

A Theory of Power Structure and Institutional Compatibility: China vs. Europe Revisited*

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Abstract

The literature on institutions and development contrasts inclusive societies with extractive ones, while the scholarship comparing imperial China and premodern Europe challenges this binary view. To reconcile these views, we model the institutional differences between the two societies along two dimensions of their power structure: the Ruler’s absolute power was weaker in Europe, whereas the Elite–People relationship in terms of their everyday power and rights was more balanced in China. We show that a more absolutist Ruler prefers a more balanced Elite–People relationship. Our theory helps to interpret specific institutions and variations and changes in power structures between and within Europe and China.

Keywords: absolute power, Elite–People relationship, autocratic stability, inclusive institution, rule of law, access to elite status

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1 Introduction

The very influential literature on institutions and development has often categorized societies as either inclusive, open-access, and equal, or extractive, limited-access, and unequal (e.g., North, 1989; North and Weingast, 1989; Acemoğlu et al., 2001, 2005a,b; North et al., 2009; Acemoğlu and Robinson, 2012; Cox et al., 2019). Nevertheless, the scholarship comparing imperial China and premodern Europe challenges this dichotomic classification. It has been emphasized that, although rule of law and protection of property rights against the Ruler were weaker in China, some other institutional features of China were more inclusive compared to Europe: for example, the access to elite status was primarily non-hereditary and governed by the civil service exam, peasants enjoyed a greater degree of freedom, and land ownership was less concentrated (e.g., Finer, 1997a,b; Fukuyama, 2011; Tackett, 2014; Zhang, 2017; Acemoğlu and Robinson, 2019; Stasavage, 2020; Greif et al., Forthcoming; the survey by Qian and Sng, 2021). Are these views of institutional differences contradictory to each other? More generally, why is it possible for a society, be it imperial China, premodern Europe, or some other society, to be repressive in a few institutional dimensions, but quite inclusive in others?

In this paper, to reconcile these views and address these questions, we propose a three-player, two-dimensional framework of the power structure of society that would help us categorize these institutional differences and analyze the relationship between them. The three players are, first, the *Ruler*, which was the emperor or king, second, the *Elites*, which included primarily the lords in Europe and bureaucrats in China, and, finally, the common *People*. Compared with the classic two-estate framework in the literature (e.g., Acemoğlu and Robinson, 2005; North et al., 2009), having these three players allows us to distinguish the power relationship between the Ruler and the ruled, which include both the Elites and People, from that between the ruled. Making this distinction is necessary because some of the aforementioned institutional differences between imperial China and premodern Europe were about the former, while the others were about the latter.¹

The two dimensions are, first, the degree of *asymmetry between the Elites and People* in terms of their everyday power and rights, which we conceptualize as a matter of distribution of social surplus, and, second, the *Ruler's absolute power* over the ruled, which we conceptualize not as a matter of distribution of social surplus, but as to what degree such distribution is conditional on the ruled submitting to the will of the Ruler. New to the

¹Some studies have incorporated the middle class, selectorate, military, or clergy to the two-estate framework, but the focus has been on political agency, regime transition, provision of accountability, or secularization (e.g., Acemoğlu and Robinson, 2005; Besley and Kudamatsu, 2008; Acemoğlu et al., 2010; Auriol et al., Forthcoming).

literature, our conceptualization of the Ruler’s absolute power introduces the main insight from the neo-Roman theory of liberty in political philosophy, i.e., there is liberty only when there is no possibility for one’s civil rights to be dependent on the goodwill of someone else (e.g., Pettit, 1997; Skinner, 1998, 2022).

Guided by this three-player, two-dimensional framework, we first examine rich comparative historical narratives on the power structures of imperial China and premodern Europe. On the one hand, European Rulers had a weaker absolute power, and this was reflected in, for example, the different strengths of rule of law, property rights, and whether the king or emperor had ultimate ownership and control over land and population. On the other hand, the People’s everyday power and rights were more on a par with the Elites’ in China, and this can be seen, for example, in how the access to elite status was governed, how much freedom the peasantry enjoyed, and how unequal land ownership was. Our characterization of the differences in the power structures was the most relevant between the 9th and 14th centuries, with persistence beyond, between the society in the historical core of imperial China, and the western–central European society where feudalism once prevailed.

Having these narratives in mind, we analyze the relationship between the two dimensions of the power structure in a simple game-theoretical model. We start with a Ruler, who prefers to maintain a particular status quo of autocratic rule, and a Challenger, who could try to alter it. Since the Challenger can be either a foreign threat not under the Ruler’s rule, a conspiring elite, or a rebellious population under the Ruler’s rule, since the Challenger’s goal does not necessarily involve dethroning the Ruler, and since the challenge can be armed or nonviolent, our model is sufficiently general to cover a wide range of threats that could destabilize an autocratic rule. In the model, we assume that the success of a potential challenge in altering the status quo depends on whether the Elites and People choose to side with the Ruler. In the model, a more symmetric Elite–People relationship is represented by less unequal payoffs if they have not defied the Ruler; we model a stronger absolute power of the Ruler as a greater proportional reduction in the payoffs of the ruled, i.e., a heavier punishment, if they unsuccessfully defied the Ruler.

Analysis of the model leads to a theory about the compatibility between the two dimensions of the power structure. In the analysis, we first take the level of the Ruler’s absolute power as exogenous and analyze how it affects the Ruler’s perspective about the Elite–People relationship. In a historical perspective, the Ruler’s absolute power is determined by a set of slow-moving institutions that affect people’s expectations, values, and beliefs (e.g., Roland, 2004, 2008), so it seems appropriate to start by taking this parameter as exogenous; we endogenize it later in two different settings, one static and one dynamic.

To be precise, note that we have viewed the absolute power of the Ruler as the *con-*

ditionality of the payoffs of the ruled on their submitting to the Ruler's will. Given any non-zero level of such conditionality, the greater payoff the People enjoy when they submit to the Ruler's will, the more they will lose if they do not, and, therefore, the more they will be willing to side with the Ruler when called upon. We call this the *punishment* effect. Knowing that a stronger alliance between the Ruler and People has worsened the prospect of a challenge to the Ruler, the Elites will be more willing to side with the Ruler, too. We call this the *political alliance* effect. The Challenger would then be deterred from challenging the status quo, which stabilizes the autocratic rule and thus creates an incentive for the Ruler to promote a more symmetric Elite–People relationship.

Knowing these effects and this incentive, how will they depend on the degree of the Ruler's absolute power? Since a stronger absolute power implies a greater aforementioned conditionality, it will strengthen the initial punishment effect of more power and rights of the People and, therefore, strengthen the total stabilizing effect. The Ruler's incentive to promote a more symmetric Elite–People relationship will thus be greater when the Ruler has a stronger absolute power. A more absolutist Ruler will thus push for a more symmetric Elite–People relationship, given any well-behaved cost for such effort. This result suggests that a stronger absolute power of the Ruler and a more symmetric Elite–People relationship are compatible, reconciling the seemingly contradictory views in the literature on the institutional differences between imperial China and premodern Europe.

As we show in the online appendix, the insights and results from the theory are robust in a Markov game in which the ruled covet the Ruler's throne and all players take continuation values into consideration, among many other specific settings. We also show in the appendix that the compatibility result holds in the other direction, too, i.e., the stabilizing effect of a stronger absolute power of the Ruler is increasing in the level of symmetry between the Elites and People.

A few additional implications arise about the power structure in the long run when we extend the model by endogenizing the level of the Ruler's absolute power. For example, knowing that a more absolutist Ruler could grant more everyday power and rights to the People, the People may prefer a more absolutist Ruler in the first place, defying less often and enjoying their granted everyday power and rights under a more stable autocratic rule. This makes it possible for the power structure of a strong absolute power and a smaller degree of Elite–People asymmetry to be incentive-compatible for the People, and therefore to persist.

In another extension, we allow the current political stability, which has resulted from the current power structure, to influence the future power structure, creating a dynamic complementarity. This dynamic complementarity implies that, if there exist multiple steady states,

then two societies that differ slightly in their power structure or autocratic stability may diverge into two different steady states, and these two steady states must follow institutional compatibility, i.e., one must have a stronger absolute power of the Ruler, a more symmetric Elite–People relationship, and a higher stability of autocratic rule, compared with the other. This highlights the importance of initial conditions and the potential for path dependence in the evolution of power structures.

We further discuss the implications of our theoretical results in the context of Chinese and European history. We elaborate on how our theory can help to understand specific institutions, such as bureaucracy and the civil service exam in China, cities in Europe, and other efforts by European Rulers to reduce the Elite–People asymmetry. We also discuss how our theoretical framework, which is motivated primarily by the comparison between Europe and China, can be used for understanding variations and changes within Europe and China. Finally, we examine the auxiliary prediction from our model about the impact of the power structure on the stability of autocratic rule. Data show that autocratic rule was more stable in China than in Europe between the 9th and 14th centuries, when the differences in the power structure were the most prominent, with persistence in later centuries.

The paper is organized as follows. The rest of this section clarifies our position in the literature. Section 2 briefly presents historical narratives in the power-structure framework on the institutional differences between imperial China and premodern Europe. Section 3 presents the settings, analysis, and extensions of the model. Section 4 further discusses the implications of the theory. Section 5 concludes.

Position in the literature. The political divergence between the unified autocratic rule of a dominant state in imperial China and the lack of it in post-Roman Europe has received much attention in comparative history and political economy (e.g., Finer, 1997a,b; Scheidel, 2019; Stasavage, 2020). This is especially true given its implications for the economic divergence between the two (e.g., Rosenthal and Wong, 2011; Mokyr, 2016; Root, 2020). While most notable explanations for the political divergence have focused on natural variables and their close derivatives, such as the environment, geography, and geopolitical conditions (e.g., Wittfogel, 1957; Jones, 1981; Diamond, 1997; Turchin, 2009; Dincecco and Wang, 2018; Ko et al., 2018; Scheidel, 2019; Fernández-Villaverde et al., 2020; the survey by Qian and Sng, 2021), less attention has been paid in the economics literature to the role of power structures beyond the state–society balance or imbalance (e.g., Acemoğlu and Robinson, 2019). This is a significant gap in the literature, since the political divergence itself is related to the power structure across multiple players within society, affecting in turn economic trajectories (e.g., Scheidel, 2019, p. 9), and current power structures are often rooted in historical

ones (e.g., Bloch, 1962b, p. 171–173; Yan, 2009, p. 1–16). Our paper addresses this gap in the literature.

Against the backdrop of the political divergence, the literature has also focused on the working mechanisms and implications of a few important institutional components, such as fiscal capacity (Gennaioli and Voth, 2015; Ma and Rubin, 2019), bureaucracy (Stasavage, 2020), meritocracy (Huang and Yang, 2021), and culture and the loci of cooperation (Greif and Tabellini, 2010, 2017). That said, not much effort has been devoted to analyzing the relationship between various institutional components, which could be puzzling if one compares societies along a single dimension, be it inclusiveness (e.g., Acemoğlu and Robinson, 2012), degree of open-access (e.g., North et al., 2009), or state–society balance (e.g., Acemoğlu and Robinson, 2019). For example, why did China feature more absolutist emperors and a weaker rule of law on the one hand, while having predominantly non-hereditary access to elite status and a more landowning and freer peasantry on the other hand, compared with medieval Europe?

We fill this gap by focusing on the relationship between the institutions that promote a greater Elite–People symmetry in their everyday power and rights, and the others that constrain the Ruler’s absolute power. We show that a Ruler’s incentive to promote the former would be stronger if the latter were weaker, explaining the seemingly puzzling institutional differences between imperial China and premodern Europe. This result also implies that the more repressive a regime in one institutional dimension, the more inclusive it could be in another, and, because of this, it is even possible for the People to prefer a regime that is more repressive in one dimension, if they take into consideration its inclusiveness in the other dimension. To our knowledge, these implications are new to the broad literature on institutions and development, where a strong interdependence and synergy is expected between major components of pro-development institutions, such as the rule of law and property rights on the one hand, and a more open access to elite status on the other hand (e.g., North et al., 2009; Besley and Persson, 2011, 2014; Acemoğlu and Robinson, 2012).

On the origin of the initial differences in the power structure between China and Europe, some studies have made explorations along the technological, demographic, geographical, and economic lines (e.g., McNeill, 1982; Herlihy, 1984; Roland, 2020; Stasavage, 2020).² Not

²McNeill (1982) argues that the military advantage of heavy armored calvary in medieval Europe led to the rise of its owners, i.e., the Elites, in the power structure, while the early availability of crossbows in China canceled such advantage, favoring the Ruler’s authority; Herlihy (1984) postulates that behind the rise and loosening of serfdom in medieval Europe was a change in the pattern of population growth; Roland (2020) suggests that homogenous conditions of agricultural production across the middle and lower basin of the Yellow River during the earliest Chinese dynasties (17th–3rd centuries BC) favored centralized coordination and specialization, contributing to the forming of a statist system in which the ruled were the subjects of the Ruler, whereas Stasavage (2020) argues that the practice of dispersed, extensive agriculture in medieval

focusing on these “deeper” factors, we show instead that the power-structure differences can exhibit self-reinforcing dynamics over time, together with a persistent difference in the autocratic stability. This dual divergence of the power structure and autocratic stability complements the divergence of culture and its co-evolution with political institutions, adding to the literature that is not limited to the comparison between China and Europe (e.g., Greif and Tabellini, 2010, 2017; Greif et al., Forthcoming; Bisin and Verdier, 2017; Bisin et al., 2021; Acemoğlu and Robinson, 2021a,b).

Our paper also contributes to the literature on the strategies that a ruling class can use to fend off challenges to its rule. On this general subject, Bueno de Mesquita et al. (2003) analyze how the incentive structure for political survival depends on the size of the selectorate and of the winning coalition among them. Our analysis suggests that an absolutist Ruler can co-opt the People and thus secure his autocratic rule by making the People’s power and rights more comparable to the Elites’, for example by promoting meritocratization. Compared with the literature, strategies of this type are unique in the sense that they provide ex-ante committed payoff schedules instead of ad-hoc policies (e.g., Acemoğlu et al., 2004), do not involve shifting the decision power (e.g., Acemoğlu and Robinson, 2000, 2001, 2005), and the disciplining incentives for the ruled rely mainly on the current power structure, which is not external to the incumbent ruler (e.g., Padró i Miquel, 2007).

Conceptually the closest to us in this thread of literature, Persico (2021) shows in a general model for political regimes that as long as civil liberties are imperfectly protected, which is similar to our notion that the everyday power and rights of the ruled are conditional on the Ruler’s will, a politician will always have an incentive to promise equal treatment across citizens, trying to win their coordinated support, which is similar to the more symmetric Elite–People relationship in our context with the political alliance effect involved. Concurrently and independently developed, our paper and Persico (2021)’s paper complement each other: we focus on the compatibility within the power structure and its implications for political stability, whereas Persico (2021) focuses on policy treatment and provision of public goods; he also provides examples of egalitarian rhetoric and policies in modern illiberal regimes, which mirror imperial China in our historical comparison.

Europe made it difficult for such a system to operate there.

2 Power Structure in Historical Narratives

2.1 Scope and Focus

In this section, we discuss historical narratives on the institutional differences between imperial China and premodern Europe along the two dimensions of the power structure of society. In the narratives, by “China,” we consider the society in “the historical core of imperial China,” i.e., “the traditionally agrarian part of China south of the Great Wall and east of the Tibetan Plateau” (Fernández-Villaverde et al., 2020, p. 8, 12). By “Europe,” unless clarified otherwise, we follow the focus of Bloch (1962a,b), Finer (1997b, p. 855–1051), and Blaydes and Chaney (2013), i.e., the Romano–Germanic influenced or assimilated society in western and central Europe where feudalism once prevailed. This society was “[h]emmed in by these three blocs, Mohammedan, Byzantine, and Slav” and “comprised principally the British Isles, the Scandinavian countries, France, Germany, Italy, and northern Spain” (Bloch, 1962a, p. xxvi; Finer, 1997b, p. 855).³

The most relevant period of the characterized power-structure differences was the 9–14th centuries, with persistence beyond. This period covered the rise and decline of feudalism in Europe (e.g., Bloch, 1962a,b; Ganshof, 1952), with the Black Death taking place in the middle of the 14th century; in imperial China, since the Tang dynasty (618–907) political institutions had largely been stable, after the swings during the eight preceding centuries (e.g., Yan, 2009).

Admittedly, important variations and changes in the power structure existed across polities and over time within China and Europe. Still, “over and above” these variations and changes, historians have emphasized “the predominant quality of a common civilization” in Europe and the “evolving axis” or “theme” of the institutional and cultural characteristics of Chinese society during the period we focused on (e.g., Bloch, 1962a, p. xxvi; Yan, 2009, p. 11–12). We follow this insight in our narratives in this section: we try to identify the “ideal type” of the differences between the power structures of imperial China and premodern Europe, sometimes discussing specific polities or periods as examples. The relevance of our model to variations and changes within Europe and China is discussed in Section 4.

We summarize the historical narratives in Table 1, and we elaborate on them below.

³Following Blaydes and Chaney (2013), “Europe” by this definition covered all countries under the section “The Barbarian West” and the subsections “The British Isles,” “France,” “The Low Countries,” “Italy,” “The Iberian Peninsula,” “The German-speaking States,” “Scandinavia,” and “Crusader States” under the section “Europe” in Morby (1989).

Table 1: Power structure in imperial China and premodern Europe

	China	Europe	Examples of references
Absolute power of the Ruler			
Strength of rule of law	Ruler less constrained by law	Ruler constrained by Church and law	Bloch (1962b), Anderson (1974), Unger (1977) Mann (1986), Finer (1997a,b), Tamanaha (2004) Fukuyama (2011), Acemoglu and Robinson (2019) Greif et al. (Forthcoming)
Ultimate ownership of land	Reserved for Ruler; confiscation legitimate when Ruler deemed it necessary	Confiscation highly constrained; Ruler expected to “live of his own”	Chao and Chen (1982), Levi (1988) Finer (1997b), Wang (2000), Hsing (2011)
Ruler’s control over population	Ruled considered Ruler’s subjects; harsh penalty against disloyalty	Limited control; much less harsh punishment against disloyalty	Bloch (1962a), Lander (1961), Levenson (1965) Anderson (1974), Mann (1986), Finer (1997a,b) Ormrod (2000), Boucoyannis (2021)
Asymmetry in power and rights between Elites and People			
General comparison	Much less unbalanced	Elites a supreme class; oppressive to the poor	Bloch (1962b), Lü (1944), Weber (1978)
Hereditary vs. non-hereditary access to elite status	Non-hereditary, elite status governed through civil service exam	Hereditary nobility	Kemp (1970), Finer (1997b), Wickham (2009) Yan (2009), Parish (2010), Tackett (2014) Hsing (2011)
Inequality in land ownership	Mostly free and landowning peasantry; land ownership less concentrated	Serfdom common in Middle Ages; land ownership much more concentrated	Esherick (1981), Chao and Chen (1982) Beckett (1984), Finer (1997a), Wickham (2009) Tackett (2014), von Glahn (2016), Zhang (2017)
Inheritance rule	Partible inheritance	Primogeniture increasingly more common	Cecil (1895), Goody et al. (1976) Goldstone (1991), Bertocchi (2006) von Glahn (2016), Fernández (2021)

2.2 Absolute Power of the Ruler

The first difference we emphasize is that Chinese Rulers enjoyed a stronger absolute power than their European counterparts, by which we mean that the everyday power and rights of the ruled were more dependent on the Ruler’s will in China than in Europe. This difference is first reflected in the strength of rule of law, and then in the ultimate ownership and control over the most important assets in historical societies: land and population.

Strength of rule of law. As noted by many scholars, Chinese emperors were less constrained by the rule of law (Finer, 1997a,b; Stasavage, 2016; Acemoğlu and Robinson, 2019; Ma and Rubin, 2019, p. 227; Greif et al., Forthcoming). As put by Finer (1997a,b, p. 455, 836), “even the higher mandarins” were “subjects not citizens” and had only “duties not rights”; as observed by Fukuyama (2011, p. 290) and Unger (1977, p. 104), “law was only the positive law that [the emperor] himself made” and it “could be as general or as particular as the policy objectives of the rulers might require.”⁴

In contrast, European Rulers faced strong constraints from the Christian church (Mann, 1986; Fukuyama, 2011; Johnson and Koyama, 2019; Scheidel, 2019; Greif et al., Forthcoming). As shown in many examples, because of the pope’s threat to delegitimize and excommunicate them, “[k]ings ...could not defy the Pope for very long” (Southern, 1970, p. 130).⁵ The king also faced much tighter legal constraints. In the famous words of Bracton (1968, vol. 2, p. 33), “[t]he king must ...be under the law, because law makes the king.” Having emerged from the 9th-century customary law, a man’s right to judge and resist when his king had acted unlawfully had been repeatedly recognized by significant legal documents throughout the Middle Ages (Bloch, 1962b, p. 172–173).⁶ Importantly, this right was “not subject to the king’s justice” and “not upon the desires of the king” (Tamanaha, 2004, p. 26).⁷ After all, “[i]n principle, the highest superordinate level of the feudal hierarchy in any given territory of Western Europe was necessarily different not in kind, but only in degree, from the subordinate levels of lordship beneath it,” such that “[t]he monarch ...was bound by

⁴For example, the founding emperor of the Ming dynasty created “law beyond the law” when he was frustrated by the Great Ming code of his own, while insisting that only he could use the newly created law (Brook, 2010, p. 87). Unger (1977, ch. 2) discusses the characteristics of law in imperial China in detail.

⁵Famous examples include the dramatic scenes of Henry IV of Germany at Canossa, Henry II of England at Canterbury, John of England at Dover, and the destruction of the family of Frederick II of the Holy Roman Empire.

⁶Bloch (1962b, p. 173) raises examples of “the English Great Charter of 1215; the Hungarian ‘Golden Bull’ of 1222; the Assizes of Jerusalem; the Privilege of the Brandenburg nobles; the Aragonese Act of Union of 1287; the Brabantine charter of Cortenberg; the statute of Dauphiné of 1341; the declaration of the communes of Languedoc (1356).”

⁷For more extensive discussion on the rule of law, see Finer (1997b), Tamanaha (2004), Fukuyama (2011), Vincent (2012), Fernández-Villaverde (2016), Acemoğlu and Robinson (2019), and Greif et al. (Forthcoming).

reciprocal ties of fealty, not a supreme sovereign set above his subjects” (Anderson, 1974, p. 151).

To be sure, we are not implying that Chinese Rulers had unconstrained power; instead, these narratives highlight the qualitative difference in the absolute power between Chinese and European Rulers. About legitimacy, the Chinese Ruler had the obligation to act benevolently towards the ruled and to follow the “Mandate of Heaven” (e.g., Zhao, 2009). That said, Stasavage (2016, p. 148) notes that “the concept of a Mandate of Heaven never extended to obtaining consent, nor did it involve assembling representatives to achieve this goal”. Finer (1997a, p. 462) also notes: “[i]deally, government must be of the people, for the people; but, emphatically, Mencius never for a moment hints that it can ever be by the people. Very much the reverse. ...Nor did a dissatisfied populace have the right to rebel.”⁸

In addition, administrative constraints could limit the absolute power of the Ruler, and Chinese Rulers faced principal-agent problems as any autocrat does. In particular, one factor contributing to these problems was the size of China’s territory, and the problems became increasingly severe in the late imperial era (e.g., Sng, 2014; Ma and Rubin, 2019). That said, the absolute power of the emperor was indicated by his undisputable right to assign, rotate, and demote administrators at will, which underpinned any sustainable decentralizing solutions to such problems in the Chinese context (e.g., Xu, 2011).

