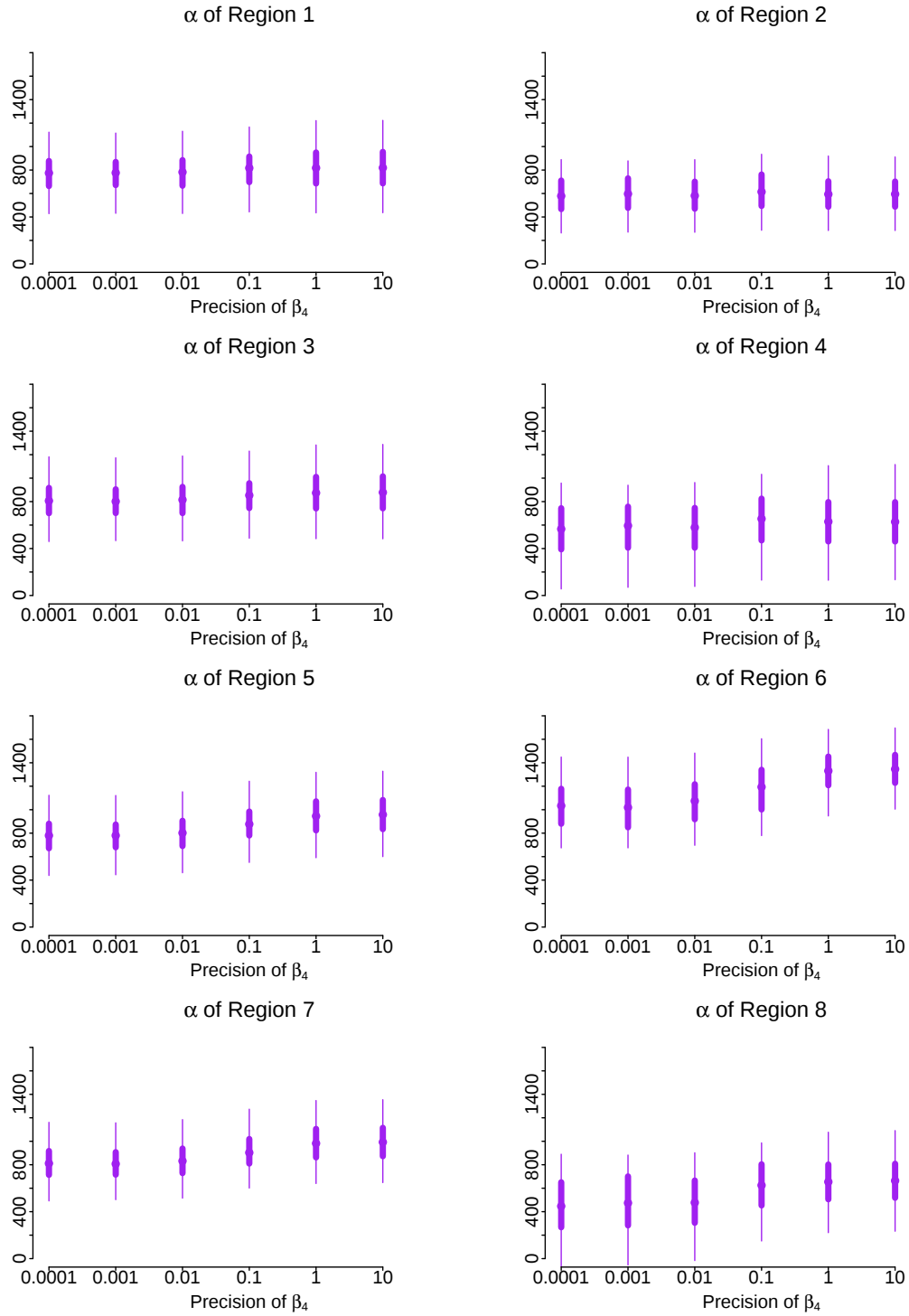


Figure 6.4: This figure illustrates how sensitive regional intercepts (α_j 's) are to variance of the coefficient for vote margin (β_4).

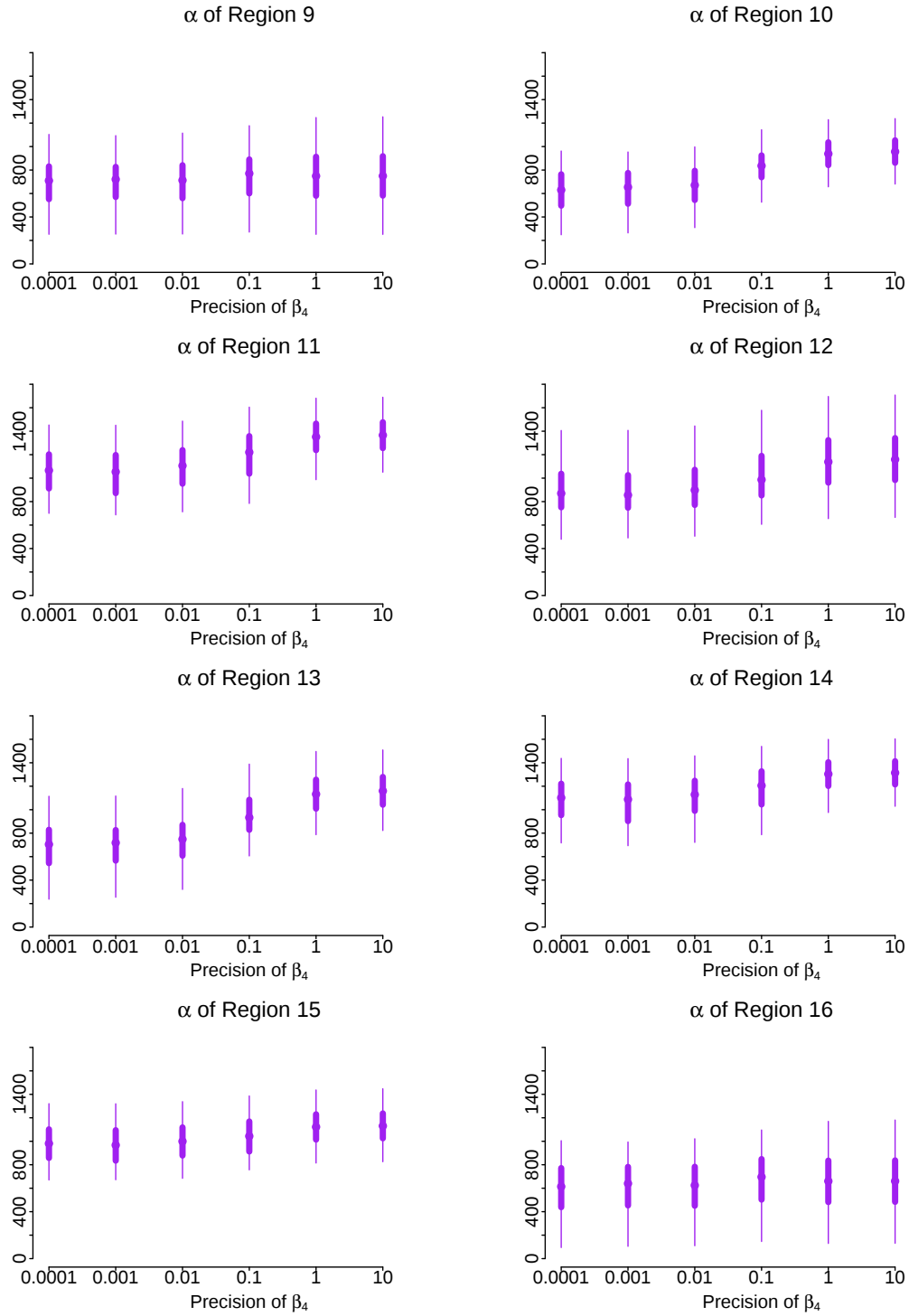


Figure 6.5: This figure illustrates how sensitive regional intercepts (α_j 's) are to variance of the coefficient for vote margin (β_4).

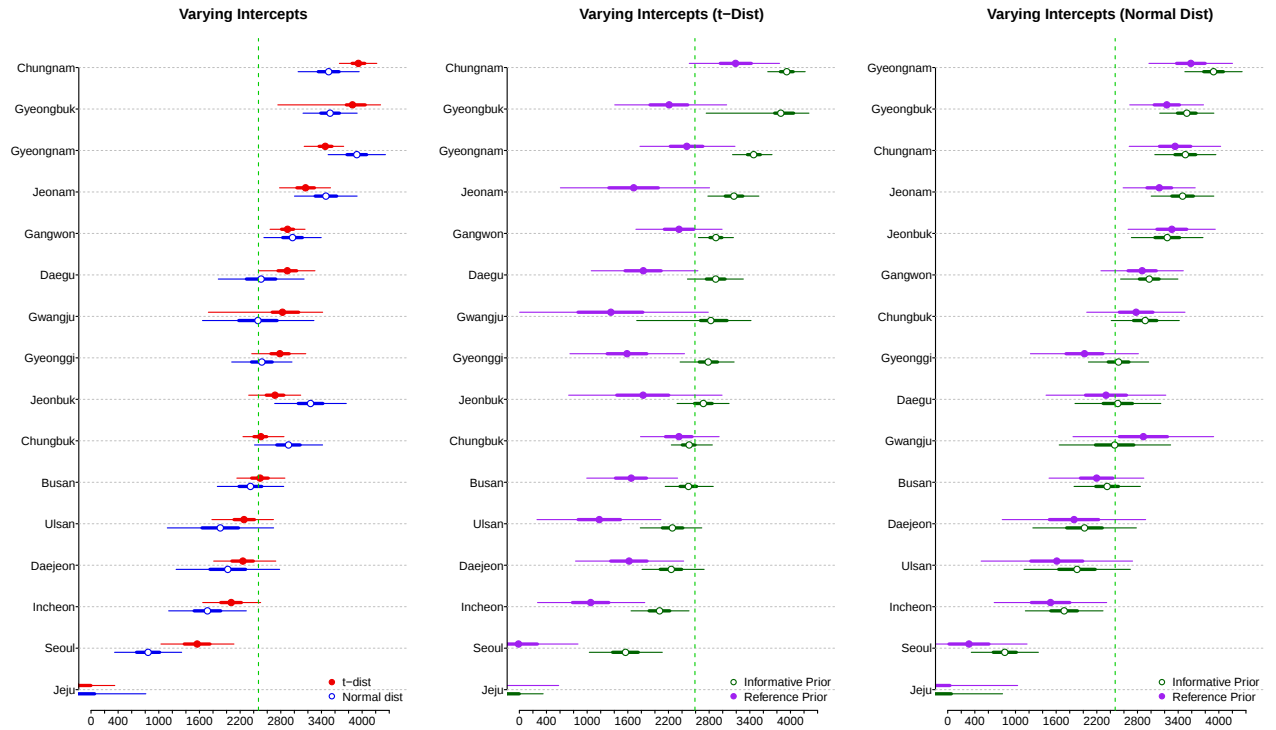


Figure 6.6: This figure illustrates random effects represented as varying intercepts across provinces by model and prior, 2008-2012. Dots indicate the posterior means of intercepts obtained by the multilevel linear regression without the group predictor. While thick lines represent 50% confidence intervals, thin lines indicate 95% confidence intervals. The green dashed-line indicates the mean of intercepts that vary across provinces.

CHAPTER 7

Conclusion

This essay began with assuming that there may exist different electoral incentives by political actor. We assume that (1) individual legislators seek to be reelected; (2) a ruling party wants to maximize its seats in the legislature; and (3) a president attempts to secure his key policies after his retirement. These incentives may be well coordinated, or conflict with each other. For instance, under the institutional setting in which a president who cannot be reelected the president's incentive may not be aligned with the ruling party's incentive, which explains that a president is willing to allocate considerable amount of money to opposition districts to draw support for his successor expected to secure his policies in the future. The potential discordance between the two players' incentives may grow under Single-Member District Plurality (SMDP) rule. The assumption about different electoral incentives distinguishes the theory that this essay adopts with other standard theories about distributive politics.

I have employed several regression models to test three hypotheses on the relationship between potentially different electoral incentives and the actual allocation of intergovernmental grants by focusing on the case of the *Special Local Allocation Grants* in Korea (2005–2006). The results from complete-pooling regression and no-pooling linear regression models demonstrate that the *Unstable electoral districts hypothesis* is not consistently supported and the tests themselves are very sensitive to selection on the outcome variable. The *Legislators' capability hypothesis* is partially supported. Most models show that being a member of the

Public Administration and Security Committee is positively associated with the allocation. However, we can find a little substantive association between other individual legislators' capabilities (e.g., seniority in the National Assembly, personal connection to the president) and the grant allocation.

To carefully test the *Unstable provinces hypothesis*, I employed the multilevel linear regression model in the Bayesian framework. This method substantively helped capture regional variations in the allocation and utilize substantive knowledge from literature on this issue. The result provides strong evidence against the *Unstable Electoral Districts Hypothesis*. The posterior distribution of vote margin that represents electoral stability at the district level has a substantively positive mean ($=9.513$), and the 95% confidence interval is also greater than zero. Considering the average of vote margins in the election, it could make substantial differences in the allocation. How can we explain this result against the *Unstable electoral districts hypothesis*? There are some reasonable explanations. For example, it is possible that risk-averse parties have accurate knowledge about the quantities of core supporters needed to guarantee a victory (i.e., a majority in the National Assembly) at the national level, which has been explained in classical qualitative literature.

As in the classical regression models, the posterior mean of the legislators' membership of the Public Administration and Security is both substantively and statistically significant, which supports the *Legislators' capability hypothesis*.

Most of all, my main finding is that there is a significant positive association between the amount of intergovernmental grants and being an electorally unstable province within a broader region in which voters are motivated by their regional identities even after controlling for the need-based criteria (e.g., financial autonomy, population). That is, the result from Bayesian multilevel linear model supports the *Unstable provinces hypothesis*. In sum, the intergovernmental grants are more likely to be allocated to stable electoral districts at the district level,

whereas they are more likely to be delivered to unstable provinces at the higher level. This apparently contradictory finding is novel in quantitative works on this issue, but is not inconsistent with findings by qualitative research that emphasizes the role of president in the allocation process.

This finding also has a strong implication for decentralized democratic governments under circumstances where significant regionally (or ethnically) affiliated-voting is observed. That is, it is more efficient to target an electorally unstable province even within a supporter region because voters in the electorally stable province are strongly affiliated with a regional (or ethnic) identity so that they may not resent the allocation of grants even if they are not the main beneficiaries. Thus, while the allocation is concentrated on strong supporters at the district level, the apportion at the higher level can be decided by the efficient targeting strategy.

Nevertheless, this essay has some limitations. First, since to model distributive politics in Korea using the Bayesian approach is a totally new attempt, the priors for hierarchical part unlike the other components are subjectively specified, which is the weakest part of this essay. Nonetheless it is meaningful that my results can be an informative prior for next research based on the Bayesian approach. Second, according to Dahlberg and Johansson (2002), the data used in this essay are not fully suitable for analyzing the relationship between electoral incentives and the allocation of intergovernmental grants in that the granting decisions are not made in close connection to an election. To fulfill Dahlberg and Johansson's criteria, we need the data on the special local allocation grants in 2007 (or 2008) in that the following legislative election was held in April, 2008, which has been frustrated by the government which does not want to release the detailed data.

APPENDIX

Special Local Allocation Grants by Components, 2005-6

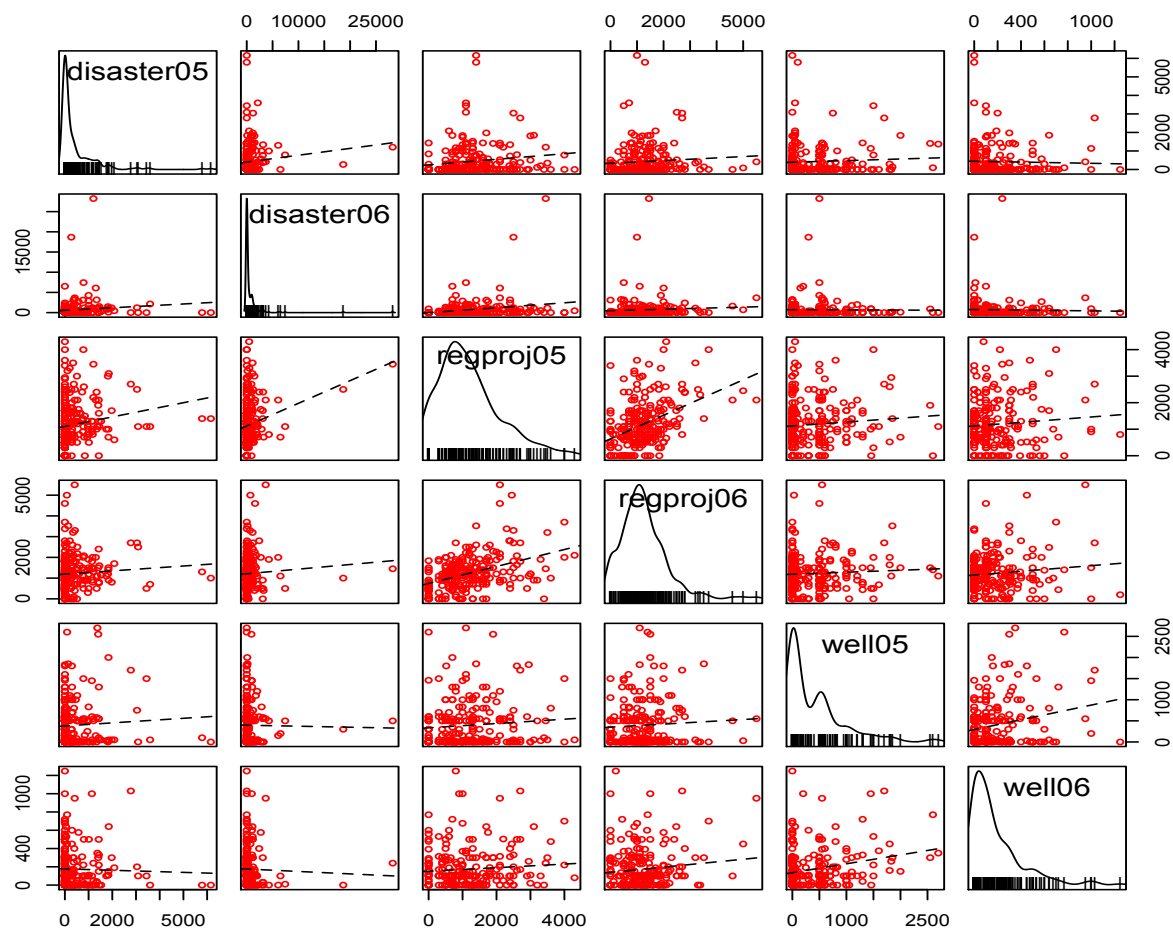


Figure 7.1: This figure shows scatterplots between possible pairs of components of the *Special Local Allocation Grants*. `disaster05` and `disaster06` indicate the grants allocated for recovery from natural disasters in 2005 and 2006, respectively. `regproj05` and `regproj06` represent the grants allocated for the two components (regional needs, and pilot projects) in 2005 and 2006, respectively. Likewise, `well05` and `well06` indicate the grants allocated for financial incentives for well-performed local governments in 2005 and 2006, respectively. The black dotted-lines indicate linear best fit lines. Diagonals show densities of the components.

Descriptive Statistics

2005-2006 Data							
<i>Dependent Variable</i>	Min	1Q	Median	Mean	3Q	Max	Sd
Grant (components (2) and (3))	0	703	1100	1203	1573	3850	741
<i>District-Level Predictor</i>							
Financial Autonomy(%)	7.80	14.25	25.60	28.74	38.77	90.40	16.93
Population	9538	58494	133534	207317	316757	1044113	189849
Population Density (Pop/ km^2)	20	104	372	3960	5294	27240	6389
Committee Membership	0.00	0.00	0.00	0.09	0.00	1.00	0.29
Vote Margin (%)	0.00	0.00	5.20	12.90	17.01	57.30	14.77
<i>Group-Level Predictor</i>							
Swing Index	2.00	10.94	14.06	15.06	20.08	29.67	8.25
2008-2012 Data							
<i>Dependent Variable</i>	Min	1Q	Median	Mean	3Q	Max	Sd
Grant (All components)	0	2130	2892	2965	3655	11890	1479
<i>District-Level Predictor</i>							
Financial Autonomy (%)	8.42	15.16	23.76	28.26	37.89	82.94	16.32
Population	10484	58006	144188	216105	331586	1076650	201301
Population Density (Pop/ km^2)	13	113	394	4704	4952	173284	13065
Committee Membership	0.00	0.00	0.00	0.09	0.00	1.00	0.29
Weighted Vote Margin (%)	0.260	8.36	15.01	18.62	23.15	55.15	13.71
<i>Group-Level Predictor</i>							
Swing Index	11.14	28.59	34.47	32.07	36.82	47.01	8.20

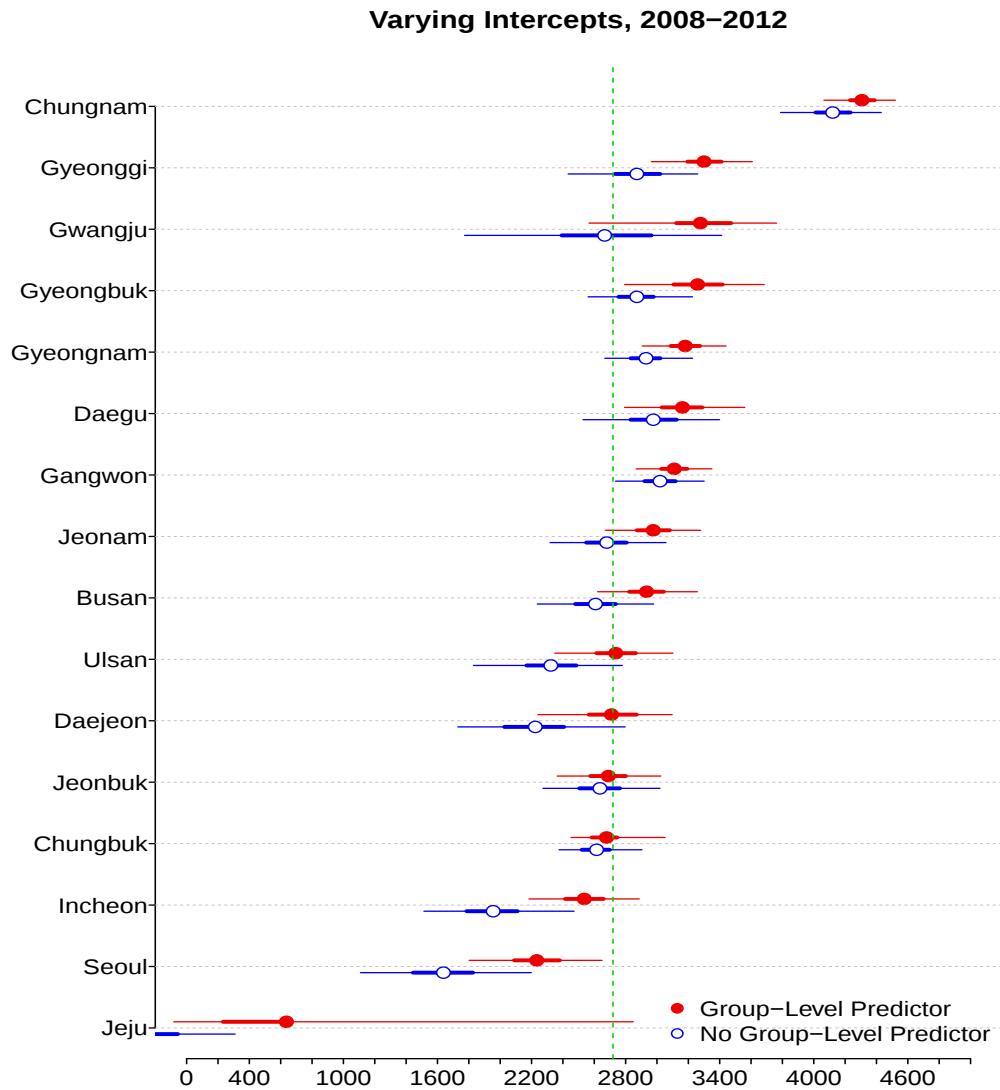


Figure 7.2: This figure illustrates random effects represented as varying intercepts across provinces by model and prior, 2008-2012. Red solid dots indicate the posterior means of intercepts obtained by the multilevel linear regression with a group-level predictor, the swing index. Blue hollow dots represent the posterior means of intercepts obtained by the multilevel linear regression without any group-level predictor. While thick lines represent 50% confidence intervals, thin lines indicate 95% confidence intervals. The green dashed-line indicates the median of intercepts that vary across provinces. The intercepts of two electorally unstable provinces (Chungnam, and Gyeongnam) are greater than the median of sixteen intercepts. It is worthwhile to note that the confidence intervals of intercepts of Gyeongbuk, the less swing province in the core supporter region, Gyeongsang and Daegu, the metropolitan city located in Gyeongbuk are greater than the median.

District-Level Predictor	Mean	Sd	2.5%	97.5%
Financial Autonomy	-25.003	2.875	-30.442	-19.156
Population	0.002	0.000	0.002	0.003
Population Density	-0.051	0.006	-0.062	-0.041
Committee Membership	228.808	109.485	15.763	444.287
Vote Margin	7.661	2.861	2.059	13.262
Group-Level Predictor				
Intercept (g_0)	1373.845	788.321	-131.803	3020.487
Swing Index (g_1)	45.588	23.385	-2.906	90.348

Table 7.1: This table presents the posterior distributions of coefficients for district-level predictors by the t -distribution sampling model with a province-level predictor (the swing index by province), the average grants (2008-2012), and the informative priors from Hur and Kwon (2009)’s data. 1,000,000 iterations including the 10,000 burn-in period were implemented in **Stan**. It is noted that the 95% confidence interval for the posterior distribution of the degrees of freedom (df_y) is [2.00, 2.05].

