# Informal Succession Institutions and Autocratic Survival: Evidence from Ancient China*

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Abstract: Can informal institutions promote autocratic survival? This paper looks at a special informal succession institution—the norm of primogeniture in ancient monarchies. My theory draws on both rationalist and constructivist accounts. Strategically, primogeniture helps alleviate the coordination problem among the elite and commitment problems between heirs and monarchs. Meanwhile, the norm of primogeniture regulates public expectation about the order of succession and bestows the rightful successor a sense of legitimacy, which shapes beliefs and interests of monarchs and the elite and contributes to norm following. Using a novel dataset covering 357 monarchs in 17 states in ancient China during the Spring-Autumn and Warring States eras (771-221 BCE) , I find that the norm of primogeniture reduces a monarch's risk of being deposed by the elite. I further provide statistical and anecdotal evidence for two mechanisms: 1) the norm of primogeniture works through moderating the adverse effect of elite competition on monarchs' tenure; and 2) norm following is partially driven by ideational factors such as beliefs and emotions.

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*"The advantages of a hereditary Monarchy are self-evident. Without some such method of prescriptive, immediate and automatic succession, an interregnum intervenes, rival claimants arise, continuity is interrupted and the magic lost."*

(Harold Nicolson , *King George the Fifth, His Life and Reign*)

# Introduction

It has been well established that institutions are crucial to leadership tenure, especially in authoritarian regimes (e.g., Acemoglu & Robinson, 2005; Svolik, 2009; Geddes, Wright, Wright, & Frantz, 2018). Formal institutions such as parties (Brownlee, 2007; Magaloni, 2008), legislatures (Gandhi & Przeworski, 2006; Lü, Liu, & Li, 2018), elections (Gandhi & Lust-Okar, 2009), and constitutions (Frantz & Stein, 2017; A. Meng, 2021) are found to contribute greatly to authoritarian continuity. However, existing literature on autocratic survival mostly focuses on formal institutions, and we still don't know much about whether informal institutions also deliver political stability to authoritarian regimes.

This paper theorizes and tests the relationship between informal succession institutions and autocratic survival. In the absence of democracy, arraigning a peaceful power transition is extremely difficult (Brownlee, 2007; Svolik, 2009). Scholars have shown that institutionalized succession rules are an important predictor for the tenure of authoritarian leaders. Kurrild-Klitgaard (2000) finds that institutionalized hereditary succession limits the number of coups in Denmark during the period of 935-1849. Analyzing 961 monarchs ruling 42 European states between 1000 and 1800, Kokkonen and Sundell (2014) show that leaders in states practicing primogeniture face lower risks of being removed from office. Frantz and Stein (2017) argue that institutionalized succession institutions reduce the risk of coups for modern dictators. Current literature mostly theorizes and tests the effect of formal succession institutions, and informal succession rules receive little attention.[1] However, as Helmke and Levitsky (2004, p. 726) point out, in many contexts

[1]The coding of primogeniture in Kokkonen and Sundell (2014) and Kokkonen and Møller (2020) also builds on informal rules, especially for the early period in their study. Acharya and Lee (2019) suggest

failing to consider informal institutions of the game "risks missing much of what drives political behavior and can hinder efforts to explain important political phenomena."

Another motivation to focus on informal succession institutions is the fact that throughout human history, succession rules were informal most of the time. Among Arabian dynasties, "no firm principle specified which member of the ruling family had the right to rule (Herb, 1999, p. 22)." The vast majority of dynasties in the Middle East had the same principle. For example, though primogeniture became the de facto succession order in the Ottoman Empire after 1617, it was not formalized legally (Alderson, 1956). Empires in Asia had the same pattern. The Mughal Empire in India had no formal succession rules (Faruqui, 2012). In Japan, there were no formal rules governing succession to the throne until the 1889 Meiji Constitution.[2] Also, succession rules were never formalized in ancient and imperial China (H. Li, 1987). While most European states have witnessed development of formal succession rules since 1500 CE, most polities did not have a clear succession rules for female heirs during the medieval period (Acharya & Lee, 2019). Even today, succession rules in some authoritarian regimes such as North Korea, Iran, Syria, and Saudi Arabia are opaque and informal (Brownlee, 2006; Yom & Gause III, 2012; Haggard, Herman, & Ryu, 2014).

I argue that the norm of primogeniture, the right of succession goes to the first born child, promotes political stability and incentivizes state building. My theory departs from existing studies as I draw on both rationalist and constructivist accounts. From a rationalist perspective, primogeniture reduces uncertainty after the ruler's demise and provides the elite assurance that the regime will reward their loyalty in a longer time horizon given the much younger age of the child (Tullock, 2012). Meanwhile, primogeniture reduces the risk that the designated successor will rebel against the ruler because usually the heir is younger than the ruler's brothers and thus he can better wait to inherit power peacefully (Tullock, 2012; Kokkonen & Sundell, 2014). From a constructivist per-

that the number of male heirs in medieval European monarchies affects the adoption of primogeniture, formal or informal. While these studies touches the idea of informal succession rules to some extent, their theories do not distinguish between formal and informal succession rules.

[2]Before 1889, the succession rules for the emperor were more or less agnatic and based on rotation. The rules of succession for the samurai and Daimyo (feudal lords) were also informal during the classical and feudal periods (Fukuda, 1998).

spective, the norm of primogeniture has normative factors that can constrain and shape the behavior and interests of autocrats and the elite. Following Cialdini and Trost (1998, p. 152), I define social norms as "rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws." The norm of primogeniture regulates public expectation about the order of succession and bestow the rightful successor a sense of legitimacy, which should contribute to a monarch's survival in office.

To test this theory, I collect a new dataset on fates of the monarchs in ancient China during the Spring and Autumn period (771-476 BCE) and the Warring States period (475-221 BCE). I focus on the case of ancient China for several reasons. First, it complements current studies which heavily relies on the experience of European states. Second, there was considerable variation in the succession norms during the period of study across states and time. Third, the international system during the period of study arguably best represents anarchy (Waltz, 1986), which provides an ideal environment for the test of theories in international relations and comparative politics. History of medieval and early modern European states featured power struggles among the Church, kings, and parliaments (Greif, 2006; Van Zanden, Buringh, & Bosker, 2012), and this dynamic could affect both institutions and autocratic survival (Gandhi & Przeworski, 2006). Fortunately, these potential confounders were absent in ancient China. Last, culture and ethnicity were potential confounders in the study of political stability in authoritarian regimes (Y. Wang, 2018; Kokkonen, Møller, & Sundell, in press). And society in ancient China was more homogeneous than that in medieval and early modern European states.

Because of the complexities of succession norms during the period of study, I do not explore variations among different types of succession norms. Instead, I focus on the strength of the norm of primogeniture over time and across states as a compromise.[3] Estimating Cox proportional hazards models for 357 monarchs in 17 states in ancient China, I find that monarchs faced a lower risk of being deposed by the domestic elite when the norm of primogeniture became stronger, controlling for state capacity, fates

[3]For more details, please see the historical background section.

of the previous monarchs, and other things. To alleviate the concern of endogeneity, I carefully trace the evolution of succession norms during the period of study, estimate shared frailty models and stratified models (which is analogous to random and fixed effects models for panel data), and include century-fixed effects to account for time trend. The results remain consistent.

To test the mechanisms, I use the number of generations of the aristocratic lineages in a state to measure elite competition following Zhao (2015). Then I interact elite competition with primogeniture and estimate the same models. I find that higher level of elite competition increases the risk of a monarch being deposed, and the effect is moderated by the norm of primogeniture. While I cannot formally test the mechanisms of constructivist accounts because of data availability, I provide anecdotal evidence that norm following is at least partially driven by the elite's beliefs and emotions.

Debates on the relative effectiveness of formal vs informal institutions are beyond the scope of this paper. However, to to entertain this idea, we can compare monarchs in ancient China to monarchs in medieval and early modern Europe. Data of European monarchs are from Kokkonen and Sundell (2014) and I restrict the European sample to states with de jure primogeniture laws. I find no evidence that the informal rule of primogeniture was less effective than their formal counterparts.

I further extend the analysis to modern autocracies, and show that a similar pattern persists today: leaders in authoritarian regimes that practice some type of primogeniture face lower risks of being removed from office compared to leaders in military, personal, and party regimes, as well as monarchies that do not practice primogeniture. While the relationship is not causal, it is consistent with qualitative studies that argue hereditary successions are one of the historic and organizational sources of authoritarian resilience during the Arab Springs (Brownlee, 2007; Brownlee, Masoud, & Reynolds, 2013).