Ultimate ownership of land. The difference in the Ruler’s absolute power between China and Europe was also reflected in ultimate ownership of land and control of population. While land could be owned by individuals on a regular basis in China, the ultimate ownership was always reserved for the Ruler, so it was always legitimate for the emperor to re-centralize ownership when he deemed it necessary (Chao and Chen, 1982; Wang, 2000; Hsing, 2011). Since even before the Qin dynasty unified China in 221 BC, land confiscation from the noble families and landed gentry had been a common practice of Chinese Rulers to raise revenue for military projects (Ebrey and Walthall, 2013).⁹ Depending on the emperor’s will, systematic persecutions against Buddhism, Manichaeism, and other religions also repeatedly happened, regularly entailing large-scale confiscation of temple properties (de Groot, 1903, p. 15–95).

In contrast, when European Rulers needed revenues, they could usually not confiscate land from the Elites or the Church, at least between the 9th and 14th centuries, and this

⁸Perry (2008) further contrasts the right to rebel in the Anglo-American tradition, which is against tyranny and for liberty, i.e., about the Ruler’s absolute power, with the People’s rights in the Chinese tradition, which is for livelihood and against poverty and socioeconomic injustice, i.e., mainly about the degree of the Elite–People asymmetry in their everyday power and rights.

⁹Among famous early examples, Duke Xiao of the Qin state confiscated land from the feudal nobles in the 340s BC, sharing it among the peasants; in 114 BC, Emperor Wu of Han confiscated land from nobles and merchants to raise additional revenue to fund the Han–Xiongnu War.

was especially the case in continental Europe, where “kings’ de facto control over land was confined to the royal demesne” (Boucoyannis, 2021, p. 30).¹⁰ Instead, they had to exchange rights or resources with revenues. Levi (1988, p. 99) states it clearly: “[d]uring the medieval period, a monarch was expected to ‘live of his own’ (*vivre du sien*). That is, funds for the monarch were to come from royal lands and customary dues. ...Should monarchs need more, even if it was to fund a campaign on behalf of the country as a whole, they had to obtain assent to some form of ‘extraordinary’ taxation. They could neither expropriate property at will nor rely on a regular levy.”¹¹

Ruler’s control over the population. As the population were subjects of the Ruler in China, the Ruler could reward or punish anyone arbitrarily, which precisely reflected his absolute power (Levenson, 1965, p. 39; Finer, 1997a, p. 455). Consistent with the emphasis of Confucianism on the loyalty of the ruled to the Ruler (Greif et al., Forthcoming), one person’s rebellion, treason, or even slight disobedience, regardless of her social status, would be punished extremely harshly, usually leading to eradication of the whole family line (Finer, 1997b, p. 778).¹² Sometimes mere suspicion from the Ruler could guarantee the calamity, as shown in the fall of Princess Taiping in 713.¹³ Following the Legalist tradition in Chinese political philosophy, the absolute right to override the bureaucracy, control its personnel, and impose harsh punishment on the ruled could effectively help the Ruler control society, despite sometimes significant administrative constraints (e.g., Watson, 1964; Sng, 2014).

In contrast, in feudal Europe, “[i]t was in general considered that [unfree men] could only be tried ...by the lord to whom they were personally bound,” such that the king, if not their overlord, did not have direct judicial control over them; “free men were ...subject only to the jurisdiction of the public courts,” but “these courts had for the most part fallen into the hands of the magnates” (Bloch, 1962b, p. 91–92). At the time, “[j]ustice was a

¹⁰European Rulers could become more capable of expropriating the Church as their absolute power grew, but mainly in a later period, i.e., the 16–18th centuries, and especially during the Reformation. One may also notice that this was often accompanied by a more balanced Elite–People relationship, consistent with Proposition 3 below, as in the English example (Heldring et al., 2021).

¹¹See also Anderson (1974, p. 151) and Finer (1997b, p. 887) for a similar observation. Besides, when Louis XIV managed to tax the nobility, the taxes happened only at the end of his reign and were insignificant in size and subject to numerous exemptions (McCollim, 2012). Expropriations did happen but mostly under eminent domain (Reynolds, 2010); in case of serious crimes like treason, the nature of the crime had to be determined by law, not merely the Ruler’s will (Lander, 1961).

¹²In a famous case, when Fang Xiaoru, a prominent minister, refused to write an inaugural address for Emperor Yongle of Ming, the emperor sentenced 873 people to death, including Fang’s family, kinfolk, friends, and students, before having Fang himself executed.

¹³In 713, Emperor Xuan of Tang, merely suspecting that his aunt Princess Taiping had been planning a coup, forced her to commit suicide and executed several dozens of her extended family and allies. Literary inquisitions for merely *potentially* subversive attitudes to the Ruler were also conducted at a frequency and scale much more significant than in Europe (e.g., Xue, 2021).

universal demand, but ruler preponderance occurred only rarely”: in continental Europe, “without power over the nobility, rulers had limited access to the populations under noble jurisdiction” (Boucoyannis, 2021, p. 19–20); even in England, a setting known for having the stronger royal power among medieval European countries (e.g., Strayer, 1970; Finer, 1997b; Stasavage, 2020; Boucoyannis, 2021), in 1294, in exchange for noble support for the French war, Edward I “had called off the general eyre, a special judicial commission sent out periodically to tour the shires,” leaving control of the local population largely under noble jurisdiction, too (Ormrod, 2000, p. 273). In all, “[t]he monarch ...was a feudal suzerain of his vassals [and] would have no direct political access to the population as a whole” (Anderson, 1974, p. 151).

Although loyalty was also emphasized in Europe and enforced through mechanisms like oaths, treason was punished much less harshly than in China. First, although execution of the traitor and attainder could apply, killing the family seldom applied, and the attainder would often later be reversed (e.g., Lander, 1961).¹⁴ Second, it was common in the feudal system for a vassal to have two or more overlords (Bloch, 1962a) and when in conflict, he could simply choose which one to follow (e.g., Cantor, 1964, p. 202; Tuchman, 1978; Mann, 1986). Eventually, as Finer (1997b, p. 881) observes, the Ruler’s control over the population was “abysmal” and he “could not always count on the fidelity of the vassal,” precisely because his lack of ability to punish them: “after all, [they were] in possession of his lands and what could he do if defeated?”

2.3 Elite–People Asymmetry in Their Everyday Power and Rights

The power structures of imperial China and premodern Europe were also different in the relationship between the Elites and People. In Bloch’s words, the disparity between “[a] subject peasantry” and “the supremacy of a class of specialized warriors” was one of “the fundamental features of European feudalism” (Bloch, 1962b, p. 167), and his final verdict on the system concerns only its constraints on the Rulers, which we have discussed, and its oppressiveness towards the poor (Bloch, 1962b, p. 173). In contrast, prominent Chinese historian Lü Simian summarizes the scenario in imperial China elegantly: “once the father or elder brother takes the throne, the sons and younger brothers,” who are princelings themselves, “will become mere commoners” in terms of their power and rights (Lü, 1944, p. 347). Weber (1978, p. 1047) observes that “[i]n practice some impure vocations were hereditary; [o]therwise there is not a trace of a caste system or of other status or hereditary privileges” in the Chinese Empire, “apart from an unimportant titular ennoblement which was granted

¹⁴For example, during the reigns from Henry VI to Henry VII of England, 64% of the attainders were eventually reversed (Lander, 1961, p. 149).

for several generations.” This difference in the Elite–People relationship was reflected in differences in, for example, the dominance of the hereditary versus non-hereditary access to elite status, inequality in land ownership, and the inheritance rule.

Hereditary vs. non-hereditary access to elite status. In medieval Europe, elite status was governed primarily by hereditary nobility. As *Finer* (1997b, p. 879–880) explains, “lineage [was] much more important than initiation,” while “the very right to be a vassal (i.e. to hold a fief) [was] confined to those already noble!” Government positions, especially in courts and the army, were largely reserved for aristocrats. Although ordinary peasants routinely performed military service as a privilege in the early Middle Ages, this stopped to be the case later and was reserved for knights and higher titled nobles (for more discussion, see, e.g., *Wickham*, 2009). Access to priesthood and religious orders was not forbidden to commoners, but even after the Gregorian reform in the 11th century, “the abolition of ...the hereditary ecclesiastical benefice” had remained a “formidable task” in western Christendom until as late as the 13th century (*Kemp*, 1970, p. 1; *Parish*, 2010, p. 88–92).

In contrast, as early as in the 5–4th centuries BC, accompanied by reforms that strengthened the absolute power of the Ruler, the Warring States in China had started to abolish hereditary titles and make elite status open to the common People and dependent solely on military merit (*Yan*, 2009, p. 23–24). To facilitate the fluid exchange between the Elites and the People, the Sui dynasty (581–619) established the civil service exam to regulate elite status, and the exam system was greatly developed during the Tang dynasty (618–907). Notably, the exam was in principle open to almost all adult males, and elite status gained via success in the exam could not be inherited. Following the destruction of the aristocratic clans during the fall of the Tang dynasty (*Tackett*, 2014), elite status in China had been governed mainly by the exam system, while “feudalization, appropriation and the clientele attached to an office ...were contained” (*Weber*, 1978, p. 1049). Sustained by “a culture of merit,” the resulting Chinese Elites were “more diffuse [and] justified ...on the basis of talent and education” instead of hereditary titles, which “would constitute one of the most striking distinctions between Chinese and Western societies over the course of the subsequent millennium” (*Tackett*, 2014, p. 3–5).¹⁵

It may be worthwhile to comment here on the difference between the perceived and realized access to elite status. First, there is a lack of comparative historical evidence on the realized difference in the access to elite status between imperial China and premodern Europe for the 9–14th centuries, when our characterization of the power structures was the

¹⁵*Hsing* (2011, p. 47) comments that “compared to other major premodern civilizations,” helped by the civil service exam, “China had the most open-access and fluid society with the least hue of a class system.”

most relevant. We thus do not take a strong stand on this subject.¹⁶

Second, we emphasize in our framework the perceived difference in the access to elite status, which is largely shaped by different formal institutional arrangements. It is important to note that the belief in society about the realized access to elite status can affect the stability of the autocratic rule. For example, Bai and Jia (2016) show empirically that China's abolition of the civil service exam in 1905 caused an increase in revolutionary activities against the Qing court, contributing to the end in 1912 of not only the Qing dynasty but also of the imperial era. One interpretation for such evidence is that the People's belief in the alliance with the Ruler was temporarily broken when the abolition of the civil service exam shut down the primary formal access of the commoners to elite status, and thus changed people's perception of their chance of advancement.

Inequality in land ownership. Circumstances on land ownership inequality are also suggestive. In imperial China, peasants “were mostly free” (Finer, 1997a, p. 205), “land-owning peasantry had been the main agent and form of agricultural production,” and they “had mostly enjoyed the freedom of choice” (Chao and Chen, 1982, p. 192–193).¹⁷ In contrast, in early-medieval Europe, mostly between the 8th and 10th centuries, small peasants became gradually expropriated by rich aristocrats as well as by the Church, making peasants gradually fall entirely under the control of landlords. This happened in many ways, as documented by Wickham (2009): first, in the aftermath of the Viking incursions, some landlords became richer and acquired more land, usually from poor peasants, either through payment or expropriation. Tenant peasants faced higher rents and greater control over their

¹⁶In medieval Europe, with the system of hereditary aristocracy, the most visible way of social preferment for commoners was the Church, which could have been comparable to the civil service exam in China. That said, it was still mainly the few landowners, patricians, or clerics themselves, if allowed, who sent their children to the clergy, since only they needed to cut down the numbers of heirs *and* could afford losing precious family labor (Herlihy, 1973; Barrow, 2015). During the Avignon papacy, non-prebendary clerics could also petition to the pope for minor benefices (Tihon, 1925), but only “a small proportion of these expectancies took effect” (Zutshi, 2000, p. 671), the career prospects of these minor benefices were quite modest (Meyer, 1990, p. 326), and “many of the poor clerks would already have links with the religious houses against whose patronage they received provision” (McDonald, 1992, p. 347). All in all, in practice the relevance of ecclesiastical careers to commoners was limited: Herlihy (1973) identifies three main patterns of social mobility in medieval Europe, and ecclesiastical careers were not among them. For later periods only scattered evidence for China and England is available. Ho (1959) documents that during 1752–1938, 78%–88% of Cambridge students came from elite families, whereas between the 13th and 19th centuries, only 50%–65% of the highest degree holders (Jinshi) in the Chinese civil service exam system came from elite families; Clark (2014, p. 86) shows that the surname-approach estimate of the intergenerational correlation of elite status for England during 1380–1858 is about 0.81–0.85, whereas Hao and Clark (2012) show that the estimate from the same approach for Zhejiang and Jiangsu in China during 1645–1810 is about 0.81–0.89. These results suggest that during the studied periods, the realized social mobility in China was comparable to that in England, if not significantly higher.

¹⁷See von Glahn (2016, p. 218, 297, 324) for a similar observation from the mid-late Tang dynasty on.

labor. They became gradually submitted to the judicial control of landlords and completely lost their freedom only to become feudal serfs. A main escape route for engaged peasants was to flee to the cities, a process that accelerated with the Black Death, but those living in the countryside remained heavily under the control of landlords until much later on.¹⁸ In 17th-century England, around 70% of the land was still owned by landlords and gentry (Beckett, 1984). Almost all scholars on China would agree that the corresponding number remained below 45% from the 6th century to the modern period (e.g., Esherick, 1981; Chao and Chen, 1982).¹⁹ Even during the Tang dynasty when aristocratic families still had considerable political influence, they “did not maintain large landed estates over multiple generations” (Tackett, 2014, p. 12).

Inheritance rule. The differences in land ownership concentration are partly related to differences in inheritance rules. China gradually switched from primogeniture to partible inheritance in the Qin and Han dynasties (221 BC–220), while primogeniture had become more commonly practiced in the majority of medieval European countries (Cecil, 1895; Goody et al., 1976; Bertocchi, 2006; Fernández, 2021; von Glahn, 2016, p. 57, 324, 336). The consequence of these rules on elite privilege is intuitive: partible inheritance makes it more difficult for elite families to accumulate assets over generations. As Goldstone (1991, p. 380) observes, in China, “land was generally divided among heirs, and over a few generations such division could easily diminish the land holdings of gentry families. At the same time, peasants, who could purchase clear and full title to their lands, might expand their holdings through good luck or hard work. Thus the difference between the gentry and the peasantry was not landholding per se, but rather the cultivation, prestige, and influence that came from success in the imperial exams.”

3 Comparative Institutional Analysis

With the historical narratives in mind, we now introduce our model. We assume that there is a Ruler (R), who prefers a certain status quo of autocratic rule. The nature of the status quo is open to interpretation: for example, it can be a peaceful, unified autocratic rule across the territory. There is also a Challenger (C), who is unhappy about the status quo and can challenge it. She could be one or a group of nobles, lords, or bureaucrats, or some common people who are under R’s rule, or a foreign threat who is not under R’s rule, for

¹⁸It is important to note that the stronger property rights of land in Europe documented by historians in reality concern mainly whether the rights of landlords were independent of the arbitrary will of the Ruler, not whether small peasants enjoyed certain rights in their normal, everyday life.

¹⁹For extensive discussion on the many works on England and China, see Zhang (2017).

example, a foreign king or nomadic invader; her challenge may or may not seek to dethrone R or be violent. With such flexibility in interpretation, the model is sufficiently general to accommodate different types of threats to autocratic rule, such as external conflicts, elite revolts, coups, or secessions, popular uprisings, independence wars, and other non-violent attempts to alter the status quo, with or without a competing claim over the ruling position.

Besides R and C, we assume that there are also the Elites (E), which represents the nobles, lords, and bureaucrats, and the People (P), which includes peasants and urban commoners, in the model. When interpreting E and P, depending on the identity of C, we exclude the initial challenger from E and P. For example, if C were a group of elites, then E would be the other elites; if C were a group of members of the commoners, then P would be the other members of the commoners.

We assume that both E and P have the agency to help R preserve the status quo, and we interpret E and P's actions as whether all significant members of each estate actively side with and fully support R to preserve the status quo or not, focusing on the alliance across R, C, E, and P. Naturally, unanimous actions were rare in reality, both within the Elites and People, but the model can be easily extended to analyze the collective action or coordination problem within each estate, on which a few studies have focused (e.g., Myerson, 2008; Shadmehr and Bernhardt, 2011).

There are two stages in the model. At Stage 2, C, E, and P play a game about the stability of the status quo of autocratic rule, while taking the power structure as given. Stage 1 is about R's design of the power structure. For reasons discussed in Section 1, we assume that at Stage 1 R takes the level of his absolute power as given and chooses the degree of asymmetry between E and P in their everyday power and rights, while foreseeing how C, E, and P will play at Stage 2. Across the two stages, we assume that all players maximize their own expected payoff. Given the two-stage structure, we will introduce and analyze Stage 2 first and then move back to Stage 1.

Relevance of the People. We have included the People in the model and assumed that they are relevant to the survival of the status quo of autocratic rule. As we show below, this setup creates the political alliance effect, i.e., C and E will take P's strategy into account when deciding whether to challenge the status quo and facilitate the challenge, respectively.

A concern may arise about whether this setup is realistic – were the common People relevant in autocratic politics, especially in medieval Europe? In response to that concern, we first provide in Online Appendix A historical examples where the People's position was critical in determining the outcome of a conflict, an important type of threat to the stability of the Ruler's rule in both Europe and China.

Second, our model will be able to explain as an equilibrium outcome the fact that in Europe the autocratic stability looked largely reliant on the Elites but not the People: analysis in Section 3.1.2 suggests that if the Elite–People relationship is extremely asymmetric, as in medieval Europe, then it will be rare for the People to actively support the Ruler when called upon, making their action seemingly irrelevant and the Elites’ position apparently decisive to the status quo.

Finally, one may also note that even if we did not observe any significant move of the People in reality, it does not suggest that the People were irrelevant. On the contrary, they may have been influential in the off-equilibrium path, which we could not observe but may have been instrumental in supporting the observed outcome as an equilibrium.

3.1 Stage 2: Stability of Autocratic Rule

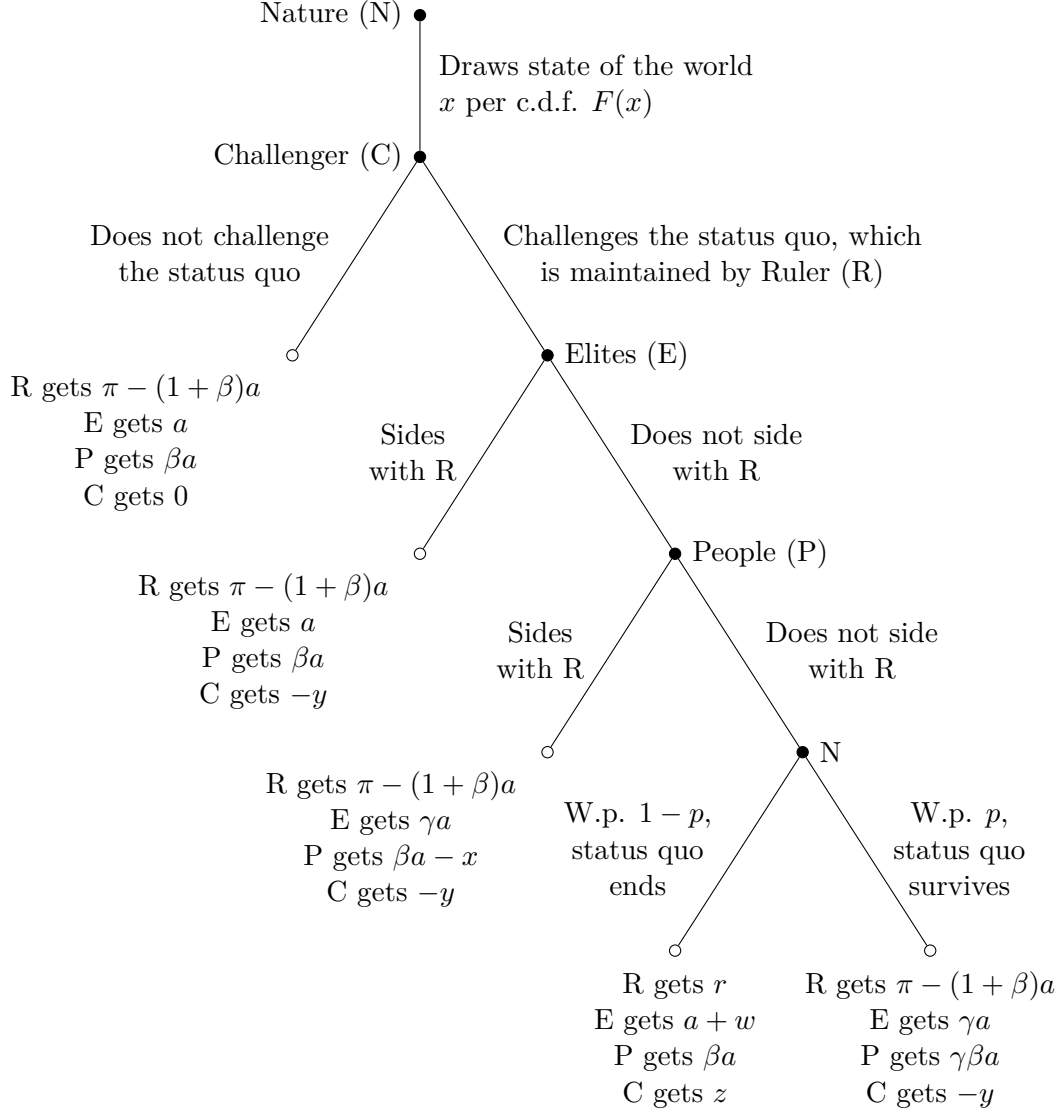
3.1.1 Setting

Figure 1 presents the setting of Stage 2. Nature (N) first randomly draws a state of the world $x \geq 0$, following the exogenous cumulative distribution function $F(x)$. The random variable x will appear later in the game as the cost born by P if she sides with R.

Given x , C will decide whether to challenge the status quo, which is maintained by the rule of R. If C does not challenge, then C will get her default payoff 0; E will get her status quo payoff $a > 0$, which is exogenous; P will get βa , where $\beta \in [0, 1]$ measures the power symmetry between E and P in the status quo and is exogenous at this stage; R will get the exogenous total surplus π net of the sum of E and P’s status quo payoffs $(1 + \beta)a$, which is $\pi - (1 + \beta)a$ in total. Intuitively, we assume that $\pi - 3a \geq 0$, so that for any $\beta \in [0, 1]$, R’s status quo payoff $\pi - (1 + \beta)a$ is never lower than P’s status quo payoff βa . Stage 2 then ends there.

If C instead does challenge, then E will decide whether to side with R. If E sides with R, then the status quo will survive. Stage 2 will end there with R, E, and P all getting their status quo payoffs, respectively, while the failed challenge will incur an exogenous loss $y > 0$ to C, leaving her the payoff $-y$.

If E instead does not side with R, then it will be P’s turn to decide whether to side with R. If P decides to side with R, then the state of the world x comes in as the cost incurring to P for the choice, while the status quo will survive. In this scenario, C will still get $-y$ for the failed challenge; R will still get his status quo payoff $\pi - (1 + \beta)a$; P will get her status quo payoff βa but net of the cost x , which is $\beta a - x$ in total; E will now suffer a punishment because she has not sided with R, getting only γa instead of her status quo payoff a , where $\gamma \in [0, 1]$ is exogenous. A lower γ measures a stronger absolute power of R to punish its



$$x \geq 0, a > 0, \pi - 3a \geq 0 > r, 0 \leq \beta \leq 1, 0 \leq \gamma \leq 1, 0 < p < 1, w > 0, y > 0, z > 0$$

Figure 1: Stage 2: Stability of autocratic rule

subjects who have defied him. For simplicity, we assume that the destroyed part of E's status quo payoff, $(1 - \gamma)a$, evaporates and is not going to R; assuming otherwise would complicate Stage 1 with few additional insights. Stage 2 then ends there.