The JAGS code for varying intercept model (Model 5.2) can be written as

```
1 model{
2   for(i in 1:N){
3     y[i] ~ dt(y.hat[i],tau.y,df.y)
4     y.hat[i] <- a[X[i,1]] + inprod(b[],X[i,2:6])
5   }
6   tau.y ~ dgamma(aa,bb)
7   sigma.y <- pow(tau.y,-2)
8   df.y <- pow(inv.df.y,-1)
9   inv.df.y ~ dunif(0,0.5)
10
11  for(k in 1:K){
12    b[k] ~ dnorm(m[k],precb[k])
13  }
14
15  for(j in 1:J){
16    a[j] ~ dnorm(mu.a,tau.a)
17  }
18  mu.a ~ dnorm(ma0,preca0)
19  tau.a ~ dgamma(cc,dd)
20  sigma.a <- pow(tau.a,-2)
21 }
```

The model with a group predictor Model 5.3 can be written by modifying line 15 to 20 as follows:

```
1   for(j in 1:J){
2     a[j] ~ dnorm(a.hat[j],tau.a)
3     a.hat[j] <- g.0 + g.1*u[j]
4   }
5   g.0 ~ dnorm(500,0.0001)
```

```

6   g.1 ~ dnorm(0,0.001)
7   tau.a ~ dgamma(cc,dd)
8   sigma.a <- pow(tau.a,-2)

```

To implement a MCMC sampling for Model 5.4, the line 15 to 20 can be modified as follows:

```

1   for(j in 1:J){
2     a[j] ~ dnorm(a.hat[j],tau.a)
3     a.hat[j] <- g.0 + g.1*u[j] + inprod(g.2[],g.mean[j,])
4   }
5
6   g.0 ~ dnorm(500,0.0001)
7   g.1 ~ dnorm(0,0001)
8
9   for(k in 1:K){
10    g.2[k] ~ dnorm(g.m[k],g.prec[k])
11  }
12
13  tau.a ~ dgamma(cc,dd)
14  sigma.a <- pow(tau.a,-2)

```

where `g.m` and `g.prec` indicate the mean and the precision hyperparameters for slope of the group predictor `g.2`, respectively. In line 3, `g.mean[j, ]` represents a matrix of the average of each district-level predictor in j -th province ($= \bar{\mathbf{Z}}_j$).

We can also use a different MCMC sampling STAN for faster convergence to the stationary distribution.¹

The STAN code for Model 5.3 can be written as follows:

¹The results are similar to those from JAGS, but it converges faster. All the results are available at my Github site (<https://github.com/bsk245/sthesis>)

```

1 #####
2 # Varying Intercept with a group-level predictor
3 # Note: (1) t-distribution sampling model
4 #       (2) informative prior for the group level predictor
5 #####
6 data {
7   int<lower=0> N;
8   int<lower=0> J;
9   int<lower=0> K;
10  vector[N] y;
11  real X[N,K];
12  int province[N];
13  vector[J] u;
14  real m[K];
15  real<lower=0> sigma_b[K];
16 }
17 parameters {
18   real a[J];
19   real b[K];
20   real g_0;
21   real g_1;
22   real<lower=0> sigmasq_y;
23   real<lower=0> sigmasq_a;
24   real<lower=0> inv_nu;
25 }
26 transformed parameters {
27   real<lower=0> sigma_y;
28   real<lower=0> sigma_a;
29   real<lower=0> nu;
30   sigma_y <- sqrt(sigmasq_y);

```

```

31   sigma_a <- sqrt(sigmasq_a);
32   nu <- 1/inv_nu
33 }
34 model {
35   g_0 ~ normal(500,100);
36   g_1 ~ normal(0,100);
37   sigmasq_y ~ inv_gamma(108, 77182.75);
38   sigmasq_a ~ inv_gamma(2, 200);
39
40   inv_nu ~ uniform(0,0.5);
41
42   for (j in 1:J)
43     a[j] ~ normal(g_0 + g_1*u[j], sigma_a);
44
45   b ~ normal(m,sigma_b);
46
47   for (n in 1:N)
48     y[n] ~ student_t(nu,a[province[n]] + b[1]*X[n,1]
49                      + b[2]*X[n,2] + b[3]*X[n,3]
50                      + b[4]*X[n,4] + b[5]*X[n,5] ,
51                      sigma_y);
52 }

```

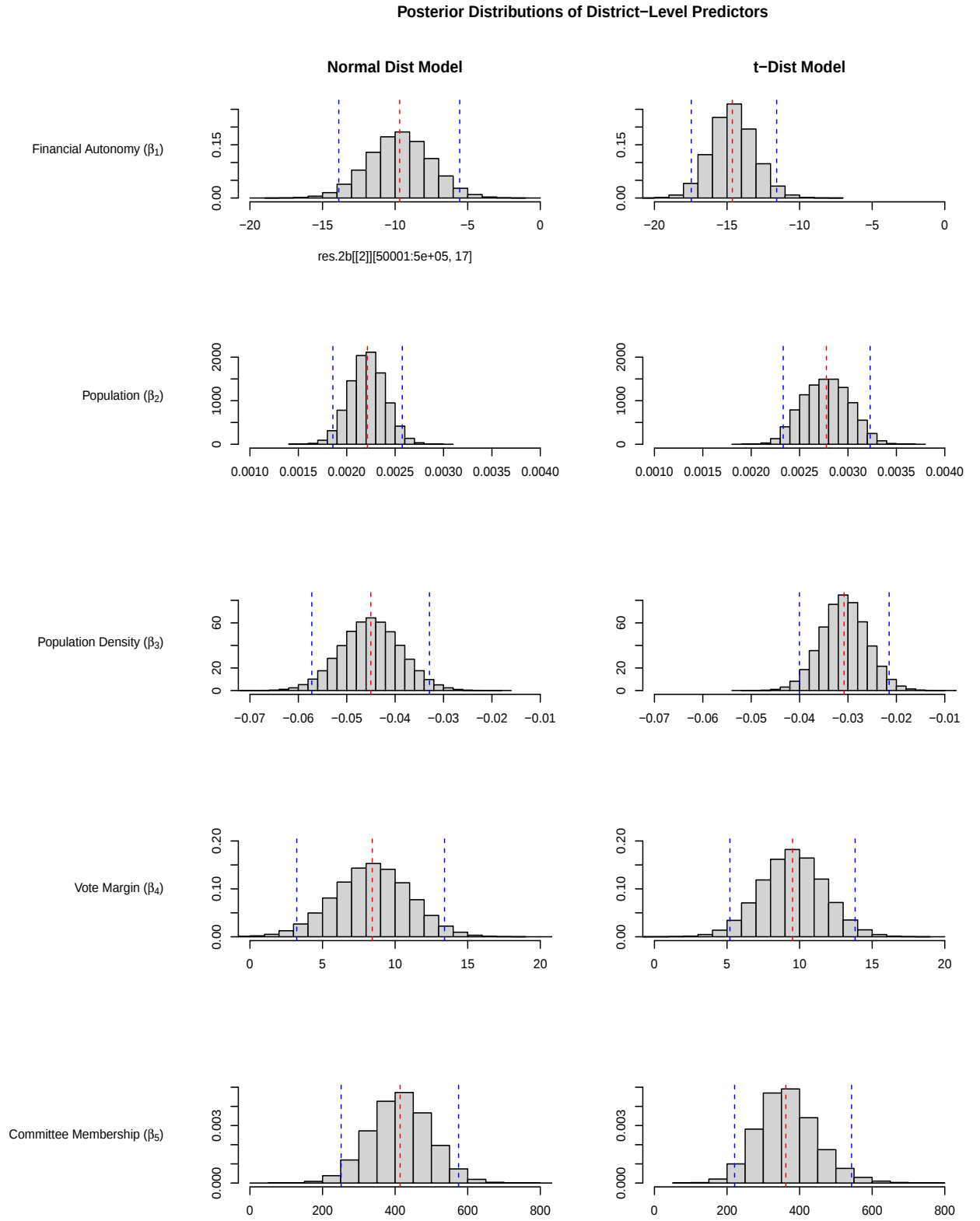


Figure 7.3: Posterior distributions of district-level predictors

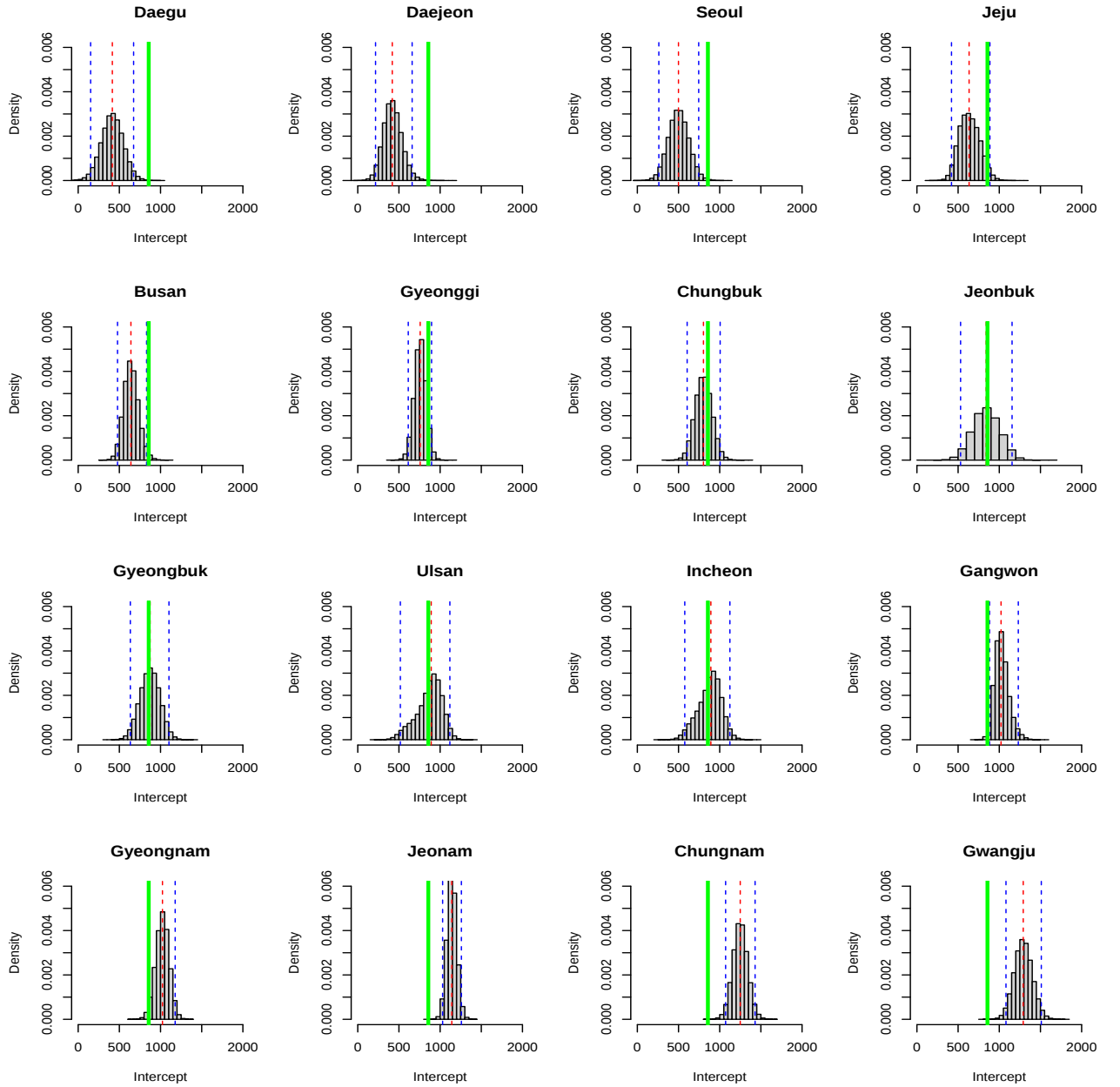


Figure 7.4: This figure shows posterior distributions of varying intercepts (α_j) when the MCMC runs 1,000,000 iterations including the 50,000 burn-in period. Blue dashed-lines indicate 95% confidence intervals, and a red dashed-line presents the median of the posterior distribution in each province. The thick green line indicates the median of the intercepts that vary across provinces. We observe that despite the huge number of iterations the posterior distributions for some provinces such as Ulsan and Incheon are still not bell-shaped in t -distribution sampling model.

Part III

A Simple Model of Conflicts between Rising Powers with Incompatible Ordering Principles: Evidence From The Open Door Principle vs. Partition Principle in Northeast Asia in the Early Twentieth Century

CHAPTER 1

Introduction

A historical overview of world politics reveals that ideal principles designed to order other states' behavior have been declared by rising powers. A few ideas (e.g., neoliberalism) survived, but most of them (e.g., proletarian internationalism) were not firmly established, and disappeared after all. The questions of why some rising powers unilaterally declare new ordering principles not likely to be realized in some regions in the near future and of under what circumstances such ideal principles are successfully implemented in the regions operated by different principles are central to this paper.

One potential explanation is that a state who is unsatisfied with the current ordering principle earns a good cause to secure its interest in the region by declaring a new ideal principle. In case the proponent wins in an armed conflict with the opponent, the new principle is firmly established in the region, so that the winner can benefit from the principle. However, we can hardly demonstrate the validity of the explanation unless an armed conflict actually occurs.

An alternative explanation is that a proponent places a high value on the idea itself. Whether the existing principle is replaced with the new one in a region, the proponent would declare the principle. For example, the Soviet Union under Lenin unilaterally declared proletarian internationalism that prescribes the principle applied among socialist states for the construction of socialism and communism, and then was confidently involved in the third world as well as the more advanced countries of Western Europe for confronting the existing capitalist prin-

ciples at the international level.¹ Still, the principle was unquestionably weakened by *socialism in one country* adopted by Stalin. After the rule of Stalin, proletarian internationalism did not completely disappeared, but the Soviet Union did not place a deep value on the principle itself. Also, this value-driven account can hardly provide a coherent analysis of cases in which either the proponent or the opponent (or both) experiences frequent changes in foreign policy keynotes subsequent to domestic regime changes.

How can we construct a theoretically coherent model of potential conflicts between rising powers with incompatible ordering principles, which is robust to frequent regime changes? One approach that has received much attention in the discipline of international relations is to form game-theoretic models. In particular, crisis bargaining games played by payoff maximizers have been intensively studied. As Myerson (1992) points out, however, it is a difficult task to find tractable game-theoretic models that capture and clarify the important aspects of real situations.

To redefine conventional crisis bargaining models that are not applicable to real international situations I have checked over empirical studies of fragmented events by two rising powers (the United States and Japan) in Northeast Asia in the early twentieth century. Disorder in the European continent during the period brought the unexpected moment of power vacuum in Northeast Asia. Old external powers such as Great Britain and Germany who played a leading role in building an ordering principle left out the region. Due to unstable domestic politics a potential regional power, Russia, could not afford to advance into the region.

Such circumstances allowed the two rising powers with different ideas to confront with each other in Northeast Asia. Based on its commercial competitiveness

¹According to Tunkin, the principle of proletarian internationalism provides specific rights and duties for each socialist state in its relations with other socialist states. It dictates to socialist states close cooperation and mutual assistance in all spheres of the construction of socialism in particular the economic sphere (Butler, 1971).

and national wealth, the United States, a new external power, wanted to be engaged in Northeast Asia. With mobilization of all the resources, Japan, a new regional power, would take advantage of the moment of power vacuum in the region (Kim, 1984). The partition principle intended to build spheres of influence by exclusive partitions (e.g., leased territories, railroads) was preferred by Japan as a late industrial country. Under the old ordering principle the United States could not fairly compete against Japan for commercial interest in the region. Understanding of such fundamental information about the two rising powers helps extend the model applicable to actual interactions between the two rival powers from 1899 to 1941.

This paper proceeds as follows. In chapter 2, I will state the basic logic of my model after critically reviewing literature on game-theoretic models of crisis bargaining under uncertainty, which will provide an insight into constructing a theoretical model of rising power's unilateral declarations of a new ideal principle not likely to be realized in the near future. I will describe players, payoffs in feasible outcomes, and the structure of the game, and then provide salient equilibria as possible solutions of the game, using a solution concept of Perfect Bayesian Equilibrium. In chapter 3, I will summarize the propositions drawn from the equilibria, and present empirically testable hypotheses in order to demonstrate the validity of the theoretical model. In chapter 4, I will test the hypotheses as well as predictions made by the propositions by examining the U.S.-Japanese conflict in Northeast Asia during the first half of the twentieth century (1899–1941). In chapter 5, I will summarize the empirical tests, and provide implications for potential conflicts between rising regional powers with incompatible ideas beyond the U.S.-Japanese conflict.

CHAPTER 2

The Model

The model is designed to analytically account for the reason why a rising power would unilaterally declare a new ideal principle which is not likely to be realized in the near future, and under what circumstances such an ideal principle can be successfully operated or lead to an armed conflict between rival powers with incompatible ordering principles.

Despite its strong intuitiveness and analytical convenience, empirical studies tell us that a complete information game does not fit the analysis of the U.S.-Japanese continuous conflicts during the time under investigation. Indeed, the U.S.-Japanese relations were filled with uncertainty. First of all, both states were rising powers with different methods of creating national wealths, but did not have any prior information about the other's real interest in Northeast Asia before the beginning of the twentieth century.

Second, each state's real view on an ideal policy toward Northeast Asia was not overtly revealed. This is mainly attributable to extremely unstable Japanese politics at the time, which is shown by frequent changes of government. Japan experienced 40 changes in prime ministers during a span of 56 years (1885-1941), and so a prime minister's average term was only 1.4 years. The political instability makes it difficult to employ simple formalizations of repeated games, which are common in formal international relations work on crisis bargaining, to analyze the U.S.-Japanese conflicts in that a change in players in the course of a game may generate a completely different game.

Third, the Japanese political culture at the time often facilitated Western powers' misjudgment of true characteristics of Japanese governments. In particular, the U.S. failed to adequately understand the culture during and after the crisis of 1931-3, which lead to major misjudgments. For instance, the anti-liberal movement in Japan did not overthrow the existing order through a coup or an elected triumph as occurred in European fascist states, but rather took over state power by a process of consolidating support among groups which held the official civil and military bases. Therefore, the United States was uncertain as to whether political changes occurred in the 1930s would be sustainable (Thorne, 1973). In sum, insights derived from empirical studies suggest that more generalized models should consider potential conflicts between rising powers with different ordering principles under uncertainty.

2.1 Previous Models under Uncertainty

States often express opinions which are contradictory to their true preferences. That is, there exist incentives to misrepresent their real preferences. In the credible signaling literature, an important mechanism by which private information can lead to war is through the tactics by which players try to credibly signal their private information. Such credible signaling tactics include audience costs (Fearon, 1994*a*), military mobilization (Fearon, 1997; Slantchev, 2005), opposition party endorsement of the governments threats (Schultz, 1998), private diplomatic signals (Kurizaki, 2007; Sartori, 2002), and creating a risk of war (the threat that leaves something to chance) (Schelling, 1960). For example, generating audience costs can lead to standing firm, and thus a player now prefers war to backing down (Fearon, 1994*a*, 1997).

Until recently, a large number of game-theoretic works on crisis bargaining in

the field of international relations have examined the process where uncertainty can lead to inefficient war (Leventoglu and Tarar, 2008). For example, Fearon (1995) formalizes a process of crisis bargaining to show that even if war is costly and there exists negotiated settlements that both states strictly prefer to war, war can be a rational outcome when there is private information about military capabilities or resolve and incentives to misrepresent it. His model allows defenders to choose only one settlement offer: take-it-or-leave-it (TILI).

Powell (1999) constructs a bargaining model in which a potentially infinite number of offers and counteroffers are allowed, and also shows that inefficient war can be rational outcome under uncertainty. Despite some differences, both Fearon's and Powell's models treat war as a game-ending costly lottery. That is, these models regard the decision to go to war as a game-ending move. The approach has been often observed in other literature (Schultz, 1999; Smith, 1998). Of course, a number of recent models of crisis bargaining have arisen that allow the bargaining process to continue after a war begins (Filson and Werner, 2002; Slantchev, 2003; Powell, 2004; Wagner, 2000). As Powell (2004) himself points out, the costly-lottery model limits the scope of any analysis to the origins of war, and thus cannot be used to capture the dynamics of intrawar conflict and bargaining (e.g., the relation between the states' negotiating positions and battlefield outcomes (Goemans, 2000)).

Despite such recent criticisms (Filson and Werner, 2002; Leventoglu and Tarar, 2008), the approach regarding war as a bargaining breakdown is still productive. According to Powell (2004), informational accounts based on the costly-lottery approach provide a more coherent theoretical explanation of the origins of war than do many other explanations based on anarchy or preventive war (Fearon, 1995) or on the offense-defense balance or relative-gains concerns (Powell, 2002). This approach has also demonstrated the theoretical and empirical importance of considering selection effects in understanding the relation between deterrence

and *ex ante* indicators like alliances. For example, Fearon (1994*b*) provides an explanation of the negative correlation between the existence of an alliance and deterring an attack. Costly-lottery models may also help explain why it has been very difficult to find any stable empirical relation between the distribution of power and the likelihood of war (Powell, 1996*a*; Wagner, 2000).

Still, Powell's costly-lottery model that provides all of the bargaining leverage to the satisfied state even though both sides can make proposals predicts that the risk-return tradeoff in which the satisfied state's initial offer is accepted or war occurs is the unique PBE outcome (Powell, 1996*b*, 1999). It rules out any incentive for the dissatisfied state to make a counteroffer. Leventoğlu and Tarar (2008) modify Powell's model by allowing states to go to war in any period, and thus multiple equilibrium outcomes can be possible. In their model, as long as the dissatisfied state's discount factor is not too low, there exists peaceful equilibria in which a negotiated settlement is reached. If the dissatisfied leader is domestically vulnerable and does not expect to remain in power for long, which means it has a very low discount factor, and thus does not attach much value to future payoffs, he or she is not willing to remain at the bargaining table. According to Leventoğlu and Tarar, for such leaders, private information can make going to war likely to be a more plausible outcome under uncertainty. Despite its stronger predictive power, Leventoğlu and Tarar's model is built on a framework of repeated games played by fixed types of players with different discount factors, and thus is not appropriate to consistently analyze conflictual situations under uncertainty mainly that arises from changes in players themselves.

2.2 Structure of the Game

Figure 2.1 depicts a game that comprises three players: a challenger C , a defender D , and Nature N . To consider incomplete information about other player's private values, Nature initiates the game by choosing types of both players. This is reasonable because, in general, the direction of a state's foreign policy is decided by a newly organized administration (or cabinet). The next nodes represent the challenger's choice whether to declare a new idea (DEC) in order to enforce the defender to follow the principle.¹

In conventional crisis bargaining models (Fearon, 1997; Sartori, 2005) the game ends if the challenger did not send any message or take an action (e.g., threatening). However, the model that I would construct considers the possibility that C would threaten to use force to adjust his unfair share of interest in a specific region *even after he did not declare any ideal principle at his initial decision*, which not uncommonly occurs in reality.² It is worthwhile to note that not declaring an ideal principle ND is considered a signal. In other words, by sending the signal ND C will compete under the current ordering principle. In particular, since the signal does not create any additional cost, C can freely threaten to use force in order to adjust the unfair partition of contestable interest in the region.

The next node of the game is played by D . She knows her own type, but does not know C 's type. Players have common knowledge about the rule of the game, the actions available to each player, and the structure of payoffs and costs for each player. D chooses whether to sustain the existing policy (SUS) established in the region. If D temporarily stops her current policy (ST), the game ends. If she sustains the policy, then C has two options: threatening to use force (TH) and making a concession (CD). If C concedes, the game ends. If he threatens to use force to solve the problem of the unfair share of interest in the region, then D has

¹ ND refers to *Not Declaring* any form of ideal principles.

²I refer to the challenger C as "he" and the defender D as "she".

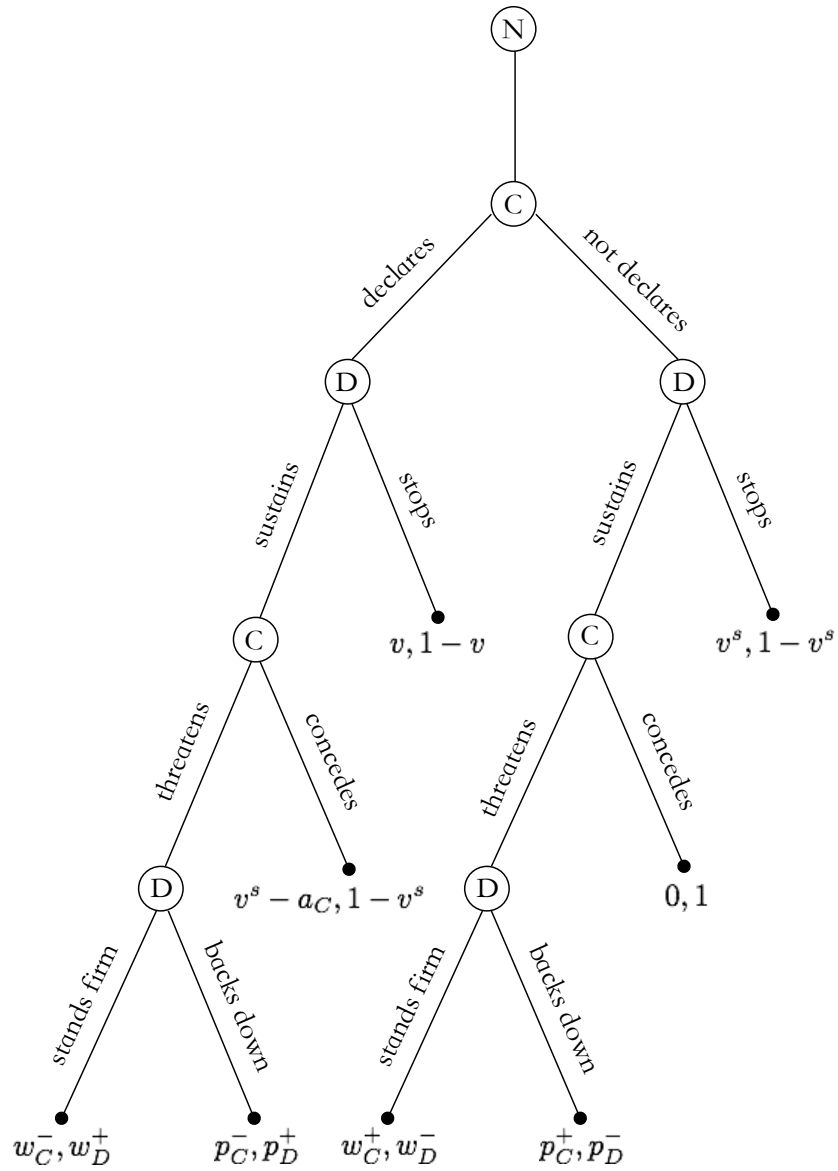


Figure 2.1: This figure describes the structure of game and the payoffs. The game is initiated by Nature. That is, Nature randomly chooses a type of the challenger (e.g., a newly inaugurated U.S. administration).

two options at the final node: standing firm (SF) and backing down (BD). If D stands firm, then an armed conflict may occur. If D backs down, then the game ends, which is the best scenario for C .