This paper speaks to the literature on institutions and autocratic survival. Current studies exclusively focus on formal institutions, and the effects of informal institutions on autocratic survival is under-explored. Exceptions include A. Meng (2020).[4] However,

[4]Kokkonen and Sundell (2014) use both de jure and de facto measures of primogeniture, and in this sense their paper also speaks to informal institutions. But they do not theorize how informal institutions

A. Meng (2020) focuses on de facto institutions—the actual appointment of key positions within the presidential cabinet, and it is difficult to know whether the effects come from the rules themselves or the actual appointment. Also, a discussion on the evolution of informal institutions is largely missing in A. Meng (2020). This paper focuses on de jure primogeniture, which allows us to better disentangle the effects of informal rules from actual practice. I also trace the evolution of succession rules in ancient China and discuss why primogeniture eventually became the social norm. My results suggest that informal institutions can also deliver political stability to authoritarian regimes and the effectiveness of informal institutions can be traced back to more than two thousands years ago.

The empirical findings speak to a growing literature in political science that challenges an Eurocentric approach to world history (Blaydes & Paik, in press; Haggard & Kang, 2020). Existing studies on succession arrangement and autocratic survival mostly focus on the contemporary world or occasionally, historical European states. Using a unique data, this paper improves our understanding of autocratic survival by showing that the norm of primogeniture improved political stability in ancient China through two channels: 1) primogeniture moderates the adverse effects of elite competition; and 2) norm following of the elite is at least partially driven by ideational factors such as beliefs and emotions.

The rest of the paper proceeds as follows. I first draw on both rationalist and constructivist accounts to develop a theory of why the norm of primogeniture can deliver political stability and incentivize state building. Then I provide a historical background of ancient China, followed by a discussion of the evolution of succession norms. After discussing data collection strategy, I estimate Cox proportional hazards models for fates of the monarchs and discuss the empirical results and robustness checks. Then I provide both statistical and anecdotal evidence for two mechanisms suggested by rationalist and constructivist accounts. I further discuss the relative effectiveness of formal vs. informal institutions by comparing fates of monarchs in ancient China and fates of monarchs in medieval and early modern European states. To explore external validity, I extend the

can constrain and shape beliefs and behavior of monarchs and the elite, nor do they discuss the evolution of succession rules.

analysis to modern autocracies and show that a similar pattern persists today. The final section concludes.

# Theory: Primogeniture and Autocratic Survival

## Rationalist Explanations

Primogeniture has several advantages over other succession norms in addressing two main problems in authoritarian succession: the coordination problem and the commitment problems (Svolik, 2012; Kokkonen & Sundell, 2014). Similar to much of the research in authoritarian politics, I begin with the assumption that the autocrat provides private goods to the elite in exchange for their support and loyalty (De Mesquita, Smith, Morrow, & Siverson, 2005; Gandhi & Przeworski, 2006). If the autocrat passes away and the elite cannot agree upon a successor, internal conflict will arise. This is not in the best interest of the elite. While the elite may seize this opportunity to grab power and secure more rents, they generally prefer maintaining the status quo to a potentially disastrous rebellion (Brownlee, 2007). This is because they cannot be certain their rebellion will succeed, and if they lose, the price will be too high to pay (Kokkonen & Sundell, 2014). In ancient China, the penalty for rebellion against the monarch was extremely cruel: not only the rebel will be tortured to death, his families and even distant relatives will be executed (Turner, 1993). Therefore, it is of the elite's best interest to coordinate and agree on a successor who can continue to share rents with them after the demise of the monarch. Compared to the norm of selection, the norm of primogeniture offers a clear expectation about whom will succeed the throne, which alleviates the coordination problem among the elite and increases the likelihood of agreeing on a successor (Kokkonen & Sundell, 2014).

The commitment problems is another threat to peaceful power transition in authoritarian politics. There are two types of commitment problems: whether the designated successor can commit to share power peacefully with the incumbent autocrat, and whether the successor can commit to reward the elite once he ascends to power. The designated

successor has strong incentives to launch a coup as he will succeed the throne if the incumbent autocrat dies (Kokkonen & Sundell, 2014; Konrad & Mui, 2017). The special status also provides the designated successor opportunities to accumulate power and seek allies. Nonetheless, some designated successors are more dangerous to others. Sons are usually younger than brothers and they can better wait to inherit the throne (Tullock, 2012). Thus compared to horizontal succession (and agnatic seniority in particular), vertical succession can better solve type I commitment problems. Within vertical succession, primogeniture prevails because it can also better solve type II commitment problems compared to ultimogeniture. Recall that under ultimogeniture, the youngest son inherits the throne. However, the older sons will not sit idle. Indeed, the older sons have more time to accumulate power and when the incumbent autocrat dies, it is very likely that the youngest son does not have enough power to hold on to his throne. Anticipating that the youngest son stands a low chance against his elder brothers, the elite will most likely support the elder brothers instead of the youngest one. In another word, under ultimogeniture, the designated successor—the youngest son, cannot credibly commit to the elite that he will reward them after ascending to the throne. In contrast, the eldest son has more time to accumulate power and the elite find it more credible that their support will be rewarded if they stand by the side of the eldest son.

Records show that monarchs and the elite in ancient China came to realize that primogeniture was the best way to guarantee a peaceful power transition and a state's prosperity. The Zuo Commentary on the Spring and Autumn Annals said that "Failing to distinguish the legal and social status of concubines and the wife, and treating concubines' sons and the wife's son the same way... proved to be the scourge of turmoil."[5] The Records of the Grand Historian mentioned that "A state was fragile if the monarch's legal wife did not have a son when the monarch passed away."[6]

[5] 《左传. 桓公十八年》：并后、匹嫡、两政、耦国，乱之本也。
[6] 《史记. 魏世家》：君终无嫡子，其国可破也。

## Constructivist Explanations

Social norms are powerful in shaping behavior (Axelrod, 1986; Finnemore & Sikkink, 1998; Cialdini & Goldstein, 2004; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Following Cialdini and Trost (1998, p. 152), I define social norms as "rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws." According to Cialdini and Trost (1998), there are two types of social norms: descriptive norms and injunctive norms. Descriptive norms specify what is done. People learn how to behave by observing others' behavior as a source of information to help them maximize the effectiveness of their social behavior (Aarts & Dijksterhuis, 2003). In contrast, injunctive norms specify what ought to be done. People learn how to behave by their perception of what most people approve or disapprove.

Primogeniture as a social norm specifies the rightful order of succession, and thus it falls into the category of injunctive norms. Scholars of international relations show that injunctive norms can constrain and shape state behavior and interests. For example, the norm of self-determination helped wiped out colonialism; the nuclear taboo helped keep the spread of nuclear weapons in check; and global human right norms helped improve domestic practice of human right in many countries (Finnemore & Sikkink, 1998; Tannenwald, 1999; Risse-Kappen, Risse, Ropp, & Sikkink, 1999). Here I argue that primogeniture as a social norm can constrain and shape behavior and interests of the monarch and the elite primarily through three mechanisms.

First, "norms exerts the greatest influence when conditions are uncertain." (Cialdini & Trost, 1998, p. 162). Few occasions have more uncertainties than a monarch passed away in office. Succession norms provide clear expectation about whom will succeed the throne, reducing uncertainties and facilitating coordination among the elite.[7] Business studies find that about 70 percent of family firms did not make it to the second generation (*The business failure record.*, n.d.). Lansberg (1988) argues that the lack of a succession plan is one of the most important factors contributing to the failure of family business. Even

[7]Arguably, other succession norms such as selection and agnatic seniority can also alleviate the coordination problem among the elite. The goal of this section is not about how primogeniture is superior than other succession rules. The superiority of primogeniture is discussed in the previous section and this section focuses on how social norms can constrain and shape behavior and interests.

in modern authoritarian regimes, leadership succession norms in China have delivered peaceful and orderly power transition since the early 1990s (Z. Wang & Vangeli, 2016), and hereditary succession norms in Syria contribute to the continuity of the al-Assad family's ruling (Stacher, 2011).