If P does not side with R either, then R will be left on his own. N will then determine randomly whether the status quo will survive. With exogenous probability $p \in (0, 1)$, the status quo will survive, so C will still get $-y$ for the failed challenge; R will still get his status quo payoff $\pi - (1 + \beta)a$; E will be punished, getting γa ; P will be punished, too, getting $\gamma \beta a$; as above, we still assume that the destroyed parts $(1 - \gamma)a$ and $(1 - \gamma)\beta a$ evaporate and are not going to R. Stage 2 then ends there.

With probability $1 - p$, the status quo will end, leaving C with an exogenous prize $z > 0$ and R an exogenous reservation payoff r , where we assume, intuitively, $r < 0$, so that R would always prefer the status quo to survive. P will still get her status quo payoff βa , while E will now get an exogenous incentive $w > 0$ for having not sided with R, in addition to her status quo payoff a , so her total payoff will be $a + w$. Stage 2 then ends there.

About the random elements, we assume that N's draws of x and whether the status quo will survive on R's own are mutually independent. About the informational environment, we assume that in Stage 2 there is complete and perfect information. We will thus use backward induction to solve for subgame perfect equilibria.

For simplicity, we assume that, when indifferent, E and P will side with R and C will not challenge. This assumption rules out mixed strategies. Insights from our results will remain if mixed strategies are allowed.

Before analyzing Stage 2, we make a few remarks:

Power structure, from historical narratives to the model. Given the historical narratives in Section 2, when formalizing the power structure, we have to make a choice. One option is to model the exact mechanism of each specific institution, for example, each specific constraint on the Ruler, the exact ownership of land, various methods of control of the population, hereditary versus non-hereditary access to elite status, degree of freedom of peasants, and the specific inheritance rule. The other is to focus on the general implications of these institutions on the power relationship between the Ruler and the ruled, which include the Elites and People, and that between the ruled. Since the first option would involve modeling many institutional details that cannot easily be summarized in a stylized model, and since we can summarize the implications of all these institutions on the power structure in a general way, we opt for the second option.

When doing so, for one dimension of the power structure, we read the degree of symmetry between the Elites and People in their everyday power and rights as the distribution of the social surplus in the status quo, π . Given that the Elites' status quo payoff is a , the People's would be βa , with the Ruler receiving the rest of the surplus, $\pi - a - \beta a$. The parameter $\beta \in [0, 1]$ thus indicates the degree of symmetry in the Elite–People relationship. Applying this to the comparison between imperial China and premodern Europe, China would have a higher β , i.e., a more symmetric Elite–People relationship, compared to Europe.

For the other dimension, we read the absolute power of the Ruler as to what degree the distribution of the social surplus is conditional on the ruled submitting to the will of the Ruler. We assume that when the Ruler has survived a challenge to his rule, he could punish the defiers by having them enjoy only $\gamma \in [0, 1]$ of their status quo payoff, i.e., γa for the

Elites and $\gamma\beta a$ for the People. The parameter γ thus indicates negatively the degree of the aforementioned conditionality, i.e., the absolute power of the Ruler. Comparing imperial China and premodern Europe, Europe would have a higher γ , i.e., less absolutist Rulers, than China.

Potential dependence of P on E. One may consider that P’s everyday power and rights may be conditional on E’s will, too, i.e., P depends on E to some extent. In Online Appendix B, we explore an extension in which P will be punished if she and E end up on different sides when called upon. We show that introducing this additional dependence would complicate the impact of a more symmetric E–P relationship on autocratic stability, but it would not affect how this impact depends on R’s absolute power. The insight of institutional compatibility would thus remain.

Alternative sequences of moves. In the current setting, we have assumed that C, E, and P move sequentially. As we will show, this has the advantage of simplicity when we highlight the political alliance channel, through which the power structure affects E and C’s equilibrium strategies by affecting P’s equilibrium strategy. The political alliance channel always exists, unless P moves strictly earlier than both C and E, which is unrealistic because, naturally, C the Challenger must be among the first to move; any other sequence of moves, for example, C, E, and P moving simultaneously, E and P moving simultaneously after C, or C, P, and E moving sequentially, would not affect the insights of our analysis.

To confirm this point, we explore two examples of these alternative sequences in Online Appendix C. In Appendix C.1, we consider a setting where P moves before E; in Appendix C.2, we consider another setting where P and E move simultaneously after C mounts a challenge. In both settings, we show that all insights in the main text are robust.

Alternative approach to model the E–P relationship. About the specification of the payoffs, an alternative approach to model the E–P relationship is to assume that E and P’s status quo payoffs are $(1 - \beta') a'$ and $\beta' a'$, respectively, where $\beta' \in [0, 1/2]$ measures the E–P symmetry and $a' > 0$ measures the sum of their status quo payoffs, instead of a and βa , respectively, as in our current approach.

Comparing the two approaches, first, as shown in Proposition 1 below, C and E will follow P’s strategy in equilibrium in Stage 2, and all further results depend only on how γ and β or β' would affect P’s best strategy in the equilibrium. Since P’s status quo payoffs have the same form in the two approaches, i.e., either βa or $\beta' a'$, the two approaches will thus derive the same theoretical results.

That said, as shown in Proposition 1, the current approach helps us show that greater everyday power and rights of the People, i.e., a higher βa , which can be brought by a more symmetric Elite–People relationship, i.e., a higher β , can raise political stability even without directly hurting the Elites, i.e., not lowering a . Moreover, as shown in Section 3.2 below, the current approach will create a political–economic trade-off for R in Stage 1, making R’s problem non-trivial. This is achieved without the help of any additional modeling device that would be necessary if the alternative approach were adopted. In light of these considerations, we opt for our current approach.²⁰

C and E’s additional incentives to the power structure. As mentioned, C can be an outsider or an elite member or part of the people; the incentive for E not to side with R also depends on the specific context.²¹ Thus, for generality and simplicity, we model any incentives of C and E that are additional to the power structure via the exogenous variables w , y , and z that are added to C and E’s payoffs.

On the robustness of this approach, first, modeling these incentives as multiplicative terms would not affect our results, since Proposition 1 below will suggest that in the focal equilibrium, these additional incentives are irrelevant at the margin.

Second, one may suggest that these additional incentives, i.e., w and z , can still be endogenous to the power structure characterized by β and γ , and the potential endogeneity may depend on whether R will be replaced after a successful challenge, and also on C and E’s identities.²² In light of this, in Online Appendix D, we endogenize these additional incentives by collapsing C and E into a single player E under the autocratic rule, making her look forward infinitely in a Markov game, and allowing her to replace R if her challenge succeeds. We show parallel results in the appendix to all results in the main text.

P’s additional incentive to the power structure. P’s incentive not to side with R depends also on the specific context, for example, P’s level and prospect of income, R’s level of legitimacy, whether and how severely R is in a crisis, and whether P has an opportunity to revolt, all of which can be affected in turn by many random factors, and there can always exist

²⁰On the empirical side, there is little historical evidence comparing the Elites’ power and rights between imperial China and premodern Europe. This has already made it difficult for us to generate empirical implications related to a or a' . The consequence of the different empirical implications from the two approaches is thus limited, too.

²¹For example, E could hope to replace R in the challenge, or simply to get more power, rights, or other economic interests, or even to secede from the Ruler, without necessarily taking the ruling position; similarly, C could hope to replace R, or to secede from R, or simply to loot a great fortune in the challenge.

²²For example, if C or E is to replace R after a successful challenge, then w or z will be endogenous to the power structure; if C is a lord or provincial governor under R’s rule, then y will depend on the power structure.

an additive component in the incentive. We thus model this random, additive component in addition to the power structure as a single, exogenously drawn, state-of-the-world variable, i.e., the random cost x added to P's payoff when he sides with R. Modeling it alternatively as a reward for not siding with R would not affect our analysis.²³

Revolution. One may entertain the idea that C may impose a new power structure once she manages to topple the status quo. In particular, P may act as C and wipe out R and E after a successful revolution, enjoying the surplus π without any conditionality. In Online Appendix E, we explore this alternative setting and show that all insights from the baseline model remain.

Potential commitment problems. Finally, one may propose two different types of commitment problems to be present within this stage. The first type concerns the credibility of the payoffs specified at all the ending nodes. On this issue, we consider the power structure as a social contract that is, once settled at Stage 1, difficult to break at Stage 2. As the specified payoffs are based on the settled power structure, we assume away commitment problems about these payoffs from this stage. That said, we discuss in Section 3.3 the implications if the power structure can be changed between two repeatedly played Stages 2.

The other type concerns the credibility of any contract that R, C, E, and P could write among themselves at Stage 2, taking the power structure as given. We understand that this type of commitment problems can be severe: any threat R or C can exert upon E and P depends on the status quo's own survival or the success of C's challenge, respectively, and any reward R or C can promise to E and P is not too credible, since the need for cooperation will disappear once the status quo survives or C's challenge succeeds, respectively (e.g., Myerson, 2008; Egorov and Sonin, 2011). Given this understanding, we have chosen not to focus on the possibility of contracting among R, C, E, and P at Stage 2. That said, by Proposition 2 below, one can interpret R choosing a higher β at Stage 1 as an implicit contract between R and P where R grants more everyday power and rights to P in exchange for support; when players are bargaining over other potential contracts, the power structure can also serve as the basis of their bargaining power. Meanwhile, the severity of this type of commitment problems may be endogenous to the power structure. A more explicit exploration on contracting among R, C, E, and P could be interesting for future research.

²³Also, note that any incentive behind P's choice that is conditional on the outcome of the challenge, i.e., R's autocratic rule, is included in the power structure, i.e., the difference between $\gamma\beta a$ and βa .

3.1.2 Equilibrium Characterization

We start the backward induction from P's strategy. In any subgame perfect equilibrium, P will side with R if and only if

$$\beta a - x \geq (1 - p) \cdot \beta a + p \cdot \gamma \beta a, \quad (1)$$

i.e., the cost of siding with R is not greater than the probability-adjusted punishment for not siding with R in case that C's challenge fails:

$$x \leq p \cdot (1 - \gamma) \beta a \equiv \hat{x}. \quad (2)$$

As mentioned when introducing the players of the model, one may note here that if the power structure has an extremely asymmetric relationship between E and P, i.e. if β is close to zero, then the critical threshold \hat{x} will be extremely low, i.e., in equilibrium P will almost never actively help R out when called upon, making R largely reliant on E. P may thus look irrelevant to the fate of the status quo, but E must still consider P's strategy when solving for his own best strategy.

Now consider E's best strategy while expecting P's strategy in equilibrium, i.e., to side with R if and only if $x \leq \hat{x}$. When $x \leq \hat{x}$, P would side with R, so E will side with R; when $x > \hat{x}$, P would not side with R, so E will not side with R if and only if

$$a < (1 - p) \cdot (a + w) + p \cdot \gamma a, \quad (3)$$

i.e., the incentive for not siding with R is greater than the probability-adjusted punishment in case C's challenge fails:

$$w > \frac{p}{1 - p} \cdot (1 - \gamma) a. \quad (4)$$

This analysis implies that if this condition does not hold, then in any subgame perfect equilibrium, E will always side with R so that it will be impossible for the status quo to end. Such equilibria are empirically irrelevant, as in reality the chance for the status quo to end was always strictly positive; such equilibria are also theoretically trivial, in the sense that E will always side with R regardless of the state of the world. Therefore, to narrow our focus onto empirically more relevant and theoretically less trivial scenarios, we assume $w > a \cdot p / (1 - p)$ so that for any $\gamma \in [0, 1]$, in any subgame perfect equilibrium, E will not side with R if and only if $x > \hat{x}$.

Under this assumption, consider now C's strategy while expecting these strategies of E and P in equilibrium. When $x \leq \hat{x}$, E would side with R, so C will not challenge the status

quo; when $x > \hat{x}$, E and P would not side with R, so C will challenge the status quo if and only if

$$0 < (1 - p)z - py, \quad (5)$$

i.e., the prize from a successful challenge is greater than the probability-adjusted loss from a failed challenge:

$$z > \frac{p}{1 - p} \cdot y. \quad (6)$$

This analysis implies that if this condition does not hold, then in any subgame perfect equilibrium, C will never challenge the status quo. Similar to the discussion above, such equilibria are empirically irrelevant and theoretically trivial. Therefore, to further narrow our focus onto empirically more relevant and theoretically less trivial scenarios, we further assume $z > y \cdot p/(1 - p)$ so that in any subgame perfect equilibrium, C will challenge the status quo if and only if $x > \hat{x}$.

Note that under the two assumptions we have introduced, we have found the unique strategy of each player in any subgame perfect equilibrium, so these strategies constitute a unique subgame perfect equilibrium. To summarize:

Proposition 1. *If $w > a \cdot p/(1 - p)$ and $z > y \cdot p/(1 - p)$, then for any $\beta \in [0, 1]$ and $\gamma \in [0, 1]$, there exists a unique subgame perfect equilibrium at Stage 2, in which C will challenge the status quo if and only if $x > \hat{x}$, E will not side with R if and only if $x > \hat{x}$, and P will not side with R if and only if $x > \hat{x}$, where $\hat{x} \equiv p \cdot (1 - \gamma)\beta a$.*

This equilibrium is indeed theoretically non-trivial, since in the equilibrium, whether C will challenge the status quo and start a challenge and whether E and P will side with R all depend on the state of the world; this equilibrium is also empirically relevant, since in the equilibrium, a challenge of the status quo can happen and E and P may not side with R, i.e., the probability of challenge $1 - F(\hat{x})$ can be strictly positive and the survival probability of the status quo

$$S = 1 - (1 - F(\hat{x})) \cdot (1 - p) \quad (7)$$

can be strictly lower than one. Therefore, to focus on this equilibrium, from now on we assume that the condition in Proposition 1 holds, i.e., $w > a \cdot p/(1 - p)$ and $z > y \cdot p/(1 - p)$.

3.1.3 Impact of Power Structure on Autocratic Stability

Proposition 2. *At Stage 2, a higher β and a lower γ decrease the probability of challenge and increase the survival probability of the status quo of autocratic rule in equilibrium.*

Proof. By Proposition 1, the probability of challenge is $1 - F(\hat{x})$ and the survival probability

of the status quo is $S = 1 - (1 - F(\hat{x})) \cdot (1 - p)$, so a higher \hat{x} lowers $1 - F(\hat{x})$ and raises S . Since a higher β and a lower γ increase $\hat{x} \equiv p \cdot (1 - \gamma)\beta a$, the proposition follows. \square

Intuition. The intuition of Proposition 2 deserves more discussion. In the model, β and γ influence the stability of the status quo in equilibrium by their impacts on P, E, and C's equilibrium strategies. We discuss each of these impacts. First, the impacts of β and γ on P's strategy in equilibrium are straightforward: by Equation (2), P's strategy hinges on the comparison between her cost x for siding with R and the probability-adjusted punishment $\hat{x} \equiv p(1 - \gamma)\beta a$ for not siding with R in case C's challenge fails; both a higher β and a lower γ impose a heavier punishment $(1 - \gamma)\beta a$, making P more willing to side with R in equilibrium. We can say that these impacts work through a generic, *punishment* channel.

Second, the impact of γ on E's strategy in equilibrium generally has two channels. The first is again the punishment channel: a lower γ imposes a heavier punishment $(1 - \gamma)a$ on E in case C's challenge fails, making E more willing to side with R *given any strategy of P*, including the one in equilibrium. The second, which is new, is a strategic, *political alliance* channel: a lower γ makes P more willing to side with R in equilibrium, lowering the chance for C's challenge to succeed and, therefore, making E more willing to side with R in the first place.²⁴ This channel exists because P is relevant to whether the status quo can be preserved. Therefore, through both channels, a lower γ makes E more willing to side with R in equilibrium.

In the specific case of Proposition 2, under the condition $w > a \cdot p / (1 - p)$, E always prefers “both herself and P not siding with R” to “herself siding with R”, and further to “herself not siding with R while P siding with R.” Meanwhile, P will always either side with or not side with R, and her decision solely depends on x , so E does not face strategic uncertainty about P. Therefore, a heavier punishment upon E brought by a lower γ would not change the fact that E's best response to P's strategy in equilibrium is to “follow” P's strategy, i.e., to switch between to side or not to side with R at $x = \hat{x}$. Therefore, the punishment channel is muted and we observe only the political alliance channel.²⁵

Finally, the impact of β on E's strategy and the impacts of β and γ on C's strategy in

²⁴To see the point, observe that when deciding whether to side with R, E compares the payoff of doing so, i.e., a , versus the payoff of not doing so, i.e., $\mathbf{P}[\mathbf{P} \text{ sides with R} | x, \gamma] \cdot \gamma a + (1 - \mathbf{P}[\mathbf{P} \text{ sides with R} | x, \gamma]) \cdot ((1 - p) \cdot (a + w) + p \cdot \gamma a)$, where P's strategy is represented by $\mathbf{P}[\mathbf{P} \text{ sides with R} | x, \gamma]$. There are two channels via which γ can influence this comparison: first, γ can affect γa in the payoff of siding with R, which is the punishment channel; second, γ can affect $\mathbf{P}[\mathbf{P} \text{ sides with R} | x, \gamma]$, which is the political alliance channel.

²⁵If E faced strategic uncertainty about P, the punishment channel would not be muted. For example, suppose E did not observe x when deciding whether to side with R. She would then compare a versus $\int_0^{\hat{x}} \gamma a \cdot dF(x) + \int_{\hat{x}}^{\infty} ((1 - p) \cdot (a + w) + p \cdot \gamma a) \cdot dF(x)$. As a lower γ will strictly lower the latter sum by lowering γa , its impact on E's decision via the punishment channel would be visible.

equilibrium have only the political alliance channel: β does not affect E's payoffs at any ending node of the game, and β and γ do not affect C's payoffs at these nodes, either, but a higher β makes E more willing to side with R by making P more willing to side with R in equilibrium, whereas a higher β and a lower γ make C more reluctant to challenge by making P and E more willing to side with R in equilibrium.

To summarize, Proposition 2 reveals that both a higher β and a lower γ will make P more willing to side with R, thus E more willing to side with R, and, therefore, C more reluctant to challenge the status quo in the first place. The probability of challenge is then lowered and the status quo becomes more stable. In our specific setting, a generic punishment channel appears in β and γ 's impacts on P's strategy; it exists in γ 's impact on E's strategy but is muted, with only a strategic political alliance channel visible; in β 's impact on E's strategy and β and γ 's impacts on C's strategy, only the political alliance channel exists. All these make the impacts of β and γ on political stability come from only their impacts on P's switching threshold \hat{x} , providing much simplicity for the result.

Proposition 2 thus highlights that how well R can form an alliance with P is critical in stabilizing his autocratic rule. This proves crucial in R's design of the power structure at Stage 1, which comes below. Also, by Proposition 2, compared with Europe, both a higher β and a lower γ make an autocratic rule more stable in China. We will come back to this implication in Section 4.

3.2 Stage 1: Design of Power Structure

3.2.1 Setting

This stage characterizes how R's incentive to promote the symmetry between E and P depends on the level of his absolute power. As discussed in Section 1, we assume that R at this stage simply chooses β , while foreseeing the equilibrium at Stage 2 and taking γ as given. This is to say that, given the distinction between β and γ , we do not allow any change in β to be translated into a change in γ ; in Section 3.3 we discuss an extension that would allow such a link in dynamics. Here R's program is

$$\max_{\beta} V^R \equiv (\pi - (1 + \beta)a) \cdot S + r \cdot (1 - S), \text{ subject to} \quad (8)$$

$$0 \leq \beta \leq 1, \quad S = 1 - (1 - F(\hat{x})) \cdot (1 - p), \quad \hat{x} = p \cdot (1 - \gamma)\beta a, \quad (9)$$

where V^R is R's expected payoff from Stage 2. Without loss of generality, we also assume that the state of the world x has a uniform distribution in the relevant range, i.e., $F(x) \equiv fx$ over $x \in [0, pa]$, where $f \in (0, 1/pa]$ is a constant. As we establish in Online Appendix F,

the main result is robust as long as the probability density is not diminishing too quickly, which we do not find unreasonable.

3.2.2 Institutional Compatibility

Proposition 3. *At Stage 1, given γ , R's optimal choice of β is:*

- if $\gamma \geq \bar{\gamma} \equiv 1 - 1/(\pi - a - r)(1 - p)f$, then R will choose $\beta^* = 0$;
- if $\gamma \leq \underline{\gamma} \equiv 1 - 1/(\pi - 3a - r)(1 - p)f$, then R will choose $\beta^* = 1$;
- if $\underline{\gamma} < \gamma < \bar{\gamma}$, then R will choose

$$\beta^* = \frac{1}{2a} \cdot \left(\pi - a - r - \frac{1}{(1 - \gamma)(1 - p)f} \right) \in (0, 1), \quad (10)$$

which is strictly decreasing over $\gamma \in [\underline{\gamma}, \bar{\gamma}]$. Therefore, R's choice β^* is weakly decreasing over $\gamma \in [0, 1]$.

Proof. By $S = 1 - (1 - F(\hat{x})) \cdot (1 - p)$, $\hat{x} = p \cdot (1 - \gamma)\beta a$, and $F(x) = fx$ over $x \in [0, pa]$, the marginal impact of β on stability S is

$$\frac{dS}{d\beta} = (1 - p) \cdot \frac{dF(\hat{x})}{d\beta} = (1 - p)pf \cdot a \cdot (1 - \gamma). \quad (11)$$

The marginal impact of β on R's expected payoff V^R is thus

$$\frac{dV^R}{d\beta} = (\pi - (1 + \beta)a - r) \cdot \frac{dS}{d\beta} - aS = (\pi - (1 + \beta)a - r) \cdot (1 - p)pf \cdot a \cdot (1 - \gamma) - aS. \quad (12)$$

Observe that the second-order marginal impact of β on V^R is, for any $\gamma \in [0, 1]$,

$$\frac{d^2V^R}{d\beta^2} = -a \cdot (1 - p)pf \cdot a \cdot (1 - \gamma) - a \cdot \frac{dS}{d\beta} = -2a \cdot (1 - p)pf \cdot a \cdot (1 - \gamma) < 0, \quad (13)$$

which suggests $dV^R/d\beta$ is strictly decreasing over $\beta \in [0, 1]$.