C has eight possible pure strategies: $(DEC, TH; TH)$, $(DEC, TH; CD)$, $(DEC, CD; TH)$, $(DEC, CD; CD)$, $(ND, TH; TH)$, $(ND, TH; CD)$, $(ND, CD; TH)$, and $(ND, CD; CD)$. D also has eight feasible pure strategies: $(SUS, SF; SUS, SF)$, $(SUS, SF; ST, SF)$, $(ST, SF; ST, SF)$, $(ST, BD; SUS, SF)$, $(ST, BD; ST, SF)$, $(ST, BD; ST, BD)$, $(SUS, BD; SUS, SF)$, and $(SUS, BD; SUS, BD)$.

To solve the game, I use the Perfect Bayesian Equilibrium (PBE) as a solution concept which consists of beliefs and strategies that meet the following requirements: (1) at each information set the player with the move has a belief about the previous play of the game; (2) given these beliefs, the player's strategy must be sequentially rational; (3) Bayes' Rule and the players' strategies are used to update beliefs for moves on the equilibrium path; and (4) the same process of updating takes place off the equilibrium path where possible (Gibbons, 1992).

2.3 Payoffs

Suppose the case such that C , an external power, unilaterally declared an ideal principle in the region into which he wanted to advance, but the defender temporarily withdraws from her current policy operated by the existing principle. For computational convenience, I specify the parameter of C 's values v in the situation located in the range $[0, 1]$. In other words, the total size of contestable interest in the region under the circumstance is normalized to 1. The status quo value to C is written as v^s (> 0). It is assumed that after declaration of an ideal principle, C 's maximum value which can be obtained in the region will be greater than the status quo value, but less than 1 (i.e., $v^s < \bar{v} < 1$). This assumption is

reasonable in that an *ideal* principle does not allow one state to exclusively possess the whole interest (=1). By contrast, C can obtain the whole interest if he wins in an armed conflict without declaring an ideal principle or D backs down when threatened. Likewise D who enjoys a regional advantage can possess the whole interest through the old principle. For example, by sustaining the expansionist policy formed by the partition principle Japan could exclusively possess the commercial interest in Northern China in the early 1930s.

I also reparameterize the relative capability of C into the fraction of C 's over the total capabilities, which must be located in the range of $[0, 1]$. In other words, it is interpreted as the probability that C wins in an armed conflict. It is assumed that the costs of an armed conflict $(c_i, i \in \{C, D\})$ are distributed on the closed interval $[-1, 2]$ by the cumulative distribution function $F_i(x) = Pr(c_i \leq x)$.³

As Figure 2.1 displays, the game has the eight possible outcomes. The payoff to each state can be described in detail as follows:

- **Outcome I** (w_C^-, w_D^+) : If C wins in an armed conflict with the probability r , he can secure the fair amount of interest because the ideal principle works as a new ordering principle in the region. As a result, C expects to obtain his maximum interest $\bar{v}$. If he is defeated in the armed conflict with the probability $1 - r$, then he earns nothing. As an armed conflict imposes some costs on both players, C and D expect to earn $r\bar{v} - c_C \equiv w_C^-$ and $1 - r\bar{v} - c_D \equiv w_D^+$ in this outcome, respectively.
 - **Outcome II** (p_C^-, p_D^+) : C obtains his maximum value $\bar{v}$ guaranteed by the principle favorable to him without any additional cost. By contrast, it incurs an audience cost a_D to D who has supported the existing principle.
- In general, audience cost refers to the cost of a concession after an initial

³It is worthwhile to note that the costs of an armed conflict c_i are not necessarily non-negative values. To show reasonable cut points configurations I arbitrarily bounded the range of c_i from -1 to 2 .

demand or challenge, but audience costs can be incurred even when no explicit demand has been made in this essay. In other words, an audience cost for D is expected to be created by her backdown after she sustained her current policy based on the existing ordering principle. To sustain the current policy after observing C 's declaration of an ideal principle is also regarded as a signal which conveys information about D 's type. Thus, C and D obtain $\bar{v} \equiv p_C^-$ and $1 - \bar{v} - a_D \equiv p_D^+$, respectively.

- **Outcome III** ($v^s - a_C, 1 - v^s$): This outcome may incur an audience cost a_C , but reward the status quo value v^s . By contrast, if C concedes after declaring an ideal principle, D can expropriate the status quo value ($= 1 - v^s$) secured by the current ordering principle in the region.
- **Outcome IV** ($v, 1 - v$): In this outcome, C can obtain the value comparable to his current competitiveness v , and D obtains $1 - v$.⁴ Since the ideal principle is not firmly rooted in the region yet, C cannot earn the maximum value $\bar{v}$.
- **Outcome V** (w_C^+, w_D^-): If C wins in an armed conflict, he expects to obtain the whole interest not constrained by any ideal principle while it costs for the armed conflict. Hence, C obtains $r - c_C \equiv w_C^+$. In the same manner, D gets $1 - r - c_D \equiv w_D^-$.
- **Outcome VI** (p_C^+, p_D^-): This is the best scenario for C because he obtains the total size of contestable interest in the region without any additional cost. By contrast, D 's backdown incurs an audience cost. As a result, C and D obtain $1 \equiv p_C^+$ and $-a_D \equiv p_D^-$, respectively.
- **Outcome VII** ($0, 1$): This is the best outcome for D because she obtains her maximum value confirmed by the existing principle. By contrast, C

⁴Note that $0 < v^s < v < \bar{v} \leq 1$.

cannot stop D from possessing the whole interest in the region because he does not have any good cause such as a new ideal principle to secure his interest in the region.

- **Outcome VIII** ($v^s, 1 - v^s$): This is the status quo. C does not publicly announce an ideal principle, but D voluntarily ceases her current policy supported by the existing principle. As a result, C and D obtain v^s and $1 - v^s$, respectively.

2.4 Uncertainty: Incomplete Information and Beliefs

This model is constructed on two-sided uncertainty in that neither knows the other's value for an armed conflict: each state has private information about its own value for an armed conflict (Fearon, 1997; Kurizaki, 2007; Sartori, 2005; Schultz, 1998). In this paper the key component that creates uncertainty is each state's cost of an armed conflict. Now it is assumed that Nature randomly selects the costs, c_C and c_D , from independent distributions on bounded intervals $[\underline{c}_C, \bar{c}_C]$ and $[\underline{c}_D, \bar{c}_D]$, respectively, in every game. Each state forms its prior belief about the other's cost of an armed conflict. As in Kurizaki (2007)'s model, this model considers audience costs to both players, $a_i \geq 0$ for $i \in \{C, D\}$.

Unlike simple bargaining crisis models (Kurizaki, 2007; Schultz, 1998), each state's payoff from an armed conflict is conditional on the C 's initial decision: either declaring of an ideal principle or not. That is, to both states the payoffs in **Outcome I** (w_C^-, w_D^+) are different from those in **Outcome V** (w_C^+, w_D^-). C prefers the former to the latter, and D vice versa. In this sense, this is not a cheap-talk game. In a conventional cheap-talk game a message sent by C does not affect both players' payoffs themselves but their beliefs. Likewise, each state's payoff from D 's backing down when threatened is conditional on the C 's initial

decision. In short, to both states the payoffs in **Outcome II** (p_C^-, p_D^+) are distinguished from those in **Outcome VI** (p_C^+, p_D^-) .

CHAPTER 3

Multiple Equilibria

3.1 Perfect Bayesian Equilibria

Multiple perfect Bayesian equilibria can be described by a set of cut points along the continuum of types in the range $c_i \in [\underline{c}_i, \bar{c}_i]$, for $i \in \{C, D\}$.

By the subgame perfection criterion, D would stand firm at her final decision node if and only if her expected payoff from an armed conflict is greater than or equal to that from her backdown. Given that C declared an ideal principle, D rejected it, and then C threatened to use force, this condition holds when $1 - r\bar{v} - c_D \geq 1 - \bar{v} - a_D$. Rearranging the inequality, we have the costs of an armed conflict $c_D \leq (1 - r)\bar{v} + a_D \equiv \alpha$ where α denotes a unique type that is indifferent between standing firm and backing down under the C 's threat upheld by the ideal principle. All types with $c_D \leq \alpha$ would stand firm, SF , and all other types with $c_D > \alpha$ would back down, BD , when threatened to use force, TH . C knows it so that he can calculate his expected payoff: $w_C^- \times F_D(\alpha) + p_C^- \times (1 - F_D(\alpha))$ where $F_D(\cdot)$ is the cumulative distribution function which is common knowledge.

D also has the cut point function $c_C = \bar{v}(r - 1) + \frac{\bar{v} - v^s + a_C}{F_D(\alpha)} \equiv \beta$ where β denotes a unique type that is indifferent between threatening to use force and making a concession. All types with $c_C \leq \beta$ would choose TH , and all other types with $c_C > \beta$ would choose CD after observing D 's resistance, SUS .

To specify the D 's strategy, consider her first decision node after observing an ideal principle advocated by C . Suppose that D who knows her cost of an armed

conflict $c_D \leq \alpha$. All types with $c_D \leq \frac{v-v^s}{F(\beta)} + v^s - r\bar{v} \equiv \alpha^+$ would continue the current policy favorable to them, *SUS*, and all other types with $c_D > \alpha^+$ would accept the ideal principle, *ST*.

Suppose $c_D > \alpha$. The cut point function α^+ varies by other parameters, and is sensitive to the probability that C wins in an armed conflict, r . In this condition D 's choices are constrained by her beliefs $F_C(\beta)$. The restriction $F_C(\beta) \leq \frac{v-v^s}{\bar{v}-v^s+a_D} \equiv r_1$ can be made by an intersection point between the two cut point functions α and α^+ . Given $F_C(\beta) \leq r_1$, D with $c_D > \alpha$ would choose *SUS*. Given $F_C(\beta) > r_1$, D with $c_D > \alpha$ would select *ST*.

Now consider the case such that C did not declare an ideal principle, but threatened to use force after seeing D sustain her current policy, D would stand firm if and only if $1-r-c_D \geq -a_D$. The cost of an armed conflict $c_D \leq 1-r+a_D \equiv \gamma$ where γ denotes the critical type that is indifferent between standing firm and backing down when no ideal principle did not support C 's threats. Note that $\gamma > \alpha$ by the assumption $\bar{v} < 1$. All types with $c_D \leq \gamma$ would stand firm, and all other types with $c_D > \gamma$ would back down when threatened by C who did not make formal announcement of his ideal principle.

C knows it so that he calculates his expected payoff: $w_C^+ \times F_D(\gamma) + p_C^+ \times (1 - F_D(\gamma))$. C has the cut point $c_C = \frac{1}{F_D(\gamma)} - 1 + r \equiv \theta$ where θ denotes a unique type that is indifferent between threatening to use force and making a concession. All types with $c_C \leq \theta$ would choose *TH*, and all other types with $c_C > \theta$ would yield to D 's resistance.

To specify the D 's strategy, consider her initial decision node after not observing a C 's declaration of an ideal principle, *ND*. Suppose that D who has her cost of an armed conflict $c_D \leq \gamma$. All types with $c_D \leq \frac{v^s}{F(\theta)} - r \equiv \gamma^+$ would continue the current policy favorable to her, and all other types with $c_D > \gamma^+$ would accept the ideal principle advantageous to C .

D 's choices at her first decision are constrained by her beliefs, $F_C(\beta)$. The

restriction $F_C(\beta) \leq \frac{v^s}{a_D+1} \equiv r_2$ can be obtained by an intersection point between the two cut point functions α and α^+ . Provided $F_D(\gamma) \leq r_2$, D with $c_D > \gamma$ would continue the current policy favorable to them. Given $F_D(\gamma) > r_2$, D with $c_D > \gamma$ would accept the ideal principle.

To complete C 's strategy at his first decision node, we need to compare his expected payoffs from his declaration of an ideal principle with those from not making a formal announcement of it. When threatened C has the fixed cut point configuration, $\alpha < \gamma$. However, the cut point functions α^+ and γ^+ are more sensitive to the probability that C wins in an armed conflict than α and γ are, respectively.¹ It makes twelve ($=4 \times 3$) possible cut point configurations to specify the whole strategies of D . C also have two possible cut point configurations: (i) $\theta > \beta$ and (ii) $\beta \leq \theta$. To completely specify both players' strategies we need to consider twenty four ($=12 \times 2$) feasible cut point configurations.

To solve the game I divide the probability that C wins in an armed conflict, r , into three ranges by using the two restrictions $F_C(\beta) < r_1$ and $F_C(\theta) < r_2$. Suppose $c_D > \alpha$ or $c_D > \gamma$. In case $\beta \leq \theta$ in the whole range of r , we can separate r into three ranges: 1) $F(\beta) > r_1$ and $F_C(\theta) > r_2$; 2) $F_C(\beta) \leq r_1$ and $F_C(\theta) > r_2$; and 3) $F_C(\beta) \leq r_1$ and $F_C(\theta) \leq r_2$. D would choose $(ST; ST)$; $(SUS; ST)$; and $(SUS; SUS)$, respectively. If $\beta > \theta$ in any range of r , r can be divided into three ranges: 1) $F_C(\beta) > r_1$ and $F_C(\theta) > r_2$; 2) $F_C(\beta) \leq r_1$ and $F_C(\theta) > r_2$; and 3) $F_C(\beta) \leq r_1$ and $F_C(\theta) \leq r_2$. D would choose $(ST; ST)$; $(ST; SUS)$; and $(SUS; SUS)$, respectively.

D can be classified into three different types by strategy when threatened to use force. Regardless of C 's signals at his first decision node, the *hard-liner* type with $c_D \in [\underline{c}_D, \alpha)$, and the *soft-liner* type with $c_D \in [\gamma, \bar{c}_D]$ have the strategies SF , and BD , respectively, given TH . The *moderate* type with $c_D \in [\alpha, \gamma)$ has the

¹For instance, as r increases from 0.35 to 0.4 the cut point configuration changes from $\gamma^+ < \alpha^+ < \alpha < \gamma$ to $\alpha < \gamma < \gamma^+ < \alpha^+$ where $\bar{v} = 0.8$, $v = 0.2$, $v^s = 0.15$, $a_C = 0.1$, and $a_D = 0.1$.

separate strategy $(BD; SF)$ given TH .²

For C , there are two types of C who would choose the same actions regardless of their first choices. The *hard-liner* type would choose $(TH; TH)$, whereas the *soft-liner* type would select $(CD; CD)$ given SUS . Unlike D there may exist two moderate types by cut point configurations between β and θ : (i) $\beta \leq \theta$, and (ii) $\beta > \theta$. If the condition (i) holds, the *less sincere moderate* type with $c_C \in [\beta, \theta]$ has the separate strategy $(CD; TH)$ given SUS . This type would concede, if needed, even after he chose DEC at his initial decision node. If the condition (ii) holds, the *more sincere moderate* type with $c_C \in [\theta, \beta]$ has the separate strategy $(TH; CD)$ given SUS in that he would threaten to use force if he chose DEC at his initial decision node.

There may be various cut point functions of C 's first choices by cut point configurations, which is a challenge to deriving implications from feasible equilibria. However, we can reduce the number of cut point functions, assuming situations in which both players are highly uncertain about each other's type. Under such high uncertainty, C has three cut point functions described over c_D : δ_1 , δ_2 , or δ_3 . The *hard-liner* type has the cut point function as follows:

$$\delta_1 = \frac{(r\bar{v} - v)F_D(\alpha^+) - (r - v^s)F_D(\gamma^+) + v^s - v}{F_D(\alpha^+) - F_D(\gamma^+)} \quad (3.1)$$

The *less sincere moderate* type has the cut point function as follows:

$$\delta_2 = r - v^s + \frac{(v - v^s + a_C)F_D(\alpha^+) + v^s - v}{F_D(\gamma^+)} \quad (3.2)$$

The *more sincere moderate* type has the cut point function as follows:

$$\delta_3 = r\bar{v} - v + \frac{v - v^s(1 - F_D(\gamma^+))}{F_D(\alpha^+)} \quad (3.3)$$

²There does not exist the *moderate* type who has the strategy $(SF; BD)$ because $\gamma > \alpha$ in any cases.

The *soft-liner* type who would choose CD when resisted by D regardless of his initial decision would choose DEC if $F_D(\alpha^+) \leq \frac{v-v^s(1-F_D(\gamma^+))}{v-v^s+a_C} \equiv \kappa_1$ in any cut point configurations.

To specify the C 's strategy at his initial decision node, this paper focuses on four cut point configurations: (1) $\beta \leq \theta$ and $\alpha^+ \leq \gamma^+$; (2) $\beta \leq \theta$ and $\alpha^+ > \gamma^+$; (3) $\beta > \theta$ and $\alpha^+ \leq \gamma^+$; and (4) $\beta > \theta$ and $\alpha^+ > \gamma^+$. Under high uncertainty the strategies of *hard-liner* and the two *moderate* types at their initial decision can be summarized as follows:

(1) $\beta \leq \theta$ and $\alpha^+ \leq \gamma^+$: The *hard-liner* type would choose DEC if $c_C > \delta_1$; ND otherwise. The *less sincere moderate* type would make a choice of DEC if $c_C > \delta_2$.

(2) $\beta \leq \theta$ and $\alpha^+ > \gamma^+$: The *hard-liner* type would choose DEC if $c_C \leq \delta_1$; ND otherwise. The *less sincere moderate* type would make a choice of DEC if $c_C > \delta_2$; ND otherwise.

(3) $\beta > \theta$ and $\alpha^+ \leq \gamma^+$: The *hard-liner* type would choose DEC if $c_C > \delta_1$; ND otherwise. The *more sincere moderate* type C with $c_C \in [\theta, \beta)$ would select DEC if $c_c \leq \delta_3$.

(4) $\beta > \theta$ and $\alpha^+ > \gamma^+$: The *hard-liner* type would choose DEC if $c_C \leq \delta_1$; ND otherwise. The *more sincere moderate* type would select DEC if $c_c \leq \delta_3$.

By assuming that both player's costs of an armed conflict follow a uniform distribution we can remove the possibilities $F_C(\beta^+) < \frac{v-v^s}{v-v^s+a_C} \equiv r_1$ and $F_C(\theta^+) < \frac{v^s}{a_D+1} \equiv r_2$. These two conditions tell us that after observing DEC , D with $c_D > \alpha$ would choose ST for sure, and after observing ND , D with $c_D > \gamma$ would choose ST for sure, respectively.

3.2 Multiple Equilibria and Testable Hypotheses

If each player's cost of an armed conflict is uniformly distributed, the condition $\alpha^+ < \alpha$ holds regardless of the probability that C wins in an armed conflict.³ If we assume that the distribution lies in the range of $[-1, 2]$, then we have a specific restriction on v , an adjusted value made by a temporary withdrawal from her current policy after observing a declaration of an ideal principle, as follows:

$$v < \frac{(\bar{v} - v^s + a_C)(\bar{v} - v^s + a_D)}{\bar{v} + a_D + 1} + v^s \equiv \lambda^* \quad (3.4)$$

If the condition (3.4) is satisfied, we can reduce the number of feasible cut point configurations. A temporary cease ST is not assumed to dramatically improve C 's interest. As shown by $\frac{\partial \lambda^*}{\partial a_C} > 0$, the condition (3.4) is positively associated with a_C . As a_C increases, the condition $v < \lambda^*$ is more likely to hold. In sum, we can predict both players' choices more confidently when a_C is high.⁴

Definition 1 (The High Uncertainty Condition): *The high uncertainty condition is defined as the situation in which the cut point configurations $\alpha^+ < \alpha$ and $\gamma^+ < \gamma$ hold. This condition can readily be satisfied when both players' costs of an armed conflict uniformly distributed in bounded ranges.*

Technically, this essay calls the situation in which the conditions $\alpha^+ \leq \alpha$ and $\gamma^+ \leq \gamma$ are satisfied the *high uncertainty* condition. As mentioned above, some cut point configurations are highly sensitive to changes in other parameters, especially r . Fortunately, we can reduce the number of feasible cut point configurations by assuming c_i , for $i \in \{C, D\} \sim \text{Unif}[a, b]$ where a and b are the upper and the lower bounds, respectively. **Definition 1** demonstrates that regardless of a_D the

³The condition is equivalent to $F_C(\beta) \geq \frac{v-v^s}{\bar{v}-v^s+a_D} \equiv r_1$.

⁴This is also applicable to the probability that C wins in an armed conflict. That is, the condition $\alpha^+ < \alpha$ is more likely to hold as r rises.

condition $\gamma^+ \leq \gamma$ is satisfied unless $v^s > 0.5$.⁵ The condition $\alpha^+ \leq \alpha$ must be satisfied if $v < \lambda^*$ by (3.4). These two conditions unburden of considering the whole possible scenarios which can occur by little changes in r .

Lemma 1 (Nonexistence of Defender's Backdown under High Uncertainty): *Suppose $v < \lambda^*$. D will not choose BD when threatened after observing ND under high uncertainty over each other's type.*

Recall that the situation in which both states are highly uncertain about each other's type described over costs of an armed conflict can be formalized by using the cumulative distribution function of a uniform distribution as $F_i(\cdot)$, $i \in \{C, D\}$.

Lemma 1 states that a bargaining process would not be terminated with D 's backdown without observing C 's declaration of an ideal principle under high uncertainty about each other's type.

Suppose $\alpha^+ < \alpha$. Under the prior beliefs D will not choose BD when threatened. In short, we cannot see **Outcome II** and **Outcome VI** under the prior beliefs. By contrast, under the posterior beliefs D can choose BD when threatened by C who has sent DEC . Thus, we may see **Outcome II** in equilibrium under the posterior beliefs.

Lemma 2 (Highly Capable Challengers' Choices): *To declare an ideal principle can be an efficient option to highly capable C 's who are not hard-liners under high uncertainty.*

This lemma shows that C who does not belong to the *hard-liner* type is more likely to choose DEC as his relative power increases. In this case, we are more

⁵If $v^s > 0.5$, then a_D must be greater than $\frac{2v^s-1}{1-v^s}$ in order to satisfy the condition $\gamma^+ \leq \gamma$ regardless of r .

likely to see D 's temporarily cease of her current policy (**Outcome IV**). Under high uncertainty about each other's type the *less sincere* type would choose *DEC* for sure if $\beta \leq \theta$.

Lemma 3 (Hard-liner Challenger's Declaration). *Suppose $\alpha^+ < \gamma^+$. The hard-liner type would choose *DEC* if $c_C \geq \delta_1$, *ND* otherwise. Given $\alpha^+ \geq \gamma^+$, he would choose *DEC* if $c_C < \delta_1$, *ND* otherwise.*

Lemma 3 shows that configurations between α^+ and γ^+ can change the *hard-liner* C 's cut point strategy. If α^+ and γ^+ intersect over r , C 's strategy is divided. The cut point α^+ may exceed the cut point γ^+ at relatively high r . In this sense, C with his relative capability above the intersection point can be called a *relatively capable* challenger. By contrast, C with his relative capability below the intersection point can be called a *less capable* challenger.

There does not exist an equilibrium if $F(\alpha^+) = F(\gamma^+)$. *Hard-liner's* declarations are strongly conditioned by his relative capability. From this lemma we can induce a testable hypothesis: *we are less likely to observe an ideal principle declared by the hard-liner type at both very high and very low r 's.*

Lemma 4 (Less Sincere Challenger and Defender's Audience Cost). *Suppose $a_D < a_D^*$. Whereas the probability that a less sincere challenger exists decreases with r below the threshold, r^* , it increases with r above r^* . If $a_D \geq a_D^*$, the probability increases with r .*

Under the assumption of a uniform distribution described over $c_i, i \in \{C, D\}$ which lies between -1 and 2 , the threshold to satisfy the condition $\beta < \theta$ decreases below $a_D^* \approx 0.732$ and $r^* = a_D + 2 - \sqrt{3}$, but increases below a_D^* and above r^* . Regardless of r the probability increases with a_D above the threshold

a_D^* . This implies that unless a_D is sufficiently high (i.e., $a_C > 0.732$), the *less sincere moderate* type is more likely to exist under high uncertainty over D 's type as r increases. However, if a_D is higher than 0.732, the *less sincere moderate* type is less likely to exist.

Now the multiple equilibria in this model can be analytically summarized in the following propositions.

Proposition 1 (Capable Challenger's No Declaration Equilibrium). *Suppose $\beta \leq \theta$, $v < \lambda^*$, and $F(\alpha^+) \leq \kappa_1$. There exists an equilibrium such that if C who has $c_C \in [\delta_1, \beta)$ sends ND , DEC otherwise; after observing ND , D with $c_D \leq \gamma^*$ would choose SUS , ST otherwise; after observing SUS , C with $c_C \leq \theta^*$ would choose TH , CD otherwise. After observing TH , D would choose SF for sure.*

After observing ND , D updates her belief about C 's type. That is, C 's prior belief that D would choose TH if she choose SUS is $F_C(\theta)$. However, the *hard-liner* with $c_D < \gamma$ updates her belief after seeing ND , $\Pr(c_C < \theta | DEC, SUS) = 1$, which means that D believes C would choose TH if she choose SUS for sure. Thus, she would choose SUS if $c_D \leq v^s - r \equiv \gamma^*$, ST otherwise. For the *soft-liner* with $c_D \geq \gamma$, ST is the sole option under high uncertainty which satisfies the conditions $\gamma^+ < \gamma$ and $\alpha^+ < \alpha$.⁶

After observing SUS C also updates his belief that D would choose SF when threatened. The belief is revised from $F_D(\gamma)$ to 1 because $\gamma^* < \gamma$. Thus, he would choose TH , if $c_C \leq r \equiv \theta^*$, CD otherwise. After seeing TH D is willing to go to an armed conflict for sure.

⁶This is readily proved. After observing SUS following ND , D with $c_D \geq \gamma$ will choose BD when threatened (BD). Thus, $EU_D(SUS|TH) = 1 \times (-a_D) + 0 \times 1 < EU_D(ST|TH) = 1 - v^2$ by the assumption $a_D \geq 0$.

Proposition 2 (Less Capable Challenger's No Declaration Equilibrium).

Suppose $\beta \leq \theta$, $v < \lambda^$, and $F(\alpha^+) > \kappa_1$. There exists an equilibrium such that if C who has $c_C \in [\delta_1, \bar{c}_C)$ sends ND , DEC otherwise; after observing ND , D with $c_D \leq \gamma^*$ would choose SUS , ST otherwise; after observing SUS , C with $c_C \leq \theta^*$ would choose TH , CD otherwise. After observing TH , D would choose SF for sure.*

After seeing ND , D updates her belief that C would choose TH when she choose SUS . The belief of a *hard-liner* with $c_D < \gamma$ is revised from $\Pr(c_C < \theta | DEC) = F_C(\theta)$ to $\Pr(c_C < \theta | DEC, SUS) = 1$. That is, D believes C would choose TH for sure once SUS was chosen. Thus, she would choose SUS if $c_D \leq v^s - r \equiv \gamma^*$, ST otherwise. For the *soft-liner* with $c_D \geq \gamma$, ST is the sole option under high uncertainty as in **Proposition 1**.