Second, the norm of primogeniture can shape beliefs and interests of the elite, and (attempted) violations of the norm will be punished collectively. Monarchs who attempted to deviate from the norm of primogeniture almost always faced strong oppositions. Historical examples where a monarch explored the possibility of overturning the norm of primogeniture include Liu Bang in the Han Dynasty, Cao Cao in the Three Kingdoms Period, and Zhu Yijun in the Ming Dynasty. In each case, the elite expressed concerns over violations of the norm of primogeniture, and some even threatened to quit. Sometimes the monarch conceded, but sometimes the monarch became so angry that he demoted those who confronted him or even threw them into jail (S. Meng, 2015). The elite's effort to enforce the norm of primogeniture against monarchs' will cannot be explained by material self-interests alone. As Fukuyama argues, "rule following for human being is not primarily a rational process but one that is grounded in emotions (Fukuyama, 2011, p. 38)." The elite may feel angry when monarchs attempted to break the rule, or they may take pride in defending the norm which they deemed fundamental to the stability of the dynasty. Here ideational factors such as beliefs and emotions may better explain why some elites were willingly to risk their careers or even lives to enforce the norm of primogeniture.

Although it is rare, succession norms may also shape monarchs' behavior by transforming their interests. Primogeniture as a social norm bestows a sense of legitimacy and reputation to the monarchs and eventually, the monarchs may internalize the norm and conform to the norm automatically. When Marquess Lie of Zhao died in 400 BCE, his son was under age and thus his younger brother Zhao Wugong succeeded as ruler of Zhao. Thirteen years later, Zhao Wugong passed away and the son of Marquess Lie of Zhao succeeded the throne (Shen, 2000). If he wanted, Zhao Wugong could pass the throne to his own son. After all, he had 13 years to accumulate power and primogeniture was not

formalized.[8] The fact that Zhao Wugong upheld the norm of primogeniture even though he was powerful enough to overthrow it shows that primogeniture not only constrained behavior through punishment, but also could transform the interests of monarchs.

Hypothesis: primogeniture as a social norm reduces the likelihood of a monarch being removed from office by the domestic elite.

# Historical Background

## The Feudal System and its Dissolution

The Zhou Dynasty is the third earliest dynasties in ancient China.[9] It is divided into two periods: the Western Zhou Period (1046-772 BCE) and the Eastern Zhou Period (771-256 BCE). The Spring and Autumn period corresponds to roughly the first half of the Eastern Zhou Period (771–476 BCE), and the second half of the Eastern Zhou Period overlaps with the Warring States period (475–221 BCE).[10] Following is a timeline/key dates of this history.

**Timelines**

| | |
|---|---|
| 1046-772 BCE | Western Zhou Period |
| 771-256 BCE | Eastern Zhou Period |
| 771–476 BCE | Spring and Autumn period |
| 475–221 BCE | Warring States period |
| 221 BCE | Unification of China by Qin |

The political and economic system of Western Zhou is very similar to that of the medieval Europe's feudalism. When the Western Zhou overthrew the Shang Dynasty, its rulers were beset by the question of how to govern such a vast territory (HOU, 2007). The solution, known as "fenfeng zhi," was for the king of Zhou to keep the capital and

[8] Indeed, Zhao Wugong never claimed himself as Marquess of Zhao and there is no regnal year associated with his name in the Bamboo Annals.

[9] Appendix A provides a brief historical background of the first three dynasties in ancient China: the Xia, Shang, and Zhou Dynasties.

[10] The Eastern Zhou Dynasty was brought to an end by Qin in 256 BCE.

its surrounding areas under direct control (about 1000 square miles) and then donated territory across the country to the relatives (and a few meritorious statesman) who served the King as vassals (Loewe & Shaughnessy, 1999). The vassals further donated their land to their relatives (Bau, 1986). The vassals exercised hereditary succession within their small states and enjoyed the right to collect taxes within their states and build an army. However, the vassals were obliged to pay regular tributes to the king of Zhou and supply manpower during military operations (Loewe & Shaughnessy, 1999).

The decentralized system began to disintegrate gradually in the late Western Zhou as the familial relationship between the king of Zhou and the vassals thinned over generations. In 771 BC, the Quanrong barbarians sacked the capital of Western Zhou and the King was forced to move the capital eastward to Luoyang. Hence started the Spring and Autumn period (771–476 BCE).

During the Spring and Autumn period, more and more feudal lords developed power and prestige on par with the king of Zhou or became even stronger. As the king of Zhou lost political hold on the feudal lords, the feudal system was gradually transformed into an international system (Bau, 1986, p. 24). There were over 100 states mentioned in the chronicles during this period, and about 20 of them were major powers (Loewe & Shaughnessy, 1999). States waged war against each other and sought expansion. The scale and frequency of interstate wars increased during the Warring States period (W. Y. Li, 2011). By the year of 334 BCE, there were only 7 states left: Qi, Chu, Qin, Yan, Zhao, Wei, Han. After conquering the State of Qi in 221 BCE, Qin ruled over a unified China, ending the Warring States period and starting the Qin Dynasty. Hui (2004, p. 176) provides a good summary of the international system during the Spring and Autumn period and the Warring States period:

*"similar to the early modern European system, the ancient Chinese system experienced prevalence of war, disintegration of feudalism, formation of international anarchy, emergence of territorial sovereignty, and configuration of the balance of power."*

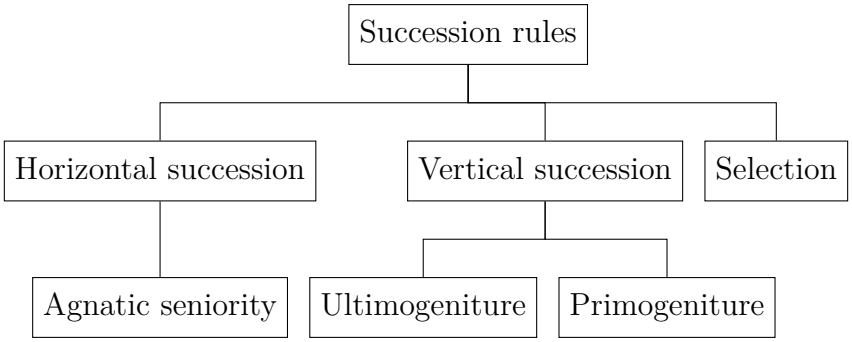


Figure 1: Categorization of succession rules

## Succession Rules in Ancient China

Different from monarchies in medieval Europe and Early Modern Europe, the rules of royal succession were never codified in ancient China (Tshung-Zuh, 1925). To my best knowledge, there is no dataset that covers succession rules during the period of my study and therefore I rely on works of historians for the coding.

Succession rules in ancient China could be divided into three large groups: horizontal succession, vertical succession, and selection (see Fig 2.1). Under horizontal succession, brothers of the monarch have the first right to inherit the throne after the monarch's demise. The most common rule of horizontal succession is agnatic seniority, which stipulates that the eldest brother of the current ruler inherits the throne. In contrast, under vertical succession, when the monarch passed away, the throne will be passed to the children of the monarch. Two most common rules of vertical succession in ancient China were ultimogeniture and primogeniture. Ultimogeniture specifies that the last-born child has the privilege to inherit the throne whereas under primogeniture the right to succeed the throne goes to the eldest son of the empress (Y. Wang, 2018).[11] The third category of succession rules is selection, under which the monarch can select whoever he likes to inherit the throne, mostly among his sons (Tshung-Zuh, 1925). The selection criteria was arbitrary in ancient China: it could be some desirable character and ability (such as "Ren," translated as altruism and empathy) or a divine revelation (H. Li, 1987).

Succession norms during the period of study were complex, and sometimes it is con-

[11]Kings in ancient China were allowed to marry multiple women and have multiple concubines, but they could only have one empress. Only the eldest son of the empress has the right to succeed the throne under primogeniture in ancient China.

troversial to code the de jury succession norm of a state during the Spring and Autumn period with pinpoint accuracy.[12] Since the goal of this paper is to examine how the norm of primogeniture affects political stability, I use two rough measures for the strength of the norm of primogeniture during the period of study as a compromise. The downside of these rough measures is that they do not allow me to compare primogeniture to other types of secession rules directly. However, using rough measures gets rid of controversies among historians and still allows me to test whether variations in the strength of the norm of primogeniture affects fates of the monarchs.