We can now solve the program with three cases:

- if $\frac{dV^R}{d\beta}|_{\beta=0} \leq 0$, i.e., $\gamma \geq 1 - 1/(\pi - a - r)(1 - p)f \equiv \bar{\gamma}$, then $\beta^* = 0$;
- if $\frac{dV^R}{d\beta}|_{\beta=1} \geq 0$, i.e., $\gamma \leq 1 - 1/(\pi - 3a - r)(1 - p)f \equiv \underline{\gamma}$, then $\beta^* = 1$;

- if $\frac{dV^R}{d\beta}|_{\beta=0} > 0$ and $\frac{dV^R}{d\beta}|_{\beta=1} < 0$, i.e., $\underline{\gamma} < \gamma < \bar{\gamma}$, since $dV^R/d\beta$ is continuous over $\beta \in [0, 1]$, then $\beta^* \in (0, 1)$ must uniquely solve the first-order condition

$$\frac{dV^R}{d\beta}|_{\beta=\beta^*} = 0. \quad (14)$$

By $S = 1 - (1 - F(\hat{x})) \cdot (1 - p)$, $\hat{x} = p \cdot (1 - \gamma)\beta a$, and $F(x) = fx$ over $x \in [0, pa]$, again, this first-order condition is equivalent to

$$(\pi - (1 + 2\beta^*)a - r) \cdot (1 - p)f(1 - \gamma) - 1 = 0, \quad (15)$$

which derives

$$\beta^* = \frac{1}{2a} \cdot \left(\pi - a - r - \frac{1}{(1 - \gamma)(1 - p)f} \right). \quad (16)$$

Now consider comparative statics and focus on the case in which $\underline{\gamma} < \gamma < \bar{\gamma}$. One could see the strict monotonicity by the solution, while a more general approach is to examine how γ affects $dV^R/d\beta$. To do that, first note that

$$\frac{dS}{d\beta} = (1 - p)pf \cdot a \cdot (1 - \gamma), \quad (17)$$

which is proportional to $1 - \gamma$, i.e., the stabilizing effect of a greater E–P symmetry is governed by R’s absolute power, and we have

$$\frac{\partial^2 S}{\partial \gamma \partial \beta} = -(1 - p)pf \cdot a. \quad (18)$$

Second, by $S = 1 - (1 - F(\hat{x})) \cdot (1 - p)$, $\hat{x} = p \cdot (1 - \gamma)\beta a$, and $F(x) = fx$ over $x \in [0, pa]$, we have

$$\frac{dS}{d\gamma} = (1 - p) \cdot \frac{dF(\hat{x})}{d\gamma} = -(1 - p)fp\beta a. \quad (19)$$

Therefore, by $\beta \in [0, 1]$ and $\pi - 3a \geq 0 > r$, we have

$$\begin{aligned} \frac{\partial^2 V^R}{\partial \gamma \partial \beta} &= (\pi - (1 + \beta)a - r) \cdot \frac{\partial^2 S}{\partial \gamma \partial \beta} - a \cdot \frac{dS}{d\gamma} \\ &= -(\pi - (1 + \beta)a - r) \cdot (1 - p)pf \cdot a + a \cdot (1 - p)fp\beta a \\ &= -(1 - p)pfa \cdot (\pi - (1 + 2\beta)a - r) \leq -(1 - p)pfa \cdot (\pi - 3a - r) < 0, \end{aligned} \quad (20)$$

i.e., a lower γ will shift $dV^R/d\beta$ strictly up. Since $dV^R/d\beta$ is continuous and strictly decreasing over $\beta \in [0, 1]$, a lower γ will thus strictly raise β^* , i.e., the value of β that uniquely

solves the first-order condition $dV^R/d\beta = 0$. The proposition is then proved. \square

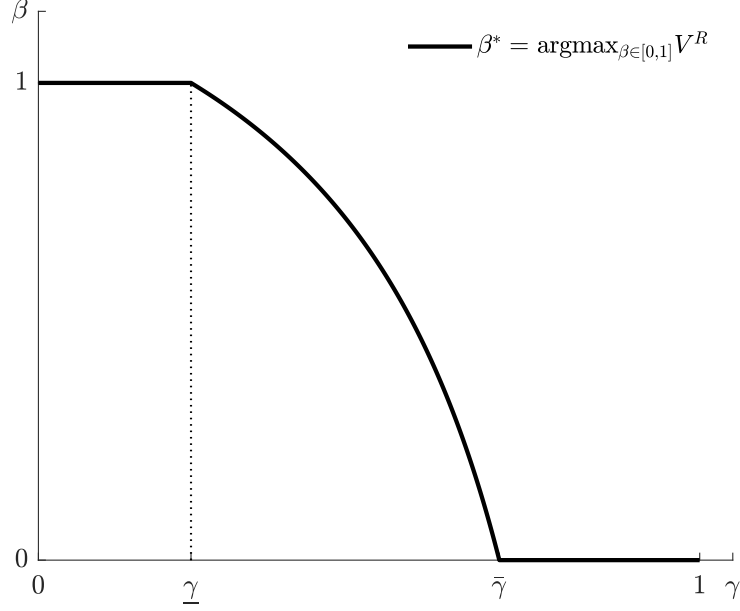
Intuition. The intuition of Proposition 3 is as follows. A more symmetric E–P relationship, i.e., a higher β , has two effects on R’s expected payoff, V^R . Politically, it stabilizes the status quo so that R will have a higher probability to enjoy her status quo payoff, i.e., $dS/d\beta > 0$. Economically, it renders more status quo payoff to P so that R’s status quo payoff will become smaller, i.e., $d(\pi - a - \beta a)/d\beta < 0$. These two effects thus constitute a political–economic trade-off, and, when choosing the degree of the E–P symmetry, β , R needs to balance the two sides of this trade-off at the margin, i.e., to solve the first-order condition $dV^R/d\beta = 0$, whenever possible.

Therefore, how a weaker absolute power of R, i.e., a higher γ , affects this optimal choice depends on how it affects these two sides of the trade-off. That said, since R’s reservation payoff is sufficiently low, i.e., $r < 0 \leq \pi - 3a$, R’s concern of stability is so important that we can just focus on the political side in comparative statics, i.e., how a higher γ affects the stabilizing effect of a higher β .

This stabilizing effect of greater E–P symmetry is indeed governed by the absolute power of R: a weaker absolute power suggests that P will not lose much of her status quo payoff if she turns out to be on the wrong side of politics, so any additional status quo payoff would not make her much more loyal to R; therefore, it will not make E much more loyal toward R, and neither would C be much more reluctant to challenge. The key assumption that leads to this intuition is that the punishment upon P, i.e., $(1 - \gamma)\beta a$, is multiplicative between $1 - \gamma$ and β . We find this assumption uncontroversial, since in reality, those who have more would often be more concerned about losing what they have, when punished for defiance.

Therefore, as illustrated in Figure 2, a weaker absolute power of R, i.e., a higher γ , will weaken the side of the stability concern in R’s trade-off, leading R to choose a lower degree of E–P symmetry, i.e., a lower β^* . In particular, if his absolute power is sufficiently weak, i.e., $\gamma \geq \bar{\gamma}$, he will make the E–P relationship as asymmetric as possible, i.e., $\beta^* = 0$; at the other end, if R is sufficiently absolutist, i.e., $\gamma \leq \underline{\gamma}$, he will make the E–P relationship as symmetric as possible, i.e., $\beta^* = 1$.

Further analysis. A few questions can be raised further on Proposition 3. For example, would the institutional compatibility hold the other way around, i.e., would a more symmetric Elite–People relationship magnify the stabilizing effect of the absolute power of the Ruler? How would the Ruler choose the Elites’ status quo payoff (a) if he had a chance, and how would a affect the Ruler’s political–economic trade-off discussed above? What is the role of the Ruler’s capability of preserving the status quo on his own (p)? We explore these



Specification: $\pi = 30$, $a = 7$, $r = -0.1$, $p = 0.5$, $x \sim U[0, pa]$.

Figure 2: Ruler's choice β^* as a function of γ , an example

questions in Online Appendix G, trying to analyze institutional compatibility further while keeping the main text of our paper focused.

3.3 Extensions: Endogenizing Absolute Power

So far we have taken the level of the absolute power of the Ruler γ as exogenous. Here we introduce two extensions in which we endogenize γ and derive additional implications.

People's perspective on the Ruler's absolute power. One may argue that γ would eventually depend on the legitimacy that P has granted to R in the first place. Along this argument, if before Stage 1 P has an opportunity to choose γ , will P always prefer a higher γ , i.e., a less absolutist Ruler?

Corollary 1. *If P could choose γ before Stage 1, then P would prefer any $\gamma < \underline{\gamma}$ over any $\gamma > \bar{\gamma}$.*

Proof. Given the β - γ power structure, P's expected payoff in equilibrium at Stage 2 is

$$\begin{aligned} V^P &= \gamma\beta a \cdot (1 - F(\hat{x})) \cdot p + \beta a \cdot \left(1 - (1 - F(\hat{x})) \cdot p\right) \\ &= \beta a \cdot \left(1 - (1 - F(\hat{x})) \cdot (1 - \gamma) \cdot p\right). \end{aligned} \tag{21}$$

By Proposition 3, if $\gamma > \bar{\gamma}$, R will choose $\beta^* = 0$; if $\gamma < \underline{\gamma}$, R will choose $\beta^* = 1$. Note that $V^P|_{\gamma < \underline{\gamma}, \beta = 1} > 0 = V^P|_{\gamma > \bar{\gamma}, \beta = 0}$. The corollary is then proved. \square

The intuition is as follows. On the equilibrium path at Stage 2, P will never side with R when called upon. Therefore, she will receive either her status quo payoff βa or her post-punishment payoff $\gamma \beta a$. Given a sufficiently high $\gamma > \bar{\gamma}$, R will choose $\beta^* = 0$ at Stage 1, so P will receive exactly a zero payoff eventually; any sufficiently low $\gamma < \underline{\gamma}$ will induce R to choose $\beta^* = 1$, granting P a strictly positive payoff eventually. P will then prefer any sufficiently low $\gamma < \underline{\gamma}$ over the sufficiently high $\gamma > \bar{\gamma}$ before Stage 1.

To clarify, we focus on the extreme case to highlight that it is not always the case that P will prefer a high to a low γ ; instead, P may tolerate a quite absolutist R. We will come back to this in Section 4 when discussing the persistence of the power structure in China.

Allowing current stability to shape future power structure. One may also argue that R may want to invest in a stronger absolute power, but such endeavour may rely on the Ruler's current strength to succeed. Along this thinking, in Online Appendix H, we consider a dynamic setting in which Stage 2 gets played repeatedly over different periods, and in each period, the power structure is determined in two steps: first, an exogenous relationship exists that a more stable past autocratic rule would lead to a stronger current absolute power of the ruling position; second, the current R will take the current absolute power as given and follow Proposition 3 to choose the degree of E–P symmetry.

In this setting, the more stable R's autocratic rule today, the stronger the absolute power of the ruling position tomorrow; with a stronger absolute power, the R tomorrow will also choose a more symmetric Elite–People relationship. With a stronger absolute power and a more symmetric Elite–People relationship, by Proposition 2, the autocratic rule tomorrow will then be even more stable, thus creating a dynamic complementarity between autocratic stability and the power structure.

As we show in Online Appendix H, if multiple steady states of (β, γ, S) exist, by this dynamic complementarity, these steady states can be sorted uniquely, i.e., a stronger absolute power of R, a more symmetric Elite–People relationship, and a higher autocratic stability are always associated with each other in one steady state when comparing any two different steady states. A dual divergence of the power structure and autocratic stability from slightly different initial conditions can thus appear. In particular, in the context of the political divergence of imperial China and premodern Europe, any early difference between the two societies in their power structures and autocratic stability may persist or even widen over time. Here we summarize the implication as follows:

Corollary 2. *Consider two societies, and one of them had a lower γ , a higher β , and a higher S at an early time. These two societies may diverge into different steady states, and in their respective steady states, the aforementioned society will feature a lower γ , a higher β , and a higher S , compared to the other.*

4 Implications of Results

In this section, we further discuss the implications of our theoretical results. In addition to the general comparison between imperial China and premodern Europe in Section 2, we discuss how our results can help us understand some specific institutions and variations in power structures within China and Europe. Guided by Proposition 2, we also briefly discuss the stylized facts comparing autocratic stability between the two societies.

4.1 Europe

Push for less Elite–People asymmetry. Proposition 2 implies that a greater Elite–People symmetry (a higher β) would help to stabilize an autocratic rule through a strategic alliance between the Ruler and People against the Elites. Consistent with this implication, Weber (1978) observes that “monarchs throughout the ages, from ancient Mesopotamia up to Imperial Germany, have been welfare-minded because they needed the support of the lower strata against the higher; ...the stability of monarchy rests in part on the ruler’s ability to balance” the “lower” and the “higher strata” (Roth, 1978, p. xxxix). Premodern Europe was not an exception: Orwell (1947, p. 17) once commented that the idea of the Ruler and the People “being in a sort of alliance against the upper classes” is “almost as old as history.”

Furthermore, Proposition 3 implies that a more absolutist Ruler (a lower γ) would prefer a smaller degree of Elite–People asymmetry (a higher β), compared with a less absolutist Ruler. This implication is consistent with many anecdotes that the rise of a more absolutist king in Europe was often accompanied by his push to raise the status of the commoners, as a counterweight against aristocratic power. For example, during the reign of Louis IX of France, “the revival of royal power ...favoured the personal freedom of the peasantry ...because this meant gaining the support of the peasants and limiting seigneurial powers” (Sivéry, 1999, p. 43–44, 49); in Tudor England, when the dissolution of the monasteries (1536–1541) indicated a rise of the Ruler’s absolute power under Henry VIII, the gentry, who were commoners, also had their power and rights grow relative to the peerage, who were the Elites (Heldring et al., 2021).

Moreover, Proposition 3 implies that the effectiveness of the Ruler’s effort for a smaller

degree of Elite–People asymmetry would hinge on whether the granted “social power and honor” to the lower strata “were entirely dependent” on the Ruler (Weber, 1978, p. 1043). As an example, compared with his predecessors who were “only the preserver of law [a]ccording to the graduated constitution of the medieval world,” Frederick II of the Holy Roman Empire was deemed “the creator of law” in the Constitutions of Melfi, enjoying a greater degree of absolute power (Kantorowicz, 1957, p. 230–231). It was also him who “selected ...men ...from every rank” into his service (Kantorowicz, 1957, p. 235). Most importantly, this was done “by a special act of the Emperor’s grace”; “[t]hese officials ...held their posts not as a beneficium, a fief to possess, but as an officium, a service to fulfil”; “their offices are not transferable” and ‘no[t] hereditary”; “[t]he official remains an official, as long as the Emperor considers him worthy, ...irrespective of his personal worthiness or unworthiness” (Kantorowicz, 1957, p. 235). All in all, the elevation of these commoners was conditional purely on the will of the Emperor himself. As a result, Frederick II was “effective” in “co-opt[ing] whom [he] please[d]” and “imping[ing] on private powers” (Levenson, 1965, p. 40).

Cities in medieval and early modern Europe. In particular, the logic of the argument above applies to one significant aspect of the Ruler’s efforts toward a more symmetric Elite–People relationship in medieval and early modern Europe, i.e., the issuing of charters that granted certain rights to the People in cities against other local Elites. Indeed, consistent with Proposition 2, these charters could help to stabilize the Ruler’s rule. For example, “Philip [II of France] knew that in recognizing a commune, he was binding the citizens of that town to him. At critical moments in the reign the communes ...proved staunch military supporters. ...From the point of view of the communes ...the king was their natural ally, a counter to the main opponents of their independence, the Church or the magnates” (Bradbury, 1998, p. 236). Louis VII had the same insight and “gave encouragement to the commune movement and received reciprocal support from the communities, at the expense of local lords” (Bradbury, 1998, p. 32).²⁶

By Proposition 3, however, this stabilizing effect would be more limited if the Ruler’s absolute power was weaker. As a European Ruler was generally constrained by his own charters, he would find it difficult to punish the cities by retracting the granted rights. Because of this, granting more power and rights to cities might not help a not-so-absolutist Ruler much in creating a political alliance with urban commoners in securing his position. In this sense, when a Ruler in Europe freed a city from its feudal lords, he ran the risk of freeing it also from himself. Notable examples can be found during the rise of cities and

²⁶On the economic consequences of cities freeing peasants from local lords, see Cox and Figueroa (2021).

boroughs in England and the free imperial cities in the Holy Roman Empire.²⁷ Therefore, under the generally weak absolute power of European Rulers, the European population that enjoyed cities' privileges was eventually relatively small at the eve of the modern times (e.g., Cantor, 1964; de Vries, 1984, p. 76; Bairoch et al., 1988; Boucoyannis, 2021, p. 19).²⁸

Regional variation. One may want to test Proposition 3 across regions within Europe. We are not aware of data that systematically characterize power structures across localities. Nevertheless, some comparative historical narratives could shed light on the subject.

One example is the comparison between England and France in the 10–11th centuries. In France, in terms of the absolute power of the king, “princes were entitled to act as partners in ruling,” so that “any historian looking at tenth-century history from the ruler’s point of view is bound to ...compare unfavourably the [French] kings’ authority against that wielded by ...their contemporary kings in ...England” (Dunbabin, 1999, p. 376). In terms of the Elite–People asymmetry, following “the collapse of the Carolingian Empire in the 9th century,” there was a rise of “the duchies and marquisates,” who “presided over an increasingly articulated vassalage system with a servile peasantry beneath it” (Anderson,

²⁷In England, in May 1215, facing rebelling barons, King John chartered the right of Londoners to elect their own mayor, together with other rights, “[i]n a last attempt to win the city” (Williams, 1963, p. 6). This proved futile: in June, still, “discontent citizens joined the barons in enforcing the signing of Magna Carta; the Mayor [of London] was the only commoner whose name appeared among the signatories” (Porter, 1994, p. 25–26). Magna Carta eventually extended the city rights by confirming in Article 13 that “the city of London [and] all other cities, boroughs, towns, and ports shall have all their liberties and free customs” (McKechnie, 1914, p. 241). Angelucci et al. (2022, p. 3441–3443) also document that “[b]eginning in the twelfth century, some merchant towns and the king entered a mutually beneficial agreement ...that granted [them] autonomy in tax collection and law enforcement,” but “over the subsequent centuries [these] self-governed towns strengthened the role of Parliament ...as a check vis-à-vis the Crown.” Similarly, in the Holy Roman Empire, “the free towns had been winning valuable privileges in addition to those which they already possessed, and the wealthier among them, like Lübeck and Augsburg, were practically *imperia in imperio*, waging war and making peace, and ruling their people without any outside interference,” even from the Emperor (Holland, 1911, p. 342).

²⁸Stasavage (2020, p. 191–192) shows that the rate of urbanization in states with strong assemblies was largely declining in the late Middle Ages and early modern period, while states without strong assemblies saw their urbanization rate rising steadily from the 13th to the 17th century, though the pattern is subject to different interpretations; Boucoyannis (2021, p. 179) argues that urban development in medieval and early modern Europe depended on “the ...crown’s capacity to harness urban and rural entities across [its] territory,” and “[t]he more independent cities were from any supra-local ‘state,’” which would indicate a weaker absolute power of the Ruler, “the more their long-term political (and economic) trajectory suffered.” One may also wonder how we should compare the rise of cities in medieval and early modern Europe with urbanization in imperial China. On this question, one may note that Chinese cities differed from European cities in nature: “the paradigmatic medieval towns of Europe which practised trade and manufactures were self-governing communes, enjoying corporate political and military autonomy from the nobility and the Church,” while “in China, vast provincial agglomerations were controlled by mandarin bureaucrats resident in a special district, [i.e., the city,] segregated from all commercial activity” (Anderson, 1974, p. 150), and these bureaucrats “were centrally appointed” within a “highly centralized governing structure” since as early as the Han dynasty (Noreña, 2015, p. 197–198). Such a difference makes directly comparing the urbanization rates between imperial China and medieval and early modern Europe less fruitful.

1974, p. 156, 161; Dunbabin, 1999, p. 376). In particular, in northern France, which has been long considered to be the archetype of feudal society (e.g., Bloch, 1962a), “[h]arsh seigneurial jurisdictions over an enserfed rural mass, which had lost any popular courts of its own, prevailed virtually everywhere” (Anderson, 1974, p. 156). Notably, this was due to “pragmatism on the part of the kings” (Dunbabin, 1999, p. 376). This significant asymmetry between the Elites and People as an almost conscious choice by kings who had a weak absolute power is consistent with Proposition 3.

“In England, by contrast, a centralized [form of] feudalism was imported from the outside by the Norman conquerors, and systematically implanted from above, in a compact land that was only a quarter the size of France,” which resulted in a greater absolute power of “[t]he monarchy [who] possessed a relatively advanced and coordinated administrative system, with royal taxation, currency and justice effective throughout the country” (Anderson, 1974, p. 158–159). At the same time, “[t]he peasantry were by ...the mid 11th century ...generally semi-dependent tenants,” and “in the North-Eastern areas of former Danish settlement ...allodial plots of ‘sokemen’ were more numerous,” indicating a less asymmetric Elite–People relationship. This comparison with the power structure in France is consistent with Proposition 3.²⁹

Consistent with Corollary 2 and Online Appendix H on the dynamics of the power structure, this pattern of differences between England and France did persist through the Middle Ages. In England, compared with other European countries, “an allodial peasantry with strong communal institutions persisted well after the onset of stable hierarchical differentiation in rural society,” and “the peculiar combination of a highly centralized State and a resilient popular justice ...distinguished mediaeval England thereafter” (Anderson, 1974, p. 155, 160). Eventually, by the end of the Middle Ages, “greater numbers of the peasantry achieved free status, [whereas] law and order was becoming more concentrated in the hands of royal justices” (Challet and Forrest, 2015, p. 286). By contrast, “France was, in this respect, moving at a slower pace than England, given the resistance that the Crown encountered when encroaching on the territory of provincial dukes and princes” (Challet and Forrest, 2015, p. 286). In particular, consistent with Proposition 2, the French power structure had

²⁹One may add 10th-century Germany into the comparison. In terms of the absolute power of the Ruler, the feudal relationship between the German king and his vassals retained more of a flavor of “pure subordination” or being “half-servile” (Bloch, 1962a, p. 180), and Dunbabin (1999, p. 376) rates the absolute power of the kings in East Francia as similar to the kings in England and stronger than the kings in West Francia. In terms of the Elite–People asymmetry, “the distinction between military service and the cultivation of the soil, the real foundation ...of the cleavage between classes” of the nobility and peasantry, was much less significant in Germany than in France, to the extent that warriors of Henry I of East Francia “were themselves genuine peasants, cultivating the soil with their own hands” (Bloch, 1962a, p. 180), and “a free allodial peasantry” still existed (Anderson, 1974, p. 162). All these are consistent with Proposition 3, too.

led to “precarious ...royal control exercised from Paris, ...all too evident ...inner instability,” and eventually “prolonged civil wars” throughout the 14–16th centuries (Anderson, 1974, p. 158).

Another example is the contrast between 13th-century northern and southern Italy. In the north, “as Frederick II’s efforts to reimpose imperial authority failed, monarchical power was recreated at the local level,” and “[b]y 1300 most cities of northern Italy were under signorial rule; nearly all of those that were not ...soon followed” (Dean, 1999, p. 458). Notably, these Rulers “were masters, not lords of their cities, [and held] arbitrary power” (Dean, 1999, p. 458). Consistent with Proposition 3, it was also there that many features of a smaller degree of Elite–People asymmetry were seen: “mounted military service was compulsory for all male citizens above a set level of wealth, ...knighthood as a means of entry into aristocratic society [was] open even to former serfs, [and] it remained possible for new families to enter the patriciate by adopting the chivalric values of the urban nobility”; “the fiscal privileges attendant upon nobility [were] reduced, ...making nobility more than ever a matter of values and style,” as “the partible inheritance customs ...acted to dissolve ...powerful noble lordships” (Stacey, 1999, p. 22–23).

In the south, “by contrast, knighthood [was] more often restricted to the descendants of knights”; “[u]rban life itself was far less developed, and the structures of rural lordship were more securely in the hands of a territorialised nobility,” helped by “[i]nheritance customs [of] indivisibility”; “[t]ax exemptions on feudal property became more securely established” (Stacey, 1999, p. 22–23). Consistent with Proposition 3, this greater asymmetry between the Elites and People in the south was maintained despite the legacy of Frederick II in the Constitutions of Melfi, but against the backdrop that there was a “consistent difficulty” of competing claims of “the right to grant the [Sicilian] kingdom’s crown” between the “assemblies of barons, ...leading townspeople, [and] the papacy ...throughout the thirteenth, fourteenth and fifteenth centuries”; in particular, “the recognition by the Norman kings of papal overlordship ...was reactivated in the late thirteenth century under Charles I and II of Anjou” (Abulafia, 1999, p. 499). Most kings of Sicily had thus been yearning for a stronger absolute power, while under “continued pressure” not only “from papal armies,” but also from other “candidate[s] for the Sicilian throne ...on the papal shortlist” (Abulafia, 1999, p. 506–508).