After observing SUS C also updates his belief that D would choose SF when threatened. The belief is revised from $F_D(\gamma)$ to 1 because $\gamma^* < \gamma$. Thus, he would choose TH , if $c_C \leq \theta^*$, CD otherwise. After seeing TH D would choose SF for sure.

Proposition 3 (Challenger's Concession Equilibrium). *Under high uncertainty over D 's types the hard-liner type can make a concession when resisted after ND if $\beta > \theta$. By contrast, the hard-liner type cannot make a concession when rejected after DEC if $\beta \leq \theta$.*

Recall that the cut point configurations between β and θ describe the probabilities of two moderate types: the *less sincere moderate* type exists if $\beta \leq \theta$; and the *more sincere moderate* type does if $\beta > \theta$. **Proposition 3** demonstrates that *hard-liners* would not choose CD in equilibrium if $\beta \leq \theta$. Concession can be made only by the *less sincere moderate* or the *soft-liner* type in the cut point

configuration. By contrast, the *hard-liner* type as well as the *sincere moderate* and the *soft-liner* types can choose *CD* given *ND* if $\beta > \theta$. Consequently, this proposition shows that while **Outcome VII** ($ND \rightarrow SUS \rightarrow CD$) can occur in equilibrium with *hard-liner* challengers, **Outcome III** ($DEC \rightarrow SUS \rightarrow CD$) cannot occur in equilibrium with *hard-liner* challengers.

Corollary 3.1 (Nonexistence of Hard-liner Challenger's DEC). *Suppose $\beta \leq \theta$, $F_D(\alpha^+) \leq \kappa_1$, and $\delta_2 < \beta$. If α^+ exceeds γ^+ as r rises, an equilibrium initiated with hard-liner's DEC does not exist in the range of $r \in [\underline{r}^*, \bar{r}^*]$. In this range of r we can observe only *CD* once observed *DEC* sent by C .*

Suppose $\beta \leq \theta$. Denote $\underline{r}^*$ and $\bar{r}^*$ cut points of r such that $\delta_1 = \beta$ at $\underline{r}^*$ and $\delta_1 = \underline{c}_C$ at $\bar{r}^*$, respectively. Then a *hard-liner* would not send *DEC* in the range of $r \in [\underline{r}^*, \bar{r}^*]$. If $\delta_1 \leq \beta$, the signal *DEC* does not convey information. Put differently, there does not exist an equilibrium such that the *hard-liner* send *DEC* at his initial decision node in the range of r . By contrast, we can see *ST* which follows *DEC* outside the range of r . Consequently, neither **Outcome I** nor **Outcome IV** can occur in the range of $r \in [\underline{r}^*, \bar{r}^*]$. The left panel in Figure 3.1 illustrates the possibility that *hard-liners'* *DEC* may not exist in the middle of r .

Proposition 4 (Armed Conflict Equilibrium). *The probability of an armed conflict declines as information conveys via signals. While the probability of an armed conflict following DEC increases with the relative capability of C , the probability of an armed conflict following ND decreases with the relative capability of C .*

This proposition demonstrates that an armed conflict with no declaration of an ideal principle can more scarcely occur in equilibrium than an armed conflict

with a declaration if C is capable. Belief revision clearly reduces the probability of either an armed conflict following DEC or that following ND . In particular, as ND becomes informative, the probability of an armed conflict without a declaration of an ideal principle declines.

Under what circumstances signal is ND more informative? The equilibria shows that ND becomes highly informative (1) when r is high or low, (2) when the C 's status quo value is high, and (3) audience costs (especially D 's audience cost a_D) are high. From the challenger's perspective, DEC is very efficient signal. If the signal ND is informative, the updated cut point γ^* decreases. Such information which was newly added pulls down the cut point θ^* , which makes the probability of an armed conflict without a declaration of any ideal principle fall. Such information enables C whose cost of an armed conflict is relatively high to consider concession (**Outcome VII**) as an option. Clearly, this makes some difference from expectations based on prior beliefs.

Corollary 4.1 (Defender's Backdown under High Uncertainty). *Suppose a high uncertainty condition. D 's backdown can occur only after observing DEC .*

Proposition 4 implies that high status quo values for C , and increased audience costs (especially in a_D) make the signal ND more informative at high or low relative capability of C . If the signal ND is informative, the updated cut point γ^* declines. Such information newly added pulls down the updated cut point θ^* again, which reduces the probability of an armed conflict without a declaration of an ideal principle, other things being equal. Put differently, information conveyed via the signal ND enables C whose cost of an armed conflict is relatively high to consider concession as a reasonable option.

Corollary 4.1 shows a sender's advantage over a receiver in signaling games.

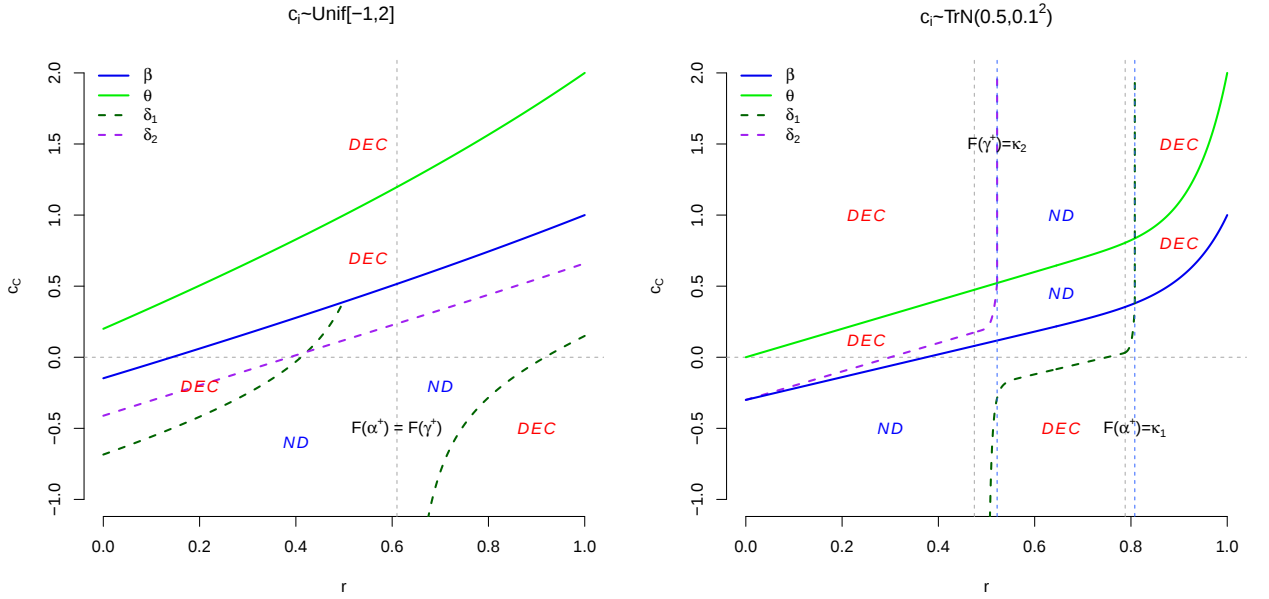


Figure 3.1: This plot illustrates how C 's initial decision changes by C 's relative capability by a numerical example where $\bar{v} = 0.8$, $v = 0.65$, $v^s = 0.6$, $a_C = 0.3$, and $a_D = 0.5$. The left panel assumes that c_i , for $i \in \{C, D\}$ is uniformly distributed in the range of $[-1, 2]$, which describes a situation in which both players are uncertain about each other's type. The right panel is based on the CDF of a truncated normal distribution with mean of 0.5 and sd of 0.1. Compared to the left panel, both states are less uncertain about each other's type in the right panel.

Suppose $\alpha^+ < \alpha$ and $\gamma^+ < \gamma$. Note that BD cannot occur under the prior belief distribution. However, if $F_C(\delta_1) \leq \frac{v-v^s(1-F_C(\beta))}{\bar{v}-v+a_D} \equiv F_C(\delta_1)^*$, then belief revision through information conveyed from the signal DEC enables D with $c_D > \alpha$ to choose BD when threatened to use force under high uncertainty over C 's type. In this sense, declaring an ideal principle is an efficient option to improve C 's interest in a region which a different ordering principle was firmly established under high uncertainty.

Consequently, the multiple perfect Bayesian equilibria provide theoretical solutions to some puzzles and plenty of implications. First, those equilibria explain the reason why a challenger gets stuck to an ideal principle which does not seem to be realized in the near future. Although an ideal principle does not guarantee maximum value to a challenger even if a defender totally accepts it, it provides

him with an incentive to declare it in common conditions. That is, declaring an ideal principle can be an efficient option to highly capable or highly incapable challengers who want to improve their payoffs under uncertainty over each other's type. Second, it specifies the conditions where *hard-liner* defenders are willing to accept an ideal principle unfavorable to her. Third, it coherently explains why we can hardly observe a *hard-liner* challenger's concession after declaring an ideal principle, but can often see a *hard-liner* challenger's concession without any declaration of an ideal principle. Fourth, it shows that belief revision by signals and choices can reduce the probability of an armed conflict between rising powers. It also accounts for the reason why an armed conflict following no declaration of an ideal principle is less likely to be observed than is an armed conflict following declaration of a new idea.

From multiple equilibria we can derive some historically testable hypotheses as follows:

Hypothesis 1: *Suppose both powers are less constrained by audience costs. Under high uncertainty we are more likely to observe a defender state's temporary withdrawal from her current policy after a declaration of an ideal principle than any other equilibrium outcome.*

Hypothesis 1 can be applied to a confrontation between rising powers with incompatible ordering principles in the early stage. Figure 3.3 illustrates the situation such that both players are not highly constrained by audience costs, and have little information about each other's type. Regardless of the relative capability r , **Outcome IV** is expected to occur most frequently.

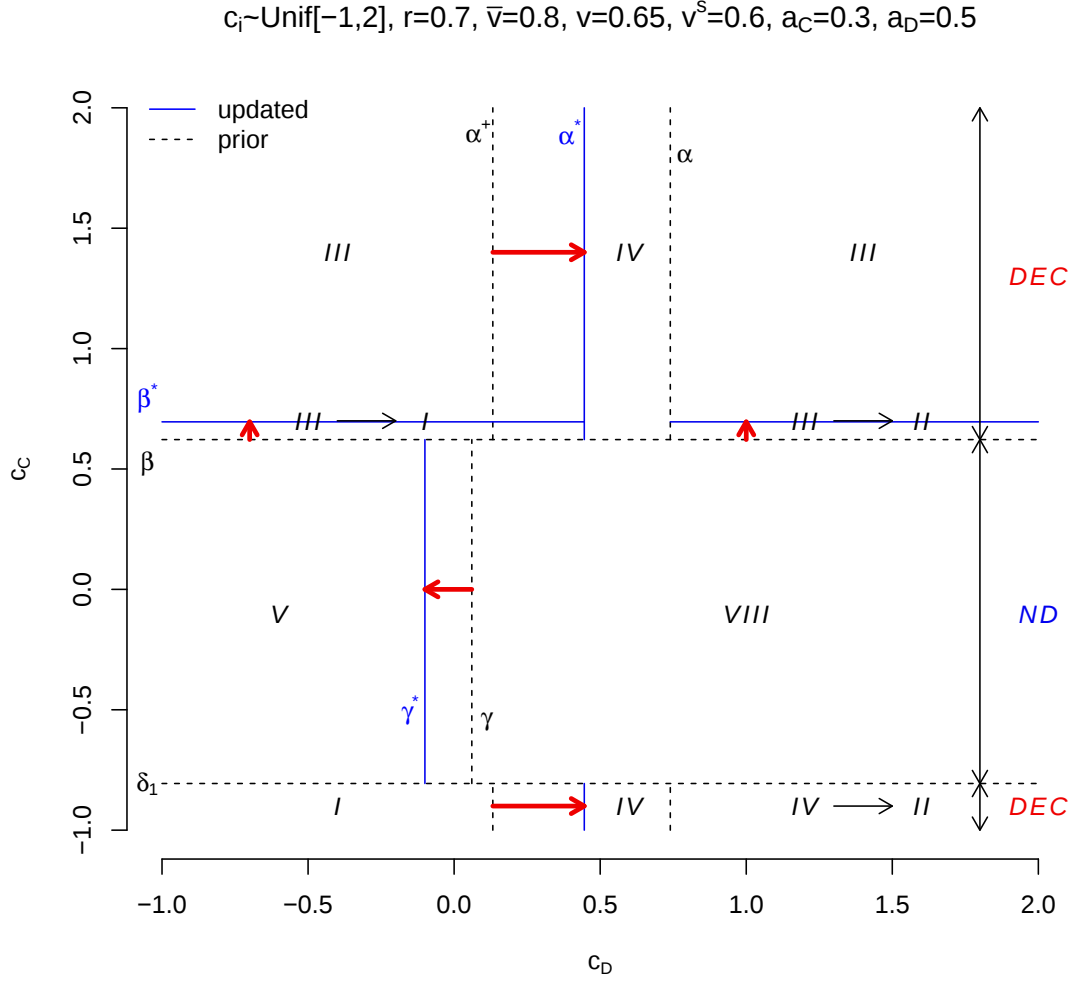


Figure 3.2: This plot illustrates a numerical example where $r = 0.7$, $\bar{v} = 0.8$, $v = 0.65$, $v^s = 0.6$, $a_C = 0.3$, and $a_D = 0.5$. It assumes that c_i , for $i \in \{C, D\}$ is uniformly distributed in the range of $[-1, 2]$, which describes a situation in which both players are uncertain about each other's type. The blue solid lines represent updated cut points, thick red arrows indicate belief revision directions.

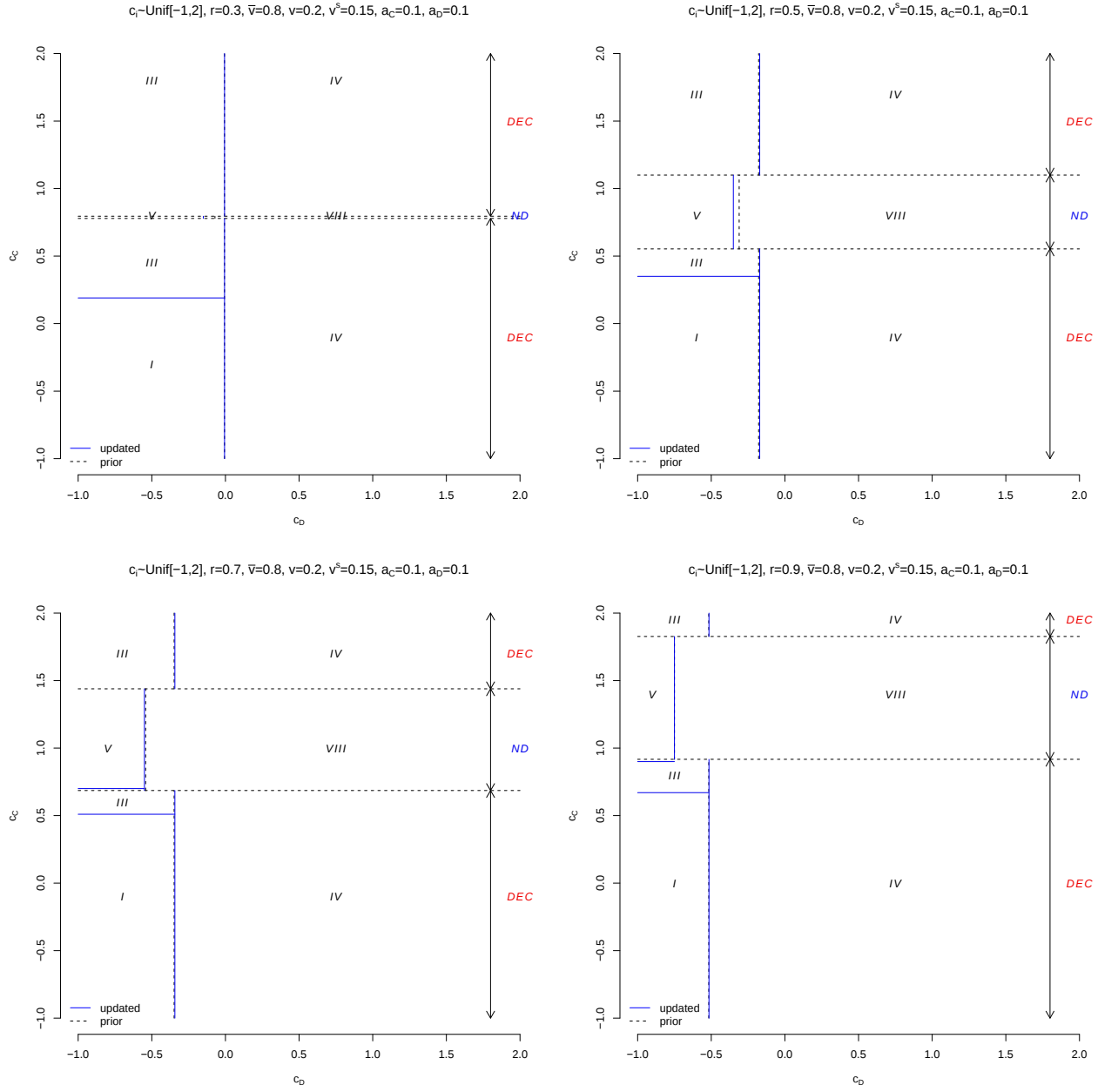


Figure 3.3: This plot illustrates a numerical example where $\bar{v} = 0.8$, $v = 0.2$, $v^s = 0.15$, $a_C = 0.1$, and $a_D = 0.1$. It assumes that c_i , for $i \in \{C, D\}$ is uniformly distributed in the range of $[-1, 2]$, which describes a situation in which both players are uncertain about each other's type. The blue solid lines represent updated cut points, whereas the black dotted lines cut points based on their prior beliefs.

Hypothesis 2: *We can see neither a defender state's temporary withdrawal from her current policy nor her withstanding after observing challenger's declaration of an ideal principle in the range of r such that she is convinced that her rival does not belong to the hard-liner type. As a result, we can only observe a challenger's concession once a declaration was observed.*

Hypothesis 2 is directly derived from **Corollary 3.1**. Of course, the condition which informs of a defender that her rival who sent *DEC* is not a *hard-liner* is highly restricted. However, it is worthwhile to note that *DEC* cannot be the best choice to a *hard-liner* who is not sufficiently capable under some circumstances.

Hypothesis 3: *A challenger's concession without a declaration of an ideal principle is more likely to occur as his audience cost as well as his cost of an armed conflict increase.*

Hypothesis 3 is intuitively straightforward: Rising costs make challenger states more cautious. It is notable that belief revision enables challengers who change their minds from an armed conflict to a concession. It implies that such challengers' cost of an armed conflict may lower than *soft-liners* who would make a concession when their ideas were defied by their rivals. This can provide an explanation of why the same administration changes its choices by other's actions.

Hypothesis 4: *Suppose a highly capable challenger. As both states gather information about each other's type, we are more likely to observe a challenger's declaration of an ideal principle.*

As illustrated in Figure 3.1, the probability of a unilateral declaration of an ideal principle in equilibrium is not monotonically increasing over a challenger's relative capability when the cost of an armed conflict is not seriously truncated by the upper bound. The signal *DEC* is not informative if r exceeds the threshold where *ND* cannot occur in equilibrium. That is, when r is sufficiently high, *DEC* is the only feasible equilibrium strategy to challengers. Hence, an armed conflict can hardly occur unless a challenger does declare his ideal principle in the situation.

Hypothesis 5: *As a challenger becomes more capable under uncertainty, we are less likely to see a defender who has not observed any declaration of an ideal principle back down when threatened. By contrast, we are more likely to see a defender who has observed a declaration of an ideal principle stand firm when threatened.*

It is worthwhile to note that the probability of a challenger's victory in an armed conflict is very important in that it dramatically changes the possible options to rising rivals. As demonstrated in **Definition 1**, the slopes of the cut points α^+ and γ^* more steep than those counterparts α and γ .

If the probability r high enough to satisfy the conditions $\alpha^+ < \alpha$ and $\gamma^+ < \gamma$, some defenders who have observed a declaration of an ideal principle are willing to back down when threatened. As illustrated in Figure 3.2, **Outcome II** can occur in equilibrium under uncertainty even if a defender believes that his rival who has declared an ideal principle does not belong to the *hard-liner* type.

Hypothesis 6: *As a status quo value to a challenger increases, the threshold of relative capabilities at which an armed conflict can occur*

after a unilateral declaration of an ideal principle declines.

By assumption an occurrence of **Outcome IV** ($DEC \rightarrow ST$) induces a small advance in the challenger's attainable value ($v^s < v$). The adjusted value becomes the status quo value in the next game. As a challenger's status quo value rises gradually, to declare an ideal principle is considered an efficient option to induce practical improvement. Thus, it lowers the threshold of the challenger's relative capability in which an armed conflict can occur. That is, as the status quo value rises through repeated defender's temporary withdrawals from her current policy, an armed conflict after a declaration of an ideal principle (**Outcome I**) can occur at a relatively low r . This implies that an armed conflict can occur between rising powers who possess asymmetric capabilities when a challenger can benefit from sending a signal. It also implies that declaring an ideal principle conveys information, which makes a favorable adjustment of interest by an armed conflict easier so that it can be an efficient option to capable challengers such as the United States or the Soviet Russia.

CHAPTER 4

Empirical Test: Historical Cases in Northeast Asia (1899–1941)

A careful examination of international relations in Northeast Asia in the early twentieth century reveals several tensions between the United States and Japan even before the late 1930s. Both states were emerging rival powers in the region, but supported incompatible ordering principles: the Open Door principle and the partition principle. The Open Door Policy was a new idea designed by Great Britain but introduced as a new principle to Northeast Asia by the United States in the early twentieth century. Since the Open Door principle declared that the foreign powers in China must observe a policy of free and open economic competition (Davidann, 2007), it was strongly preferred by early industrialized countries with strong commercial advantages such as Great Britain and the United States.¹

In contrast, the partition principle intended to build spheres of influence by exclusive partitions (e.g., leased territories, railroads), and was preferred by late industrial countries such as Germany and Japan, and in common use in Northeast Asia at that time. The potential for conflict rooted in incompatible principles had already begun in the 1900s, and exploded into the Pacific War of 1941 (Kim, 1984).

¹The Open Door Policy consists of two components: *(i)* equal commercial and industrial trade rights in China and *(ii)* Chinese administrative and territorial integrity. The relevance of the former part had dwindled away since the failure of the Taft administration's Dollar Diplomacy. Instead, the United States began to emphasize the latter part since the Japanese Twenty-One Demands of 1915 which revealed its expansionist ambitions. Such change in the U.S. emphasis enabled the Open Door Policy to be viable until the 1940s.

Case No.	Year	Hypotheses Tested (Lemmas or Propositions)	Feasible Outcomes	Actual Outcome
1	1899	<i>h1</i>	IV	IV
2	1900	<i>h1</i>	IV	IV
3	1904	<i>h1</i>	IV	IV
4	1908	<i>h1, h4</i>	III, IV	IV
5	1909	<i>h2</i>	III, IV	III
6	1914	<i>h5</i>	IV, VIII	VIII
7	1915	<i>h2</i>	III, IV	III
8	1917	<i>h4</i>	III, IV	IV
9	1921	<i>l4</i>	IV	IV
10	1922	<i>p1, h5</i>	VII, VIII	VIII
11	1931	<i>h4</i>	III, IV	IV
12	1933	<i>h3, p3</i>	III, IV, VII, VIII	VII
13	1934	<i>p1</i>	III, IV, VIII	VIII
14	1938	<i>h2</i>	I, III, V	III
15	1941	<i>h4, h6</i>	I, III	I

Table 4.1: This table summarizes the fifteen historical cases, the hypotheses (lemmas or propositions) tested, the predicted (feasible) outcomes, and the actual outcomes in each case. *h*, *l*, and *p* in the third column indicate hypothesis, lemma, and proposition, respectively. Feasible outcomes were drawn from specifying both states' types.

Such an approach raises a simple question. Is there a single, consistent framework to explain the dynamic relationship between the rival powers during the period from 1899 to 1941? Based on unobservable structural approaches (e.g., the world-system argument), fragmented historical facts, fluctuation in macro economic fundamentals, or psychological factors of decision-makers (e.g., misperception and irrational choices), many researchers have attempted to answer the question (Blainey, 1973; Clyde and Beers, 1975; Hosoya, 1968; Iriye, 1967; Jervis, 1976; Thompson, 1983). These efforts, however, fail in providing a consistent explanation.

As many historians have argued, both states' choices might be affected by domestic politics as well as international politics (Hosoya, 1968; Iriye, 1973; Kim, 1984). As realists have maintained, the relationship might also be influenced by

change in the relative capabilities (Mearsheimer, 2001). Besides such factors, these two rising powers' choices were influenced by uncertainty about each other, and the two-sided uncertainty has been repeatedly revised by each other's actions. In particular, whether to declare the Open Door principle when a new administration (or a new cabinet) embarks played an important role in competition between the two rivals. The theoretical model captures the importance of long-standing ideas in the U.S.–Japanese conflict in the early twentieth century.

In this section, fifteen cases from 1899 to 1941 will be examined for empirically testing the hypotheses (lemmas, or propositions), as summarized in Figure 4.1.

4.1 The First Open Door Notes (Case No.1)

The Open Door principle was an idea that all states should have equal commercial and industrial trade rights. As a specific policy with regard to China, it was first proposed by the United States in the Open Door Notes of September–November 1899. In 1898, the United States had become an East Asian power through the acquisition of the Philippines. However, as the partition of China by the European powers and Japan seemed imminent, the United States felt its commercial interest in China threatened. John Hay, U.S. Secretary of State, sent diplomatic notes to the major powers (France, Germany, Great Britain, Italy, Japan, and Russia), requesting them to declare formally that (1) they would support Chinese territorial and administrative integrity and (2) would not interfere with the free use of the treaty ports within their spheres of influence in China.

During this period there were strong economic tensions among the Western powers. Each power would evade Hay's request until other powers complied with it (Langer, 1951). Nevertheless, Hay announced that every power had satisfactorily granted consent to the principle, and thus the Open Door policy became a conclusive international principle in March 1900 (Clyde and Beers, 1975). Although

most treaties made after 1900 referred to the Open Door Policy, competition among the powers for special concessions within China for railroad rights, mining rights, loans, foreign trade ports, and so forth, continued unabated in practice. In fact, Hay's notes allowed for the continuance of existing privileges and spheres of influence in China. For example, Hay recognized that southern Manchuria was in effect a Russian province.