The first measure of the strength of the norm of primogeniture draws on variations over time. Studies show that the norm of primogeniture was established during the period of transition from the Spring and Autumn period to the Warring States period (H. Li, 1987; Wei & Wang, 2010; E. Wang, 2017). So the first measure is a binary variable: the norm of primogeniture was "weak" in the Spring and Autumn period and "strong" in the Warring States period.[13] The second measure adds a layer of cross-country variations to the first measure. The State of Song was a descendant of the Shang Dynasty, and the State of Lu was a descendant of the Zhou Dynasty (Loewe & Shaughnessy, 1999). Both the Shang and Zhou Dynasty embraced a special succession norm called "Yi Ji Yi Ji," which is largely a mixture of horizontal succession and vertical succession: the monarch passed his throne to his son, then to his son's brother, then to his son's brother's son, and so on (E. Wang, 2017). Since Song and Lu were descendants of the Shang and Zhou Dynasties respectively, they also inherited the norm of "Yi Ji Yi Ji" during the Spring and Autumn period (Wei & Wang, 2010; E. Wang, 2017). In contrast, other states were ahead of the transition to the norm of primogeniture (H. Li, 1987). Thus the second measure is an ordinal variable: the strength of the norm of primogeniture is "weak" if the monarch was from the State of Song or Lu during the Spring and Autumn period, "moderate" if the monarch was from other states during during the Spring and Autumn period, and "strong" if the monarch exited office during the Warring States period.

[12]For example, there is a debate about whether the succession norm in the State of Qi during the Spring and Autumn period was primogeniture (H. Li, 1987; Zhang, 1998; Y. Li, 2007).

[13]I use the time when a monarch exited office to determine which period the monarch belonged to. The results remain consistent if I use the time when a monarch took office.

Besides historians' accounts, these two measures of the strength of the norm of primogeniture finds strong support in the data. In the first measure, when the norm of primogeniture was weak, 62 percent of the monarchs were succeeded by their sons; when the norm of primogeniture was strong, 78 percent of the monarchs were succeeded by their sons. For the second measure, when the norm of primogeniture was weak, 56 percent of the monarchs were succeeded by their sons; when moderate, this number increased to 63 and it reached 78 percent when strong.[14] Table 1 summarizes this finding.

[Table 1 here]

## Evolution of Succession Norms

A challenge facing studies of social norms is that it is difficult to explain how informal institutions emerged and how they changed over time (Helmke & Levitsky, 2004). In this section, I first provide an overview of the evolution of succession norms in ancient China during the period of study. Then I discuss three possible explanations for why primogeniture became the social norm that governed royal succession during the transition from the Spring and Autumn period to the Warring States period.

Before the Western Zhou Dynasty (1045-771 BC), agnatic seniority was the dominant norm governing royal succession (G. Wang, 1959). Most historians believe that the norm of primogeniture originated from "lineage law" (aka the zongfa system) set up by Duke Wen of Zhou (G. Wang, 1959; Zhang, 1998). It is a system of "ranked authorities based on patriarchal principles" (Zhao, 2015, p. 59). Duke Wen of Zhou was one of the founding generations of the Western Zhou Dynasty, and he set up lineage law in order to control and regulate his vassals (who mostly were his sons or brothers) (Zhao, 2015). The core concepts of lineage law are Major Lineage (dazong) and Minor Lineage (xiaozong). The king of Zhou was the head of the Major Lineage for the whole kingdom and the eldest son of his legal wife was supposed to inherit the throne. The king's younger sons or sons

[14] In comparison, only 56 percent of monarchs were succeeded by their sons in medieval and early modern European states that formalized primogeniture (Kokkonen & Sundell, 2014). This result is also partially driven by the differences in marriage patterns. Medieval European states practiced monogamy while ancient China practiced polygamy (Y. Wang, 2018).

of concubines became vassals or nobles who belonged to the Minor Lineage relatives to the king of Zhou. However, vassals were the head of the Major Lineage in their own territories and similarly, the eldest sons of their legal wives were supposed to succeed the lordship and younger sons or sons of concubines became nobles who belonged to the Minor Lineage relative to the vassals (Wu, 1984). Under lineage law, not only the state became a private entity of the royal family, but the political order was seen as dictated by lineage principles (Zhao, 2015).

However, lineage law was not a "law" but rather a set of principles and customs. There was no formal punishment system in the event of a violation.[15] The formation of lineage law was also slow and gradual (Zhao, 2015). Recent archaeological findings show that it was not until late Western Zhou period or early Spring and Autumn period that lineage law became an essential part of ancient China's political culture (Von Falkenhausen, 2006).

Even in the Spring and Autumn period, there was not a clear dominant succession norm (H. Li, 1987). The elite and prominent thinkers disagreed on how to interpret lineage law and what succession rules to apply. For example, the Gongyang Commentary on the Spring and Autumn Annals said that "The heir should be chosen based on age, not merit; the heir should be chosen based on the status of his mother (legal wife versus concubine), not age."[16] According to this interpretation, the eldest son of a monarch's legal wife had the right to succeed the throne. However, the Zuo Commentary on the Spring and Autumn Annals maintained that "When an heir passed away, the younger brother of the monarch should be chosen as the new heir; in the absence of a younger brother, the heir should be chosen based on age (among the monarch's sons); if two sons are in the same age, the more virtuous one should be chosen; if they are equally virtuous, it should be resolved by divination (through rituals)."[17]

It was not until the end of the Spring and Autumn period that primogeniture became the dominant social norm governing royal succession (H. Li, 1987; Wei & Wang, 2010;

[15] There was never a written law in ancient China that governed royal succession.
[16] 《公羊传. 隐公元年》"立嫡以长不以贤，立子以贵不以长。"
[17] 《左传. 襄公三十一年》"太子死，有母弟则立之，无则立长，年钧择贤，义钧则卜。"

E. Wang, 2017). Scholars have developed three social-economic explanations for the establishment of primogeniture as a social norm. The first explanation focuses on changes in marriage customs (E. Wang, 2017). Before monogamy was established in the late Spring and Autumn period,[18] ancient Chinese society tolerated a high degree of sexual freedom and premarital sex was not uncommon (E. Wang, 2017). This is corroborated by many love stories depicted in the Classic of Poetry (Shijing),[19] as well as archaeological discoveries that in most caves husbands and wives were buried separately during that era (Lv, 2020). A high degree of sexual freedom and the prevalence of premarital sex contributed to monarchs' concern that their eldest sons may not share their own blood (E. Wang, 2017, p. 56-57). However, in the late Spring and Autumn period, men tightened their control of women and women lost a large degree of their freedom (especially after marriage). Curfews emerged as a way for husbands to limit their wives' social activities. What was worse, women were deprived of the right to divorce their husbands while husbands could unilaterally divorce their wives almost at will, and divorce left a permanent social stigma to women. Also, Eunuchs began to be widely used in the imperial service, which allowed monarchs to spy on their wives and concubines' lives.[20] These extreme measures ensured monarchs that their eldest sons shared their own blood and contributed to the establishment of primogeniture as the social norm.

Another explanation for the evolution of succession norms is economic development (E. Wang, 2017; Zhang, 1998). During the Western Zhou period and the early to mid Spring and Autumn period, private property was very limited. Some scholars calculated the frequency of the word "wealth/rich" (Fu) in the three commentaries of the Spring and Autumn Annals, and they find that the word "wealth/rich" appeared 29 times and 28 of its appearance referred to the late Spring and Autumn period (E. Wang, 2017, p. 57). As wealth increased, competition for inheritance became more fierce. Since the bond between fathers and sons is stronger than that among brothers (G. Wang, 1959), it is of

[18]While under monogamy man could only have one legal wife in ancient China, he could have multiple concubines (Y. Wang, 2018).

[19]The Classic of Poetry contains the oldest authenticated Chinese poems dating back to as early as the Western Zhou period and as late as the mid Spring and Autumn period.

[20]E. Wang (1992) provides a good summary of changes in marriage customs and women's right during this period.

human nature that parents desire to pass their possession to their children rather than their siblings (W. He & He, 2019). An alternative to primogeniture is dividing possession equally among the children. However, this is problematic because it weakens the power of the family.[21] While convincing to some extent, the economic development explanation is not clear on whether this effect took place from top-down or bottom-up.[22]

The third explanation is state capacity (Zhang, 1998; Qian, 1991). Studies show that states experienced a wave of bureaucratization during the transition from the Spring and Autumn period to the Warring States period (Zhao, 2004).[23] As bureaucratization level increased, states became less dependent on superman leaders, and monarchs and the elite became more comfortable to pick the eldest son to succeed the throne even if he were not the best choice based on merits (Zhang, 1998; Qian, 1991).