4.2 China

Bureaucracy and civil service exam. Our model can help us understand specific institutions without explicitly modeling them in detail. One such example is the Chinese

bureaucracy with the civil service exam, the hallmark of the institutions of imperial China (e.g., Finer, 1997a,b).

In our power-structure framework, we can read the institution primarily as the Ruler raising β by generalizing the access to elite status between the Elites and People, which created the prospect of a stronger alliance between the Ruler and People. In China, this idea of a Ruler–People alliance against the Elites strengthening autocratic stability, which is consistent with Proposition 2, can be traced to no later than *Han Feizi* from the 3rd century BC, which is the most representative text in the Chinese Legalist tradition (Watson, 1964, p. 87; Hsing, 2011, p. v).

By Proposition 3, Chinese Rulers would have a greater incentive to do so when they enjoyed a stronger absolute power (a lower γ). This is consistent with the fact that the civil service exam was first introduced during the Sui dynasty (581–619) and greatly developed during the Tang dynasty (618–907), when the absolute power of the Ruler had recovered from the low level during the Six Dynasties period (220–589) (Yan, 2009).

Given the bureaucratic system, the Elites became mainly bureaucrats who were appointed by the Ruler, so they became further reliant on the Ruler for legitimacy, making their everyday power and rights more conditional on the Ruler’s will, i.e., further strengthening the Ruler’s absolute power. This is consistent with the observation that, after the civil service exam was introduced, each bureaucrat faced a higher probability of being purged by the emperor (Chen et al., 2022).

By Proposition 2, autocratic rule would become more stable under the combination of a consolidated generalized access to elite status and an even stronger absolute power. Consistent with this implication, as show in Figure I.1 in Online Appendix I, the risk of deposition for a Chinese Ruler in a given year was generally low since the 8th century, compared to the period before. Not only that, but Corollary 1 suggests that such a power structure can be incentive compatible: the People might have been satisfied with the power structure under the resulting stability, without too much appetite for stronger rule of law or property rights against the Ruler. We have thus provided an explanation for the persistence of the institutional arrangement and of the induced power structure of imperial China.

Dynastic cycles in Chinese history. A significant pattern in Chinese history is that of the dynastic cycles. In brief, students of Chinese history often observe that each dynasty started with a relatively stable autocratic rule, but would see over generations declining power of the emperor, increasing dominance of the elites over the emperor and common people, increasing concentration of land ownership, and decreasing effectiveness of governance, eventually slipping into chaos and leading to the end of the dynasty (e.g., Skinner, 1985;

Dillon, 1998).³⁰

Our model could guide us to interpret the observation. We start by noting that the founding emperor of each dynasty often enjoyed a strong absolute power, i.e., a low γ . One among many reasons was that he himself was bestowed with a high level of legitimacy by receiving the Mandate of Heaven to be the new Ruler (e.g., Zhao, 2009; Jiang, 2011). By Proposition 3, he would have been more willing to restrict the asymmetry between the Elites and People, maintaining a relatively high β . As a result of the power structure of a high β and a low γ , by Proposition 2, the stability of autocratic rule would have been relatively high.

Over generations, however, an increasing number of precedents placed further constraints on the actions of emperors. All these led to a decline of the Ruler's absolute power, i.e., a higher γ . By Proposition 3, again, the later emperors would be less willing to enforce a more symmetric Elite–People relationship, leading to a lower β . The power structure of a lower β and a higher γ would then lead the autocratic rule to a lower stability and, eventually, a downward spiral towards its collapse.

4.3 China vs. Europe: Autocratic Stability

Proposition 2 states that a stronger absolute power of the Ruler and a more symmetric relationship between the Elites and People, as in imperial China compared to premodern Europe, imply a higher stability of autocratic rule. Empirically, the stability of autocratic rule can be proxied by multiple measures. In Online Appendix I, we examine three measures, i.e., the share of the population in the respective continent that was controlled by the largest polity, the Ruler's risk of deposition, and the number of wars. Overall, these measures support the observation in the literature that a unified autocratic rule was largely more stable in imperial China (e.g., Finer, 1997a,b; Scheidel, 2019; Stasavage, 2020). This was especially true between the 9th and 14th centuries, when the characterized differences in the power structures were the most prominent, with persistence in later centuries.

In particular, the risk of deposition for a Chinese Ruler in a given year declined rapidly from the high level in the 6th century, i.e., the late Southern and Northern Dynasties period, to a lower level in the 7–8th centuries, i.e., the Sui dynasty and the early and mid-Tang dynasty. As discussed above, this decline happened at the same time when, first, the absolute power of the Ruler initially recovered from a historical low and then was further strengthened, especially after a large number of aristocrats were killed during three decades of extreme violence at the end of the Tang dynasty, and, second, the civil service exam was

³⁰For some explorations of modeling the dynastic cycle with a focus on the demographic dynamics, see Usher (1989), Chu and Lee (1994), and Turchin (2003).

introduced and then greatly developed (e.g., Yan, 2009; Tackett, 2014).³¹ These correlations are consistent with Propositions 2 and 3.

Our interpretation does not deny that there exist more exogenous differences than those in the power structure between China and Europe. For example, China is more mountainous and has a high-productivity, traversable core geographical region at the same time, compared with the multi-core geography with lower ruggedness in Europe (e.g., Hoffman, 2015; Fernández-Villaverde et al., 2020). In light of this, we are not claiming that the power-structure differences were the sole cause of the difference in autocratic stability between China and Europe. Instead, we hope to show the usefulness of the power-structure approach in interpreting the differences in institutions *and* autocratic stability between imperial China and premodern Europe.

5 Conclusion

In this paper, we provide a power-structure framework to reconcile a series of views on the institutional differences between imperial China and premodern Europe that are seemingly contradictory in the light of the literature on institutions and development. In this framework, we read the institutional differences along two dimensions: Chinese Rulers had a stronger absolute power, while the relationship between the Elites and People in their everyday power and rights was more asymmetric in Europe.

By building a model and analyzing how the power structure can shape the stability of an autocratic rule, we show that, once we recognize that the Ruler’s absolute power is about the conditionality of the power and rights of the ruled on the Ruler’s will, a more symmetric Elite–People relationship will strengthen the political alliance between the Ruler and the People, thus creating more loyalty to the Ruler, deterring potential challenges, and stabilizing the autocratic rule. Importantly, this effect and, therefore, the Ruler’s incentive to promote a more symmetric Elite–People relationship depend on the Ruler’s absolute power. This suggests that a more absolutist Ruler can be compatible with a more symmetric Elite–People relationship. A society can thus be repressive in one institutional dimension but inclusive in another at the same time, a new result to the literature.

This comparative institutional theory explains the coexistence of the two power-structure differences between imperial China and premodern Europe. It also helps us understand specific institutions, variations and changes within China and Europe, and the higher stability of autocratic rule in imperial China.

³¹Yan (2009, p. 240–245) discusses the cultural and institutional elements behind the Northern dynasties-led changes in the Chinese power structure in the 6–8th centuries.

Admittedly, our theory is highly stylized as we capture the power structure with only two parameters, and we only examine the stability of autocratic rule as the outcome of the power structure. That said, our framework can be applied to understand other political, economic, and social outcomes.

For example, on the one hand, as a result of the power structure, the too stable autocratic rule and lack of spatial competition in imperial China may have hindered economic and scientific innovations from happening or being adopted (e.g., Rosenthal and Wong, 2011; Mokyr, 2016; Desmet et al., 2020). On the other hand, given the power structure in pre-modern Europe, the profit from innovations flowed primarily to the Elites, while the lack of pro-People institutions could not maintain a sufficiently stable social order for sustainable growth until the early modern days (e.g., Greif and Iyigun, 2013; Greif et al., 2013). It could be worthwhile to model explicitly the interplays between the power structure, endogenous growth, and political and social stability.

As another example, about culture, on the one hand, the Chinese Legalist tradition had emphasized the absolute power of the Ruler; on the other hand, Confucianism had “made protecting and promoting the people’s livelihood the cornerstone of statecraft” (Perry, 2008, p. 39), and the apparent dominance of Confucianism in China had been reflected in the content of the civil service exam, all consistent with a relatively balanced Elite–People relationship. Our Proposition 2 explains why Chinese Rulers had promoted the Confucianism–Legalism confluence as the dominant political culture (e.g., Qin, 1998; Yan, 2004; Zhao, 2015); Proposition 3 sees Legalism as the more fundamental side within the confluence; Corollaries 1 and 2 explain why such a culture may have been accepted by the People and persistent over time, respectively.

Finally, there can be more insights to gain if one applies our power-structure framework to other parts of the world. For example, as characterized by Weber (1978, p. 1065–1067), tsarist Russia featured a “disconnected juxtaposition of landed nobility and patrimonial officialdom,” and “the situation was the same as in the late Roman and Byzantine empire, in their Babylonian, Persian and Hellenistic predecessors and Islamic successors.” This characterization places these power structures as intermediate cases in between imperial China and medieval Europe along both of the two dimensions in our power-structure framework, which is consistent with Proposition 3.³² As another example, Blaydes and Chaney (2013)

³²For example, in tsarist Russia, “political power proper and social prestige were – wholly in accordance with the Chinese pattern – dependent solely upon office holding or directly upon court connections,” but “[t]he forfeiture of aristocratic patents because of failure to take an office” was not always practiced, and “[w]ell-established status convention” often “limited the Tsar considerably in the selection of his highest-ranking administrative officials and army leaders,” making a stronger conditionality of the everyday power and rights of the ruled on “the ruler’s favor” that “no Occidental ruler could” enjoy, but still weaker than in the Chinese case (Weber, 1978, p. 1065–1066). At the same time, “[s]ince the existing nobility had no

show that Christian kings in western Europe enjoyed a higher political stability than Muslim sultans between the 9th and 15th centuries. This difference can be explained in our framework: lords in feudal Europe owned land and military forces on a regular basis, suggesting a high status quo payoff a to the Elites, while Mamlukism in the Muslim world was designed to remove elite Mamluks “from the luxuries of settled life” (Blaydes and Chaney, 2013, p. 23), suggesting a low a . As shown in Online Appendix G, a lower a in our model would decrease the stability of autocratic rule because the Elites would have a smaller stake tied to the status quo. These examples suggest that our power-structure approach can be useful for comparative studies of institutions, and extending it beyond the two dimensions we have focused on can be helpful. In addition, incorporating regime transition to the framework could also be fruitful in furthering comparative studies on endogenous dynamics of power structures (e.g., Acemoğlu and Robinson, 2000, 2001; Acemoğlu et al., 2012, 2015). We thus hope that our study opens new avenues for future research.

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Online Appendix

A Relevance of Elites and People in Conflicts

There existed a wide range of conflicts in both Chinese and European histories. Having carefully examined significant examples, we argue that the positions taken by the Elites and the People were critical in determining the outcome of the conflict. Below we discuss some examples.^{A.1}

History has shown that given the Elites' political, economic, and military resources, whether they sided with the Ruler when the Ruler was challenged was critical to the outcome of the challenge. For example, the fate of the French throne during the Hundred Years' War closely followed whether the Duke of Burgundy, first John the Fearless and later his son Philip the Good, allied with the English or veered back to the French ruler (Seward, 1978). During the Wars of the Roses (1455–1485), “crucially, Thomas, Lord Stanley, refused to answer Richard’s summons” in the Battle of Bosworth in 1485, and his brother “Sir William Stanley committed his men, tipping the battle decisively in Henry [Tudor, later Henry VII of England]’s favour,” delivering the demise of Richard III and the coronation of Henry VII (Grummitt, 2014, p. 123). In China, during the civil war at the end of the Sui dynasty (611–618), Emperor Yang was killed in a coup by Yuwen Huaji, the commander of the royal guard and the son of Duke Yuwen Shu; during the late Tang dynasty, after Qiu Fu, Wang Xianzhi, and Huang Chao led peasants to revolt all over the country (859–884), it was the regional governors, such as Wang Chongrong and Li Keyong, who fought hard to recover Chang’an, defeated the uprisings, and restored the throne of Tang.

The People’s position was more than often crucial, too, as we can see in the history of not only China but also Europe. In Chinese history, in the final years of the Qin, Xin, Sui, Tang, Yuan, and Ming dynasties, following the initial rebellion within the country or invasion from the outside, peasants revolted and contributed to the end of these dynasties. In Europe, for example, Morton (1938, p. 46, 63) comments on the English history: “the king was able to make use of the peasantry in a crisis when his position was threatened

^{A.1}An incomplete list of the examples we examine include, for China, the Qin–Han turnover, Rebellion of the Seven Prince States, Western Han–Xin turnover, Xin–Eastern Han turnover, Eastern Han–Three Kingdoms turnover, Western–Eastern Jin turnover, Eastern Jin–Southern Dynasties turnover, Sui–Tang turnover, Tang–Zhou turnover, An Lushan Rebellion, Huang Chao Rebellion and Tang–Five Dynasties and Ten Kingdoms turnover, Northern–Southern Song turnover, Yuan–Ming turnover, Ming–Qing turnover, and Revolt of the Three Feudatories; for Europe, the Rebellion of Robert de Mowbray, Henry I’s invasion of Normandy, 1215 Magna Carta, Second Barons’ War, Hundred Years’ War, Jacquerie, Wat Tyler’s Rebellion, Richard II–Henry IV of England turnover, Jack Cade’s Rebellion, Wars of the Roses, German Peasants’ War, Dutch Revolt, and Thirty Years’ War. Some examples include more than one entries of examination. These cover 15 and 14 entries for China and Europe, respectively, and 29 in total.

by a baronial rising,” and “even the strongest combination of barons had failed to defeat the crown when, as in 1095 [Robert de Mowbray’s rebellion] and in 1106 [the challenge of Duke Robert Curthose of Normandy over the throne of Henry I], it had the support of other classes and sections of the population.” Finer (1997b, p. 901) also observes that the English fyrd, largely mobilized from the freemen, “was retained, and even called out by the Norman kings against their rebellious Norman barons.” In the Hundred Years’ War, “the longbow” handled by commoners recruited “from Nottinghamshire and Derbyshire, as well as large contingents of already-subjugated Welshmen, ...still played a critical role in English victory and would continue to do so until” the rise of Joan of Arc, as she inspired the common people of France to join the war, leading to the eventual French triumph (Whetham, 2008, p. 232).^{A.2} In England, shortly before and during the Wars of the Roses, popular support was generally important in determining how firmly Richard II, Henry IV, Henry VI, Edward IV, and Richard III could hold the throne (e.g., Morton, 1938; Bennett, 1999; Grummitt, 2014).^{A.3} In the German Peasants’ War, as the status quo was challenged by peasants across

^{A.2}For more details on the French throne’s lack of popular support before Joan of Arc, the change after that, and the implications of the change on the development of the war, see Morton (1938) and Seward (1978).

^{A.3}During the Richard II–Henry IV turnover, “Richard found himself without supporters,” as the common “merchants [have been] alienated” (Morton, 1938, p. 115); Grummitt (2014, p. 5) comments that “Lancastrian legitimacy was based on an appeal to popular support,” and Bennett (1999, p. 204) states that “it was widely believed that Henry had been raised to the throne on the basis of a covenant with the people.” During Henry VI’s reign, he relied heavily on the support of the people, i.e., “the willingness of the political nation to act for the common good,” but later in his reign “[t]he Commons could have little confidence in the king” (Grummitt, 2014, p. 21). Over 1449–1454, “the defeat in France led to a popular groundswell of opinion against the Lancastrian regime; the appeal to the commons that had been one of the foundations of Lancastrian rule would, in part, prove its undoing” (Grummitt, 2014, p. 13, 21, 23); in 1450, Jack Cade’s Rebellion broke out, during which Londoners played a decisive role by first siding with the revolt but later deserting them for looting, eventually “shutting off Cade and his men ...from the City” (Morton, 1938, p. 123); Grummitt (2014, p. 161) comments that “[i]n 1450 politics were driven by an agenda that was unmistakably set by the commons,” which would continue “[t]hroughout the following two decades” when Richard, Duke of York, would have, “to all intents and purposes, become an opportunistic ‘Cadist’, jumping on a popular bandwagon to end his self-imposed political exile” (Grummitt, 2014, p. 161, also 24–28). Following the strategy, Edward IV’s taking of the throne depended on the support of the common people: “[t]he most significant aspect of the series of events that led to Edward’s accession was ...the judgment made by the assembled crowds at St John’s Fields ...that Henry VI ...should be deposed for his recent misdeeds. ...The assembled crowd then merely assented to Edward’s de jure right to be king of England. ...The notion of popular support for the new king emerged as an important principle of Yorkist propaganda,” and “the Yorkists owed their success in no small part to the support they enjoyed from the commons. ...This popularity was also crucially transformed into tangible expressions of support in terms of men and, more importantly perhaps, money” (Grummitt, 2014, p. 71, 76–77). At that time, the importance of the people made them also a force to be used by other political players: for example, “[m]ore than any of his contemporaries perhaps, [Richard Neville] was able to exploit the idea of the commonweal and mobilise the commons’ sophisticated understanding of the constitution and the nature and duties of kingship in support of his own aims” (Grummitt, 2014, p. 102). During the Edward IV–V–Richard III turnover, “[a]ll the chronicles agree that [Richard III’s] usurpation evoked no popular enthusiasm” initially (Wood, 1975, p. 270), but what followed proved again what the common People could do: Buckingham’s rebellion failed because it “failed

southwestern Germany, the uprisings were eventually defeated by the Swabian League, given that the support from the common people in cities were inconsistent.

These examples show that both the Elites and the People are highly relevant in conflicts, an important type of threats to the stability of the Ruler’s rule. This gives us confidence to link the power structure among the Ruler and both the Elites and the People to the stability of autocratic rule.

B Introducing Dependence of People on Elites

Consider an alternative setting of Stage 2 as shown in Figure B.1. The only difference from the baseline model is that here P will get $\gamma'\beta a - x$, instead of $\beta a - x$, if E does not side with R but P does, where $\gamma' \in [0, 1]$ negatively proxies P’s dependence on E. In this setting, P will side with R if and only if

$$\gamma'\beta a - x \geq p\gamma\beta a + (1 - p)\beta a, \tag{B.1}$$

i.e.,

$$x \leq \left(p(1 - \gamma) - (1 - \gamma') \right) \beta a \equiv \hat{x}'. \tag{B.2}$$

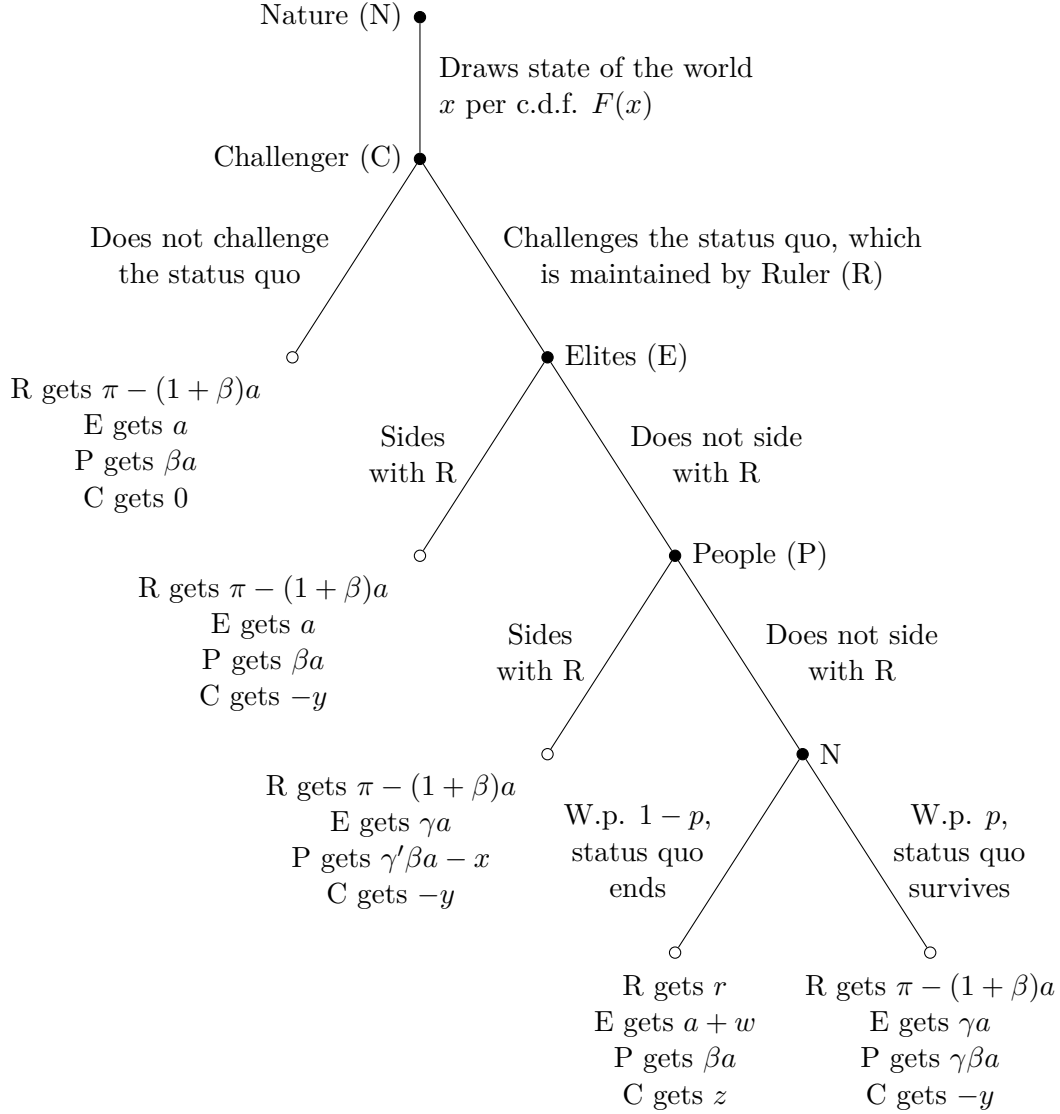
Now examine this condition. Observe that how a more symmetric Elite–People relationship, i.e., a higher β , affects P’s willingness to side with R depends on R’s absolute power over P, i.e., $1 - \gamma$, relative to P’s dependence on E, i.e., $1 - \gamma'$.

If $(1 - \gamma) / (1 - \gamma') > 1/p$, i.e., if R’s absolute power over P relatively dominates P’s dependence on E, then a more symmetric Elite–People relationship will stabilize the status quo, while the strength of this stabilizing effect ($(p(1 - \gamma) - (1 - \gamma')) a$) is increasing in R’s absolute power ($1 - \gamma$), and decreasing in P’s dependence on E ($1 - \gamma'$).

If otherwise, i.e., if P’s dependence on E relatively dominates R’s absolute power over P, then a more symmetric Elite–People relationship will destabilize the status quo, but this destabilizing effect will still be weaker if R’s absolute power is stronger, i.e., if $1 - \gamma$ is greater, and if P is less dependent on E, i.e., if $1 - \gamma'$ is smaller. In this sense, the complementarity between a more symmetric E–P relationship and a stronger absolute power of R still holds.

Further, note that in our setting, if P’s dependence on E relatively dominates R’s absolute power over P, then $\hat{x}' \leq 0$ for any $\beta \in [0, 1]$, i.e., P will almost never side with R when called

to mobilise popular support,” while Richard III’s lack of popular support when he was killed in the decisive Battle of Bosworth suggested that “[t]he disengagement from politics [of the common People] was probably the most damning indictment of Richard III’s short reign” (Grummitt, 2014, p. 117, 124). In general, the Wars of the Roses “had witnessed the incorporation of the commons as a legitimate partner with the king, lords and parliamentary Commons in the process of politics and government” (Grummitt, 2014, p. 163).



$$x \geq 0, a > 0, \pi - 3a \geq 0 > r, 0 \leq \beta \leq 1, 0 \leq \gamma \leq 1, 0 < p < 1, w > 0, y > 0, z > 0$$

Figure B.1: Stage 2: People also depend on Elites

upon, regardless of the Elite–People relationship. This makes the model theoretically trivial and empirically irrelevant for the purpose of comparative institutional analysis.