In contrast to other Western powers, Japan could not respond to the request proactively. Japan did not have reserve power to join the partition of mainland China, and was not capable enough to restrain Russia's southern advance policy in 1900. Therefore, Japan tried to obtain other powers' recognitions of its predominant position in Korea, withholding the expansionist policy. It is noted that Japan did not harbor territorial ambitions toward mainland China in the early 1900s.²

A first game started as the McKinley administration requested to formally declare the Open Door policy in 1899. Observing the U.S. action, the Yamagata Cabinet accepted it and chose a non-exclusive policy toward mainland China (excluding Manchuria), and then the game was completed (**Outcome IV**).

The McKinley administration wanted to intervene Northeast Asia, considering the administration's foreign policy toward the region, as demonstrated in the Spanish-American War.³ The U.S. proportion of export to China was very limited (below 5 percent) compared to that of export to Canada and Europe (81.4 percent) in 1900 (Kwon, 1997). The McKinley's Open Door notes was the first diplomatic expression of its interventionist policy, but it still did not create a high audience cost to him.

Fair competition could have guaranteed the U.S. much higher commercial interest in China and Northeast Asia. Due to geographical advantages that facili-

²The territorial designs of Japan were sequentially extended from the Korean peninsula, southern Manchuria, northern Manchuria, mainland China, and South Asia.

³After the victory in the Battle of Manila the McKinley administration send the troops (10,844) necessary to capture Manila before the end of the war.

tates the establishment of the bridgehead to the mainland China, Japan effectively compete other external powers in the region. Domestically, Japanese public opinion was very hostile to Czarist Russia in the late 1890s and the early 1900s. Many Japanese citizens were in favor of hard-line factions, which may incur a relatively high audience cost in case if she backs down when threatened after she sustained her current expansionist policy based on the partition principle.

The Yamagata Cabinet may be literally categorized as the *hard-liner* if we employ a classical dichotomous classification of Japanese governments.⁴ His cabinet preferred nationalist militarists to democratic bureaucrats in the domestic political system. Yamagata's biography also shows that he was strongly affected by Prussian military and political ideas advocating military expansion abroad and authoritarian government domestically (Hackett, 1971). Nevertheless, for Japan in 1898, the cost of an armed conflict with the United States by carrying out the expansionist policy toward China was measured as very high. History provides some evidence for it. The secret memoirs of Count Tadasu Hayashi evinces that such calculations were dominant within the Japanese leadership at that time (Pooley, 1915). Yamagata seriously considered abandoning all interest in Korea to avoid war with Russia in 1899 (Azusa, 1966). It is evident that the Yamagata Cabinet knew that Japan was much less capable than the United States.

The United States had already witnessed Yamagata's first term (1889-1891). Hence, before the game started, the McKinley administration knew that the incoming Japanese government led by Yamagata could be hostile to other powers. However, since the United States had not witnessed the Japanese military capabilities until the outbreak of the Russo-Japanese War in 1904, the U.S. cost for threatening to use force might be evaluated as high as those in the Spanish-American War, which is manageable.⁵

⁴Yamagata Arimoto is called the "father of the Japanese Army"

⁵The U.S. military capability overseas was demonstrated in the Spanish-American War. Spanish Admiral Montojo's fleet was completely destroyed, which resulted in 371 casualties compared to only 9 American navies wounded in the Battle of Manila Bay on May 1st 1898.

In contrast, Japan had not experienced an armed conflict with any Western power, and observed the U.S. victory in the Spanish-American War. The Japanese government ceaselessly attempted to earn Great Britain's help to constrain Russia and the United States, which resulted in the formation of the Anglo-Japanese Alliance in 1902. Although it dictated that Great Britain would be involved only in war in which Japan would fight with more than one power, the alliance itself was the first alliance between a western power and an Asian state. Consequently, Japan believed the McKinley administration had a very low cost of an armed conflict with Japan, and could defeat her. Under high uncertainty about each other's type the McKinley administration which was highly capable sent a signal as a form of diplomatic note (*DEC*), and the Japanese government made a submissive choice, and the game ended (*ST*, **Outcome IV**), as claimed by *Hypothesis 1* which states that a defender state who is less constrained by audience cost is more likely to temporarily withdraw from her current policy after a declaration of an ideal principle under high uncertainty.

4.2 The Second Open Door Notes (Case No.2)

A similar game was started again when Hay notified the second Open Door Notes to other powers on July 3 after the outbreak of Boxer Rebellion in 1900. It was a circulation which declared that the United States would keep a peaceful relationship with China, advance legal trade partnerships, and protect the U.S. citizens' security and their property rights guaranteed by international laws and extraterritoriality. In particular, the second notes emphasized the protection of the Chinese territorial and administrative integrity, and stipulated equal opportunities of commerce and trade should be ensured in all over China beyond each nation's sphere of influence.

Before the second notes were circulated, Japan resumed its existing policy toward China. Through the Eight-Nation Alliance Japan already sent the largest number of troops (20,300) soon after the outbreak of Box Rebellion (Preston, 2000). Considering the total number of troops was 49,255, Yamagato's response to the incident could be suspicious of his expansionist intention.

Russia also had been carrying out the southern advance policy. Russia sent the second largest number of troops (12,400) to China, and then attempted to form its sphere of influence in Korea as well as southern Manchuria. The top priority of Yamagata's foreign policy was to secure its special interests in Korea and southern Manchuria by gaining other powers' support. Especially, Korea was a vital interest to Japan in the 1900s. In his memoir, Prime Minister Yamagata said, "Korea is a dagger pointed at the heart of Japan! If Korea were to be occupied by other forces, our people could not sleep... Therefore, Korea cannot be passed into other powers." (Nish, 1966)

As in **Case No.1**, observing the McKinley administration's choice of the Open Door policy (*DEC*), the Yamagata Cabinet chose a non-expansionist policy again (*ST*, **Outcome 4**). More specifically, Japan declared its entire support for the Open Door principle, and withdrew its troops from China as soon as possible. It supports *Hypothesis 1*.

Since the Boxer Rebellion, soft-line factions and hard-line factions had coexisted in Japanese politics, and each faction had clarified its own foreign policy (Pooley, 1915). Assume that while hard-line factions would endure a high cost of an armed conflict, soft-line factions would not. Hence, such a change in Japanese politics raised uncertainty over the Yamagata Cabinet's type.

4.3 Before the Russo-Japanese War (Case No.3)

Katsura Taro became a new prime minister of Japan in June 1901. A new game started as Theodore Roosevelt took the office in September 1901. The United States had been good terms with Japan, and the Roosevelt administration was also favorable to the new Japanese government. However, the administration suspected that Russia intended to expand its sphere of influence by carrying out the southern advance policy, which could influence the U.S. commercial interest in China as well as Japan's special interest. For example, the market share of Russian cotton products had grown in Northeast Asia since the Russian Army had stationed in Manchuria. Faced with this situation, American cotton product industry warned the U.S government that American cotton products would lose the market share in Northeast Asia unless Russia's southern advance policy was deterred.

Observing Russia's behavior in Northeast Asia, the Roosevelt administration was concerned about an armed conflict between Japan and Russia in Northeast Asia, which may damage the U.S. commercial interest in China. The United States initiated a new game with intense concern. The Roosevelt administration attempted to solve the issue of Russia's southern advance policy, and strongly requested Russia and Japan to conform to the Open Door principle in 1902. Observing the U.S. signal (*DEC*), the Katsura Cabinet chose a non-expansionist policy toward China (*ST*, **Outcome IV**) again, which supports *Hypothesis 1* as in the previous two cases. Then Japan formed the Anglo-Japanese Alliance with Great Britain that had advocated the Open Door Policy in 1902.

Halford Mackinder presented an influential paper, "The Geographical Pivot of History" at Royal Geographical Society in 1904. The paper claimed that Russia would be a potential state to occupy Eurasian landmass. It made U.S. foreign policy decision-makers believe that Russia's southern advance policy would threaten U.S commercial interest in China which had gradually been increasing. Hence,

they recognized the necessity of containment of Russia. However, the proportion of export to China was still limited (below 5 percent) during the Roosevelt administration.

In contrast to Russia which continued implementing the southern advance policy, Katsura often stated that, if the honor of Japan could be respected in the world, Japan would assume the responsibility given by other powers. This statement was interpreted that the Japanese government would accept the Open Door principle as a more inclusive principle to prohibit any agreement which could cause damage to Chinese sovereignty. However, hard-line factions had confronted soft-line factions regarding a treaty with Russia during during the first Katsura term (Pooley, 1915).

The Roosevelt administration had an interventionist nature. Observing the formation of the Anglo-Japanese Alliance, the United States believed that the Katsura Cabinet might not be controlled by hard-line factions. The U.S. cost of an armed conflict with Japan soared by the formation of the Anglo-Japanese Alliance in 1902. Although the alliance dictated that Great Britain would be involved only in war in which Japan would fight with more than one power, it was the first alliance between a western power and an Asian state. It raised the cost of an armed conflict with Japan incredibly high.

The friendly relationship between the United States and Japan, however, was vulnerable to Russia's behavior. In fact, the Roosevelt administration protested that Russian encroachment in Manchuria was a violation of the Open Door Policy in 1902. Japan also requested Russia to withdraw from southern Manchuria and northern Korea. Despite these strong oppositions by the United States and Japan, Russia maintained to advance to southern Manchuria and Korea. At last, Japan sent Russia an ultimatum to withdraw from southern Manchuria in 1904. As soon as Russia refused it, Japan declared war against Russia. Once the Russo-Japanese War started, Japan defeated Russia in many battles.

4.4 The Katsura Cabinet and the Roosevelt Administration after the Russo-Japanese War (Case No.4)

Roosevelt was shocked by the outbreak of the Russo-Japanese War. The war obviously displayed Japanese military power which had improved since the First Sino-Japanese War (1894–1895), and made the United States suspect that the Japanese government led by hard-line factions would choose the expansionist policy toward China. The Roosevelt administration witnessed the modern and powerful Japanese navy in the aftermath of the Russo-Japanese War. Believing that Japan could wage war against Western powers, President Roosevelt began to be concerned about Japanese ambitions toward East Asia beyond Northeast Asia. Thus, when Japan replaced Russia in southern Manchuria after the Russo-Japanese War, the United States and Japan pledged to maintain equal opportunities in Manchuria.

Japanese domestic politics was relatively stable during the war. Since public opinion was extremely hostile to Russia, the Japanese public entirely supported the Katsura Cabinet which had decided to wage war against Russia. This can be verified by Prime Minister Katsura's longest tenure of office (1901–1906) in the history of Japanese politics in the early twentieth century.

Despite his intense concern about Japanese ambition to expand its sphere of influence President Roosevelt attempted to solve the issue through traditional diplomatic measures.⁶ As a result, Taft-Katsura Secret Agreement was formed in July 1905. Before the end of the Russo-Japanese war, the secret agreement was signed between William Howard Taft, the United States Secretary of War, and

⁶According to (Neu, 1966) Roosevelt devoted himself to domestic affairs including winning in an election in 1904. Saying “our internal problems are of course much more important than our relations with foreign powers,” (Roosevelt to George Otto Trevelyan, 1905), he was stuck to a cautious policy toward Japan and China (p.438)

Katsura Taro. In the agreement, the United States recognized Japan's sphere of influence in Korea; in exchange, Japan recognized the U.S. sphere of influence in the Philippines. It also stated that peace in Northeast Asia could be accomplished by a good understanding between the United States, Japan, and Great Britain.

The Japanese victory of the Russo-Japanese War, however, brought an unstable situation in Northeast Asia at the same time. It was ambiguous that the Taft-Katsura Agreement could ensure a friendly relationship between them for a long time. Since the bilateral relationship was based not on a form of alliance but on a form of agreement, it was vulnerable to interpretation from a self-centered angle.

Japanese public opinion in the early 1900s was very hostile to Czarist Russia. The Japanese people felt that despite the Japanese military victory in the Sino-Japanese War an intervention initiated by Russia (the Triple Intervention) had prevented Japan from obtaining the fair proportion of Chinese territory. Most Japanese citizens supported hard-line factions, and responded that Japan should build up its armament, and revenge Russia.

It is evident that after the victory of the Russo-Japanese War the pendulum had swung toward hard-line factions in Japanese domestic politics. Therefore, Japan started to implement the expansionist policy in Manchuria. Japan signed a treaty of Manchuria with China on December 22, 1905. It revealed that Japan would make efforts to build its sphere of influence in Manchuria by the exclusive partition principle rather than to conform to the open door principle. As a result, American merchants were shut out of Manchuria in both trade and investment in 1906 (Matsui, 1972). As a response, the United States diplomatically protested to the closed access to Manchuria.

Friction with Japan was intensified by Japanese immigrants and San Francisco school segregation in 1906. Japanese leaders including new Prime Minister Saionji Kinmochi did not want to have trouble with the United States, but experienced

many severe postwar adjustments, which aroused Japanese public discontent. Besides, the first Russo-Japanese Agreement was signed in July 1907. Japan and Russia demarcated their spheres of influence and recognized them in the Secret Convention (Matsui, 1972). A series of Japanese actions revealed that Japan had an ambition to expand its sphere of influence by the partition principle.

Such a crack in the friendly relationship between the United States and Japan was displayed in the U.S. following actions. The Roosevelt administration made an effort to demonstrate the U.S. naval power in a global theater, called “Great White Fleet world-wide voyage of circumnavigation” in 1907. However, such a saber rattling was not recognized as a real threat to use force because the United States did not specify any presumed adversaries (Roosevelt, 1913). President Roosevelt also urged the Japanese government not to view the cruise of the battle fleet as an aggressive act.⁷

Despite the victory of the Russo-Japanese War the Japanese cost of an armed conflict with the United States was high. First, since Japan had already devoted its resources to the war against Russia, it did not have reserve power to stand firm against other powers’ military threat or economic sanctions. Second, its status in Northeast Asia was dictated by the Anglo-Japanese Alliance throughout the 1910s. The alliance helped restrain a Russian encroachment upon its sphere of influence, but it raised the cost of an armed conflict with the U.S. at the same time. Consequently, the Roosevelt administration’s saber rattling in 1907 increased the Japan’s prior belief that his administration was willing to actively intervene in Northeast Asia. Japan believed that the United States could be resolute for an armed conflict if Japan sustained the current expansionist policy toward China. It is noted that the U.S. payoff was adjusted from v^s to v in the following game.

⁷This is shown in Memorandum for the Chief of Staff by Lieutenant Colonel W.W.Wotherspoon, June 27, 1907, NA, RG 94(War Department, Office of the Adjutant General), 1260092; Aoki to Hayashi, July 17, 1907, Telegram Series, Archives of the Japanese Ministry of Foreign Affairs (recited from (Neu, 1966)). In Roosevelt’s autobiography (Roosevelt, 1913), he said his main purpose of the fleet voyage was to impress the American people with their achievement, not to threaten any other country (pp.563-5).

A new game started again when Katsura's second term began in June, 1908. Recognizing that Japan already had an aim to expand its sphere of influence by exclusive partitions, the Roosevelt administration revealed its intention to enter Northeast Asia by forming a financial consortium advocating the Open Door principle. After observing the U.S. signal (*DEC*), the Katsura Cabinet attempted to negotiate with the United States, and made a choice of a non-expansionist policy toward China again (*ST*), and the game ended (**Outcome IV**). As in the previous three cases, it supports *Hypothesis 1*.

This case also supports *Hypothesis 4* which states that as both states gather information about each other's type, we are more likely to observe a challenger's declaration of an ideal principle when the challenger is highly capable in that President Roosevelt revised his belief about the Katsura Cabinet through repeated games, which was also true to Prime Minister Katsura.

During the Katsura's second term, Japanese politics was relatively stable. The party system was first established in Japanese history. Since Japan had already devoted its resources to the war against Russia, it did not have reserve power to stand firm if faced with a U.S. military threat. President Roosevelt was convinced that Japan had suffered from resource depletion since the Russo-Japanese War (Roosevelt, 1913). In addition, Japanese status in Northeast Asia was dictated by the Anglo-Japanese Alliance. The alliance helped the Japanese security against Russia, but it may be incapacitated regarding issues (e.g., Open Door policy) to which Great Britain opposed. Japan was eager for such an alliance, which reflects that the cost for an armed conflict with Western powers was considered genuinely high.⁸

As a result of the Japanese submissive choice, Root-Takahira Agreement was signed in 1908. The U.S. Secretary of State Elihu Root and Japanese ambassador

⁸In the process of renewal of the Anglo-Japan alliance in 1905, British suspicions about the Japanese expansionist intention toward South Asia was clearly revealed. The United States was also aware that the alliance could not restrict the bilateral relationship between the United States and Japan in Northeast Asia.

Takahira Kogoro agreed to an official recognition of the territorial status quo as of November 1908, an affirmation of the independence and territorial integrity of China (i.e., the Open Door Policy as proposed by John Hay), a maintenance of free trade and equal commercial opportunities, Japanese recognition of the American annexation of the Kingdom of Hawaii and the Philippines, and American recognition of Japan's position in Manchuria. The agreement implicitly includes the U.S. acknowledgement of Japan's right to annex Korea and dominance over southern Manchuria. The peaceful bilateral relationship based on the agreement was maintained until the inauguration of the Taft administration in 1909.

4.5 Dollar Diplomacy by the Taft Administration (Case No.5)

A new game was initiated by the inauguration of the Taft administration. Using the U.S. enhanced economic capability, President Taft made efforts to develop U.S. foreign policy toward China and southern Asia as well as Latin America. It was labeled as "Dollar Diplomacy." Taft himself stated that Dollar Diplomacy was a policy using dollars for bullets (Williams, 1973).

Secretary of State, Philander Knox, who had been a corporate lawyer committed to utilizing his position to promote U.S. business interest abroad. He worked aggressively to extend U.S. investments into underdeveloped countries. The Taft administration encouraged American bankers to invest their surplus dollars on foreign countries of strategic concern to the United States, particularly in North-east Asia.

Following the Open Door policy, the Taft administration very strongly proclaimed that the U.S. government helped American bankers to participate in various ventures in China. In detail, since Knox was convinced that the U.S. free

access to trade in China was threatened by European financing of the Hukuang Railroad, he insisted that the United States also should participate in the European consortium to finance a system of railroads in China in 1909. In 1911 the consortium finally agreed to include the United States in its venture. The Taft administration arranged for American bankers to be included in the project and then prevailed on JP Morgan to create a U.S. syndicate. A series of U.S. actions indicate that the Taft administration was affected by lobbying activities by interest groups.

Indeed, Knox was concerned about Russian and Japanese railroad activities in Manchuria. He proposed that an international syndicate purchase outright the South Manchurian Railroad to remove it from Japanese control and managed to persuade American bankers to join a six-power consortium that would give China money instead. This can be recognized by Japan as the U.S. strong signal for the Open Door principle (*DEC*).

Both Japan and Russia, unwilling to be robbed of their predominant position in Manchuria, rejected Knox's suggestion, however. Japan opposed the U.S. proposal on the ground that it would violate the Portsmouth Peace Treaty. Russia and France also objected to Knox's suggestion (Clyde and Beers, 1975). Great Britain was indirectly opposed it because the Manchurian railroads were built by Russia and Japan. Knox's suggestion was supported only by Germany. Furthermore, Japan responded by signing a friendship treaty with Russia, and then the entire railroad project quickly collapsed. In the process, Japan carried out its expansionist policy toward China without any interruption (*SUS*).

When the offer was defied by Japan, the Taft administration did not use any kinds of threat such as military demonstrations (or economic sanctions), and the game ended (*CD*, **Outcome III**). Having attempted to expand its influence in China and South Asia through the Open Door principle, the United States failed to achieve it. It is evident that the Taft administration was not categorized as the

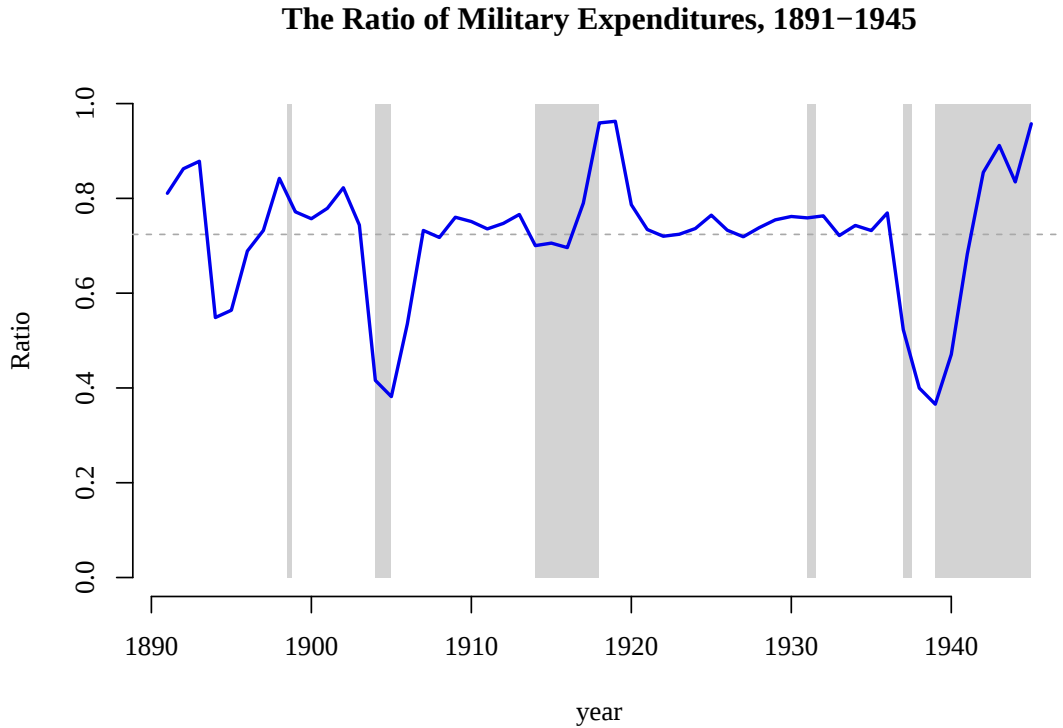


Figure 4.1: This figure displays the U.S.-Japanese military capability ratio from 1891 to 1945. The annual ratios were measured by both states' military expenditures by using the National Material Capabilities Data from the Correlates of War Project (see the website <http://correlatesofwar.org>), and recalculated by the author. Note that the ratios were computed by the U.S. military expenditures to the sum of the military expenditures of the two states by year. The gray dashed-line (≈ 0.72) indicates the average of the ratios from 1891 to 1945. An abrupt rise in the ratio results in an increase in the U.S. relative capability, which will remain until a change occurs. For instance, the ratio which was 0.74 in 1902 sharply dropped to 0.42 in 1903, and to 0.38 in 1904. Such sudden drops in the ratio would induce a decrease in the U.S. relative capability. The relative capability remained until the U.S. participated in World War I in 1917. The shaded areas indicate wars related to them: the Spanish-American War (1898), the Russo-Japanese War (1904–1905), World War I (1914–1918), the Manchuria Incident (1931), the Sino-Japanese War (1937), and the Pacific War (1941–1945).

hard-liner type, and the relative capability r declined after the Russo-Japanese War as shown in Figure 4.1. Thus, this case supports **Hypothesis 2** which states that when a defender is convinced that her rival does not belong to the *hard-liner*

type we can only observe a challenger's concession in a certain range of r once a declaration was observed.

The U.S. cost of an armed conflict with Japan had risen, as mentioned in the previous case. Japan's ceaseless military build-up also gradually lowered the probability of the U.S. victory in an armed conflict in Northeast Asia. Thus, the cut point θ also dropped, and thus we predict that the after sending a signal we are more likely to see the U.S. withdrawal than before.

Katsura was a protege of Yamagata who was top leader of the hard-line faction and his cabinet's expansionist policies were entirely supported by the Japanese public at that time. It is noted that, during his second term, the Japanese government signed a friendship treaty with Russia to protect their predominant positions in Manchuria, which contradicted the open door principle that stipulates free and open economic competition in China.

It is not ambiguous that the Taft administration was an interventionist. Ignoring the tacit agreement with Japan (i.e., Taft-Katsura Agreement of 1905) to limit American involvement in Manchuria, the Taft administration succumbed to the persuasive powers of American bankers and began to move aggressively to increase U.S. economic influence in China. Nevertheless, the radical Dollar diplomacy was not broadly supported from the American public, and frequently criticized for "lobbying activities by interest groups". This can be interpreted as a very low audience cost caused by conceding the Dollar diplomacy against expansionist powers. In particular, the friendly treaty with Russia reduced Japan's cost of an armed conflict with the United States. Consequently, after observing that Japan sustained the current policy backed up by the partition principle the Taft administration conceded.

4.6 The Wilson Administration before the Twenty-One Demands (Case No.6)

A new game began when Woodrow Wilson took the office in 1913. The Taft-Knox approach to foreign policy was repudiated by President Wilson within a few weeks of his inauguration in 1913. His administration did not entirely abandon the Open Door Policy toward China. For example, he appointed Paul Reinsch who was a strong proponent of the Open Door policy as a diplomatic minister in China. Nevertheless, there was no denying that Dollar Diplomacy failed to be an ordering principle in Northeast Asia.

As the Wilson administration proclaimed that the Dollar Diplomacy, an extreme version of the Open Door Policy, failed in China, the game started. After his administration inaugurated, it did not send any signal to Japan by the outbreak of World War I. Japan was convinced that President Wilson would not enforce Japan to follow the Open Door principle. Observing the U.S. choice of *ND*, the Yamamoto Cabinet chose a non-expansionist policy (*ST*), and then the game ended (**Outcome VIII**). This equilibrium state had continued until the Okuma Cabinet was launched in 1914.

Considering President Wilson's idealistic design of international society, his administration can be categorized into an interventionist which would endure some costs of an armed conflict. From the traditional view, the Wilson administration is categorized as an interventionist, as shown in the average number of initiations of the use of the U.S. forces abroad (see Table 4.2). However, it can be an *ex post* categorization. Indeed, President Wilson did attempt to keep the United States out of other continents from the inauguration to the beginning of 1917. The large portion of the use of the U.S. forces abroad is involved either in the defense of the Western Hemisphere or in the war after participation in World War I. Therefore, it is questionable to Japan that the Wilson administration would adopt an inter-

President	Years in Office	Number of Initiations	Average
McKinley	1897 – 1901	7	1.75 (= 7 / 4)
Roosevelt	1901 – 1909	14	1.75 (= 14 / 8)
Taft	1909 – 1913	10	2.5 (= 10 / 4)
Wilson	1913 – 1921	19	2.25 (= 19 / 8)
Harding	1921 – 1923	3	1.5 (= 3 / 2)
Coolidge	1923 – 1929	8	1.33 (= 8 / 6)
Hoover	1929 – 1933	1	0.25 (= 1 / 4)
Roosevelt	1933 – 1945	8	0.75 (= 8 / 12)

Table 4.2: This table shows initiations of the use of U.S. forces abroad by President.

ventionist policy in Northeast Asia as of 1913.