# Data

To test the hypothesis, I construct a dataset of monarchs in ancient China during the Spring and Autumn period (771-476 BC) and Warring States period (475-221 BC) with information about their tenure, exit modes, relationship to their predecessors, and others. Following Kokkonen and Sundell (2014, p. 442), I define "monarchy" as a "political system where sovereignty is vested in a person who is empowered by law or custom to remain in office for life." In this sense, monarchy is a type of autocracy where the ruler faces few if any institutional constraints (Tullock, 2012).

Constructing a dataset that spans five centuries and dates back two thousand years obviously faces challenges in terms of source material. Fortunately, historians in ancient and imperial China compiled a variety of annals and biographies. In this paper, I primarily rely on two sources for data collection. The first one is the Spring and Autumn

[21] Adam Smith has a classic discussion in *The Wealth of Nations* on page 312-313: "To divide it was to ruin it... The law of primogeniture, therefore, came to take place, not immediately indeed, but in process of time, in the succession of landed estates, for the same reason that it has generally taken place in that of monarchies, though not always at their first institution."

[22] The bottom-up mechanism might be more plausible because sitting on the throne should be attractive even when the the country was poor. However, we lack concrete records of how succession norms among common people diffused to royal families.

[23] Zhao (2004) explicitly points out that this wave of bureaucratization occurred before large-scale warfare.

Annals, as well as the Zuo Commentary on the Spring and Autumn Annals[24]. The second one is the Records of the Grand Historian.

The Spring and Autumn Annals was likely compiled in the 5th century BC and is the earliest surviving Chinese historical text organized in annals form (Wilkinson & Center, 2012). According to Mencius, it was Confucius who composed the Spring and Autumn Annals. It is the official chronicle of the State of Lu, covering various events during the period from 722 to 481 BC.[25] The astronomical observations in the Spring and Autumn Annals has been confirmed as accurate (Stephenson & Yau, 1992) and archaeological evidence corroborates the reliability of its entries for many events (Von Falkenhausen, 2006).

The Records of the Grand Historian first came to the world by around 94 BC (Nienhauser, 2011). It is most likely that Sima Qian, the son of a Grand Astrologer to the imperial court of the Han Dynasty, wrote this masterpiece under state sponsorship with a team of assistants (Lewis, 2011). The Records of the Grand Historian covers a wide range of periods—from the legendary Yellow Emperor to the author's own time. While it is questionable whether Sima Qian had adequate historical materials for his account of what happened before the Shang Dynasty (1600–1050 BC), his records of events after the Shang Dynasty are generally considered as accurate and reliable (W. Y. Li, 2011). Indeed, Sima Qian was the Chinese counterpart of Herodotus: both were great travellers conducting intensive "fieldwork" in preparation for their writing and were considered the greatest historians in their culture respectively (Stuurman, 2008).

The Spring and Autumn Annals and the Records of the Grand Historian display remarkably high degree of consistency in the construction of the dataset. The consistency between the two sources may due to the fact that the latter was written partly based on the former. Another reason is that the events of leadership change and death had always been a matter of great importance in ancient China and there were more materials that

[24]The Zuo Commentary on the Spring and Autumn Annals was thought to be composed during the fourth century BC (Bojun, 1981; Schaberg, 2011)

[25]These events include: *"sacrifices, covenants, battles, intrigues, rebellions, accessions, marriages, formal interstate visits, and deaths of members of the ruling elite in Lu and secondarily, other states, as well as astronomical movements, and disasters such as fires, floods, droughts, and locust plagues."* W. Y. Li, 2011, p. 415.

historians could rely on.

In some rare cases where the two sources conflict, I follow two principals to make a judgement. First, I cross-reference other sources such as the Bamboo Annals, the Tsinghua Bamboo Slips, and the Shiben [Book of Origins]. For example, the Records of the Grand Historian says that the 24th emperor of the State of Wu, Helü, was the son of a previous emperor Zhufan. But the Spring and Autumn Annals suggests that Helü was the son of another previous emperor Yumei. Since the claim in the Spring and Autumn Annals finds support in the Shiben, I follow the Spring and Autumn Annals for this entry. Second, when cross-reference is not available, I follow the rule of thumb in historiography and weigh the Spring and Autumn Annals over the Records of the Grand Historian because the former was written when the actual event occurred or shortly after (Feldherr & Hardy, 2011).

While cross-reference increases the reliability of the data, there are still several coding issues worth discussion. First, to the greatest extent possible I code a monarch's exact relationship to his immediate predecessor. For example, I breakdown the category of "son" into several subcategories: the eldest son of the wife, the eldest son of a concubine, the second eldest son of the wife, adopted son, etc. However, in many cases there is no adequate information to determine coding at the subcategory level. As a compromise, following Abramson and Rivera (2016), I use a rough measure for the variable "relationship to the immediate successor": a binary measure which equals 1 if a monarch is the son of his immediate successor.

Second, it is impossible to identify the date of birth for most monarchs during the period. Of all the 357 monarchs in the dataset, only 59 of them have reliable information on their date of birth. As a result, I cannot control for the age of the monarchs when they ascended to the throne. One particular concern is that those who took power at a very young age may face greater risks of being deposed. As a remedy, I control for the length of tenure of a monarch's immediate predecessor in all regression models. In general, the longer a monarch's predecessor stayed in power, the older the monarch would be when he assumed power. Admittedly, this is not a perfect way to control for the effect of age,

but it is the best available option. The findings that age does not have a significant effect on the likelihood of deposition in Kokkonen and Sundell (2014) further provide some assurance.

Eventually, the data covers 357 unique monarchs in 17 states during the Spring and Autumn period and Warring States period in ancient China. Among them, 241 monarchs died naturally while in office, 61 were deposed by coups, 10 were dethroned in civil war, 40 were removed from office by foreign force, and the rest 5 either abdicated or were killed by bandits or thugs.[26] The median length of ruling is 16 years, with the maximum being 66 years.

# Methodology

The Cox proportional hazards model is a natural choice to model the risk of monarchs being deposed, especially when we do not have a strong expectation about the survival distribution (Box-Steffensmeier, Box-Steffensmeier, & Jones, 2004). The Cox proportional hazards model is a semi-parametric model that estimates a baseline hazard without assuming a distribution. Here survival time is measured as the number of years a monarch was in office,[27] and a "failure" occurs when a monarch was removed from office by coups or civil war. Observations are right-censored, but censored observations still contribute to the likelihood. Because monarchs are nested in states and they are not truly independent, I estimate the Cox model with a shared frailty, which is analogous to random effect models for panel data. Noticeably, 10 out of 357 monarchs experienced a second failure event.[28] Since less than 3 percent of monarchs experienced a second failure event, I focus on their first failure event here.[29] There is no sign of violations of the assumption that the hazard ratio is constant overtime when looking at the Schoenfeld residuals (Grambsch &

[26] 10 out of 357 monarchs experienced a second failure event. I focus on the first failure event here. See more details in the methodology section.

[27] The survival time of a monarch is calculated as following: the year of exit - the year of entry + 1. I add one year to account for the fact that some monarchs entered and exited office in the same year.

[28] The reason is that some monarchs were first deposed by the elite but were able to reclaim their throne afterwards with the help of a foreign state.

[29] Results remain consistent if I include information of second failure event and estimate multi-failure survival models such as the Anderson and Gill Model.

Therneau, 1994). The model I estimate is as follows:

$$h_{ij}(t) = h_0(t)\,\alpha_i\,exp(x_{ij}\beta) \tag{1}$$

where $h_{ij}$ represents the hazard function for monarch j in state i, and $\alpha_i$ is the state-level frailty.

Before moving forward, I should clarify my definitions of the domestic elite, coups, and civil war and provide examples in the context of ancient China. Few theoretical constructs boast its obvious and intuitive appeal while being notoriously difficult to define as the "domestic elite" or "political elite" (Zuckerman, 1977; Dahl, 2005). Here the domestic elite refers to a small body of power holders who exercise great influence over important choices bearing on the life of the state. In ancient China, the domestic elite mostly comes from aristocratic families and ministers, and they usually share a common ancestor with the monarchs. A famous example is the "Three Huan" — three aristocratic families (Jisun, Mengsun, and Shusun) that dominated government affairs in the state of Lu for centuries during the period of study.