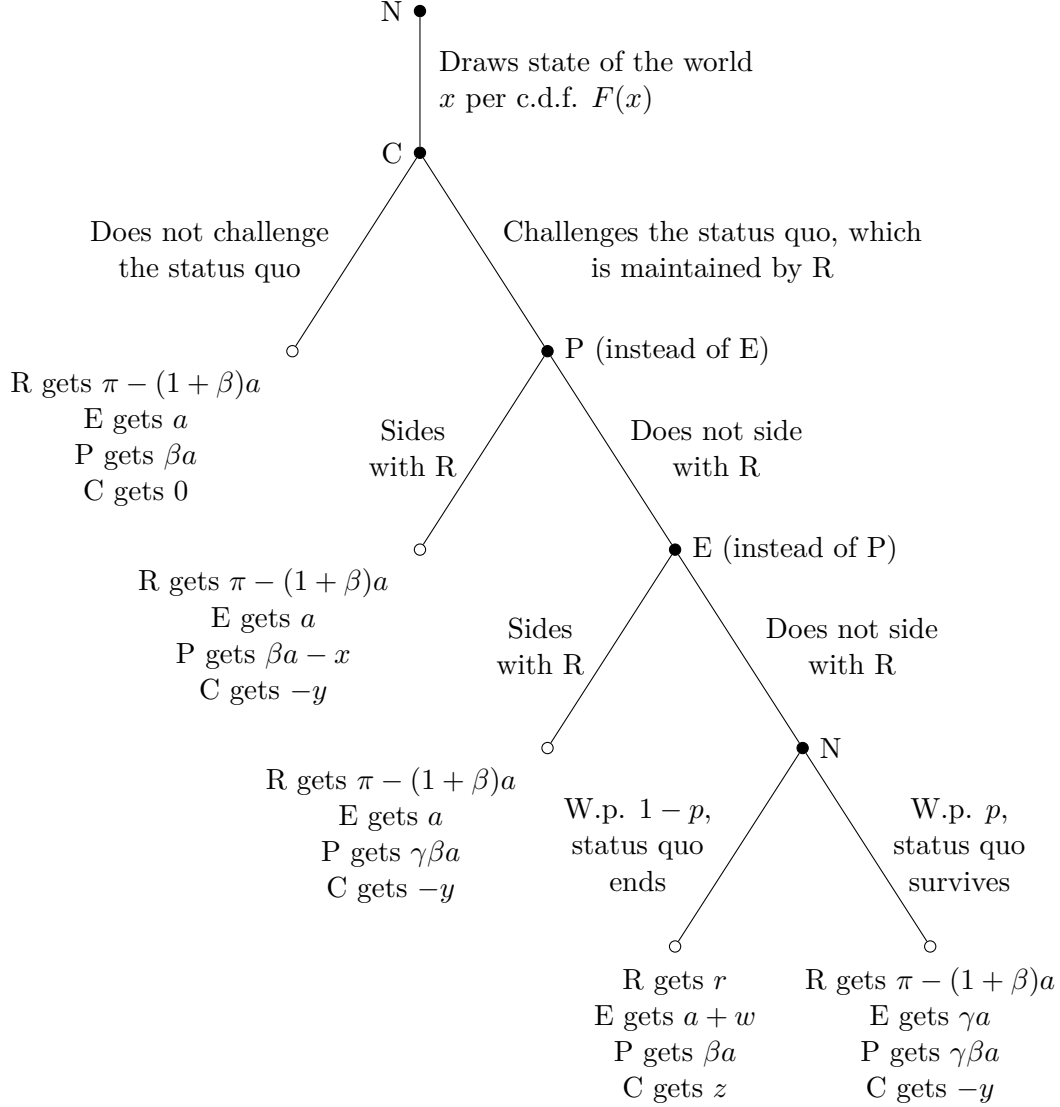
In light of all these, introducing P’s dependence on E would complicate the impact of a more symmetric E–P relationship on autocratic stability, but would not affect how this impact depends on R’s absolute power.

C Alternative Sequences of Moves

In this section we explore two examples of alternative sequences of moves in Stage 2.

C.1 P Moves before E

For the first example, Figure C.1 lays out the setup. The only difference compared with the model in Section 3 is that here P moves before, rather than after, E.



$$x \geq 0, a > 0, \pi - 3a \geq 0 > r, 0 \leq \beta \leq 1, 0 \leq \gamma \leq 1, 0 < p < 1, w > 0, y > 0, z > 0$$

Figure C.1: Stage 2 with an alternative sequence of moves

Now first consider E's strategy. She will side with R if and only if

$$a \geq (1 - p) \cdot (a + w) + p \cdot \gamma a, \quad \text{i.e.,} \quad w \leq \frac{p}{1 - p} \cdot (1 - \gamma) \cdot a. \quad (\text{C.1})$$

Under the assumption $w > pa/(1 - p)$ as in Section 3.1.2, R's strategy is thus not to side with R.

Taking R's strategy as given, P will side with R if and only if

$$\beta a - x \geq (1 - p) \cdot \beta a + p \cdot \gamma \beta a. \quad (\text{C.2})$$

Therefore, P's strategy is the same as in Section 3, i.e., to side with R if and only if $x \leq p \cdot (1 - \gamma)\beta a \equiv \hat{x}$. It is also important to note that E will have a chance to choose not to side with R only if P has decided not to side with R, i.e., if $x > \hat{x}$.

It is thus obvious that from here onwards, all results in the main text, i.e., Propositions 1, 2, and 3, and Corollaries 1 and 2, will go through. The political-alliance effect also survives, since C, who can be a group of elites in society, would need to take P's strategy and thus her alliance with R into consideration. All insights in the main text are thus robust with respect to the alternative sequence of moves.

C.2 E and P Move Simultaneously

As the second example, we consider a setting in which C first always chooses to challenge, and then P and E choose simultaneously whether to side with R. The payoff matrix that P and E face is in Table C.1.

Table C.1: Payoff matrix for P and E when they move simultaneously after C challenges

	E sides with R	E does not side with R
P sides with R	$\beta a - x, a$	$\beta a - x, \gamma a$
P does not side with R	$\gamma \beta a, a$	$(1 - p)\beta a + p\gamma \beta a, (1 - p)(a + w) + p\gamma a$

As multiple equilibria may exist, we adopt the approach of global games to reduce them (e.g., Carlsson and van Damme, 1993; Morris and Shin, 2003). When doing so, we assume that right before E and P move, nature reveals two private signals about x to P and E, respectively. The signals follow

$$x_i = x + \epsilon_i, \quad \text{where } \epsilon_i \sim N(0, \sigma^2), \quad i = P, E, \quad (\text{C.3})$$

and x , ϵ_P , and ϵ_E are mutually independent.

Now consider P's best response to her private signal x_P and E's switching strategy that E will side with R if and only if $x_E \leq \bar{x}_E$. To start with, for P, given x_P , she believes that

$$x = x_P - \epsilon_P \sim N(x_P, \sigma^2), \quad x_E = x + \epsilon_E = x_P - \epsilon_P + \epsilon_E \sim N(x_P, 2\sigma^2). \quad (\text{C.4})$$

Conditional on this belief, siding with R will give P an expected payoff of

$$\mathbf{E} [\beta a - x \mid x_P] = \beta a - x_P, \quad (\text{C.5})$$

whereas not siding with R will give P an expected payoff of

$$\begin{aligned} & \gamma \beta a \cdot F_{x_E|x_P}(\bar{x}_E) + ((1-p)\beta a + p\gamma\beta a) \cdot (1 - F_{x_E|x_P}(\bar{x}_E)) \\ &= \left(\gamma \beta a - ((1-p)\beta a + p\gamma\beta a) \right) \cdot F_{x_E|x_P}(\bar{x}_E) + (1-p)\beta a + p\gamma\beta a \\ &= -(1-p)(1-\gamma)\beta a \cdot F_{x_E|x_P}(\bar{x}_E) + (1-p)\beta a + p\gamma\beta a, \end{aligned} \quad (\text{C.6})$$

where

$$F_{x_E|x_P}(\bar{x}_E) = \Phi \left(\frac{\bar{x}_E - x_P}{\sqrt{2}\sigma} \right), \quad (\text{C.7})$$

with $\Phi(\cdot)$ being the cumulative distribution function of the standard normal distribution. Note that the expected payoff of siding with R is decreasing in x_P and ranges from $-\infty$ to ∞ ; also note that $F_{x_E|x_P}(\bar{x}_E)$ is strictly decreasing in x_P and bounded by $[0, 1]$, so the expected payoff from not siding with R is strictly increasing in x_P and bounded. Therefore, P will side with R if and only if $x_P \leq \bar{x}_P$, where \bar{x}_P uniquely solves

$$\beta a - \bar{x}_P = -(1-p)(1-\gamma)\beta a \cdot F_{x_E|\bar{x}_P}(\bar{x}_E) + (1-p)\beta a + p\gamma\beta a, \quad (\text{C.8})$$

i.e.,

$$\beta a - \bar{x}_P = -(1-p)(1-\gamma)\beta a \cdot \Phi \left(\frac{\bar{x}_E - \bar{x}_P}{\sqrt{2}\sigma} \right) + (1-p)\beta a + p\gamma\beta a. \quad (\text{C.9})$$

Now consider E's best response to her private signal x_E and P's switching strategy that P will side with R if and only if $x_P \leq \bar{x}_P$. To start with, for E, given x_E , she believes that

$$x = x_E - \epsilon_E \sim N(x_E, \sigma^2), \quad x_P = x + \epsilon_P = x_E - \epsilon_E + \epsilon_P \sim N(x_E, 2\sigma^2). \quad (\text{C.10})$$

Conditional on this belief, siding with R will give E an expected payoff of a , which is a constant, whereas not siding with R will give E an expected payoff of

$$\begin{aligned} & \gamma a \cdot F_{x_P|x_E}(\bar{x}_P) + ((1-p)(a+w) + p\gamma a) \cdot (1 - F_{x_P|x_E}(\bar{x}_P)) \\ &= \left(\gamma a - ((1-p)(a+w) + p\gamma a) \right) \cdot F_{x_P|x_E}(\bar{x}_P) + (1-p)(a+w) + p\gamma a \\ &= -(1-p) \left((1-\gamma)a + w \right) \cdot F_{x_P|x_E}(\bar{x}_P) + (1-p)(a+w) + p\gamma a, \end{aligned} \quad (\text{C.11})$$

where

$$F_{x_P|x_E}(\bar{x}_P) = \Phi\left(\frac{\bar{x}_P - x_E}{\sqrt{2}\sigma}\right). \quad (\text{C.12})$$

Note that $F_{x_P|x_E}(\bar{x}_P)$ is strictly decreasing in x_E and has a range of $(0, 1)$, so the expected payoff from not siding with R is strictly increasing in x_E and has a range of $(\gamma a, (1-p)(a+w) + p\gamma a)$. Therefore, under the assumption $w > pa/(1-p)$ as in Section 3.1.2, E will side with R if and only if $x_E \leq \bar{x}_E$, where \bar{x}_E uniquely solves

$$a = -(1-p)\left((1-\gamma)a + w\right) \cdot F_{x_P|\bar{x}_E}(\bar{x}_P) + (1-p)(a+w) + p\gamma a, \quad (\text{C.13})$$

i.e.,

$$a = -(1-p)\left((1-\gamma)a + w\right) \cdot \Phi\left(\frac{\bar{x}_P - \bar{x}_E}{\sqrt{2}\sigma}\right) + (1-p)(a+w) + p\gamma a. \quad (\text{C.14})$$

Given the two best responses, there thus exists a unique switching-strategy Nash equilibrium, in which

- P will side with R if and only if $x_P \leq \bar{x}_P^*$, whereas
- E will side with R if and only if $x_E \leq \bar{x}_E^*$,

where \bar{x}_E^* and \bar{x}_P^* uniquely solve

$$\beta a - \bar{x}_P^* = -(1-p)(1-\gamma)\beta a \cdot \Phi\left(\frac{\bar{x}_E^* - \bar{x}_P^*}{\sqrt{2}\sigma}\right) + (1-p)\beta a + p\gamma\beta a \quad (\text{C.15})$$

and

$$a = -(1-p)\left((1-\gamma)a + w\right) \cdot \Phi\left(\frac{\bar{x}_P^* - \bar{x}_E^*}{\sqrt{2}\sigma}\right) + (1-p)(a+w) + p\gamma a. \quad (\text{C.16})$$

Solving the two equations, by $\Phi\left(\frac{\bar{x}_E^* - \bar{x}_P^*}{\sqrt{2}\sigma}\right) + \Phi\left(\frac{\bar{x}_P^* - \bar{x}_E^*}{\sqrt{2}\sigma}\right) = 1$, we can get

$$\bar{x}_P^* = \left(\frac{(1-\gamma)a}{(1-\gamma)a + w} + p\right) \cdot (1-\gamma)\beta a \quad (\text{C.17})$$

and

$$\bar{x}_E^* = \sqrt{2}\sigma \cdot \Phi^{-1}\left(\frac{1}{1-p} \cdot \frac{(1-\gamma)a}{(1-\gamma)a + w}\right) + \left(\frac{(1-\gamma)a}{(1-\gamma)a + w} + p\right) \cdot (1-\gamma)\beta a, \quad (\text{C.18})$$

where $\Phi^{-1}(\cdot)$ is the inverse function of the cumulative distribution function of the standard normal distribution.

Now closely observe the equilibrium. First, for E, although β does not appear in her own payoff, her switching threshold \bar{x}_E^* depends on β , and a greater β will raise the threshold, making her more likely to side with R. We thus see the political alliance effect as in the main text. Second, for any given x , in the equilibrium, the political stability, i.e., the survival probability of the status quo, is

$$\begin{aligned}
S &= 1 - (1 - p) \cdot \mathbf{P} [x_P > \bar{x}_P^*, x_E > \bar{x}_E^* \mid x] \\
&= 1 - (1 - p) \cdot \mathbf{P} [\epsilon_P > \bar{x}_P^* - x, \epsilon_E > \bar{x}_E^* - x \mid x] \\
&= 1 - (1 - p) \cdot \left(1 - \Phi \left(\frac{\bar{x}_P^* - x}{\sigma} \right) \right) \cdot \left(1 - \Phi \left(\frac{\bar{x}_E^* - x}{\sigma} \right) \right), \tag{C.19}
\end{aligned}$$

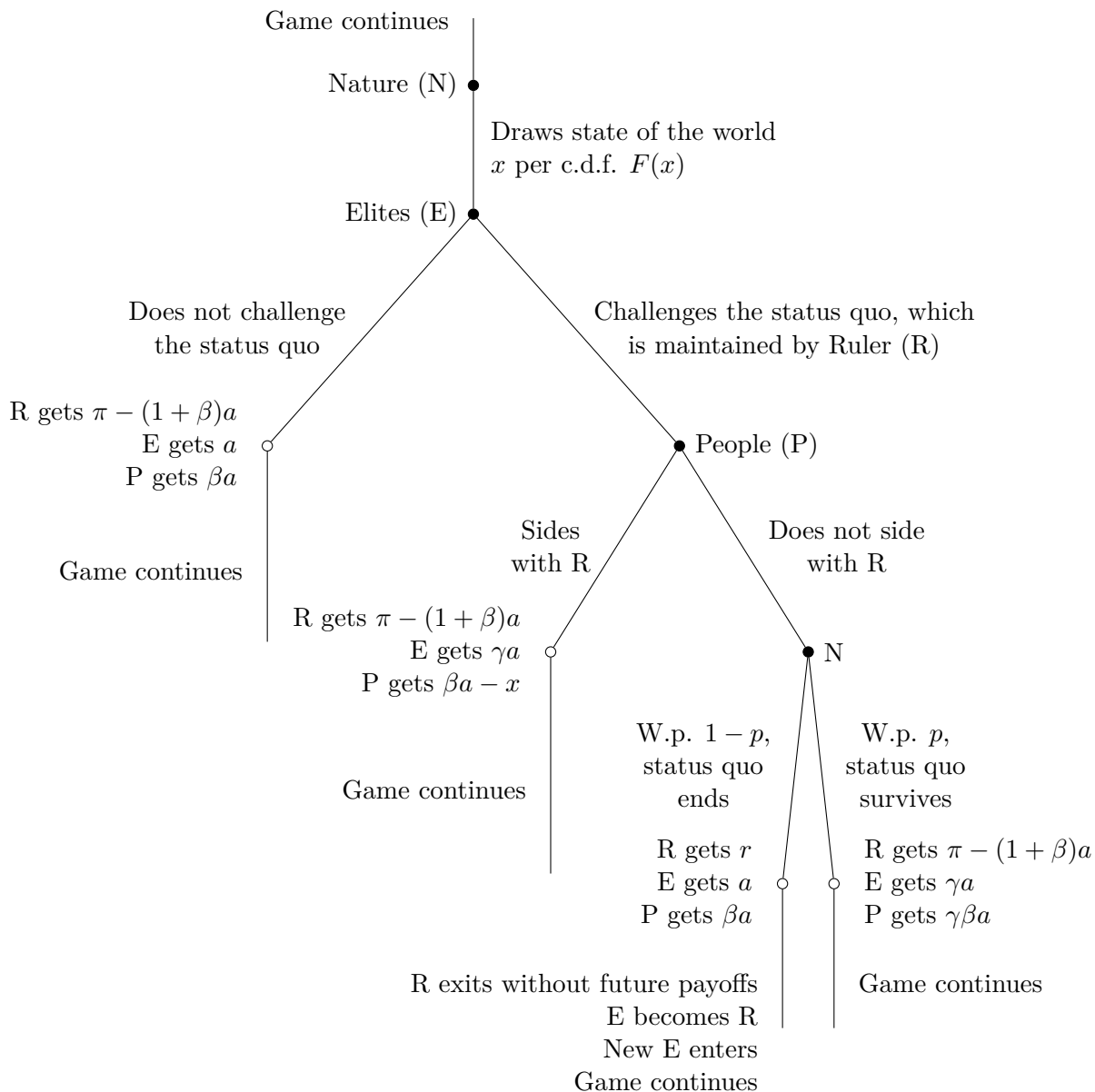
where both $\frac{\bar{x}_P^* - x}{\sigma}$ and $\frac{\bar{x}_E^* - x}{\sigma}$ have a term that is proportional to $(1 - \gamma)\beta$. Results parallel to the institutional compatibility results in the main text then follow. All insights in the main text are thus robust with respect to the alternative sequence of moves.

D Endogenizing the Challenger and Elites' Incentives in a Markov Game

In this extension of Stage 2 we collapse C and E into a single player E, make her look forward in a Markov game with an infinite number of discrete periods, and allow her to replace R. Figure D.1 shows each period of the Markov game.

Compared with Figure 1, Stage 2 will now continue after each period; the prize z for C to challenge and the incentive w for E not to side with R are replaced by the aspiration of E to replace R at the end of this period; the loss y for C if her challenges fails is replaced by the punishment that would reduce E's payoff from the status quo level a to γa . About the stochastic elements of the game, we assume that N's draws of x and whether R will survive the challenge on his own within each period and across periods are mutually independent. About the dynamic elements of the game, we assume that all the players have an infinite horizon with an exogenous intertemporal discount factor $\delta \in (0, 1)$. In addition, we introduce a slightly different assumption of having a sufficiently low r , i.e., $\pi - 3a > (1 - \delta)r$. All other assumptions in the main text remain here.

We will adopt the Markov perfect equilibrium as the solution concept in our analysis. For simplicity, we still assume that E will not challenge and P will side with R if they are indifferent in their decision, respectively, ruling out mixed strategies; allowing for mixed strategies would accommodate a mixed-strategy equilibrium when and only when pure-strategy equi-



$$x \geq 0, a > 0, \pi - 3a > (1 - \delta)r, 0 \leq \beta \leq 1, 0 \leq \gamma \leq 1, 0 < p < 1$$

Figure D.1: Extended Stage 2: Each period in the Markov game

libria do not exist, while the key insights would remain robust.

D.1 Equilibrium Characterization

Now we analyze the extended Stage 2 by first characterizing all possible Markov perfect equilibria and finding the conditions under which they exist. We denote the net present values that the players enjoy at the beginning of each period as V^R , V^E , and V^P , respectively.

We have a first result to partially characterize all Markov perfect equilibria:

Lemma D.1. *In any Markov perfect equilibrium, P will side with R if and only if $x \leq \hat{x} \equiv (1 - \gamma)\beta p \cdot a$, where $\hat{x} \in [0, pa]$; when $x \leq \hat{x}$, E will not challenge the status quo, and when $x > \hat{x}$, E will challenge if and only if the aspiration to replace R in equilibrium dominates the probability-adjusted punishment in case of a failed challenge:*

$$V^R - V^E > \frac{p}{(1-p)\delta} \cdot (1-\gamma)a. \quad (\text{D.1})$$

Proof. In any Markov perfect equilibrium, P will side with R if and only if

$$\beta a - x + \delta V^P \geq (\beta a + \delta V^P) \cdot (1-p) + (\gamma \beta a + \delta V^P) \cdot p, \quad (\text{D.2})$$

i.e.,

$$x \leq (1-\gamma)\beta p \cdot a \equiv \hat{x}. \quad (\text{D.3})$$

Given this strategy of P and the continuation strategy of E in the equilibrium, E will not challenge if $x \leq \hat{x}$, since

$$a + \delta V^E \geq \gamma a + \delta V^E \quad (\text{D.4})$$

holds for any $\gamma \in [0, 1]$ and V^E ; when $x > \hat{x}$, E will challenge if and only if

$$a + \delta V^E < (a + \delta V^R) \cdot (1-p) + (\gamma a + \delta V^E) \cdot p, \quad (\text{D.5})$$

i.e.,

$$V^R - V^E > \frac{p}{(1-p)\delta} \cdot (1-\gamma)a. \quad (\text{D.6})$$

The lemma is then proved. □

Note that the analysis is parallel to Section 3.1.2, the definition of \hat{x} is the same as in Section 3.1.2, and Condition (D.1) is parallel to Conditions (4) and (6).

By Lemma D.1, only two Markov perfect equilibria are possible. The first one is a secured-R equilibrium:

Proposition D.1 (Secured-R equilibrium in the Markov game). *If*

$$h(\beta, \gamma) \equiv \frac{\pi - (2 + \beta)a}{1 - \delta} - \frac{p}{(1-p)\delta} \cdot (1-\gamma)a \leq 0, \quad (\text{D.7})$$

then “E never challenges the status quo; P would not side with R if and only if $x > \hat{x}$ ” is a Markov perfect equilibrium; in this equilibrium, the survival probability of the status quo is $S = 1$.