As shown in his Fourteen Points, President Wilson thought that the commercial interest in China and southern Asia through free trade was of importance to the United States. He already witnessed that the Katsura Cabinet had revealed its expansionist ambition in South Asia as well as Northeast Asia during the Taft Administration. Since Yamamoto, the new Prime Minister, was affiliated with the Navy, Wilson was not convinced that the Yamamoto Cabinet led by soft-line factions. Nevertheless, Wilson himself was not much interested in Japan itself during his first term. Most of all, since he thought that Great Britain could sufficiently restrain Japan's ambition to extend its sphere of influence beyond Korea and southern Manchuria, his administration would avoid direct conflicts with Japan, if possible.

Indeed, Prime Minister Yamamoto obtained reputation for being a liberal, and supported public claims for democracy and constitutional government. During his tenure, Japan did not choose any expansionist policy toward China. This equilibrium outcome ($ND \rightarrow ST$, **Outcome VIII**) was unstable by the outbreak of World War I.

Case No.6 partially supports *Hypothesis 5* that predicts that Japan's back-down can hardly occur once she did not observe the U.S. declaration of the Open

Door Policy in China. However, the hypothesis that also states that Japan who has observed the Open Door Policy declared by the U.S. could stand firm when threatened is not fully tested because we did not see a U.S. threat to use force.

4.7 The Okuma Cabinet's Expansionist Policy and the Bryan Notes (Case No.7)

In April of 1914, a new Japanese cabinet was formed as Okuma Shigenobu became Prime Minister. Once World War I broke out in 1914, external powers whose policy priorities were placed on European affairs left Northeast Asia. Even the United States which was not directly involved in World War I paid attention to European affairs. In particular, the large-scale war reminded American public of the isolationist tradition, and made the Wilson administration hesitate to declare the Open Door policy toward China. The power vacuum in Northeast Asia provided Japan, a regional power, with a good opportunity to expand its sphere of influence by exclusive partitions.

The Okuma Cabinet targeted German-leased territories first. Among the external powers, Germany was the only power that was a member state of the Triple Alliance, and thus concentrated its capability on European frontiers right after the outbreak of World War I. The Anglo-Japanese Alliance provided Japan with a plausible cause to be involved in World War I. Despite British dissuasion, Japan declared war against Germany in August 1914, and finished up the seizure of German-leased territories in China.

Such an effort to expand its sphere of influence crystallized into the Twenty-One Demands ('*Taika Nijyuichikkajo Yokyu*'). It is a set of demands that Prime Minister Okuma sent to the Chinese government in January 1915, resulting in two unequal treaties with Japan in May 1915. Although China was nominally

on the side of the Allies in World War I, Japan demanded the German sphere of influence in China. It also wanted special economic rights for Japanese occupants living in parts of China (Spence, 1999).

The United States became aware of the Japanese expansionist intention by Group 5 of the Twenty-One Demands, but did not countermove immediately. Ironically, Great Britain, Japan's closest Western ally in the 1910s, expressed concern over what was perceived as Japan's overbearing approach to diplomacy. The British Foreign Office was dissatisfied with Japanese continuous attempts to establish a sphere of influence which would be a protectorate over all of China.

Influenced by the British reaction to the Twenty-One Demands, the United States started a new game through sending the Bryan Notes to Japan in 1915. It expressed strongly negative reactions to Japan's rejection of the Open Door policy (*DEC*). Observing the U.S. action, Japan decided to sustain its expansionist attempts (*SUS*), however. In response to the Japan's rejection, the Wilson administration did not use any threat to use force (*CD*), and then the game ended (**Outcome III**).

As in **Case No.6**, the Wilson administration was a less-interventionist before participating in World War I. The former Yamamoto Cabinet's peaceful choice helped the Wilson administration to revise its beliefs about an incoming Japanese cabinet. It is evident that before the game started the United States had believed that the Okuma Cabinet would not be a *hard-liner*.

Indeed, since the outbreak of World War I, the U.S. cost of an armed conflict with Japan had decreased. Great Britain who had a special relationship with the United States strongly complained about the Japan's expansionist policy toward China, which made the second renewal of the Anglo-Japanese Alliance seriously weakened. After the second renewal, no powers expected the alliance to be renewed again. The alliance was considered not to restrict the U.S. independent actions in Northeast in five years. This supports a decline in the U.S. cost of an

armed conflict with Japan before its participation in World War I.

In **Case No.6**, the Wilson administration proclaimed that the Dollar Diplomacy failed in China, and did not declare the Open Door policy, which was the first U.S. administration since the McKinley administration circulated the First Notes in 1899. His administration hesitated to participate in World War I before 1917. The Okuma Cabinet was convinced that the Wilson administration did not belong to the *hard-liner* type. Thus, the actual outcome ended with the U.S. concession supports ***Hypothesis 2*** which states that a defender who is convinced that her opponent is not the *hard-liner* would sustain her policy once a declaration was observed, which will result in a challenger's concession.

4.8 The Terauchi's Aggressive Policy and Lansing-Ishii Agreement (Case No.8)

After Prime Minister Okuma resigned, Terauchi Masatake became Prime Minister in 1916. During his tenure he simultaneously held the post of Foreign Minister and Treasury Minister, which means that his political influence on the process of foreign policy as well as domestic policy decision-making was decisive. In 1917 the Terauchi Cabinet upheld Japan's obligations to Great Britain under the Anglo-Japanese Alliance, dispatching battleships from the Japanese Navy to the South Pacific, Indian Ocean and Mediterranean, and seizing control of German colonies in Tsingtao and the Pacific Ocean. The Wilson administration realized the Japan's expansionist design, and decided to prevent Japan from expanding its sphere of influence beyond China even with military actions. However, as the United States entered into World War I in April, 1917, this attempt was restrained to enforcement of the Open Door principle with a concession.

A new game started as the Wilson administration proclaimed that adminis-

trative and territorial integrity of China should be protected right after its participation in World War I in 1917. This official request was a very strong signal *DEC* to Japan. Observing the U.S. signal, the Terauchi Cabinet promised a non-expansionist policy toward China and Manchuria (*ST*, **Outcome IV**). As a result, the Lansing-Ishii Agreement was signed in December, 1917. In the published text of the agreement, both parties pledged to uphold the Open Door Policy in China, with respect to its territorial and administrative integrity. The United States government also acknowledged that Japan had special interests in China due to its geographic proximity, especially in those areas of China adjacent to Japanese territory. However, critics realized that different interpretations of the agreement clauses caused by vague expressions meant that nothing had really been decided after two months of talks. The Lansing-Ishii Agreement was abrogated in April 1923, when it was replaced by the Nine-Power Treaty.

It is not debatable that the Terauchi Cabinet was aggressive to external powers as demonstrated in the process of the Japanese participation in World War I. Historical facts show that after participated in World War I, the United States took interventionist actions consistently all over the world. Whenever military interventions were needed, the United States did not hesitate to use its military forces. Thus, we can call the Wilson administration an interventionist who would endure some cost of an armed conflict, if needed, after the participation of World War I. This change was induced by domestic politics and international politics. Indeed, the Wilson's isolationist policy toward Northeast Asia which ignored the U.S. commercial interest in China and Asia had been criticized by the opposition party. However, the U.S. participation in World War I was the turning point in which his idealistic design was mixed with military actions all over the world.

This case supports *Hypothesis 4* which states that as both states become more information about each other's type, we are more likely to observe a challenger's declaration of an ideal principle when the challenger is highly capable

in that the Wilson administration gathered more information about the Japanese government.

However, the equilibrium was vulnerable to rapid changes in regional politics and Japanese domestic politics. For example, Terauchi oversaw the Nishihara Loans which had made to support the Chinese warlord Duan Qirui in exchange for the confirmation of Japanese claims on parts of Shandong Province and increased rights in Manchuria. In 1918, Japan joined the Allies in the Siberian Intervention (whereby Japan sent troops into Siberia in support of White Russian forces against the Bolshevik Red Army in the Russian Civil War), and the Japanese Army took over full control under Chief of Staff Yui Mitsue. The Terauchi Cabinet sent 12,000 troops.⁹ The Japanese Army took over full control, and occupied all ports and major towns in the Russian Maritime Provinces and eastern Siberia. However, in September 1918 Terauchi resigned his office due to the rice riots that had spread throughout Japan and postwar inflation. The price of rice was inflated from 6 yen a bag in 1914 to 21 yen a bag in 1918.

In June 1920, the allied coalition partners withdrew from Vladivostok after the capture and execution of White Army leader Alesandr Kolchak by the Red Army. However, the Japanese Army decided to stay for fear of the spread of communism in the areas controlled by Japan. The Japanese Army provided military support to the Japanese-backed Piamur government based in Vladivostok against the Moscow-backed Far Eastern Republic. The Japanese presence was viewed with great alarm by the United States, who suspected the Japanese territorial designs on Siberia and the Russian Far East.

⁹The Terauchi Cabinet sent more than 70,000 troops until November 1918.

4.9 Inauguration of the Harding Administration: Return to the Isolationist America (Case No.9)

As Warren Harding defeated Wilson in the presidential election of 1920, isolationism again emerged as the dominant American foreign policy strategy. His foreign policy program called for a “return to normalcy,” which sought “relief from the burdens that international engagement brings.” The foreign policy change was reflected in the U.S. Senate. For example, a special committee chaired by the extreme isolationist Gerald P. Nye held hearings that attributed U.S. entry into World War I to war profiteers—“merchant of death.” President Harding also chose not to become embroiled in the machinations of European power politics. The Harding administration can be clearly categorized as a non-interventionist.

The Harding administration and its counterpart, the Hara Cabinet, started a new game in 1921. First, the Harding administration convoked the Washington Conference (1921–1922). The increasing disregard of the Open Door Policy was a main reason for the convocation. For the United States, the primary objective of the conference was to inhibit Japanese naval expansion in the west Pacific, especially with regard to fortifications on strategically valuable islands. The United States intended to ultimately limit Japanese expansion, and to alleviate concerns over possible antagonism with the British due to the Anglo-Japanese alliance. The United States also attempted to agree on a favorable naval ratio vis-a-vis Japan, and urged Japan to accept a continuance of the Open Door Policy in China.

Since the Harding administration returned to the isolationist, the audience cost a_C induced by concession after declaring the Open Door Policy rose sharply. The Kato Cabinet was not believed to be led by hard-line factions with $c_D < \alpha^+$. As demonstrated in **Lemma 4**, the probability that the *less sincere moderate* exists increases in the range of $r \in [0, r^*)$ unless a_D exceeds the threshold a_D^* .¹⁰

¹⁰Recall $a_D^* \approx 0.732$ and $r^* = a_D + 2 - \sqrt{3}$ under high uncertainty.

As r increases, the updated cut point α^* and γ^* decline so that D is more likely to make a submissive choice regardless of C 's signal at his first decision. Thus, we predict that *soft-liner* Japan would make a submissive choice once she observed a declaration of the Open Door principle.

Japan approached the conference with two goals: to sign a naval treaty with Great Britain and the United States, and to obtain official recognition of Japan's special interests in Manchuria and Mongolia. Secret instructions from the Kato Cabinet to its delegation revealed that even the lowest naval ratio would be acceptable to Japan. Thus, observing the U.S. choice (DEC), Japan made a choice of a non-expansionist policy toward China (ST) given the condition in which participant powers would recognize Japan's special interests in Manchuria and Mongolia, then the game ended (**Outcome IV**). This outcome evidently supports the prediction made by this model.

This game resulted in three treaties. The Nine-Power Treaty, again affirming the integrity and independence of China via the Open Door principle, was signed by the United States, Great Britain, Japan, France, and China. The Lansing-Ishii Agreement was abrogated in April 1923, when it was replaced by the Nine-Power Treaty. However, the Nine-power Treaty also lacked any enforcement regulations except protests and economic sanctions.

In practice, the result of this game brought the Siberian Intervention to an end. The Nine-Power Treaty which stipulates the Open Door Policy in China was concluded in Feb 1922, and the Kato Cabinet withdrew the Japanese forces in October 1922. After Terauchi resigned his office in 1918, the succeeding Cabinets (the Hara Cabinet and the Takahashi Cabinet) can be categorized as the *soft-liner* type. These two cabinets were strongly oriented to domestic politics and economic crisis caused by the Siberian Intervention.¹¹

¹¹The intervention costed about five thousand dead from combat or illness and expanses in excess of 900 million yen, which aroused up the Japanese public discontent about the Terauchi Cabinet.

Indeed, World War I dramatically strengthened the overseas economic interests of major U.S. banks and corporations, who fought hard for more political involvement by the United States in world affairs. Yet domestically oriented-economic groups still remained extremely powerful and sought to have the United States isolated. Through the 1920s and early 1930s, the two broad coalitions battled to dominate foreign economic policy (Frieden, 1988).

4.10 The Coolidge Administration and Shidehara Diplomacy (Case No.10)

As President Harding died of heart attack, Vice President Calvin Coolidge became President. As (Fensterwald, 1958) describes, Coolidge, who had little interest in, or knowledge of, foreign affairs, entirely left the U.S. foreign policy to his Secretaries of State, Hughes and Kellogg. In general, the Coolidge administration followed the policy set in motion by its predecessor. Although Coolidge was not an isolationist, he was reluctant to be involved in Northeast Asia. He attempted to avoid military conflicts among powers, as demonstrated in the Kellogg-Briand Pact (1928) that renounced war as an instrument of national policy. His administration also limited U.S. interventions to Latin America. There is no question that the political atmosphere in the United States during the 1920s opposed large-scale military and naval expenditures.

It is not debatable that the Coolidge administration was a non-interventionist. Likewise, the Wakatsuki Cabinet advocating a new diplomacy is readily categorized as the *soft-liner* type. The Nine-Power Treaty improved the U.S. status quo value v^s by effectively restraining the Japanese expansionist policy in Northeast Asia. As in **Case No.9**, the audience cost a_C was high in the Coolidge administration influenced by the isolationist tradition. Once $a_C \geq a_C^*$ so that $\beta > \theta$,

we can see Japan's temporary withdrawal after not observing a declaration of the Open Door Policy, other things being equal. v^s is positively associated with $\theta - \beta$, which is equivalent to the probability that the United States has the separate strategy (CD ; TH) given SUS . Thus, we predict that, compared to **Case No.9**, it is more likely that Japan will voluntarily withdraw from its expansionist policy even after no declaration of the Open Door Policy.

Based on the Nine-Power Treaty of 1922, the Coolidge administration did not send any signal for the open door policy toward China (ND). Instead, Coolidge was "very favorably disposed to the Japanese and therefore to loans to Japan at this time" (Iriye, 1973). Interestingly, after observing ND , the Yamamoto Cabinet stopped the current expansionist policy (ST), and the game ended (**Outcome VIII**). Such a game was reiterated in the 1920s. In October 1925, for instance, the Kato Cabinet surprised other powers in the Beijing Customs Conference by pushing for agreement to China's demands for tariff autonomy. Right after the Nanjing Incident in March 1927, the Wakatsuki Cabinet refused to agree to an ultimatum prepared by other powers threatening relations for the actions of Chiang Kai-shek's Kuomintang troops for their attack on foreign consulates and settlements.

Changes in Japanese domestic politics promoted amity between Japan and the United States. First, public backlash against military interventionism was spurred by the unsuccessful Siberian invasion. Second, political parties were institutionalized during the period. Third, civilian decision-makers in the cabinet reached a consensus on economic interest in China. Politicians felt financial burdens of a naval arms race, and considered its dependence on the United State for vital raw materials (Dingman, 1976).

In 1924 Shidehara Kijuro became Foreign Minister in the Kato Cabinet and consecutively served to the Hamaguchi Cabinet. Despite the growing militarism influenced by General Araki Sadao, Shidehara attempted to maintain a non-

interventionist policy toward China, and a good relationship with the United States. In his initial speech to the Diet of Japan, he pledged to uphold the principles of the League of Nations. The term *Shidehara diplomacy* described liberal foreign policy of Japan during the 1920s.

The Coolidge administration did not think of the Open Door principle as a vital interest for which the United States should fight. American people as well as the representatives in Congress were not willing to increase the military expenditure required to deter Japan if it determined to close the door by the partition principle.

The most decisive factor that shaped the United States foreign policymaking in the Republican era (from Harding to Hoover) was the overwhelming sense of security. While favoring expansion of overseas trade and investment, the U.S. government was not willing to incur excessive costs and risk in the pursuit. The U.S. government actively backed up American business abroad when such an action coincided with the larger strategic and political goals: 1) World War I which inspired the desire for American control over petroleum reserves, cables, and banking facilities in Latin America; 2) defense of the traditional Open Door Policy in China; and 3) an access to the oil of the Middle East and Dutch East Indies because of fear of American reserve depletion.

Despite Coolidge's reluctance, the exclusive immigration Act, called the Johnson-Reed Act, was passed in 1924. The Act did not allow Asians—mainly Japanese—to be admitted to the United States, which contributed to undercutting the pro-Western moderates in Japan. But more fundamental forces emerged beyond the U.S. control. First, traditional attitudes and values antagonistic to the new “co-operative diplomacy” had been rebounded in Japan. Second, the rise of Chinese nationalism and the reemergence of Russia as a Far Eastern power were witnessed. Third, Japan was in chronic economic trouble (Braeman, 1982).

Military criticism of Shidehara's policies toward China was one of the main

factors that led to the collapse of the Wakasuki Cabinet in April 1927. Tanaka Giichi promised to take more aggressive measures to protect Japanese lives, properties, and economic interest in China than his predecessors, and won the election of 1927. The equilibrium between the United States was broken by a series of Tanaka's aggressive interventionist policies. For instance, to prevent Chiang Kai-shek's Northern Expedition from unifying China under Kuomintang rule, Tanaka sent troops to militarily intervene in China, known as Jinan Incident. However, Tanaka did not believe that such an action would not antagonize the United States or any other Western power. That is, he attempted to isolate Japanese policy toward China (Iriye, 1973).

As of 1922, the United States was highly uncertain about the new Japanese cabinet's type because such democratization was an unprecedented matter in Japan. Thus, the actual outcome **Outcome VIII** can be predicted by **Proposition 1** which states that for a *soft-liner* defender state who knows her rival is capable to temporarily stop her current policy based on the existing ordering principle is the sole option under high uncertainty after not observing any declaration of an ideal principle.

As illustrated by the ratio of military expenditures in Figure 4.1, the ratio sharply rose from 0.78 in 1917 to 0.96 in 1919. It started to decline in 1920, fast recovered the average of 0.72 in 1921, and then stood still until 1936.¹² Thus, the United States became more capable in 1921 than before. **Case No.10** partially supports **Hypothesis 5** that predicts that Japan's backdown can hardly occur once she did not observe the U.S. declaration of the Open Door Policy in China. However, the hypothesis that also states that Japan who has observed the Open Door Policy declared by the U.S. could stand firm when threatened is not fully tested because we did not see a U.S. threat to use force.

¹²The ratio decreased from 0.74 in 1903 to 0.38 in 1905. The ratio slightly fluctuated, but was relatively stable until the United States participated in World War I in 1917.

4.11 Great Depression and the Manchuria Incident (Case No.11)

In March 1929 Herbert Hoover became President of the United States. Although President Hoover was more familiar with foreign affairs than his two predecessors, he upheld their foreign policies. The most salient feature of the Republican era (from Harding to Hoover) was the United States overwhelming superiority in world economy. In the late 1920s, the United States already produced an output of manufactures larger than that of the other six major powers—Great Britain, Germany, France, the Soviet Union, Italy, and Japan—combined (Iriye, 1973). The U.S. trade volume with China was relatively minor, and substantially below that with Japan.

The main thrust of the Hoover administration's policy toward China was the favorable attitudes toward Chinese nationalism. Out of the two basic components of the Open Door Policy, the Hoover administration laid stress on Chinese administrative and territorial integrity rather than equal commercial and industrial free trade in China, and was willing to negotiate its extraterritorial rights with nationalist Chinese authorities. Thus, the Hoover administration officially requested the Tanaka Cabinet to stop its aggressive interventionist policy toward China.

The Greatest Depression reinforced isolationist sentiments in the United States, however. It is notable that the U.S. Navy's deterrent power was undermined by repeated curtailments in the budget for the Navy, which was reflection of popular hostility to naval spending. Besides the agreements upon naval limitations by country weakened the U.S. Navy. As Campbell says, "the United States possessed a unique combination of great power and an isolated position." (Campbell, 1964) Indeed, when Japan in Manchuria launched the first major direct attack upon the world order, the United States responded with no more than words (Ferrell, 1957).

The Manchuria Incident of 1931 was not a rational choice but an accident by the Kwantung Army officers. The second Wakasuki Cabinet which was not controlled by hard-line factions was unable to prevent the incident. Prime Minister Wakasuki was affiliated with Constitutional Democratic Party (Minseito), and preferred democratic bureaucrats in his cabinet. Shidehara returned as Foreign Minister, and immediately resumed a non-interventionist policy toward China, trying to restore good relations with the United States. The cabinet attempted to end the war as quickly as possible after the declaration of hostilities. A careful investigation of the emperor's approval of the military operation also demonstrates that the Manchuria Incident was an irrational choice. Nevertheless, with the Japanese seizure of Manchuria and the creation of Manchukuo, the Open Door principle was seriously challenged in practice.

A game started when the United States issued the "Stimson Doctrine" as a result of the Japanese Army's invasion of Manchuria. The doctrine declared that the United States refused to recognize any situation or treaty that limited U.S. treaty rights or was brought about by aggressive actions. It signaled the renouncement of Japan's violation of the Open Door Policy (*DEC*). Unlike Stimson who emphasized the importance of the China market and was more optimistic about the success of economic sanctions *r*, Hoover believed that the U.S. vital interests as limited to the defense of the Western Hemisphere. However, since he allowed his Secretary of State full discretion over this issue, the "Stimson Doctrine" could be issued. Observing the Hoover administration's choice, the Wakatsuki Cabinet opposed war against the United States, and tried to control the military design on China again (*ST*), and the game ended (**Outcome IV**).

Due to the Great Depression the isolationist tradition was revived in the United States. There still existed the competition between soft-line and hard-line factions supported by the military in Japan. A series of attempted assassinations of Prime Ministers who advocated a conciliatory policy toward China reflect the balance of

power between the two factions in Japanese politics during that time.

Indeed, American firms with a large economic stake in China, such as Standard Oil, had also political muscle in the 1930s. However, it is notable that the U.S. trade volume with China was relatively minor, and substantially below that with Japan. Nor did American bankers show any enthusiasm for loans to China. American interests in China were primarily sentimental (Cohen, 1978). Mixed with the interventionist inclination, such sentiment lowers the U.S. cost of an armed conflict.

This case also supports ***Hypothesis 4*** which states that as both states gather information about each other's type, we are more likely to observe a challenger's declaration of an ideal principle when the challenger is highly capable in that President Hoover revised his belief about the Japanese government through repeated experiences in the 1920s, which was also true to Prime Minister Wakasuki (2nd term).

This equilibrium was not kept long, however. Imposing a fiscal restraint on military expenditures, the next Japanese government, the Inukai Cabinet, belonged to the *soft-liner* type attempted to control the military design on China, but Prime Minister Inukai was assassinated by a military officer. It marked the end of civilian political control over government decisions in Japan until World War II broke out.

4.12 The Saito Cabinet and the First Roosevelt Administration (Case No.12)

A new game between the Saito Cabinet and the Roosevelt administration started in 1933. Faced with severe economic depression, Franklin D Roosevelt decided to sustain a non-interventionist policy toward China instead of continuing

"Stimson Doctrine." The decision-makers acknowledged that the United States had not much to lose and there was nothing that was vital to itself (McCarty, 1972). Such a point of view was shared by the public at large, Congress, and political leaders. Both U.S. public and Congress shared anti-Japanese sentiment, but the universal opinion was still against any action that may incite a war with Japan. Given the Japanese domestic political situation as well as Japan's preponderant military power in Northeast Asia, there was little that the United States, Britain and France, singularly or even together, could do to make Japan surrender over Manchuria without accepting a high risk of extensive costs (Thorne, 1973).

A careful review of the first Roosevelt (FDR) administration tells us that he himself was not a totally non-interventionist. When Roosevelt took the office in March 1933, he hoped to achieve two major goals: 1) to stabilize the U.S. international economic relations and 2) to resolve domestic economic problems caused by the Great Depression. Indeed, isolationism was peaked in the 1930s. From 1935 to 1937 the U.S. Congress passed a series of neutrality acts designed to disentangle the United States from the emerging European conflict. Such acts effectively barred the United States from assisting the anti-fascist regimes. Figure 4.2 illustrates that the military expenditure ratio of the United States (green solid line) declined since the end of WWI. During the first FDR administration, the United States adopted completely isolationist policy toward China since Roosevelt himself was not much interested in China itself. He recognized Japan's special interest in Manchuria, and would avoid an armed conflict, if possible. Roosevelt had a big picture of the U.S. interventionist role in the world, however.