As for coups and civil war, current literature on political violence typically differentiates them as the former is organized by the domestic elite while the latter is led by opposition groups/regime outsiders (e.g. Sudduth, 2021). However, in ancient China during the period of study, no monarchs were removed from office by peasants' rebellion or the bourgeoisie.[30] Indeed, among all the 10 cases where I code the exit mode as "removed by civil war," 7 of them were initiated by sons of previous monarchs and 3 of them by brothers of previous monarchs. I code them as "civil war" because there were effective resistance by both sides for a relatively long period of time.[31] Since both coups and civil war were organized by the domestic elite during the period of study, following Kokkonen and Sundell (2014), I define an event of "failure" as deposition through coups or civil war.

[30]The first recorded peasants' rebellion in China was the Dazexiang uprising against the Qin Dynasty in 209 BCE.

[31]I also consider using the number of casualties to differentiate civil war from coups, but unfortunately, information on casualties is missing for most cases.

I include a set of control variables that may be correlated with both primogeniture and monarchs' fate. To account for the possibility that a monarch's fate is correlated with his predecessor's, I include the exit mode of a predecessor. Abramson and Rivera (2016) find that monarchs with a longer tenure can better accumulate and pass their power to successors. To control for this, I include the length of time a predecessor was in office. Though imperfect, this variable also indirectly controls for a monarch's age since in general, the longer a monarch stayed in power, the older his successor would be.

Another confounder is state capacity. Leaders in states with a centralized bureaucracy may better respond to internal threat and enjoy greater political stability (Besley & Persson, 2010). To control for state capacity, I use two different measures. The first measure is the total number of newly created counties. The county (xian) as a unit of administration first appeared in a few states during the Spring and Autumn period, and was gradually adopted by all states during the Warring States period. Counties were created in two ways. The first method is through conquest of small neighboring states, and the second way is by grouping nearby villages together (Zhou & Li, 2009). County magistrates were appointed by monarchs directly and their office was not hereditary. Also, counties' tax revenues were handed to the monarchs directly for military use (Yang, 1981). Thus, the accumulated number of newly created counties is a useful indicator for bureaucratic centralization (Chen, 2021).[32] Zhou and Li (2009) have a thorough discussion on the names, locations, and dates of establishment for all counties during the period of study. However, some counties do not have exact dates of establishment. Therefore, I calculate the total number of newly created counties for each state during the Spring and Autumn period and Warring States period separately. The second measure of state capacity builds on the idea that "the number of official titles existing in a state often indicates the level of bureaucracy of that state (Zhao, 2004, p. 604)." Thus following Zhao (2004), I calculated the number of official titles in a state before and after its bureaucratic reforms based on the work of Dong (1998).[33] Because both the number of

[32]If a state annexed a county of another state, I do not count it as a newly created county. However, if a state conquered a piece of land (which was not a county of any states) and created a county afterwards, I count it as a newly created county.

[33]Dong Yue was a scholar in the Ming Dynasty (1368–1644 CE) who examined extensive surviving

newly created counties and the number of official titles have a skewed distribution, I use the log of the variables in the regression.[34] The correlation between these two measures of state capacity is 0.66, which provides some assurance to the consistency of the measures.

To control for the level of external threat, I calculate the number of times a state was attacked by other states or nomad groups in each century. The source of the data is the first volume of the *Chronology of Wars in China Through Successive Dynasties* (中国历代战争年表) published by the People' s Liberation Army Press in 2003, which is widely used by scholars who study conflict in ancient and imperial China (Kang, Shaw, & Fu, 2016). I do not count the number of times a state initiated a war because besides the level of external threat, it also measures aggressiveness and state capacity. I use the log of the variable in the regression models.[35]

Table 2 provides the summary statistics of the variables.

[Table 2 here]

# Results and Discussions

Table 3 presents results of the Cox Models with shared frailty at the state level.[36] Both measures of the strength of the primogeniture norm are negative and statistically significant across all models, which strongly supports the hypothesis that monarchs in states with a stronger primogeniture norm face a lower risk of being deposed by the domestic elite. The impact of this informal succession institution is also sizeable. The coefficients of primogeniture variables range from -0.40 to -0.67, which is equivalent to a 50 percent to 56 percent reduction in the hazard of being deposed when changing from a weak primogeniture norm to a strong primogeniture norm, holding other variables at their median values.

records of the time and compiled a book of 14 volumes about 7 states. For the rest of the 10 states not covered by Dong Yue, I use cross-reference when coding the number of official titles. Specifically, I searched each official title in an online dictionary of ancient Chinese studies: http://www.guoxuedashi.com/.

[34]In practice, because the variables contain the value of zero and log(0) is undefined, I use log(x+1) instead of log(x).

[35]Similarly, I use log(x+1) instead of log(x).

[36]I present regression coefficients instead of hazard ratios throughout the paper.

[Table 3 here]

Surprisingly, the length of ruling and exit mode of the previous monarch do not have a significant impact on the fate of the current monarch. This may due to a special feature of the history in ancient China: states rarely experienced long-term political instability during the Spring and Autumn period and Warring States period. In my dataset, only 20 percent of monarchs were deposed by the domestic elite. In comparison, this number rose to 35 percent for European monarchs between 1000 to 1800 BC (Kokkonen & Sundell, 2014). Also, there is no strong evidence that fates of the monarchs are associated with the level of external threat a state faces. State capacity, measured as the number of newly created counties and the number of official titles, appears to have no effect on monarchs' survival, which is consistent with (Kokkonen & Sundell, 2014). My interpretation is that random measurement errors bias down the coefficients of state capacity toward zero.

# Robustness Checks

Although results in Table 3 provide strong support to my hypothesis, there are still two primary concerns for a causal identification between the norm of primogeniture and fates of the monarchs. The first concern is reverse causality. It may be that primogeniture was only adopted in states where the power of the monarch had been consolidated. In the previous discussion, I traced the evolution of succession norms during the period of study and showed that the establishment of primogeniture as the social norm was a result of changes in marriage customs, economic development, and state capacity. The inclusion of two measures of state capacity in the regression also addresses the concern that bureaucratization explains both the shift in social norms and autocratic survival.

Second, one may worry that the adoption of primogeniture was a larger trend toward greater political stability. In this regard, both the norm of primogeniture and political stability increased over time, but it does not necessarily mean a causal relationship. I address this concern in several ways. First, this concern can be conceived as omitted variable bias. To alleviate this concern, I estimate stratified Cox models which only utilize

within-country variations. The results become slightly weaker but remain consistent (See Table A1 in the Appendix). Second, I use two different measures for the strength of the primogeniture norm, and the second measure has variations both over time and across countries. As we can see in Table 3, the coefficients of the second measure of primogeniture norm are also negative and statistically significant across all models. Third, to further address the concern of time trend, I include century fixed effects and estimate stratified Cox models, which is analogous to two-way fixed effects regression for panel data. The results remain consistent (See Table A2 in the Appendix).

Besides these two primary concerns, I further exclude monarchs who entered and exited their office in the same year and re-estimate the same models with stratification. The concern is that some unobserved factors may explain fates of the monarchs who only stayed in power for a very short time. In Table A3 (see the Appendix), we can see that while the results become slightly weaker, they largely remain consistent.

One may worry that the effect of primogeniture is explained by the relationship between a monarch and his predecessor. To address this concern, I include a dummy variable which equals 1 if the monarch is the son of his predecessor and estimate the same model in the main analysis. Results remain consistent (see Table A4 in the appendix). Noticeably, being the son of the previous monarch reduces the risk of deposition, which is consistent with Kokkonen and Sundell (2014). One explanation is that primogeniture allows the heir to be groomed by the elite. However, we do not know whether a particular son was chosen as the heir. And more importantly, the variable is endogenous to primogeniture and it is measured after the dependent variable (Kokkonen & Sundell, 2014). Because of these concerns, I only include this variable as a robustness check.