Proof. For “E never challenges the status quo; P would not side with R if and only if $x > \hat{x}$ ” to be a Markov perfect equilibrium, the condition

$$V^R - V^E \leq \frac{p}{(1-p)\delta} \cdot (1-\gamma)a \quad (\text{D.8})$$

must hold, where, given E and P’s strategies in this equilibrium,

$$V^R = \frac{\pi - (1 + \beta)a}{1 - \delta} \quad \text{and} \quad V^E = \frac{a}{1 - \delta}. \quad (\text{D.9})$$

The condition is then equivalent to

$$\frac{\pi - (1 + \beta)a}{1 - \delta} - \frac{a}{1 - \delta} \leq \frac{p}{(1-p)\delta} \cdot (1-\gamma)a, \quad (\text{D.10})$$

i.e.,

$$h(\beta, \gamma) \equiv \frac{\pi - (2 + \beta)a}{1 - \delta} - \frac{p}{(1-p)\delta} \cdot (1-\gamma)a \leq 0. \quad (\text{D.11})$$

The proposition is then proved. \square

The intuition of the result is as follows: the function $h(\beta, \gamma)$ measures E’s aspiration $V^R - V^E = (\pi - (2 + \beta)a)/(1 - \delta)$ to replace R given the specified strategies, net of the probability-adjusted punishment $(p/(1-p)\delta) \cdot (1-\gamma)a$ on E in case the challenge fails. The condition $h(\beta, \gamma) \leq 0$ then suggests that the aspiration cannot dominate the punishment. Lemma D.1 then implies that we have the secured-R equilibrium.

Note that this equilibrium is parallel to the scenario in Section 3.1.2 when Conditions (4) and (6) do not hold. Following the same argument as in Section 3.1.2, this equilibrium is empirically not much relevant, as in reality the chance for R to be ousted was always strictly positive; it is also trivial, in the sense that no challenge will happen in equilibrium.

The second equilibrium is an unsecured-R equilibrium:

Proposition D.2 (Unsecured-R equilibrium in the Markov game). *If*

$$g(\beta, \gamma) \equiv \frac{(\pi - (1 + \beta)a) \cdot S + r \cdot (1 - S)}{1 - \delta S} - \frac{a}{1 - \delta} - \frac{p}{(1-p)\delta} \cdot (1-\gamma)a > 0, \quad (\text{D.12})$$

where

$$S = 1 - (1 - F(\hat{x})) \cdot (1 - p) \in [p, 1] \quad \text{and} \quad \hat{x} \equiv (1 - \gamma)\beta p \cdot a, \quad (\text{D.13})$$

then “E will challenge the status quo if and only if $x > \hat{x}$; P would not side with R if and only if $x > \hat{x}$ ” is a Markov perfect equilibrium; in this equilibrium, R’s stability is $S \leq 1$.

Proof. For “E will challenge the status quo if and only if $x > \hat{x}$; P would not side with R if and only if $x > \hat{x}$ ” to be a Markov perfect equilibrium, the condition

$$V^R - V^E > \frac{p}{(1-p)\delta} \cdot (1-\gamma)a \quad (\text{D.14})$$

must hold, where, given E and P’s strategies in this equilibrium,

$$\begin{aligned} V^R &= \left(\pi - (1+\beta)a + \delta V^R \right) \cdot S + r \cdot (1-S) \\ &= \left(\pi - (1+\beta)a \right) \cdot S + r \cdot (1-S) + \delta V^R \cdot S \\ &= \frac{\left(\pi - (1+\beta)a \right) \cdot S + r \cdot (1-S)}{1 - \delta S} \end{aligned} \quad (\text{D.15})$$

and

$$\begin{aligned} V^E &= a \cdot \left(1 - (1 - F(\hat{x})) \cdot p \right) + \gamma a \cdot (1 - F(\hat{x})) \cdot p + \delta V^E \cdot S + \delta V^R \cdot (1-S) \\ &= a \cdot \left(1 - (1-\gamma) \cdot (1 - F(\hat{x})) \cdot p \right) + \delta V^E \cdot S + \delta V^R \cdot (1-S) \\ &= \frac{a \cdot \left(1 - (1-\gamma) \cdot (1 - F(\hat{x})) \cdot p \right) + \delta V^R \cdot (1-S)}{1 - \delta S}, \end{aligned} \quad (\text{D.16})$$

with

$$S = 1 - (1 - F(\hat{x})) \cdot (1-p) \in [p, 1]. \quad (\text{D.17})$$

The condition is then equivalent to, with some algebra,

$$g(\beta, \gamma) \equiv \frac{\left(\pi - (1+\beta)a \right) \cdot S + r \cdot (1-S)}{1 - \delta S} - \frac{a}{1-\delta} - \frac{p}{(1-p)\delta} \cdot (1-\gamma)a > 0. \quad (\text{D.18})$$

The proposition is then proved. \square

Again, the intuition of Proposition D.2 follows Lemma D.1: the function $g(\beta, \gamma)$ indicates, given the specified strategies, how E’s aspiration $V^R - V^E$ to replace R is compared with the punishment in case the challenge fails. The condition $g(\beta, \gamma) > 0$ then suggests that the aspiration dominates the punishment. Lemma D.1 then implies that we have the unsecured-R equilibrium.

Following the same argument as in Section 3.1.2, the unsecured-R equilibrium is empirically relevant and nontrivial. We thus now explore the conditions under which it always exists and is the unique equilibrium. The following result first shows that the secured-R equilibrium and the unsecured-R equilibrium cannot exist simultaneously:

Corollary D.1. *Given $(1 - \delta)r < \pi - 3a$, if $g(\beta, \gamma) > 0$, then $h(\beta, \gamma) > 0$, i.e., if the unsecured-R equilibrium exists, then the secured-R equilibrium does not exist.*

Proof. Observe that, given $(1 - \delta)r < \pi - 3a$, we have $(1 - \delta)r < \pi - (1 + \beta)a$ for any $\beta \in [0, 1]$, which suggests $g(\beta, \gamma)$ is increasing in S . Then observe that, for any $S \in [p, 1]$, $g(\beta, \gamma) \leq g(\beta, \gamma)|_{S=1} = h(\beta, \gamma)$. Therefore, if $g(\beta, \gamma) > 0$, then $h(\beta, \gamma) > 0$. \square

The intuition of Corollary D.1 is as follows. Since R is safer in the secured-R equilibrium than in the unsecured-R equilibrium, E's aspiration to replace R is stronger, too. Therefore, if E's aspiration is already so strong that the unsecured-R equilibrium is supported ($g(\beta, \gamma) > 0$), then given the strategies specified in the secured-R equilibrium, E's aspiration must be too strong to support the secured-R equilibrium ($h(\beta, \gamma) > 0$).

This corollary helps derive a set of conditions under which the unsecured-R equilibrium will generally exist and be the unique equilibrium, parallel to Proposition 1:

Proposition D.3 (Focus on unsecured-R equilibrium in the Markov game). *If $((1 - \delta p)/(1 - \delta)(1 - p)\delta) \cdot a \leq r < (\pi - 3a)/(1 - \delta)$, then given any $\beta \in [0, 1]$ and $\gamma \in [0, 1]$, the unsecured-R equilibrium exists and is the unique Markov perfect equilibrium.*

Proof. For any $\beta \in [0, 1]$ and $\gamma \in [0, 1]$, by $0 < ((1 - \delta p)/(1 - \delta)(1 - p)\delta) \cdot a \leq r < (\pi - 3a)/(1 - \delta)$ and $S \in [p, 1]$, we have

$$\begin{aligned}
g(\beta, \gamma) &\geq \frac{(\pi - 2a) \cdot S + r \cdot (1 - S)}{1 - \delta S} - \frac{a}{1 - \delta} - \frac{p}{(1 - p)\delta} \cdot a \\
&\geq \frac{r}{1 - \delta S} - \frac{(1 - p)\delta + p(1 - \delta)}{(1 - \delta)(1 - p)\delta} \cdot a > \frac{r}{1 - \delta p} - \frac{1 - p + p}{(1 - \delta)(1 - p)\delta} \cdot a \\
&\geq \frac{r}{1 - \delta p} - \frac{1}{(1 - \delta)(1 - p)\delta} \cdot a \geq 0.
\end{aligned} \tag{D.19}$$

Therefore, $g(\beta, \gamma) > 0$, i.e., the unsecured-R equilibrium exists, and by Corollary D.1, the secured-R equilibrium does not exist. Therefore, the unsecured-R equilibrium is the unique equilibrium. \square

In this result, $((1 - \delta p)/(1 - \delta)(1 - p)\delta) \cdot a \leq r$ is parallel to $w > ap/(1 - p)$ and $z > yp/(1 - p)$ in Proposition 1, guaranteeing that E's aspiration to replace R is sufficiently strong so that E will challenge if P will not side with R.

D.2 Analysis of the Unsecured-R Equilibrium

To focus on the empirically relevant, nontrivial unsecured-R equilibrium in our analysis, from now on we assume that the condition in Proposition D.3 holds, i.e., $((1 - \delta p)/(1 -$

$\delta)(1-p)\delta) \cdot a \leq r < (\pi - 3a)/(1 - \delta)$, so that the unsecured-R equilibrium exists and is the unique Markov perfect equilibrium. Without losing generality, as in Section 3.2, we also assume that $F(x) \equiv fx$ over $x \in [0, pa]$, where $f \in (0, 1/pa]$ is a constant.

Now we can derive a result parallel to Proposition 3.

Proposition D.4 (Institutional compatibility in the Markov game). *If R's optimal choice of β is an interior solution $\beta^* \in (0, 1)$, then it is strictly decreasing in γ .*

Proof. First, observe that, if R's optimal choice of β is an interior solution $\beta^* \in (0, 1)$, then it must satisfy

$$\frac{dV^R}{d\beta}\Big|_{\beta=\beta^*} = 0, \quad \frac{d^2V^R}{d\beta^2}\Big|_{\beta=\beta^*} < 0. \quad (\text{D.20})$$

It then suffices to examine how γ affects $dV^R/d\beta$ at $\beta = \beta^*$. To do that, first observe that

$$\begin{aligned} \frac{dV^R}{d\beta} &= \frac{\left(\pi - (1 + \beta)a - r + \frac{\delta((\pi - (1 + \beta)a - r)S + r)}{1 - \delta S} \right) \cdot \frac{dS}{d\beta} - aS}{1 - \delta S} \\ &= \frac{1}{1 - \delta S} \cdot \left(\frac{\pi - (1 + \beta)a - (1 - \delta)r}{1 - \delta S} \cdot \frac{dS}{d\beta} - aS \right), \end{aligned} \quad (\text{D.21})$$

which implies

$$\begin{aligned} \frac{\partial^2 V^R}{\partial \gamma \partial \beta} &= \frac{1}{1 - \delta S} \cdot \left(\frac{\pi - (1 + \beta)a - (1 - \delta)r}{1 - \delta S} \cdot \frac{\partial^2 S}{\partial \gamma \partial \beta} - a \cdot \frac{dS}{d\gamma} \right. \\ &\quad \left. + \frac{\pi - (1 + \beta)a - (1 - \delta)r}{(1 - \delta S)^2} \cdot \frac{dS}{d\beta} \cdot \delta \cdot \frac{dS}{d\gamma} \right) \\ &\quad + \frac{1}{(1 - \delta S)^2} \cdot \left(\frac{\pi - (1 + \beta)a - (1 - \delta)r}{1 - \delta S} \cdot \frac{dS}{d\beta} - aS \right) \cdot \delta \cdot \frac{dS}{d\gamma} \\ &= \frac{1}{1 - \delta S} \cdot \left(\frac{\pi - (1 + \beta)a - (1 - \delta)r}{1 - \delta S} \cdot \frac{\partial^2 S}{\partial \gamma \partial \beta} - a \cdot \frac{dS}{d\gamma} \right) \\ &\quad + \frac{\delta (\pi - (1 + \beta)a - (1 - \delta)r)}{(1 - \delta S)^3} \cdot \frac{dS}{d\beta} \cdot \frac{dS}{d\gamma} + \frac{\delta}{1 - \delta S} \cdot \frac{dV^R}{d\beta} \cdot \frac{dS}{d\gamma}. \end{aligned} \quad (\text{D.22})$$

Now analyze the three terms. First note that, by $F(x) = fx$ and $\hat{x} \equiv (1 - \gamma)\beta p \cdot a$, we have

$$\begin{aligned} S &= 1 - (1 - F(\hat{x})) \cdot (1 - p) = 1 - (1 - f\hat{x}) \cdot (1 - p) \\ &= 1 - (1 - f(1 - \gamma)\beta pa) \cdot (1 - p), \end{aligned} \quad (\text{D.23})$$

and thus

$$\frac{dS}{d\beta} = (1-p)fpa \cdot (1-\gamma) > 0, \quad \frac{dS}{d\gamma} = -(1-p)fpa \cdot \beta < 0, \quad \frac{\partial^2 S}{\partial\gamma\partial\beta} = -(1-p)fpa < 0. \quad (\text{D.24})$$

Therefore, by $\pi - 3a - (1-\delta)r > 0$, we have

$$\begin{aligned} A &\equiv \frac{1}{1-\delta S} \cdot \left(\frac{\pi - (1+\beta)a - (1-\delta)r}{1-\delta S} \cdot \frac{\partial^2 S}{\partial\gamma\partial\beta} - a \cdot \frac{dS}{d\gamma} \right) \\ &= -\frac{1}{1-\delta S} \cdot \left(\frac{\pi - (1+\beta)a - (1-\delta)r}{1-\delta S} \cdot (1-p)fpa - a \cdot (1-p)fpa \cdot \beta \right) \\ &= -\frac{(1-p)fpa}{1-\delta S} \cdot \left(\frac{\pi - (1+\beta)a - (1-\delta)r}{1-\delta S} - \beta a \right) \\ &= -\frac{(1-p)fpa}{1-\delta S} \cdot \frac{\pi - (1+(2-\delta S)\beta)a - (1-\delta)r}{1-\delta S} < 0; \end{aligned} \quad (\text{D.25})$$

by $dS/d\beta > 0$ and $dS/d\gamma < 0$, we have

$$B \equiv \frac{\delta (\pi - (1+\beta)a - (1-\delta)r)}{(1-\delta S)^3} \cdot \frac{dS}{d\beta} \cdot \frac{dS}{d\gamma} < 0; \quad (\text{D.26})$$

by $dV^R/d\beta|_{\beta=\beta^*} = 0$, we have

$$C|_{\beta=\beta^*} \equiv \frac{\delta}{1-\delta S} \cdot \frac{dV^R}{d\beta} \cdot \frac{dS}{d\gamma} = 0. \quad (\text{D.27})$$

Therefore, we have

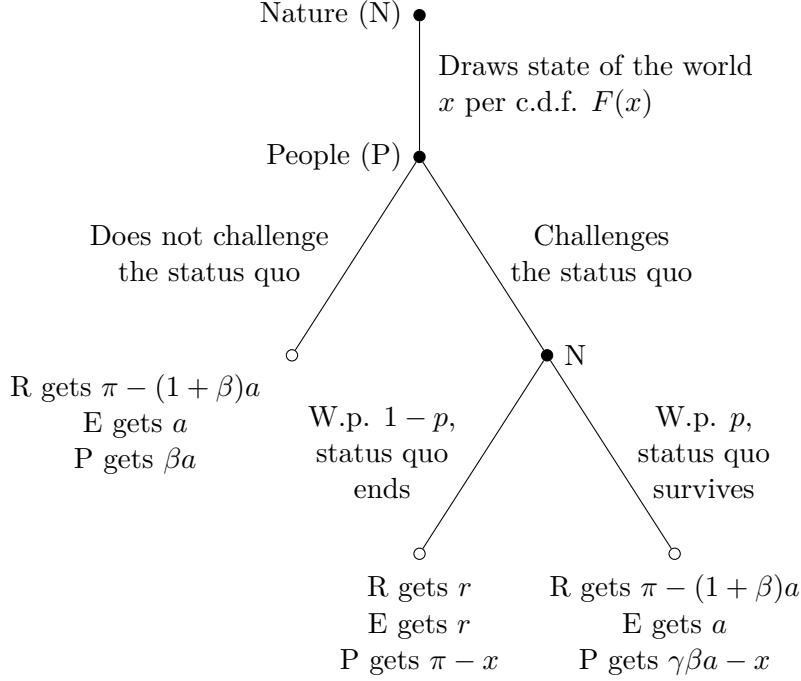
$$\frac{\partial^2 V^R}{\partial\gamma\partial\beta}|_{\beta=\beta^*} = (A+B)|_{\beta=\beta^*} + C|_{\beta=\beta^*} = (A+B)|_{\beta=\beta^*} < 0, \quad (\text{D.28})$$

so β^* is strictly decreasing in γ . □

E Revolution

Now consider this alternative setting in Figure E.1 where the People can challenge unilaterally to replace the status quo with a power structure that would exclude the Elites and Ruler. In this setting, the People will challenge if and only if

$$\beta a < (1-p)(\pi - x) + p(\gamma\beta a - x), \quad (\text{E.1})$$



$$x \geq 0, a > 0, \pi - 3a \geq 0 > r, 0 \leq \beta \leq 1, 0 \leq \gamma \leq 1, 0 < p < 1$$

Figure E.1: Stage 2: Revolution

where x is now the cost for revolution, and the current power structure is still characterized by β and γ . This condition is equivalent to

$$x < (1 - p)\pi - (1 - p\gamma)\beta a \equiv \tilde{x}, \quad (\text{E.2})$$

i.e., the People will revolt if and only if the cost for revolution is sufficiently small.

Observe that \tilde{x} is decreasing in β , i.e., the People will be less willing to revolt if the Elite–People relationship is more symmetric in the current power structure. Also this stabilizing effect will be stronger if the Ruler has greater absolute power, i.e., $d\tilde{x}/d\beta = -(1 - p\gamma)$ is more negative if γ is lower. The intuition is still that a more symmetric Elite–People relationship, i.e., a higher β , makes the punishment for a failed revolution more significant, i.e., a greater $(1 - \gamma)\beta a$, and such an effect is more pronounced when the Ruler’s ability to punish is greater, i.e., a lower γ . The main insights in our baseline model thus remain.

F Non-uniform Distribution

Here we provide a result when we allow x not to follow a uniform distribution: Proposition 3 is robust as long as the probability density of x is not diminishing too quickly.

Proposition F.1. *If $F'(x) \equiv f(x)$ satisfies*

$$\epsilon \equiv -\frac{x \cdot f'(x)}{f(x)} \leq \bar{\epsilon} \equiv 1 - \frac{a}{\pi - 2a - r} \quad (\text{F.1})$$

over $x \in [0, pa]$, then a lower $\gamma \in [0, 1]$ would make R prefer a higher $\beta \in [0, 1]$.

Proof. One can verify that

$$\frac{\partial^2 V^R}{\partial \gamma \partial \beta} = -(1-p)pa \cdot \left((\pi - (1+\beta)a - r) \cdot f'(\hat{x}) \cdot \hat{x} + (\pi - (1+2\beta)a - r) \cdot f(\hat{x}) \right). \quad (\text{F.2})$$

Therefore, $\partial^2 V^R / \partial \gamma \partial \beta \leq 0$ if and only if

$$(\pi - (1+\beta)a - r) \cdot f'(\hat{x}) \cdot \hat{x} + (\pi - (1+2\beta)a - r) \cdot f(\hat{x}) \geq 0, \quad (\text{F.3})$$

i.e.,

$$\epsilon \equiv -\frac{f'(\hat{x}) \cdot \hat{x}}{f(\hat{x})} \leq \frac{\pi - (1+2\beta)a - r}{\pi - (1+\beta)a - r} = 1 - \frac{\beta a}{\pi - (1+\beta)a - r}. \quad (\text{F.4})$$

Since

$$\frac{\beta a}{\pi - (1+\beta)a - r} \in \left[0, \frac{a}{\pi - 2a - r} \right], \quad (\text{F.5})$$

we have

$$1 - \frac{\beta a}{\pi - (1+\beta)a - r} \in \left[1 - \frac{a}{\pi - 2a - r}, 1 \right]. \quad (\text{F.6})$$

Therefore, $\partial^2 V^R / \partial \gamma \partial \beta \leq 0$ can be guaranteed by

$$\epsilon \leq 1 - \frac{a}{\pi - 2a - r} \equiv \bar{\epsilon}, \quad \text{where } \bar{\epsilon} < 1. \quad (\text{F.7})$$

The proposition then follows. \square

G Further Analysis on Institutional Compatibility

Compatibility, the other way around. We examine how the stabilizing effect of the Ruler's absolute power depends on the Elite-People relationship.

Proposition G.1. *The stabilizing effect of the Ruler's absolute power is increasing in the level of the Elite-People symmetry, i.e., $dS/d(1-\gamma) > 0$ is increasing in β .*

Proof. By $\hat{x} = p(1-\gamma)\beta a$, $S = 1 - (1 - F(\hat{x})) \cdot (1-p)$, and $F(x) = fx$ over $x \in [0, pa]$, we have

$$\frac{dS}{d(1-\gamma)} = f \cdot (1-p) \cdot \frac{d\hat{x}}{d(1-\gamma)} = f(1-p)pa \cdot \beta > 0, \quad (\text{G.1})$$

which is increasing in β . □

Role of the Elites' status quo payoff. First, examine the Ruler's optimal choice of the Elites's status quo payoff. The program would be

$$\max_a \quad V^R = (\pi - (1 + \beta)a - r) \cdot S + r, \text{ subject to} \quad (\text{G.2})$$

$$0 \leq a \leq \frac{\pi}{3}, \quad S = 1 - (1 - F(\hat{x})) \cdot (1 - p), \quad \hat{x} = p \cdot (1 - \gamma)\beta a, \quad (\text{G.3})$$

where the feasible range of a is bounded by the assumption $\pi - 3a \geq 0 > r$. Further assume that R's reservation payoff is sufficiently low, i.e., $(1 - 2\beta)\pi/3 > r$, and $F(x) = fx$ over $x \in [0, pa]$.

Proposition G.2. *At Stage 1, given γ and β , R's optimal choice of a is:*

- if $\gamma \geq \bar{\gamma}' \equiv 1 - (1 + \beta) / ((\pi - r) / (1 - p) f \beta)$, then R will choose $a^* = 0$;
- if $\gamma \leq \underline{\gamma}' \equiv 1 - (1 + \beta) / ((1 - 2\beta)\pi/3 - r) / (1 - p) f \beta$, then R will choose $a^* = \pi/3$;
- if $\underline{\gamma}' < \gamma < \bar{\gamma}'$, then R will choose

$$a^* = \frac{1}{2} \cdot \left(\frac{\pi - r}{1 + \beta} - \frac{1}{(1 - \gamma)(1 - p)f\beta} \right) \in \left(0, \frac{\pi}{3} \right). \quad (\text{G.4})$$

Proof. Observe that, by $F(x) = fx$ over $x \in [0, pa]$, we have

$$\frac{dS}{da} = (1 - p)pf\beta(1 - \gamma) > 0, \quad \frac{dS}{d\gamma} = -(1 - p)fp\beta a < 0, \quad (\text{G.5})$$

and

$$\frac{d^2S}{da^2} = 0, \quad \frac{\partial^2S}{\partial\gamma\partial a} = -(1 - p)pf\beta < 0. \quad (\text{G.6})$$

Now examine the marginal impact of a on V^R . We have

$$\frac{dV^R}{da} = (\pi - (1 + \beta)a - r) \cdot \frac{dS}{da} - (1 + \beta)S, \quad (\text{G.7})$$

while

$$\frac{d^2V^R}{da^2} = -2(1 + \beta) \cdot \frac{dS}{da} < 0. \quad (\text{G.8})$$

We have then three cases:

- if $dV^R/da|_{a=0} \leq 0$, i.e., $\gamma \geq \bar{\gamma}' \equiv 1 - (1 + \beta) / ((\pi - r) / (1 - p) f \beta)$, then R will choose $a^* = 0$;

- if $dV^R/da|_{a=\pi/3} \geq 0$, i.e., $\gamma \leq \underline{\gamma}' \equiv 1 - (1 + \beta)/((1 - 2\beta)\pi/3 - r)(1 - p)f\beta$, then R will choose $a^* = \pi/3$;
- if otherwise, i.e., $\underline{\gamma}' < \gamma < \bar{\gamma}'$, then R will choose $a^* \in [0, \pi/3]$ that uniquely solves $dV^R/da|_{a=a^*} = 0$, i.e.,

$$a^* = \frac{1}{2} \cdot \left(\frac{\pi - r}{1 + \beta} - \frac{1}{(1 - \gamma)(1 - p)f\beta} \right). \quad (\text{G.9})$$

The proposition is thus proved. □

Combining this proposition and our main result, we see that when R's absolute power is strong, R would like to make E and P's status quo payoffs both high (high a and β); when R's absolute power is weak, although R would like to have an asymmetric Elite–People relationship ($\beta = 0$), this asymmetry would not make much a difference in terms of the Elites and People's status quo payoffs, since both payoffs would be low ($a = \beta a = 0$). In this sense, the Ruler would largely like to have the Elites and People's everyday power and rights on par with each other.