In contrast, Prime Minister Saito himself cannot be categorized as the *soft-liner*. The former Navy Minister had striven for expansion of the Japanese Navy. After taking office in 1932, he recognized the independence of Manchukuo, and withdrew Japan from the League of Nations. Nevertheless, there still existed the balance of power between the military faction and the civilian faction. In fact, the

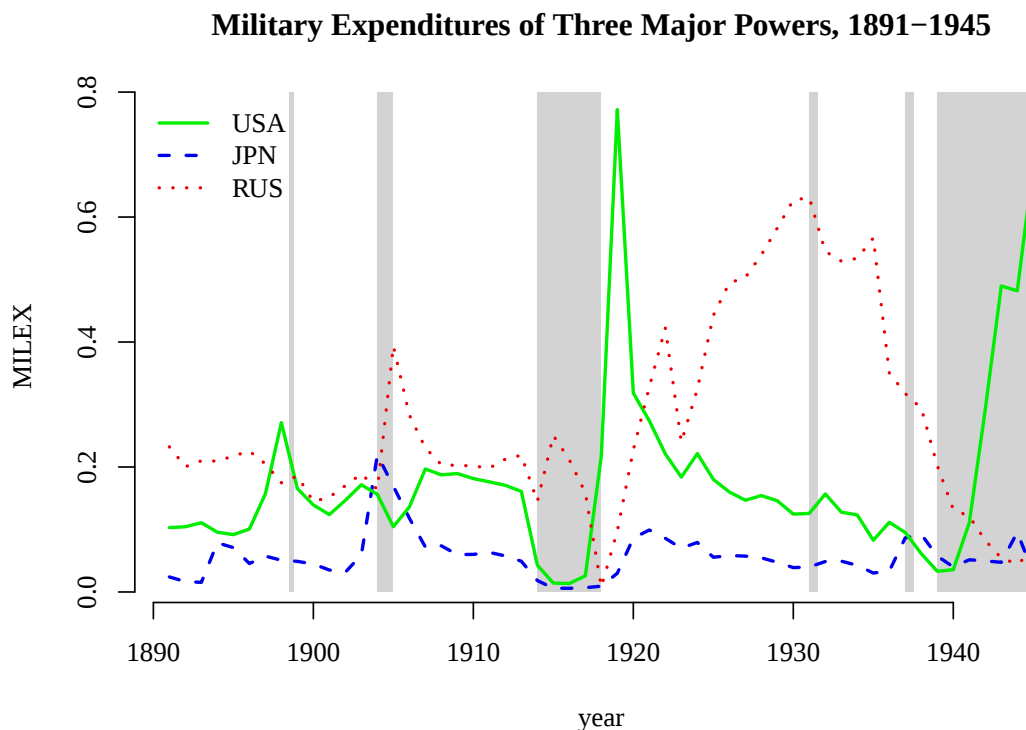


Figure 4.2: This figure displays the military expenditures of three major powers (the United States, Russia, and Japan) in Northeast Asia in the early twentieth century by using the National Material Capabilities Data from the Correlates of War Project (see the website <http://correlatesofwar.org>). All the figures were recalculated by the author. It is noted that the denominator was replaced with the sum of military expenditures (*MILEX*) of the six major powers (the United States, Russia, Germany, Great Britain, France, and Japan) in East Asia. The original denominator is the sum of military expenditures of all states. The shaded areas indicate wars related to them: the Spanish-American War (1898), the Russo-Japanese War (1904–1905), World War I (1914–1918), the Manchuria Incident (1931), the Sino-Japanese War (1937), and the Pacific War (1941–1945). Note that the index *MILEX* itself cannot be interpreted as relative capabilities in that the figures represent the annual relative military expenditures (thousands of current year British Pounds or thousands of current year U.S. dollars).

Okada Cabinet was brought about by the compromise between the hard-liners and the soft-liners. The Roosevelt administration was not convinced that the Saito or incoming cabinet would pursue a moderate policy toward China.

The United States was still considered more capable than Japan ($r > 0.5$),

but the Great Depression sharply raised the U.S. cost of an armed conflict with Japan. The cut point θ which is negatively associated with r and positively associated with a_D . The probability that the *more sincere moderate* type who has the separate strategy (TH ; CD) given SUS exists can be measured by $d = \beta - \theta$ if $\beta > \theta$.

The game started by non-interventionist signal (ND) sent by the Roosevelt administration. As illustrated in Figure 4.2, the relative capability r declines, and the audience cost was high, which may satisfy the cut point configuration $\beta > \theta$. By **Proposition 3** we can observe the U.S. concession once the Open Door Policy was not declared even if the Roosevelt administration belonged to the *hard-liner* type. After observing it, the Saito Cabinet sustained its expansionist policy toward China (SUS). Prime Minister Saito allowed the Japanese Army to advance into Northern China in 1933. Indeed, the game ended when the United States took neither military nor economic action (CD , **Outcome VII**). This outcome supports **Hypothesis 3** which states that a challenger's concession without a declaration of an ideal principle is positively associated with a rise in his costs.

4.13 The Soviet Russian Threats and Japan's Choice of a Non-expansionist Policy in 1934 (Case No.13)

A new game started before Okada Keisuke became Prime Minister in succession to Saito Makoto in July 1934. After the Manchurian Incident in 1931, the United States observed military elites rise into power in Japan. As military factions became influential over Japanese foreign policy, the United States was concerned about the expansionist policy toward all of Asia as well as China. Nevertheless, the Roosevelt administration did not publicly issue any note or doctrine regarding the Open Door Policy toward China (ND). After the United States chose ND ,

Year	Export to the U.S.	Import from the U.S.	Sum
1931	31.6	27.7	59.3
1932	31.6	35.6	67.2
1933	26.5	32.4	58.9
1934	18.7	33.7	52.4
1935	22.4	32.8	55.2
1936	22.1	30.7	52.8
1937	20.1	33.6	53.7
1938	15.8	34.4	50.2
1939	17.9	34.4	52.3

Table 4.3: This table shows the Japanese trade with the United States in the 1930s. **Source:** Dorothy Borg, 1964. *The United States and the Far Eastern Crisis of 1933-1938*. Cambridge: Harvard University Express

Japan voluntarily restrained the expansionist policy (*ST*), and the game ended (**Outcome VIII**).

As mentioned before, it is worthwhile to note that the Japanese political culture often caused Western powers to misjudge true characteristics of Japanese cabinets at the time. For example, the anti-liberal movement in Japan did not overthrow the existing order through a coup or an elected triumph as occurred in European fascist states, but rather took over state power by a process of consolidating support among groups which held the official civil and military bases. Therefore, although military factions' influence over foreign policy was expanded, the Japanese cabinet might not necessarily adopt a hard-liner foreign policy. Indeed, the Okada Cabinet can be categorized as the *soft-liner* type, and the subsequent Hirota Cabinet can also belong to the same type despite increasing military influence. Such a unique political culture created uncertainty. As a result of *ST* following *ND*, the status quo specified by the U.S.-Japanese Treaty of Commerce and Navigation was maintained.

The Okada Cabinet's choice can be explained by some reason. First, we find a reason from the Japanese economic structure in the 1930s. Japanese economy heavily depended on imports, and the ratio of domestic products to the whole

Country	1000 tons	Percentage
United States	3,043	66
Dutch Indies	991	21
British Borneo	301	7
Manchukuo	73	2
North Sakhalin	26	1
Others	191	4
Total	4,645	100

Table 4.4: This table shows the countries from which Japan imported petroleum as of 1936. **Source:** Dorothy Borg, 1964. *The United States and the Far Eastern Crisis of 1933-1938*. Cambridge: Harvard University Express

consumption was ranged between only 0.077 and 0.098 during the 1930s. In particular, Japan had the heavy dependence upon the U.S. resources in the 1930s. Table 4.3 shows the fractions of Japanese trade with the United States from 1931 to 1939. Japan heavily relied upon the U.S. supply of petroleum (Borg, 1964), as shown in Table 4.4. The Japanese military recognized that an immediate armed conflict with the U.S. would paralyze the economy.

Second, Japanese politics radically changed in 1934. Okada Keisuke affiliated with the Navy became Prime Minister in 1934. However, he was one of the democratic and moderate politicians who were balancing with the hard-liners. For example, he supported the arms reduction treaty which backed up the London Naval Conference of 1931.

Third, the Soviet Russian returned to Northeast Asia, and threatened the Japanese predominant position in southern Manchuria. The Soviet Tupolev TB-3 (ANT-6) four-engined “Super Heavy Bomber,” capable of striking the main island of Japan, was deployed in the Maritime province of Siberia in 1934. It was the first direct threat to the main island of Japan. Figure 4.2 illustrates that the military expenditure of the Soviet Union overwhelmed those of the United States and Japan in the 1930s. Under the circumstance, the Japanese Army revised its operational planning for an armed conflict with the Soviet Union. Consequently,

the Soviet Russian military threat increased the cost of an immediate armed conflict with the United States.

As demonstrated in **Case No.10**, the actual outcome **Outcome VIII** can be predicted by **Proposition 1** which states that for a *soft-liner* defender state who knows her rival is capable to temporarily stop her current policy based on the existing ordering principle is the sole option under high uncertainty after not observing any declaration of an ideal principle.

4.14 The Second Roosevelt Administration and the Sino-Japanese War (Case No.14)

There had been two factions regarding Northeast Asian issues within the Department of State since the victory of the Spanish-American War. During the Roosevelt administration the soft-line faction led by Joseph Grew and Maxwell Hamilton attempted to adopt a conciliatory policy toward Japan. In contrast, the hard-line faction led by Stanley Hornbeck believed that the United States would not appease Japan, arguing that the Japanese people believed in and were enthusiastic over the expansionist policy and territorial aggrandizement. The balance of power between the two factions within the Department of State was supported even by the U.S. Army and the U.S. Navy authorities who did not feel the United States was sufficiently prepared to be engaged in an armed conflict with Japan (Hosoya, 1968).

When the Second Sino-Japanese War broke out in 1937, American public opinion favored China over Japan. As the Open Door principle was recognized by the American people, a sentiment against Japan raised the U.S. audience cost incurred by concession. According to Schaller (1979), China was “emerged as something of a symbol of American-sponsored resistance to Japanese aggression” by 1938

(p.17). President Roosevelt began to attempt to protect Chinese administrative and territorial integrity. In October 1937, he addressed the Quarantine Speech designed to contain aggressive states. He proposed that “warmongering states” be treated as public health menace and be quarantined. This reveals the Roosevelt administration’s belief about the Konoe Cabinet’s type. It is evident that the U.S. audience cost was sharply raised by Japan’s repeated trials of expansion in Asia in the 1930s.

In 1938, the Roosevelt administration officially requested Japan to protect Chinese administrative and territorial integrity (*DEC*). Despite the evident signal Japan sustained the expansionist policy toward southern Indochina as well as China (*SUS*). In November 1938, the Konoe Cabinet publicly announced its program for “New Order in East Asia,” which represented a completely new move. It implies that Japan was willing to run a risk of an armed conflict with the United States in Northeast Asia. Since the second FDR administration believed that the first Konoe Cabinet might be a *hard-liner*, the United States conceded (*CD*) without any immediate threat to use force in 1938, and the game was ended (**Outcome III**).

As displayed in Figure 4.1, the U.S. relative capability r had decreased since 1936, and the United States unilaterally declared the Open Door principle. After his declaration was rejected by the Konoe Cabinet, the United States conceded. The actual outcome supports **Hypothesis 2** which suggests that when a defender is convinced that her opponent does not belong to a *hard-liner* type we can only observe a challenger’s concession in a certain range of r once a declaration was observed.

Despite no military threat the second FDR administration revealed its interventionist inclination after 1938. President Roosevelt secretly approached a program to build long range submarines that could blockade Japan. When World War II broke out in 1939, he rejected the neutral stance and sought ways to

militarily assist Great Britain and France by passing the Destroyers for Bases Agreement, which handed over 50 American destroyers to Great Britain in exchange for rights in bases in the British Caribbean islands.

The Konoe Cabinet is described as a hard-liner in historical literature. In fact, Prime Minister himself would prefer cooperation to confrontation with the United States. It is demonstrated by his resignation right after his final effort to avoid an armed conflict with the United States in October 1941. However, considering middle echelon officers' enormous political influence on foreign policy decisions in the late 1930s (Hosoya, 1968), it is reasonable to categorize his cabinet filled with many aggressive middle echelon officers as the *hard-liner* type.

4.15 An Extreme Confrontation (Case No.15)

The Second World War broke out in September 1939. It transformed the power structure in Northeast Asia as the First World War did in 1914. A game similar to **Case No.14** resumed when the second Konoe Cabinet was launched in 1940. After a struggle with Saionji Kinmochi, Konoe Fumimaro became Prime Minister again in July. The second Konoe Cabinet signed the Tripartite Pact in September, which made the Roosevelt administration firmly believe that the Konoe Cabinet did not belong to the *soft-liner* type.

The Soviet Union which had revived from the Bolshevik Revolution threatened Japan's plan to expand its sphere of influence over South Asia before the outbreak of the Second World War. The Soviet Russian military capability was sharply raised since the 1921, as illustrated in Figure 4.2. Nevertheless, the Soviet Russia could not afford to fight wars in Europe as well as Northeast Asia, once Germany invaded the Soviet Union in June 1941. The Soviet-Japanese Neutrality Pact was signed in April 1941, which enabled the Soviet Union to concentrate the

Red Army on the European Continent. The pact lowered the Japan's cost of an armed conflict with the United States. The records of the Imperial Conference held in July 2, 1941 shows that despite the neutrality pact Japanese leaders considered attacking the Soviet Union after the outbreak of war between Germany and the Soviet Union in June 1941 (Ike, 1967*b*).

In opposition to the Japanese idea, "Greater East Asia Co-prosperity Sphere", President Roosevelt appointed two interventionist Republican leaders, Henry Stimson and Frank Knox, as Secretaries of War and the Navy, respectively. Taking advantage of the rapid shifts of public opinion against Japan, the Roosevelt administration proclaimed the United States as the "Arsenal of Democracy" in December 1940 (Schaller, 1979). The Roosevelt administration signed the Lend-Lease Act in March 1941, which began to offer massive military and economic aids to Great Britain, the Soviet Union, and China. Most of all, it is worthwhile to note that the program included China as an independent member. This could be interpreted as an enforcement of the Open Door Policy backed up by military as well as economic threats.

The game started with the Lend-Lease program which includes China as a member in March 1941. After observing the U.S. evident signal *DEC*, the second Konoe Cabinet decided to sustain its expansionist policy toward Indochina as well as China (*SUS*). Japanese troops were sent into southern French Indochina in July 1941. In the Imperial Conference, July 2, 1941, the participants including Army and Navy generals, Prime Minister, War Minister acknowledged that in implementing its expansionist policy toward Indochina, Japan was prepared to go to war with Great Britain and the United States, if necessary (Ike, 1967*b*).

In return, the United States decided to impose oil embargo on Japan in August 1941 (*TH*), and could offer China the U.S. finance as well as military weapons, which was the first real threat to Japan. It is notable that the United States unilaterally notified to abrogate the U.S.-Japanese Treaty of Commerce and Nav-

igation in July 1939. The treaty was invalidated in January 1940, which means that the United States could impose the oil embargo on Japan without any restriction. Nevertheless, the Tojo Cabinet launched in October 1941 did not back down (*SF*). Such an extreme confrontation caused a war. The Pacific War was initiated by Japan's invasion of Thailand for the invasion of British Malaya in December 1941, and the armed conflict with the United States was induced by a surprise attack on Pearl Harbor (**Outcome I**).

Historical literature provides evidence for it. The Konoe Cabinet was led by the ultra nationalist and hard-line factions, but was neither a totally irrational actor nor a warmonger. To avoid a catastrophic end, Prime Minister Konoe was engaged in the U.S.-Japan diplomatic talks. Although Japanese leaders knew that it would be almost impossible to obtain what they seek in diplomatic negotiations with the United States, they did not give up negotiations. For example, Foreign Minister Shigenori Togo presented the developments in the U.S.-Japanese negotiations even in the Imperial Conference, December 1, 1941 (Ike, 1967*a*).¹³

Despite a long-lasting tension between the United States and Japan we did not observe the outcomes ended with Japan's backdown when threatened to use force (**Outcome II**, and **Outcome VI**) in reality, as predicted by **Lemma 1**. According to **Corollary 4.1** which states the possibility of Japan's backdown when threatened once the Open Door policy was declared by the United States, **Outcome II** can occur under high uncertainty.

However, as **Hypothesis 4** dictates, before the last signaling game both states became more informative about each other's type, so that we expect to observe the outcomes which follows the U.S. declaration of the Open Door principle except for **Outcome II**. Recall that **Case No.15** represents a tension between the third

¹³According to Foreign Minister Togo, the United States adhered firmly to the Four Principles, and demanded to apply them in order to reach a compromise. The principles were: (1) respect for the territorial integrity and sovereignty of all nations; (2) non-interference in the internal affairs of other countries; (3) non-discrimination in commercial matters; and (4) non-disturbance of the status quo in the Pacific, except by peaceful measures (p.264). They were another version of the Open Door principle.

FDR administration and the second and the third Konoe/Tojo Cabinets. The same players become more informative in a new game than in the previous game in that their prior beliefs in a new game are the posterior beliefs in the previous game. Therefore, we predict that a feasible outcome in equilibrium would be initiated with the U.S. declaration of the Open Door Principle if the two rivals are informative about each other's cost of an armed conflict.

As **Proposition 4** suggests, we did not see an armed conflict without proclaiming an ideal principle (**Outcome V**), which supports *Hypothesis 6*. Recall repeated withdrawals from the expansionist policy toward China had raised the status quo value to the United States, v^2 . Although the relative capability r had decreased since 1936, the United States unilaterally declared the Open Door principle during the same period (see **Case No.14** and **Case No.15**). As Figure 4.1 illustrates, the ratio of military expenditures sharply declined from 0.77 in 1936 to 0.39 in 1939. It rebounded in 1940, and reached 0.68 in 1941, which implies the probability that the United States wins in an armed conflict with Japan had decreased since 1937, and then sustained until the outbreak of the Pacific War in 1941.

CHAPTER 5

Conclusion

By constructing a dynamic model of rising powers with incompatible ordering principles in a region, this essay has demonstrated that the reason why some rising powers unilaterally declare a new ideal principle not likely to be realized in the near future in a region mainly operated by an existing principle. Unlike conventional crisis bargaining models, the model that this essay constructs considers the case such that a challenger would threaten to use force in order to adjust the unfair share of interest in a specific region even after he did not declare any ideal principle, which not uncommonly occurs in reality. It shows that declaring an ideal principle can be an efficient option to challengers in common conditions. Ideal characteristics are not assumed to allow a challenger to possess the whole interest in a region. However, it may allow the challenger to obtain improved values adjusted by the ideal principle if his opponent accepts it.

The model captures uncertainty over each state's type described over the cost of an armed conflict, and includes the audience cost incurred by concession. The model constructed on the two-sided uncertainty is more persuasive, considering both states' domestic politics during the period under investigation. Japan experienced 40 changes in prime ministers during a span of 56 years (1885–1941), so the average term of prime ministers was less than 1.4 years. Japanese politics was characterized by the balance of power between hard-liner factions and soft-liner factions. It is also true to long-lasting competitions between the isolationist and the interventionist foreign policies in the Department of States in the

Case No.	Year	U.S. President	Japanese PM	Outcome	Signal
1	1899	McKinley	Yamagata	IV	First Notes
2	1900	McKinley	Yamagata	IV	Second Notes
3	1904	Roosevelt (1st)	Katsura (1st)	IV	strong official request
4	1908	Roosevelt (2nd)	Katsura (2nd)	IV	financial consortium
5	1909	Taft	Katsura (2nd)	III	Knox's proposal
6	1914	Wilson (1st)	Yamamoto	VIII	
7	1915	Wilson (1st)	Okuma	III	Bryan Notes
8	1917	Wilson (2nd)	Terauchi	IV	strong official request
9	1921	Harding	Hara	IV	Washington Conference
10	1922	Coolidge	Yamamoto	VIII	
11	1931	Hoover	Wakasuki (2nd)	IV	Stimson Doctrine
12	1933	FDR (1st)	Saito	VII	
13	1934	FDR (1st)	Okada	VIII	
14	1938	FDR (2nd)	Konoe (1st)	III	Quarantine Speech
15	1941	FDR (3rd)	Konoe (2nd, 3rd)/Tojo	I	Lend-Lease Act

Table 5.1: This table summarizes the fifteen historical cases from 1899 to 1941.

United States, which generated uncertainty about the cost of an armed conflict with Japan, and frequently changed the audience cost.

The model provides solid evidence from U.S.-Japanese conflicts in Northeast Asia in the early twentieth century (1899–1941). It explains why the United States as a new external force in Northeast Asia was deeply attached to the Open-Door principle. Publicly announcing the principle was an efficient option in bargaining with a regional power, Japan, adhered to the partition principle. In particular, as both states' audience costs rose, the U.S. signal, a declaration of the Open-Door principle, conveyed more information to Japan, which helped update its beliefs about the U.S. type. Consequently, belief revision by new information transmitted through each player's actions reduced the probability of an armed conflict between the two rising powers.

Fifteen historical cases support the six hypotheses derived from the propositions. First, Table 5.1 shows that the early games, **Case No.1** to **Case No.4**, were often ended with Japan's temporary withdrawal from its expansionist policy following a declaration of the Open-Door Policy, as ***Hypothesis 1*** states.

We frequently observe **Outcome IV** before the Washington Conference, but can hardly see the outcome since the “Stimson Doctrine” in 1931. The Open Door principle had been gradually consolidated by repeated Japanese withdrawals from its expansionist policy toward China. As the American people seriously acknowledged the principle, the U.S. audience cost incurred by concession rose. Thus, as **Hypothesis 4** dictates, signals sent by the United States conveyed more information to Japan in the 1930s than before.

Second, the first Wilson administration conceded when the Okuma Cabinet rejected the Open Door policy in China even after receiving the Bryan Notes. The Wilson administration proclaimed that the Dollar Diplomacy failed in China in 1914 (**Case No.7**). It was the first U.S. administration that did not declare the Open Door policy since the McKinley administration circulated the First Notes in 1899. His administration also hesitated to participate in World War I before Germany adopted a policy of unrestricted submarine warfare in 1917. Since the Okuma Cabinet was convinced that the Wilson administration did not belong to the *hard-liner* type, the outcome ended with the U.S. concession in **Case No.7** can be explained by **Hypothesis 2** which states that a defender who is convinced that her opponent is not the *hard-liner* would sustain her policy once a declaration was observed, which will result in a challenger’s concession. This hypothesis is also applicable to **Case No.5** and **Case No.14**.

Third, the first FDR administration conceded in 1933 when the Saito Cabinet sustained the expansionist policy toward China beyond southern Manchuria, after not observing any formal announcement of the Open Door policy toward China. The outcome in **Case No.12** supports **Hypothesis 3** which suggests that a challenger’s concession without a declaration of an ideal principle should be positively associated with a rise in his costs.

Fourth, **Case No.15** supports **Hypothesis 4**. Recall that **Case No.15** represents a tension between the third FDR administration and the second and the

third Konoe/Tojo Cabinets. The same players become more informative in a new game than in the previous game in that their prior beliefs in a new game are the posterior beliefs in the previous game. Therefore, we predict that a feasible outcome in equilibrium would be initiated with the U.S. declaration of the Open Door Principle if the two rivals are highly informative about each other's cost of an armed conflict.¹ This hypothesis is applicable to the cases in which the same administrations/cabinets start a new game: **Case No.4** between the Roosevelt administration and the Katsura (2nd term) Cabinet; and **Case No.14** as well.

Fifth, the United States which became more capable in 1921 than before, but we observed **Outcome IV** in **Case No.10**. *Hypothesis 5* is not fully tested because we did not see a U.S. threat to use force.

Lastly, as **Proposition 4** states, we did not see an armed conflict without proclaiming an ideal principle (**Outcome V**), if a challenger is highly capable. Recall repeated withdrawals from the expansionist policy toward China had raised the status quo value to the United States. Although the relative capability had decreased since 1936, the United States unilaterally declared the Open Door principle, which may support *Hypothesis 6* that states the threshold of relative capabilities at which an armed conflict can occur after a unilateral declaration of an ideal principle decreases with the status quo value to a challenger.

Despite the potential confrontation resulted from incompatible ordering principles in Northeast Asia, an armed conflict between the two rivals was an extremely rare event. An armed conflict without a declaration of the Open-Door principle never occurred. Consequently, we may say that the armed conflict led by the extreme confrontation in the late 1930s was not a result from misperception of each other's type but an outcome produced by choices with use of more information.

The predictions made by the propositions provide implication for potential conflicts between rising regional powers with competitive ideas beyond the U.S.-

¹Note that this hypothesis is valid unless the distributions of both states' costs of an armed conflict are severely truncated by the upper bound.

Japanese conflict. To declare an ideal principle not designed to yield the maximum interest in a region can be an efficient option to challengers. By customizing components of the game, the model can appropriately explain conflicts between a challenger with a new idea and a defender with the interest secured by the existing principle. For example, we find many analogies in the relationship between the United States and Iraq. A new idea (e.g., bringing freedom and democratization to the Arab world) which can be reinforced by the U.S. repeated resolute actions, the U.S. economic interest in the Middle East, its audience cost, Iraqis' uncertainty over the U.S. administration types described over the cost of an armed conflict, and the relative capabilities accurately estimated by recent military operations.

Despite these interesting findings, the model has some limitations. First, due to the restriction of the number of cases, the theoretical model could not be quantitatively tested. The selection of cases might be biased.²

Second, as Myerson (1992) points out, game-theory is limited in its predictive power when there exist multiple equilibria. When a game has multiple equilibria, anything that focuses the players' attention on one equilibrium may make them expect it and thus fulfill it as a self-fulfilling prophecy (Schelling, 1960). That is, when there are multiple equilibria, predicting the focal equilibrium that will occur may encourage us to go beyond the economic analysis of incentives into other fields such as social psychology (e.g., groupthink).

Third, the factors employed by this essay are assumed to be exogenous, but may be endogenous in the real world. For instance, one state's relative capability which can be attained by inputs and investment may increase or decrease with the cost of an armed conflict with its rival. The improved status quo value through repeated adjustments can make the challenger deeply attached to the idea, and incur a rise in the defender's audience cost.

²These limitations can be defended when insufficient information about a problem has been quantified to make statistical analyses useful (King and Powell, 2008)

APPENDIX

Proofs

Definition 1 (The High Uncertainty Condition):

We take derivatives of the cut points $\beta = (r-1)\bar{v} + \frac{\bar{v}-v^s+a_C}{F(\alpha)}$ and $\theta = \frac{1}{F(\gamma)} + r - 1$ with respect to r as follows:

$$\begin{aligned}
 \frac{\partial \beta}{\partial r} &= \frac{\partial}{\partial r} \left(\frac{\bar{v} - v^s + a_C}{F(\alpha)} - \bar{v} + \bar{v}r \right) \\
 &= (\bar{v} - v^s + a_C) \cdot \frac{\partial}{\partial r} \frac{1}{F(\alpha)} + \bar{v} \\
 &= (\bar{v} - v^s + a_C) \cdot \frac{\bar{v}f(\alpha)}{\{F(\alpha)\}^2} + \bar{v} > 0 \\
 \frac{\partial \theta}{\partial r} &= \frac{\partial}{\partial r} \frac{1}{F(\gamma)} + r - 1 \\
 &= \frac{f(\gamma)}{\{F(\gamma)\}^2} + 1 > 0
 \end{aligned} \tag{5.1}$$

where $F(\cdot)$ is the cumulative distribution function. Thus, as r increases, the cut point θ and β also rise.

Now we take a derivative of the cut point $\alpha^+ = \frac{v-v^s}{F(\beta)} + v^s - r\bar{v}$ with respect to r as follows:

$$\begin{aligned}
 \frac{\partial \alpha^+}{\partial r} &= \frac{\partial}{\partial r} \frac{v - v^s}{F(\beta)} + v^s - r\bar{v} \\
 &= (v - v^s) \frac{\partial}{\partial r} \frac{1}{F(\beta)} - \bar{v} \\
 &= -(v - v^s) \left[\frac{(\bar{v} - v^s + a_C)f(\alpha)}{\{F(\alpha)\}^2} + \bar{v} \right] / \{F(\beta)\}^2 - \bar{v} < 0
 \end{aligned} \tag{5.2}$$

where $F(\cdot)$ is the cumulative distribution function. Thus, as r increases, the cut point α^+ declines.