Last, there are two types of competing risk models: cause-specific hazard models and sub-distribution hazard models. The cause-specific hazard model can be fit using conventional Cox proportional hazard models and it treats competing events as censoring. It is particularly suitable for estimating the effect of the covariates on the event. This paper focuses on factors associated with deposition by the elite, and thus the cause-specific hazard model is more relevant. However, one may be interested in effects of

the covariates on the cumulative incidence of the event. Therefore, I also estimate sub-distribution hazard models according to the method of Fine and Gray (1999). The results remain consistent (see the appendix table A5).[37]

# Mechanisms

## Elite Competition

An ideal test of the rationalist mechanisms would require complete information on the birth order of each of monarchs' son. However, most data on birth order are missing. One may use the number of sons of each monarch to measure the level of competition among potential successors. But this measure raises the concern of reverse causality—monarchs that lived longer tended to have more sons. Indeed, tenure length significantly predicts the number of sons in regressions.[38]

Another way to test the rationalist mechanisms is to see whether the norm of primogeniture can moderate the effect of elite competition on monarchs' tenure. The level of elite competition is an abstract concept which is difficult to measure consistently across states. Here I use the total number of generations of the aristocratic lineages (大士族) in a state in the Spring and Autumn Period and the Warring States Period respectively to approximate the level of elite competition. To illustrate, if a state had three aristocratic lineages in the Spring and Autumn Period, one lasted for nine generations and the other two lasted for five generations, then the total number of generations of the aristocratic lineages in that state is 19. Aristocratic lineages were noble houses who had received parcels of land from monarchs, and some of them even built their own armies (Zhao, 2015). Data on the aristocratic lineages are from H. He (1996, p. 202-203) and Zhao (2015) use the data in his book in a similar manner. The intuition is that the more aristo-

[37] The coefficient of primogeniture is statistically significant in 6 of the 8 models.

[38] A popular method to address reverse causality is instrumental variables. Here an ideal instrumental variable is the sex of the second-born child of a monarch. If a monarch's second-born child is a male, then the number of sons of the monarch should be higher in general and so thus the level of competition among throne contenders. The sex of second-born child is determined by nature and should only affect a monarch's tenure through its effects on the number of throne contenders. Unfortunately, this data is not available either.

cratic lineages in a state and the longer they lasted, the stronger elite competition. Three states do not have data on aristocratic lineages and are thus left out in the analysis.[39]

This measure of elite competition matches history well. Jin, Lu, and Qi had the highest values of the total number of generations of the aristocratic lineages, and elite competition in these states were most acute (Zhao, 2015, p. 147). Qin had one of the lowest values of this measure, and it unified China eventually. There is no evidence that this measure correlates with the size of a state, as small states such as Song and wey also had large values for this measure of elite competition.

To explore this mechanism, I include an interaction term between elite competition and primogeniture and estimate the same models in the main analysis. Results are reported in Table 4. The coefficients of elite competition are positive and slightly significant in three of the four models, and coefficients of the interaction term are always negative and statistically significant in three of the four models. While the statistical significance is not very strong, it provides some evidence that the norm of primogeniture can moderate the adverse effect of elite competition on monarchs' tenure.

## Beliefs and Emotions

An ideal test of the constructivist mechanisms is to survey the opinions of monarchs and the elite. However, time travel is impossible and it is difficult to test the constructivist mechanisms with large N analysis. As a compromise, I provide an illustrative example where the elite attempted to persuade a monarch from violating the norm of primogeniture. By looking at the text of the emotional speech of the elite, I hope to show that the elite's risky behavior is more a product of beliefs and emotions than calculation of self-interest.

When Liu Bang founded the Han Dynasty, primogeniture was the dominant succession norm. However, Liu Bang was in favor of the son of his concubine, not the son of his legal wife, to succeed the throne. When he expressed the intention to replace the prince with the son of his concubine, he faced strong oppositions from the elite. Zhang Liang, a

[39]The three states are Wu and Yue in the southeast and Yan in the north. For more details about the construction of this variable, please see the appendix.

statesman who contributed greatly to the founding of the Han dynasty, strongly opposed this decision and eventually quit politics when persuasion failed. Other high officials such as Zhou Chang followed suit and threatened to quit. A Chinese historiography documented a passionate speech delivered by a high official Shunsun Tong "Duke Xian of Jin replaced his rightful heir with a son of his concubine (because he loved his concubine), which turned his country into turmoil for tens of years and he himself became a laughter... If your highness must replace the rightful heir with the son of a concubine, I will cut my throat and shed my blood in the palace."[40] Liu Bang eventually gave in under high pressure from the elite and passed the throne to the son of his legal wife (Sima & Watson, 1993, vol. 96).

Fukuyama (2011, p. 39) argues that emotions such as anger, shame, and pride are potential driver of norm following. In the example above, Shunsun Tong clearly believed that adhering to the norm of primogeniture was of best interest to the Han Dynasty. He was ready to sacrifice himself for something bigger and took pride in defending the norm. He might even be angry that the leader he followed attempted to break the norm established by the ancestors. Either way, Shunsun Tong's behavior of norm following cannot be explained by rational self-interest alone.

To summarize, there are some statistical evidence that the norm of primogeniture works through moderating the adverse effect of elite competition on monarchs' tenure, and some anecdotal evidence suggests that the elite enforced the norm of primogeniture because of beliefs and emotions. This paper does not argue that one mechanism is more important than the other. Both mechanisms may be equally important and future studies of succession institutions should pay more attention to the ideational mechanism which is largely ignored in the current literature.

[40] 《资治通鉴》: 叔孙通谏上曰: "昔者晋献公以骊姬之故废太子，立奚齐，晋国乱者数十年，为天下笑... 陛下必欲废嫡而立少，臣愿先伏诛，以颈血污地。"

# Discussions

## Formal vs. Informal Succession Institutions

There is a debate in the literature about the impact of formal versus informal institutions on a set of political and economic outcomes (Williamson, 2009; Lauth, 2015). I should clarify that the debate is beyond the scope of this paper and the empirical results above should not be interpreted as suggesting that informal institutions are superior to their formal counterparts.

However, to entertain this idea, we can compare monarchs in ancient China to monarchs in medieval and early modern Europe. Data of European monarchs are from Kokkonen and Sundell (2014). To capture the idea of formal primogeniture, I restrict the European sample to states with de jure primogeniture laws, which results in 425 European monarchs in total.

Estimating the same Cox models with European monarchs as the baseline, I find no evidence that formal laws of primogeniture perform better than their informal counterparts. Results are reported in Table A6 in the Appendix. In model 1 which I include the full sample of monarchs in ancient China, the coefficient of "China" is positive but statistically not distinguishable from zero, which suggests that monarchs in ancient China (where primogeniture was informal) were not more likely to be removed by the domestic elite compared to monarchs in medieval and early modern European states with formal laws of primogeniture. And in model 2 where I restrict the Chinese sample to monarchs in the Warring States period (when the norm of primogeniture became stronger), the coefficient of "China" becomes negative but still statistically insignificant. The results remain the same if we control for the previous monarch's exit mode.[41]

Admittedly, while ancient China and medieval and early modern Europe share some similarities (such as the formation and dissolution of feudalism), they differ in many ways. And variables not included in the regressions such as religion and technology can potentially drive the results. However, the results here provide some confidence that

[41]Because other control variables such as state capacity are measured differently in Kokkonen and Sundell (2014), they are not appropriate to be included in the regressions.

both formal and informal succession institutions can facilitate peaceful power transition in monarchies. And future studies should explore the pros and cons of formal vs. informal institutions, which likely depends on historical contexts.

There are trade-offs in formalising hereditary succession rules in monarchies, and the trade-offs probably depend on historical contexts. Formal succession rules enhance transparency and accountability. Under formal succession rules, the elite develop clearer expectation about whom will succeed the throne, which alleviates the coordination problem. Meanwhile, violations of the rules more likely to be punished when the rules are formalized, which strengthens deterrence. However, the rigidity of formal rules comes with a cost. In an extreme scenario, if the monarch's first-born son was mentally retarded and he succeeded the throne under the law of primogeniture, the kingdom would probably fall into a decline or even be conquered by other states. Also, formal succession rules weakens the authority of the ruler. In the context of ancient China, monarchs' right to rule was said to come from the heaven.[42] Saying that monarchs should be subjected to a set of written rules was against this fundamental political ideology in ancient China.

## Primogeniture in the Modern World

In this section, I show that similar patterns still exists in the modern world. To gather a global sample of authoritarian regimes in the modern world, I use the dataset of Geddes, Wright, and Frantz (2014), which categorizes authoritarian regimes into four different types: personal, party, military, and monarchy. To code the practice of primogeniture, I rely on information from Kokkonen and Sundell (2014) and Brownlee (2006). The former provides information on monarchies that practiced primogeniture, and the latter includes a complete list of hereditary successions in modern autocracies that are not monarchies.[43] Data on rulers' tenure are from the the Archigos dataset (Goemans, Gleditsch, & Chiozza,

[42]The political concept "the "Mandate of Heaven" was introduced by the founders of the Zhou Dynasty to justify their uprising against the Shang Dynasty. The mandate posited that the ruler must rule virtuously; otherwise the ruler would lose the Mandate of Heaven (Zhao, 2015)

[43]I further exclude cases where the office was not succeeded by the ruler's child. Eventually the list of non-monarchy autocracies that practice primogeniture includes: Haiti from 1971-1986; Taiwan from 1975-1988; North Korea since 1994; Syria since 2000; Azerbaijan since 2003; Singapore since 2004; and Tonga since 2005.