Second, consider how a would alter the political–economic trade-off in R's preference about β . On the one hand, observe that by Equation (11), a greater a will scale up the stabilizing effect of β . On the other hand, observe that by Equation (12), a greater a will decrease the weight of the stabilizing effect of β in the aforementioned political–economic trade-off, since it will make the status quo less enjoyable for R (a lower $\pi - (1 + \beta)a - r$). At the same time, it will increase the weight of the sacrifice induced by the greater β in R's consideration (a higher aS). In this sense, a greater a will strengthen the stabilizing effect of β and thus the intensive margin of the political side of the aforementioned political–economic trade-off, while weakening the extensive margin of the political side, and increasing the weight of the economic side of the trade-off.

Role of the Ruler's capability of preserving the status quo alone. In our model, we have assumed that the Ruler's capability of preserving the status quo alone, p , is exogenous. In reality, it could depend on the Ruler's military capacity or some institutional features of the status quo, and the Ruler may well choose to invest in such capacity or features. In light of this, here we discuss briefly the role of p in the stabilizing effect of β and interesting implications for the Ruler's political–economic trade-off when choosing β .

First, Equation (11) suggests that the stabilizing effect of β is weak ($dS/d\beta \rightarrow 0$) if p is either too high ($p \rightarrow 1$) or too low ($p \rightarrow 0$), i.e., either the Ruler does not rely much on the

People and Elites' help, or he has a too little chance to preserve the status quo alone and thus eventually punish the People and Elites.

Second, note that the stability of the status quo

$$\begin{aligned} S &= 1 - (1 - F(\hat{x})) \cdot (1 - p) = 1 - (1 - f\hat{x}) \cdot (1 - p) \\ &= 1 - (1 - f(1 - \gamma)\beta pa) \cdot (1 - p) \end{aligned} \tag{G.10}$$

is increasing in p . If we allow the Ruler to invest in a higher p subject to the budget of his status quo payoff $\pi - (1 + \beta)a$, the budget will become smaller if R raises β . Therefore, allowing the Ruler to invest in a higher p can introduce a third side to the political–economic trade-off of the Ruler when choosing β . Interestingly, this third side is both political and economic – it concerns the impact of a higher β on R's ability to raise p and thus also on the stability of the status quo, while the impact functions through the economic payoff in the status quo.

H Allowing Current Stability to Shape Future Power Structure

Based on the equilibrium at Stage 2, R's preference over γ is straightforward: a lower γ stabilizes the status quo (higher S) without any impact on R's status quo payoff; therefore, R will prefer γ to be as low as possible.

Now consider the following setting:

- At t :
 - The ruling position's historical strength S_{t-1} is given.
 - The Ruler's absolute power is realized as $\gamma_t = \gamma(S_{t-1})$, where $\gamma(S)$ satisfies $\gamma(S) \in [0, 1]$ and $\gamma'(S) < 0$ for any $S \in [0, 1]$. As the exact shape of $\gamma(\cdot)$ depends on their micro-foundations, to derive the most general results without being arbitrary, we do not impose further assumptions about $\gamma(\cdot)$.
 - The Ruler chooses the degree of Elite–People symmetry following $\beta_t = \beta^* \equiv \beta(\gamma_t)$ as in Proposition 3, which is a function of her absolute power γ_t . Note that β^* and thus $\beta(\gamma_t)$ is decreasing over $\gamma_t \in [0, 1]$.
 - The modeled Stage 2 plays out $S_t = 1 - (1 - F(\hat{x})) \cdot (1 - p) \equiv S(\beta_t, \gamma_t, \theta)$ as in the unique subgame perfect equilibrium; θ include all factors that, conditional on S_{t-1} , affect S_t but do so not through γ_t or β_t . Note that $S_\beta(\beta, \gamma, \theta) \geq 0$ and $S_\gamma(\beta, \gamma, \theta) \leq 0$.

- At $t + 1$: The same happens.

The dynamics then follows

$$\gamma_t = \gamma(S_{t-1}), \quad \beta_t = \beta(\gamma_t), \quad S_t = S(\beta_t, \gamma_t, \theta), \quad (\text{H.1})$$

or just

$$S_t = S\left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta\right). \quad (\text{H.2})$$

Steady states are then defined by

$$S^* = S(\beta^*, \gamma^*, \theta), \quad \beta^* = \beta(\gamma^*), \quad \gamma^* = \gamma(S^*), \quad (\text{H.3})$$

or just

$$S^* = S\left(\beta(\gamma(S^*)), \gamma(S^*), \theta\right). \quad (\text{H.4})$$

Existence and stability of steady states. The defining equation of steady states can help establish a few technical results. The first result is about the possible range of S_t in the dynamics:

Lemma H.1. *Any S_t in the dynamics must satisfy $\underline{S} \leq S_t \leq \bar{S}$, where $\underline{S} = p$ and $\bar{S} = 1 - (1 - p) \cdot (1 - F(pa)) < 1$.*

Proof. Note that $S_\beta \geq 0$ and $S_\gamma \leq 0$. Therefore, the minimum \underline{S} is reached when $\beta_t = 0$ and $\gamma_t = 1$; the maximum \bar{S} is reached when $\beta_t = 1$ and $\gamma_t = 0$. The lemma then follows. \square

The first result helps to establish the existence of a steady state:

Proposition H.1. *There exists at least one stable steady state, i.e., there exists $S^* \in [\underline{S}, \bar{S}]$ such that, at $S_{t-1} = S^*$, $S_t = S\left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta\right)$ crosses $S_t = S_{t-1}$ from $S_t \geq S_{t-1}$ to $S_t \leq S_{t-1}$, and its slope is non-negative while not greater than one.*

Proof. Note that \underline{S} is achieved when $\beta = 0$ while $\gamma = 1$, whereas $\beta(\underline{S}) \geq 0$ and $\gamma(\underline{S}) \leq 1$. Also note that $S(\beta, \gamma, \theta)$ is increasing in β and decreasing in γ . Therefore, we have $S(\beta(\underline{S}), \gamma(\underline{S}), \theta) \geq \underline{S}$. Similarly, we have $S(\beta(\bar{S}), \gamma(\bar{S}), \theta) \leq \bar{S}$. Since $S(\beta(\gamma(s)), \gamma(s), \theta)$ is continuous in s , the defining equation $S^* = S(\beta(\gamma(S^*)), \gamma(S^*), \theta)$ must have a solution $S_{t-1} = S^* \in [\underline{S}, \bar{S}]$, i.e., a steady state exists, at which $S_t = S(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta)$ crosses $S_t = S_{t-1}$ from above, i.e., from $S_t \geq S_{t-1}$ to $S_t \leq S_{t-1}$.

Moreover, note that, by $S_\beta \geq 0$, $S_\gamma \leq 0$, $\beta'(\gamma) \leq 0$, and $\gamma'(S) < 0$, we have

$$\frac{dS \left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta \right)}{dS_{t-1}} = (S_\beta \cdot \beta'(\gamma) + S_\gamma) \cdot \gamma'(S_{t-1}) \geq 0, \quad (\text{H.5})$$

so $S_t = S \left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta \right)$ is increasing in S_{t-1} , while crossing $S_t = S_{t-1}$ from above at $S_{t-1} = S^*$. Therefore, its slope must be non-negative while not greater than one. This steady state is thus stable. The proposition is thus proved. \square

Multiplicity of stable steady states. If $S_t = S \left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta \right)$ crosses $S_t = S_{t-1}$ more than once, multiplicity will appear. The conditions governing single- or multi-crossing concern the second-order properties of $\beta(\cdot)$ and $\gamma(\cdot)$, which depend on their micro-foundation. In light of this, we do not specify the conditions here; instead, we take the possibility of multiplicity as given and explore the implications under this possibility:

Institutional compatibility under multiple steady states. If multiple steady states exist given θ , then any two different steady states must follow institutional compatibility:

Proposition H.2. *Given θ , if there are two steady states $\{S^*, \beta^*, \gamma^*\}$ and $\{S^{*'}, \beta^{*'}, \gamma^{*'}\}$, then any one among the following three statements will imply the other two: 1) $S^* \geq S^{*'}$; 2) $\beta^* \geq \beta^{*'}$; 3) $\gamma^* \leq \gamma^{*'}$.*

Proof. It follows the three defining equations of steady states and their monotonicity. \square

Given multiple steady states, the second result is about the divergence of compatible institutions:

Proposition H.3. *If there are $N \geq 2$ different stable steady states $S_1^* < \dots < S_N^*$, then there are $N - 1$ different unstable steady states $\tilde{S}_1 < \dots < \tilde{S}_{N-1}$, they satisfy $\underline{S} < S_1^* < \tilde{S}_1 < S_2^* < \tilde{S}_2 < \dots < S_{N-1}^* < \tilde{S}_{N-1} < S_N^* < \bar{S}$, and the institutional dynamics is determined by the initial strength of the ruling position S_0 :*

- if $\tilde{S}_n < S_0 < \tilde{S}_{n+1}$, where $n = 1, \dots, N - 1$, then $S_t \rightarrow S_{n+1}^*$ as $t \rightarrow \infty$;
- if $\underline{S} \leq S_0 < \tilde{S}_1$, then $S_t \rightarrow S_1^*$ as $t \rightarrow \infty$;
- if $\tilde{S}_{N-1} < S_0 \leq \bar{S}$, then $S_t \rightarrow S_N^*$ as $t \rightarrow \infty$.

Proof. As eventually $S_t = S \left(\beta(\gamma(S_{t-1})), \gamma(S_{t-1}), \theta \right)$ has to cross $S_t = S_{t-1}$ from $S_t \geq S_{t-1}$ to $S_t \leq S_{t-1}$, we can rank the stable and unstable steady states as proposed. Neighboring unstable steady states then divide the possible range of S into sub-ranges, starting from each of which S_t will converge to the stable steady state in it. \square

This result implies that the institutional difference between China and Europe can be thought as different stable steady states given the same primitives θ , but different initial S (and β and γ) at very early times.

I China vs. Europe: Autocratic Stability

Proposition 2 states that a stronger absolute power of the Ruler and a more symmetric relationship between the Elites and People, as in imperial China compared to premodern Europe, imply a higher stability of autocratic rule. As the status quo of autocratic rule and the nature of the challenge in our model are open to flexible interpretation, Proposition 2 can generate several auxiliary predictions that we could check with the stylized facts about autocratic stability in historical China and Europe.

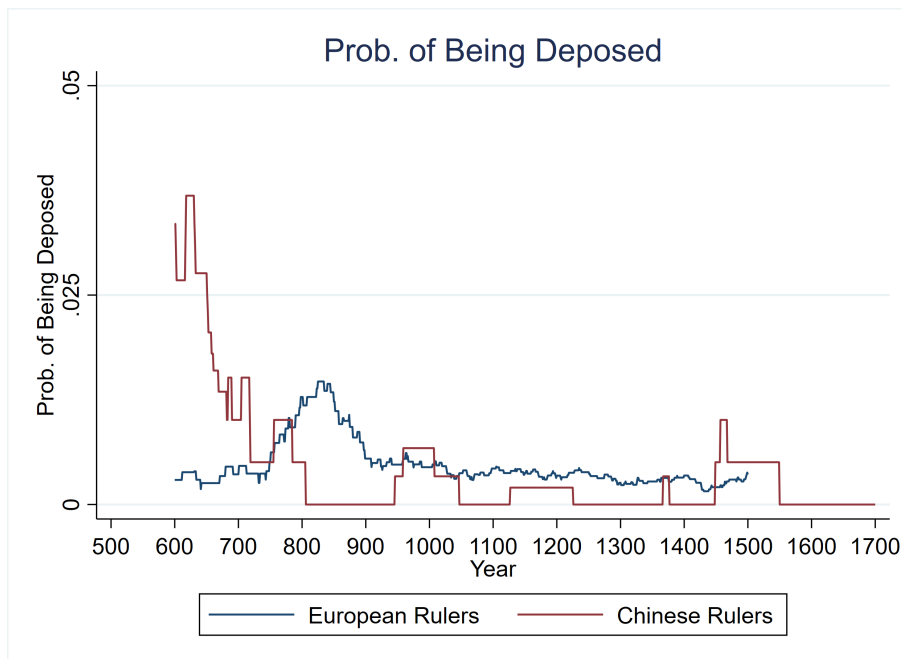
Resilience of unified autocratic rule. First, if we interpret the status quo of autocratic rule in our model as a unified one across the territory, then we can see the number of independent states as an endogenous outcome in our model. Proposition 2 thus predicts that a unified autocratic rule should have been more resilient in imperial China than in premodern Europe.

The literature has well documented that China had been more unified than Europe in history (e.g., Ko et al., 2018; Fernández-Villaverde et al., 2020). Among many measures, a comprehensive one is the share of the population in Europe or East Asia that was controlled by the largest polity in the area. Plotting the data of this measure, Scheidel (2019, fig. 1.11) shows that, since 800, in East Asia, the population share in the largest polity, which was the dominant empire in China, had usually been above 75%, except for short subperiods of turbulence; in contrast, the number for Europe had been below 20%, consistent with a more fragmented pattern. This comparison is consistent with Proposition 2.

Risk of deposition. Second, if we interpret the challenge in our model as the removal of the Ruler from the ruling position, Proposition 2 then predicts that a Chinese Ruler should have faced a lower risk of deposition in each given year than a European Ruler.

Historical information of all monarchies in the world has been compiled by Morby (1989), and some of it has been used in a few studies (e.g., Blaydes and Chaney, 2013; Kokkonen and Sundell, 2014). Using the same data, to compare the risk of deposition between China and Europe, we first calculate for each given year a measure of the risk of deposition in that year, i.e., the share of the Rulers who were deposed in that year among all the Rulers who had been in power in that year; we then visualize in Figure I.1 the comparison between

China and Europe by plotting the retrospective 100-year moving-averages of the measure; for robustness, for each retrospective 100-year window, we use the Olympic average, i.e., we take the average in the window after removing one of the highest and one of the lowest values in the window.



Olympic average within each retrospective 100-year window. Following Blaydes and Chaney (2013), “European Rulers” include all the ones who assumed power before 1500 and are under the section “The Barbarian West” or the subsections “The British Isles,” “France,” “The Low Countries,” “Italy,” “The Iberian Peninsula,” “The German-speaking States,” “Scandinavia,” and “Crusader States” under the section “Europe” in Morby (1989). “Chinese Rulers” include all the ones under the subsection “China” under the section “The Far East” in Morby (1989).

Figure I.1: Risk of deposition for a Ruler in a given year, China vs. Europe

Figure I.1 shows that between the 9th and 14th centuries, i.e., when our characterization of the power-structure differences between China and Europe was the most relevant, the risk of deposition for a Ruler was generally lower in China than in Europe. That said, a short period around the 10th century did exist when the risk in China appeared to be higher, when China entered the Five Dynasties and Ten Kingdoms period (907–979). In light of this, we conduct a Kolmogorov–Smirnov test to check whether the differences in the risks between China and Europe between the 9th and 14th centuries are systematic. The test reports that at a significance level of 0.1%, we can accept the claim that the risk of deposition for a Ruler in a given year was generally lower in China than in Europe during the period, whereas the opposite claim must be rejected. These results are consistent with Proposition 2.^{I.1}

^{I.1}One may recall that Hoffman (2015) shows that in the 16–18th centuries, major European sovereigns

Number of wars. Finally, if we interpret the challenge in our model as an armed conflict, Proposition 2 then predicts that anyone in Europe who preferred an alternative to the status quo would be more willing to start a war than her counterpart in China.

Note that this prediction does not depend on the challenger’s identity and her status in the respective status quo: she could be either a foreign power, a rebellious local lord or regional governor, or a group of commoners. In particular, it is possible for both of a foreign king and an internal regional governor to challenge the status quo, so the total number of potential challengers is not the number of independent states, but the total number of all these possibly relevant entities who could challenge the status quo. Given that area sizes of the historical core of imperial China and western and central Europe are similar but China was generally more densely populated from 900 to 1700 (e.g., Goldewijk et al., 2017; Fernández-Villaverde et al., 2020), we find it difficult to argue that the total number of potential challengers was systematically and significantly greater in Europe than in China. This reading is also consistent with Fernández-Villaverde et al. (2020), where the exogenous potential of conflict is assumed to be proportional to population density.

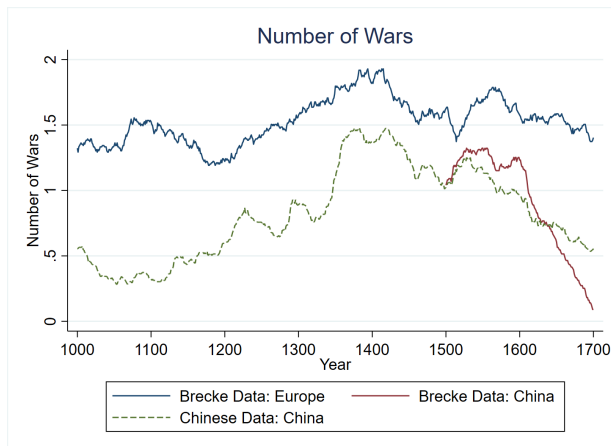
Keeping these in mind, we compare the total number of wars that challenged a status quo in the Chinese society with the number for the European society, regardless of the identity of the challengers. As defined in Section 2.1, here the “Chinese society” is the society in the historical core of imperial China, whereas the “European society” is the Romano–Germanic influenced or assimilated society in western and central Europe where feudalism once prevailed.

We are not aware of systematic evidence on this subject that covers the period of our interest. That said, Brecke (1999) provides comprehensive information on wars in Europe from 900 onwards and in China from only 1400 onwards. We complement the data with information from the Chinese Military History (2003) project from 900.^{1,2} We further identify for each war whether it was fought to challenge a status quo in the Chinese or European society, respectively.

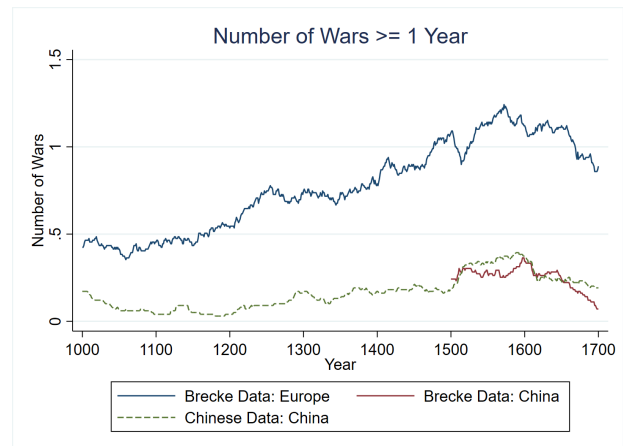
Figure I.2 reports the number of wars breaking out in each given year that challenged a status quo in the Chinese or European society; again, we plot the retrospective 100-year

were seldom deposed after losing a war. On the 7–14th centuries, when our characterization of the power structure was more relevant, however, Eisner (2011) shows that the risk of regicide, which would surely lead to but was not the only way to deposition, had remained high in Europe. Eisner (2011) also shows that at that time battle death was a major risk for European rulers and being murdered with an external power involved was also not rare.

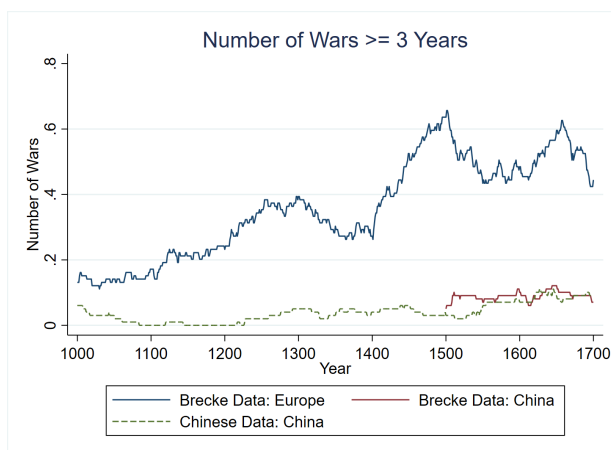
^{1,2}The original data in the Chinese Military History (2003) project are at the level of individual battles. We first compare the battle-level data from the Chinese Military History (2003) project with the war-level data from Brecke (1999) to understand Brecke (1999)’s criteria of categorization. Complementing the criteria with information from Wu (2016) and Tian (2019), we finally manually categorize the battles recorded in the Chinese Military History (2003) project into wars.



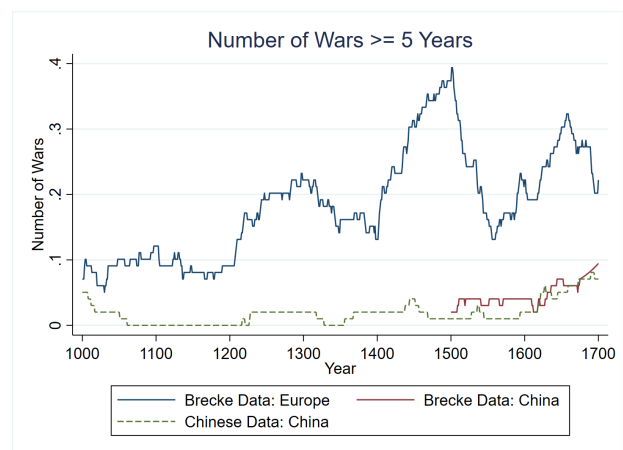
(a) All wars



(b) One-year or longer wars



(c) Three-year or longer wars



(d) Five-year or longer wars

Olympic average within each retrospective 100-year window. “Brecke Data: Europe” include wars in Brecke (1999) that challenged a status quo in the European society, i.e., the Romano–Germanic influenced or assimilated society in western and central Europe where feudalism once prevailed; “Brecke Data: China” include wars in Brecke (1999) that challenged a status quo in the Chinese society, i.e., the society in the historical core of imperial China; “Chinese Data: China” include wars in our Chinese war data that challenged a status quo in the Chinese society. For more details of our Chinese war data, see Footnote I.2.

Figure I.2: Number of wars starting in a given year that challenged a status quo in the Chinese or European society

moving-averages, and when doing so, the Olympic average is used. Since concerns may arise about the possibility that small-scale wars could be counted in systematically different ways for China and Europe, besides reporting the result for wars of all lengths in Figure I.2a, we also restrict our attention to more significant wars that lasted longer than one year, three years, and five years, respectively, in Figures I.2b–I.2d.

Across Figures I.2a–I.2d, we see the same pattern. First, Brecke (1999)’s data and our data give comparable numbers of wars that challenged a status quo in the Chinese society during 1400–1700, strengthening our confidence about our data. Second, the figures show that the number of wars for Europe was consistently higher than that for China from 900 to 1700. We thus conclude that during 900–1700, there were significantly more wars challenging a status quo in Europe than those challenging a status quo in China. Note that this happened under the backdrop that it is difficult to argue that Europe had systematically and significantly more potential challengers than China. This stylized fact is thus consistent with Proposition 2.

In sum, consistent with our model, we find a persistent difference in the stability of autocratic rule, whether measured by the resilience or vulnerability of unified autocratic rule, the Ruler’s risk of deposition, or the number of wars.