The derivative of the cut point α with regards to r can be

$$\frac{\partial \alpha}{\partial r} = \frac{\partial(1-r)\bar{v} + a_D}{\partial r} = -v < 0. \quad (5.3)$$

The first term in (5.2), $-(v - v^s) \left[\frac{(\bar{v} - v^s + a_C)f(\alpha)}{\{F(\alpha)\}^2} + \bar{v} \right] / \{F(\beta)\}^2$, is less than zero.

Thus, $\frac{\partial \alpha^+}{\partial r} < \frac{\partial \alpha}{\partial r} < 0$.

We take a derivative of the cut point $\gamma^+ = \frac{v^s}{F(\theta)} - r$ with respect to r as follows:

$$\begin{aligned} \frac{\partial \gamma^+}{\partial r} &= \frac{\partial}{\partial r} \frac{v^s}{F(\theta)} - r \\ &= -v^s \frac{F'(\theta)}{\{F(\theta)\}^2} - 1 \\ &= -v^s \left(1 + \frac{f(\gamma)}{\{F(\gamma)\}^2} \right) / \{F(\theta)\}^2 - 1 < 0 \end{aligned} \quad (5.4)$$

where $F(\cdot)$ is the cumulative distribution function. Thus, as r increases, the cut point γ^+ declines.

The derivative of the cut point γ is written as

$$\frac{\partial \gamma}{\partial r} = \frac{\partial 1 - r + a_D}{\partial r} = -1 < 0. \quad (5.5)$$

Since $-v^s \left(1 + \frac{f(\gamma)}{\{F(\gamma)\}^2} \right) / \{F(\theta)\}^2 < 0$, $\frac{\partial \gamma^+}{\partial r} < \frac{\partial \gamma}{\partial r} < 0$.

From (5.2)–(5.5), we know the cut points α^+ and γ^+ are less than the cut points α and γ where $\alpha < \gamma$ if r is sufficiently high. By contrast, the cut points α^+ and γ^+ are greater than the α and γ when r is sufficiently low. Various cut point configurations are feasible when r is neither sufficiently high nor sufficiently low.

Now suppose $F_i(\cdot)$ is the cumulative distribution function of a uniform distribution. Then, the cut point γ^+ can be written as

$$\gamma^+ = \frac{3v^s(2 - r + a_D)}{3 + r(2 - r + a_D)} - r \quad (5.6)$$

At $r = 0$ the cut point γ and γ^+ have their maximum values. We have

$$\begin{aligned} \gamma_{r=0}^+ &= v^s(2 + a_D) \\ \gamma_{r=0} &= 1 + a_D \\ a_D &\geq \frac{2v^s - 1}{1 - v^s}, \quad \gamma_{r=0} \geq \gamma_{r=0}^+. \end{aligned} \quad (5.7)$$

If $v^s < 0.5$, then $\frac{2v^s - 1}{1 - v^s} < 0$. Thus, the condition $\gamma^+ \leq \gamma$ holds regardless of a_D under high uncertainty. The condition $\alpha^+ < \alpha$ holds if $v < \frac{(\bar{v} - v^s + a_C)(\bar{v} - v^s + a_D)}{\bar{v} + a_D + 1} + v^s \equiv \lambda^*$ as shown in (3.4) under high uncertainty.

Lemma 1 (Nonexistence of Defender's Backdown under High Uncertainty):

Suppose $\alpha^+ < \alpha$ and $\gamma^+ < \gamma$. After observing *DEC*, D updates her belief about C 's type who would choose *TH* when rejected from $F_C(\theta)$ to 1. Thus, for D with $c_D < \gamma$

$$\begin{aligned} EU_D(SUS|ND) &= 1 \times (1 - r - c_D) + 0 \times 1 \\ EU_D(ST|ND) &= 1 - v^s \\ c_D &\leq v^s - r \equiv \gamma^*, \quad D \text{ would choose } SUS, ND \text{ otherwise.} \end{aligned} \quad (5.8)$$

For D with $c_D \geq \gamma$

$$\begin{aligned}
EU_D(SUS|ND) &= 1 \times (-a_D) + 0 \times 1 = -a_D \\
EU_D(ST|ND) &= 1 - v^s \\
c_D &\leq v^s - r \quad (\text{impossible by the assumption } a_D \geq 0)
\end{aligned} \tag{5.9}$$

D with $c_D \geq \gamma$ would choose ST for sure for sure after observing ND if $\alpha^+ < \alpha$ and $\gamma^+ < \gamma$. Since $\gamma^* < \gamma$, there does not exist D 's BD after observing ND in the condition.

Lemma 2 (Highly Capable Challenger's Choices)

Suppose $\theta \geq \beta$ where $F(\cdot)$ is a cumulative distribution function of a uniform distribution in the range of $[-1, 2]$. Then we have $F(\gamma) = \frac{2-r+a_D}{3}$ and $F(\alpha) = \frac{(1-r)\bar{v}+a_D+1}{3}$, respectively. The condition $\theta \geq \beta$ is

$$\frac{1}{F(\gamma)} - (1-r) \geq \bar{v}(r-1) + \frac{\bar{v} - v^s + a_C}{F(\alpha)} \tag{5.10}$$

Plugging $F(\alpha)$ and $F(\gamma)$ in (5.10) and rearranging it, we have

$$\begin{aligned}
\frac{3(\bar{v} - v^s + a_C)}{(1-r)\bar{v} + a_D + 1} &< \frac{3}{2-r+a_D} - (1-\bar{v})(1-r) \\
a_C &< \frac{1}{3} \left\{ \frac{3 - (1-\bar{v})(1-r)(2-r+a_D)}{2-r+a_D} \right\} \{(1-r)\bar{v} + a_D + 1\} \equiv a_C^*
\end{aligned} \tag{5.11}$$

Thus, if $a_C < a_C^*$, then there exists the *less sincere moderate* type.

Lemma 3 (Less Sincere Moderate's Declarations)

Suppose $\beta \leq \theta$ where $F(\cdot)$ is a cumulative distribution function of a uniform distribution between a reasonable range $[-1, 2]$. Since $\frac{\partial \beta}{\partial r} < 0$ min β at $r = 0$.

$$\begin{aligned} F(\alpha^+)_{r=0} &= \frac{B+1}{3} \\ B &= \frac{3(\bar{v} - v^2 + a_C) + (\bar{v} + a_D + 1)(1 - \bar{v} + 3v^2)}{3(\bar{v} + a_D + 1)} \\ F(\gamma^+)_{r=0} &= \frac{v^s(a_D + 2)}{1 - a_D} \end{aligned} \quad (5.12)$$

$$\begin{aligned} \beta_{r=0} &= -\bar{v} + \frac{3(\bar{v} - v^2 + a_C)}{\bar{v} + a_D + 1} \\ \delta_{2,r=0} &= -v^2 + \frac{(v - v^s + a_C)F(\alpha^+)_{r=0} + v^s - v}{F(\gamma^+)_{r=0}} \end{aligned} \quad (5.13)$$

Plugging (5.12) in (5.13), and rearranging it, we have

$$\begin{aligned} \beta_{r=0} - \delta_{2,r=0} &= \frac{3(\bar{v} - v^s + a_C)}{\bar{v} + a_D + 1} - \frac{(1 - a_D)(v - v^s + a_C)(\bar{v} - v^s + a_C)}{\bar{v} + a_D + 1} \\ &\quad - \frac{(1 - a_D)(v - v^s + a_C)(1 - \bar{v} - 9v + 12v^s)}{3} + v^2 - \bar{v} \end{aligned} \quad (5.14)$$

$\beta_{r=0}$ is minimum at $a_D = 1$, other things being equal. Thus, we have

$$\begin{aligned} \beta_{r=0,a_D=1} - \delta_{2,r=0,a_D=1} &= \frac{3(\bar{v} - v^s + a_C)}{\bar{v} + 2} + v^s - \bar{v} \\ &= \frac{3(\bar{v} - v^s + a_C) - (\bar{v} + 2)(\bar{v} - v^s)}{\bar{v} + 2} \end{aligned} \quad (5.15)$$

Since $2 < \bar{v} + 2 < 3$, $\bar{v} - v^s + a_C \geq \bar{v} - v^s$.

$\therefore \beta_{r=0,a_D=1} \geq \delta_{2,r=0,a_D=1}$. Thus, for $c_C \in [\beta, \theta]$ C would choose *DEC* for sure if $\beta \leq \theta$.

Lemma 4 (Less Sincere Moderate Challenger and Defender's Audience Cost)

Suppose $F_i(\cdot)$, $i \in \{C, D\}$ is the CDF of a uniform distribution which lies between -1 and 2 . From (5.10) we have

$$\frac{\partial a_C^*}{\partial a_D} = -\frac{(\bar{v}-1)(r-1)(r^2-2r(a_D+2)+a_D^2+4a_D+1)}{3(2-r+a_D)^2} \quad (5.16)$$

Since $-\frac{(\bar{v}-1)(r-1)}{3(2-r+a_D)^2} < 0$

$$\frac{\partial a_C^*}{\partial a_D} \begin{cases} < 0, & \text{if } r^2 - 2r(a_D + 2) + a_D^2 + 4a_D + 1 > 0 \\ \geq 0, & \text{otherwise} \end{cases} \quad (5.17)$$

By the quadratic formula the cut point of r^* which divides the sign of $\frac{\partial a_C^*}{\partial a_D}$ can be written as

$$\begin{aligned} r^* &= \frac{2(a_D + 2) \pm \sqrt{(a_D + 2)^2 - 4(a_D^2 + 4a_D + 1)}}{2} \\ &= a_D + 2 \pm \sqrt{3} \end{aligned} \quad (5.18)$$

Since $r, a_D \in [0, 1]$, we have a cut point of $a_D^* = -1 + \sqrt{3}$. Thus, we can write

$$\frac{\partial a_C^*}{\partial a_D} \begin{cases} < 0, & \text{if } a_D \in [0, a_D^*), \text{ and } r \in [0, r^*) \\ \geq 0, & \text{if } a_D \in [0, a_D^*), \text{ and } r \in [r^*, 1] \\ \geq 0, & \text{if } a_D \in [a_D^*, 1] \end{cases} \quad (5.19)$$

Regardless of r the cut point a_C^* is positively associated with a_D above $a_D^* \approx 0.732$. It is also positively associated with a_D below a_D^* and $r \in [r^*, 1]$. However, the cut point a_C^* is negatively associated with a_D below a_D^* and $r \in [0, r^*)$.

Proposition 1 (Capable Challenger's No Declaration Equilibrium)

Suppose $\beta \leq \theta$, $v < \lambda^*$, and $F_D(\alpha^+) \leq \kappa_1$. By **Lemma 1** relatively *capable* C exists if $\alpha^+ \geq \gamma^+$. For the *hard-liner* with $c_C \in [\underline{c}_C, \beta)$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (r\bar{v} - c_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times (r - c_C) + (1 - F_D(\gamma^+) \times v^s \\
 c_C &> \frac{(r\bar{v} - v)F_D(\alpha^+) - (r - v^s)F_D(\gamma^+) + v^s - v}{F_D(\alpha^+) - F_D(\gamma^+)} \equiv \delta_1, \quad C \text{ would choose } ND.
 \end{aligned} \tag{5.20}$$

For the *less sincere moderate* with $c_C \in [\beta, \theta)$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (v^s - a_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times (r - c_C) + (1 - F_D(\gamma^+) \times v^s \\
 c_C &< r - v^s + \frac{(v - v^s + a_C)F_D(\alpha^+) + v^s - v}{F_D(\gamma^+)} \equiv \delta_2,
 \end{aligned} \tag{5.21}$$

C would choose *DEC* by **Lemma 3**.

For the *soft-liner* with $c_C \in [\theta, \bar{c}_C]$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (v^s - a_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times 0 + (1 - F_D(\gamma^+) \times v^s \\
 F(\alpha^+) &\leq \frac{v - v^s(1 - F_D(\gamma^+))}{v - v^s + a_C} \equiv \kappa_1, \quad C \text{ would choose } DEC \text{ for sure.}
 \end{aligned} \tag{5.22}$$

Thus, C with $c_C \in [\delta_1, \beta)$ would send *ND* in equilibrium.

After observing *ND*, D updates her beliefs that C would choose *TH* when resisted.

For D with $c_D < \gamma$,

$$\begin{aligned}
EU_D(SUS|ND) &= 1 \times (1 - r - c_D) + 0 \times 1 \\
EU_D(ST|ND) &= 1 - v^s \\
c_D &\leq v^s - r \equiv \gamma^*, \quad (D \text{ would choose } SUS) \\
c_D &> \gamma^*, \quad D \text{ would choose } ST
\end{aligned} \tag{5.23}$$

For D with $c_D \geq \gamma$,

$$\begin{aligned}
EU_D(SUS|ND) &= 1 \times (-a_D) + 0 \times 1 \\
EU_D(ST|ND) &= 1 - v^s \\
a_D &\leq v^s - 1 < 0 \quad SUS \text{ is impossible by the assumption } a_D \geq 0
\end{aligned} \tag{5.24}$$

After observing SUS , C updates his belief that D would choose SF when threatened. Because $\gamma^* < \gamma$,

$$\begin{aligned}
EU_C(TH|SUS, ND) &= r - c_C \\
EU_C(CD|SUS, ND) &= 0 \\
c_C &\leq r \equiv \theta^*, \quad C \text{ would choose } TH \\
c_C &> \theta^*, \quad C \text{ would choose } CD
\end{aligned} \tag{5.25}$$

After observing TH D would choose SF for sure.

Proposition 2 (Less Capable Challenger's No Declaration Equilibrium)

Suppose $\beta \leq \theta$, $v < \lambda^*$, and $F_D(\alpha^+) \leq \kappa_1$. By **Lemma 1** relatively *less capable* C exists if $\alpha^+ < \gamma^+$. For the *hard-liner* with $c_C \in [\underline{c}_C, \beta)$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (r\bar{v} - c_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times (r - c_C) + (1 - F_D(\gamma^+) \times v^s \\
 c_C &< \frac{(r\bar{v} - v)F_D(\alpha^+) - (r - v^s)F_D(\gamma^+) + v^s - v}{F_D(\alpha^+) - F_D(\gamma^+)} \equiv \delta_1, \quad C \text{ would choose } ND.
 \end{aligned} \tag{5.26}$$

For the *less sincere moderate* with $c_C \in [\beta, \theta)$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (v^s - a_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times (r - c_C) + (1 - F_D(\gamma^+) \times v^s \\
 c_C &< r - v^s + \frac{(v - v^s + a_C)F_D(\alpha^+) + v^s - v}{F_D(\gamma^+)} \equiv \delta_2, \\
 C &\text{ would choose } DEC \text{ by } \mathbf{Lemma 3}.
 \end{aligned} \tag{5.27}$$

For the *soft-liner* with $c_C \in [\theta, \bar{c}_C]$,

$$\begin{aligned}
 EU_C(DEC) &= F_D(\alpha^+) \times (v^s - a_C) + (1 - F_D(\alpha^+) \times v \\
 EU_C(ND) &= F_D(\gamma^+) \times 0 + (1 - F_D(\gamma^+) \times v^s \\
 F(\alpha^+) &\leq \frac{v - v^s(1 - F_D(\gamma^+))}{v - v^s + a_C} \equiv \kappa_1, \quad C \text{ would choose } DEC \text{ for sure.}
 \end{aligned} \tag{5.28}$$

Thus, C with $c_C \in [\underline{c}_C, \delta_1)$ would send ND in equilibrium.

After observing ND , D updates her beliefs that C would choose TH when resisted.

The updated cut points γ^* and θ^* are the same in **Proposition 1**.

Proposition 3 (Challenger's Concession Equilibrium)

Suppose $\beta \leq \theta$ and $\alpha^+ < \gamma^+$. After observing *DEC* D updates her belief that C will choose *TH* when she choose *SUS*. For the *hard-liner* with $c_D < \alpha$,

$$\begin{aligned} EU_D(SUS|DEC) &= 1 \times (1 - r\bar{v} - c_D) + 0 \times (1 - v^s) \\ EU_D(ST|DEC) &= 1 - v \\ c_D &\leq v - r\bar{v} \equiv \alpha^* \end{aligned} \tag{5.29}$$

For D with $c_D \geq \alpha$,

$$\begin{aligned} EU_D(SUS|DEC) &= 1 - \bar{v} - a_D \\ EU_D(ST|DEC) &= 1 - v \\ a_D &\leq -\bar{v} + v < 0, \text{ impossible by the assumption } a_D \geq 0. \end{aligned} \tag{5.30}$$

Thus, D with $c_D \geq \alpha$ would choose *ST* for sure.

After seeing *SUS*, C believes that D would choose *SF* given *TH* because $\alpha^* = v - r\bar{v} < \alpha$. Thus,

$$\begin{aligned} EU_C(TH|SUS) &= 1 \times (r\bar{v} - c_C) + 0 \times \bar{v} \\ EU_C(CD|SUS) &= v^s - a_C \\ c_C &\leq r\bar{v} - v^s + a_C \equiv \beta^*, \text{ } C \text{ would choose } TH \\ c_C &> \beta^*, \text{ } C \text{ would choose } CD \end{aligned} \tag{5.31}$$

Under the assumption $c_i \sim \text{Unif}(-1, 2)$, for $i \in \{C, D\}$ we compare the cut point

β with the updated cut point β^* as follows:

$$\begin{aligned}
\beta &= (r-1)\bar{v} + \frac{3(\bar{v} - v^s + a_C)}{(1-r)\bar{v} + a_D + 1} \\
\beta^* &= r\bar{v} - v^s + a_C \\
\beta - \beta^* &= \frac{3(\bar{v} - v^s + a_C)}{(1-r)\bar{v} + a_D + 1} - (\bar{v} - v^s + a_C) \\
&= (\bar{v} - v^s + a_C) \left[\frac{3 - \{(1-r)\bar{v} + a_D + 1\}}{(1-r)\bar{v} + a_D + 1} \right] > 0
\end{aligned} \tag{5.32}$$

Thus, the *hard-liner* type would not choose CD for sure after updating his beliefs.

This is also valid when $\alpha^+ \geq \gamma^+$.

Now suppose $\beta > \theta$, and $F_D(\alpha^+) \leq \kappa_1$. Under the assumption $c_i \sim \text{Unif}(-1, 2)$, for $i \in \{C, D\}$, a *less capable* C exists if $\alpha^+ < \gamma^+$. After observing ND , D updates her beliefs that C would choose TH when resisted. For D with $c_D < \gamma$,

$$\begin{aligned}
EU_D(SUS|ND) &= \left(\frac{F_C(\delta_1)}{1 - F_C(\theta) + F_C(\delta_1)} \right) \times (1 - r - c_D) + \left(\frac{1 - F_C(\theta)}{1 - F_C(\theta) + F_C(\delta_1)} \right) \times 1 \\
EU_D(ST|ND) &= 1 - v^s \\
c_D &\leq v^s - r + \frac{v^s(1 - F_C(\theta))}{F_C(\delta_1)} \equiv \gamma^*
\end{aligned} \tag{5.33}$$

For D with $c_D \geq \gamma$,

$$\begin{aligned}
EU_D(SUS|ND) &= \left(\frac{F_C(\delta_1)}{1 - F_C(\theta) + F_C(\delta_1)} \right) \times (-a_D) + \left(\frac{1 - F_C(\theta)}{1 - F_C(\theta) + F_C(\delta_1)} \right) \times 1 \\
EU_D(ST|ND) &= 1 - v^s \\
F(\delta_1) &\leq \frac{1 - F_C(\theta)}{1 - v^s + a_D} \equiv F(\delta_1)^*, \quad D \text{ would choose } SUS \\
F(\delta_1) &> F(\delta_1)^*, \quad D \text{ would choose } ST.
\end{aligned} \tag{5.34}$$

Consider the case $F_C(\delta_1) > F_C(\delta_1)^*$. After observing SUS , C believes that D would choose SF given TH for sure.

$$\begin{aligned} EU_C(TH|SUS, ND) = r - c_C &\geq EU_C(CD|SUS, ND) = 0 \\ c_C &\leq r \equiv \theta^*, \quad C \text{ would choose } TH, ND \text{ otherwise.} \end{aligned} \tag{5.35}$$

We can compare the cut point θ and the updated cut point θ^* as follows:

$$\theta - \theta^* = r - 1 + \frac{1}{F_D(\gamma)} - r \geq 0 \tag{5.36}$$

Thus, the *hard-liner* with $c_C \in [\theta^*, \theta)$ can choose CD after observing ND if $\beta > \theta$.

Corollary 3.1 (Nonexistence of Hard-liner Challenger's Declaration)

After observing DEC , D updates her belief that C would choose TH when resisted. The prior belief $\Pr(c_C \leq \beta)$ is $F_C(\beta)$, and the posterior belief is 0. For D with $c_D < \alpha$,

$$\begin{aligned} EU_D(SUS|DEC) &= \Pr(c_C \leq \beta) \times (1 - r\bar{v} - c_D) + \Pr(c_C > \beta) \times (1 - v^s) = 1 - v^s \\ EU_D(ST|DEC) &= 1 - v \\ \therefore EU_D(SUS|DEC) &> EU_D(ST|DEC) \quad \text{by the assumption } v^s < v. \end{aligned} \tag{5.37}$$

For D with $c_D \geq \alpha$,

$$\begin{aligned} EU_D(SUS|DEC) &= \Pr(c_C \leq \beta) \times (1 - r\bar{v} - a_D) + \Pr(c_C > \beta) \times (1 - v^s) = 1 - v^s \\ EU_D(ST|DEC) &= 1 - v \\ \therefore EU_D(SUS|DEC) &> EU_D(ST|DEC) \quad \text{by the assumption } v^s < v. \end{aligned} \tag{5.38}$$

Thus, D would choose SUS after observing DEC for sure. After observing SUS C 's belief about D 's type is not updated so that the prior information holds. Thus, if $\beta \leq \theta$, $\delta_2 < \beta$, and $F_D(\alpha^+) \leq \kappa_1$, C with $c_C < \beta$ would not choose DEC , so that C who sent DEC would select only CD when threatened in the range of $r \in [\underline{r}^*, \bar{r}^*]$.

Proposition 4 (Armed Conflict Equilibrium)

Suppose $\alpha^+ \geq \gamma^+$ and $\beta \leq \theta$. If the cut point $\delta_1 < \beta$, then D with $c_D < \alpha$ calculates his expected payoffs after observing DEC as follows:

$$\begin{aligned}
EU_D(SUS|DEC) &= \left(\frac{F_C(\delta_1)}{1 - F_C(\beta) + F_C(\delta_1)} \right) \times (1 - r\bar{v} - c_D) \\
&\quad + \left(\frac{1 - F_C(\beta)}{1 - F_C(\beta) + F_C(\delta_1)} \right) \times (1 - v^s) \\
EU_D(ST|DEC) &= 1 - v \\
c_D &\leq -r\bar{v} + v + \frac{(v - v^s)(1 - F_C(\beta))}{F(\delta_1)} \equiv \alpha^*, \\
D &\text{ would choose } SUS, ST \text{ otherwise.}
\end{aligned} \tag{5.39}$$

For D with $c_D \geq \alpha$,

$$\begin{aligned}
EU_D(SUS|DEC) &= \left(\frac{F_C(\delta_1)}{1 - F_C(\beta) + F_C(\delta_1)} \right) \times (1 - \bar{v} - a_D) \\
&\quad + \left(\frac{1 - F_C(\beta)}{1 - F_C(\beta) + F_C(\delta_1)} \right) \times (1 - v^s) \\
EU_D(ST|DEC) &= 1 - v \\
F_C(\delta_1) &\leq \frac{v - v^s(1 - F_C(\beta))}{\bar{v} - v + a_D} \equiv F_C(\delta_1)^*, \\
C &\text{ would choose } SUS, ND \text{ otherwise.}
\end{aligned} \tag{5.40}$$

After seeing SUS , C calculates his expected payoffs based on the posterior beliefs

as follows:

$$\begin{aligned}
EU_C(TH|SUS) &= \left(\frac{F_D(\alpha^*)}{1 - F_D(\alpha) + F_D(\alpha^*)} \right) \times (r\bar{v} - c_C) + \left(\frac{1 - F_D(\alpha)}{1 - F_D(\alpha) + F_D(\alpha^*)} \right) \times \bar{v} \\
EU_C(CD|SUS) &= v^s - a_C \\
c_C &\leq r\bar{v} - v^s + a_C + \frac{(\bar{v} - v^s + a_C)(1 - F_D(\alpha))}{F_D(\alpha^*)} \equiv \beta^*
\end{aligned} \tag{5.41}$$

Thus, after observing *DEC*, *C* would choose *TH|SUS* for sure because $\beta^* > \beta$. After observing *TH*, *D* would choose *SF* for sure.

From (5.39), we see the updated cut point $\alpha^* > \alpha^+$. In sum, the probability of an armed conflict after *DEC* increases via information updating.

By contrast, after observing *ND*, *D* with $c_D < \gamma$ updates her belief that *C* would choose *TH*, and calculates her expected payoffs as shown in **Proposition 1** and **Proposition 2**

$$c_D \leq v^s - r \equiv \gamma^*, \quad D \text{ would choose } SUS, ST \text{ otherwise.} \tag{5.42}$$

D with $c_D \geq \gamma$ would choose *ST* for sure as demonstrated in **Proposition 1** and **Proposition 2**.

After seeing *SUS*, *C* believes that *D* would choose *SF* when threatened for sure because $\gamma^* < \gamma$. Thus, *C* with $c_C \leq r \equiv \theta^*$ would choose *TH*, *CD* otherwise. The condition $\gamma^* < \gamma$ tells us that the probability of an armed conflict after *ND* decreases by belief updating.

Recall the condition $\alpha^+ \geq \gamma^+$ is readily satisfied at high r , which implies that as *C*

becomes more capable, **Outcome I** occurs more frequently than does **Outcome V**.

Corollary 4.1 (Defender's Backdown under High Uncertainty)

The condition $F_C(\delta_1) \leq \frac{v-v^s(1-F_C(\beta))}{\bar{v}-v+a_D} \equiv F_C(\delta_1)^*$ in (5.40) can be possible under high uncertainty. In particular, if the cut point δ_1 is very low, the condition is satisfied. Thus, After observing *DEC*, *D* with $c_D \geq \alpha$ can choose *BD* when threatened when she believes that *C* belongs to the *hard-liner* type.

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