2009).

I should clarify that in the analysis of modern autocracies, I use de facto measure of primogeniture because succession rules in some regimes are unclear but we can clearly observe succession practices.[44] For example, it is controversial to say North Korea has a rule of primogeniture for leadership succession, but in practice the top office has been passed to the son of the leader, which fits the concept of de facto primogeniture.

One may argue that leaders must have exited office regularly in order to pass the throne to their sons, which implies a reverse causality. To alleviate this concern, I exclude first-generation leaders. For example, for North Korea, I exclude the first leader Kim Il-sung and only include his predecessors Kim Jong-il and Kim Jong-un. Excluding first-generation leaders should bias against my expectation. Eventually, the data covers 611 authoritarian leaders in 117 autocracies from 1946 to 2010.

[Table 5 here]

Again I estimate Cox models where failure occurs if a leader was removed from office by domestic actors, either through coups or civil war. The baseline is rulers in party regimes. Results are presented in Table A7 in the appendix. We can see that while rulers in personal and military regimes face a higher risk of being removed from office compared to rulers in party regimes, there is no evidence that rulers in monarchies face a higher risk. Surprisingly, rulers in authoritarian regimes that practice primogeniture face a lower risk of being deposed by domestic actors than rulers in party regimes which are usually considered as the most stable ones among authoritarian regimes. When I exclude leaders in monarchies,[45] the coefficient of primogeniture is still negative but becomes statistically insignificant, which suggests that the significant result of primogeniture is primarily driven by monarchies that practiced primogeniture. But still, leaders in regimes with de facto primogeniture perform better than leaders in military and personal regimes, and perform as good as leaders in party regimes.

[44] This measure is different from my main analysis where I use de jure measure of primogeniture.

[45] If we only look at leaders in monarchies, we cannot estimate any statistical models because of perfect predictions. None of the leaders in monarchies that practiced primogeniture were removed from office by the domestic elite.

While the relationship between primogeniture and leadership survival identified here is not causal, it gives us some confidence that the relationship is not limited to a specific historical period or region. Future studies can further probe into the durability of authoritarian regimes with de facto primogeniture.

# Conclusions

This paper provides strong empirical evidence that the norm of primogeniture delivers political stability to monarchies using a novel historical data of ancient China. It complements existing studies of monarchy and authoritarian survival which primarily focus on historical Europe and formal institutions.

Theoretically, this paper extends our understandings of succession institutions and autocratic survival. Existing theories that link primogeniture to monarchs' survival mainly focus on the strategic interactions between monarchs and the elite and how primogeniture can help alleviate the coordination problem and commitment problems. Here I draw on both rationalist and constructivist accounts and argue that while the strategic interactions are important, we cannot ignore normative factors. I further provide statistical and anecdotal evidence that both mechanisms exist: 1) the norm of primogeniture works partially through moderating the adverse effect of elite competition on monarchs' tenure; and 2) norm following is partially driven by ideational factors such as beliefs and emotions.

This paper also speaks to the literature on information institutions in authoritarian regimes. When talking about informal institutions in authoritarian regimes, people often think of patronage and clientelism that incubate corruption (Hicken, 2011). Yet recent studies show that informal institutions in authoritarian regimes can be beneficial to economic and political development. Scholars find that informal institutions can encourage more public goods provision (Tsai, 2007; Xu & Yao, 2015) and constrain executive power (A. Meng, 2020). Here I show that information institutions can lower the risk of monarchs being deposed by the domestic elite in authoritarian regimes and thus increase political

stability.

Last, this paper suggests that the power of primogeniture may still exist in the modern world. I show that leaders in countries that practice some type of primogeniture are less likely to be removed from office by the domestic elite compared to leaders in military, personal, and even party regimes that do not practice primogeniture. Future studies should expand the analysis of the impact of succession rules in modern autocracies and historical monarchies of different cultures, and probe into the roles of both strategic concerns and normative factors played during the time of power transitions.

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## Tables and Figures

Table 1: Norm of primogeniture and de facto succession

| | Measure I | | Measure II | | |
|---|---|---|---|---|---|
| **Norm of primogeniture** | **Weak** | **Strong** | **Weak** | **Moderate** | **Strong** |
| Numbers succeeded by sons | 145 | 105 | 18 | 127 | 105 |
| Number of monarchs | 233 | 134 | 32 | 201 | 134 |
| **Percent succeeded by sons** | **62.2** | **78.4** | **56.3** | **63.2** | **78.4** |

Table 2: Summary statistics

| | mean | sd | min | max | count |
|---|---|---|---|---|---|
| Primogeniture I | 0.37 | 0.48 | 0 | 1 | 357 |
| Primogeniture II | 1.28 | 0.62 | 0 | 2 | 357 |
| Son of predecessor | 0.69 | 0.46 | 0 | 1 | 357 |
| Length of ruling (t-1) | 18.9 | 14.2 | 1 | 66 | 340 |
| Exit mode (t-1) | 0.21 | 0.41 | 0 | 1 | 340 |
| External threat | 8.48 | 7.52 | 0 | 27 | 357 |
| Number of counties | 10.2 | 17.3 | 0 | 75 | 357 |
| Number of titles | 14.3 | 20.7 | 5 | 91 | 357 |

Table 3: Cox Models with Shared Frailty

| | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 | (5) Model 5 | (6) Model 6 | (7) Model 7 | (8) Model 8 |
|---|---|---|---|---|---|---|---|---|
| Primogeniture I | −0.566* | | −0.673* | | −0.662* | | −0.634* | |
| | (0.280) | | (0.280) | | (0.295) | | (0.282) | |
| Primogeniture II | | −0.403+ | | −0.468* | | −0.457* | | −0.420* |
| | | (0.209) | | (0.206) | | (0.222) | | (0.209) |
| Length of ruling (t-1) | | | 0.003 | 0.003 | 0.004 | 0.004 | 0.004 | 0.004 |
| | | | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) |
| Exit mode (t-1) | | | 0.428 | 0.429 | 0.455 | 0.451 | 0.447 | 0.444 |
| | | | (0.291) | (0.291) | (0.290) | (0.291) | (0.291) | (0.291) |
| External threat | | | | | 0.105 | 0.091 | 0.122 | 0.110 |
| | | | | | (0.143) | (0.145) | (0.139) | (0.140) |
| Number of counties | | | | | 0.008 | 0.013 | | |
| | | | | | (0.109) | (0.111) | | |
| Number of titles | | | | | | | −0.177 | −0.147 |
| | | | | | | | (0.195) | (0.197) |
| Observations | 357 | 357 | 340 | 340 | 340 | 340 | 340 | 340 |

Standard errors in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Testing the Elite Competition Mechanism

| | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| Elite competition | 1.166 | 2.177 | 1.006+ | 2.329* |
| | (0.713) | (1.447) | (0.603) | (1.179) |
| Primogeniture I | 3.344 | | 2.616 | |
| | (3.055) | | (2.401) | |
| Elite competition*Primogeniture I | −1.340+ | | −1.149* | |
| | (0.773) | | (0.570) | |
| Primogeniture II | | 3.340 | | 3.722 |
| | | (3.099) | | (2.443) |
| Elite competition*Primogeniture II | | −1.015 | | −1.107+ |
| | | (0.745) | | (0.581) |
| Length of ruling (t-1) | 0.001 | 0.003 | 0.002 | 0.003 |
| | (0.010) | (0.010) | (0.010) | (0.010) |
| Exit mode (t-1) | 0.118 | 0.152 | 0.118 | 0.154 |
| | (0.331) | (0.332) | (0.335) | (0.333) |
| External threat | 0.050 | −0.060 | −0.141 | −0.131 |
| | (0.412) | (0.423) | (0.413) | (0.420) |
| Number of counties | −0.167 | 0.024 | | |
| | (0.296) | (0.265) | | |
| Number of titles | | | −0.485 | −0.346 |
| | | | (0.396) | (0.390) |
| Observations | 287 | 287 | 287 | 287 |

Standard errors in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$