SONS AND LOVERS
Political Stability in China and Europe before the Great Divergence

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Abstract

RULERS' long duration in the medieval period had contributed to the rise of Europe. But what explained premodern ruler duration? While the extant answers focus on formal, political institutions, I examine the role of marriage and inheritance norms in affecting ruler survival. Using a novel dataset of over 1,000 monarchs in China and Europe from 1000 to 1800 CE, I obtain two findings that have been overlooked by the existing literature. First, contrary to the view that European rulers had exceptional stability, I find that Chinese monarchs stayed in power longer than their European counterparts. Second, I find a strong effect of family practices on ruler survival. More liberal marriage and inheritance norms provided Chinese emperors with sustained availability of male heirs, which reduced palace coups. But the Church's control of royal marriage and inheritance in Europe decreased the number of male heirs, which increased the probability of a deposition.

(Word Count: 8,942)

$\mathbb{A}$ Prominent literature has established a strong association between ruler duration in the medieval period and the rise of Europe (Strayer 1970, 19; Blaydes and Chaney 2013, 19-22; Acharya and Lee 2016, 20-22; Cox and Weingast 2018, 287-290). This is consistent with Olson's (2000) famous argument that rulers who are "stationary bandits" have a long time horizon to focus on public goods provision and pro-growth economic policies. Yet if premodern ruler duration was so critical to the rise of the modern world, what then explained premodern ruler duration?

Existing answers focus on formal institutions, especially feudalism and representative assemblies, that were unique in medieval Europe. After the collapse of the Western Roman Empire, a set of fragmented Germanic kingdoms emerged, in which rulers had weak bargaining power vis-á-vis the local nobility (Stasavage 2016, 156-158). To solicit the noble's financial and military assistance, the Carolingian rulers agreed to grant land in exchange for sworn services, which led to the emergence of feudalism (Anderson 1974, 29-39; Ertman 1997, 35-48). After the fall of the Carolingian Empire, European rulers' bargaining power was further weakened when interstate conflicts became frequent and expensive (Tilly 1992, 67-91; Downing 1992, 18-38). To obtain new funds, sovereign rulers conceded (partial) political control, through political representation, to the elite (North and Weingast 1989, 817-824; Stasavage 2011, 25-69; Dincecco 2011, 26-27; Cox 2016, 19-36). Armed elites, represented in parliament, were able to extract a "soft contract" from their king or queen, which made them less likely to overthrow the monarch (Blaydes and Chaney 2013, 19-22).

But political representation and elite consent were a unique European phenomena that was not witnessed in other parts of the world (Stasavage 2016, 146). This raises the scope condition question for this prominent literature, which can be addressed by including more cases outside Europe and examining institutions that were prevalent across the medieval world.

In this article, I expand this distinguished line of research in two ways. First, I add imperial China to the comparison. In the early 19th century, China and Europe experienced a "great divergence" in economic development where Europe launched the Industrial Revolution while China

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lagged behind (Pomeranz 2000). If ruler duration facilitated economic development, We should expect Chinese rulers to have shorter durations than their European counterparts before the 19th century. Second, I examine an informal institution—marriage and inheritance norms—which existed but varied across medieval polities, and its influence on ruler survival.

I obtain two findings that have been overlooked by focusing only on Europe. First, contrary to the popular view that European rulers had exceptional stability, I find that Chinese monarchs stayed in power longer than their European counterparts for the most parts between 1000 and 1800 CE. Especially in the 18th century that was the dawn of the great divergence, Chinese rulers on average stayed in power 12 years longer than European rulers. Second, I find a strong effect of family practices on ruler survival, even controlling for formal political institutions. More liberal marriage norms and a more egalitarian inheritance rule provided Chinese emperors with sustained availability of male heirs, which prolonged hereditary succession and reduced palace coups. By contrast, the Church's control of royal marriage and the disinheritance of illegitimate children in medieval Europe increased the costs of divorce and decreased the number of male heirs, which increased the probability of a deposition.

I draw on a novel dataset of over 1,000 monarchs in Europe and China between 1000 and 1800 CE to draw these conclusions. I structure my empirical analysis around four types of evidence. First (*Evidence I*), I show graphically and statistically that Chinese monarchs, except during the Mongol Empire (1271–1368 CE), stayed in power longer than their European counterparts, and that there is an inverse relationship between ruler duration and the probability of being overthrown, which indicates that ruler duration is largely determined by the probability of being deposed. Second (*Evidence II*), examining the data on Chinese and European royal families, I present evidence that Chinese emperors had more wives and children than European monarchs. Thus Chinese emperors were more likely than European monarchs to rely on hereditary succession. Third (*Evidence III*), applying survival analysis to a pooled dataset of Chinese and European monarchs, I estimate the effect of having at least one son on rulers' risk of being deposed. The identifying assumption is

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that, conditional on having at least one child, whether having a son is random. I demonstrate that monarchs who had at least one son had a 50% lower hazard of being deposed compared with those who did not, holding everything else constant. I also provide evidence that a main mechanism is through appointing a son as the successor. Last (*Evidence IV*), using fine-grained data on the exit methods of Chinese monarchs, I examine a testable implication that when monarchs had a son as their heir apparent, they were less likely to be deposed by elites.

My findings challenge a popular view that Europe has enjoyed exceptional ruler durability, and cast doubt on the belief that political stability contributed to the "European miracle" (Strayer 1970, 19; Blaydes and Chaney 2013, 19-22; Acharya and Lee 2016, 4-6). In addition to an influential, but Euro-centric,[1] literature that emphasizes the stabilizing role of feudal and representative institutions, I show that familial institutions were also important for the durability of monarchs in China and Europe.

I also contribute to a recent literature on succession politics. Scholars have emphasized the "coup-proofing" functions of certain succession arrangements. As argued by Tullock (1987, 151-174) and tested by Brownlee (2007) and Kokkonen and Sundell (2014), hereditary succession has advantages over other arrangements: appointing his or her own son as the successor provides the ruler with an heir who is young and loyal, who can wait to inherit power peacefully. The son also provides "a focal point for reducing uncertainty, achieving consensus, and forestalling a power vacuum" to help maintain the loyalty of the ruling elite (Brownlee 2007, 597). But hereditary succession creates another problem: not every ruler has a viable son. The lack of a male heir can create a succession crisis in many monarchies that have a gender bias.[2] My findings, therefore,

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[1]There are notable exceptions: Blaydes and Chaney (2013), Stasavage (2016), and Dincecco and Wang (2018) focus on non-European countries, such as the Islamic world and China.

[2]For example, certain polities of the former Carolingian Empire in Europe practiced "Salic law," which prohibited inheritance through female lines of descent (Herlihy 1962, 90; Acharya and Lee 2016, 6). The Hundred Years War occurred partly because the rulers of England and France disagreed over whether Joan II of Navarre, half-sister of the deceased king, was the rightful heir (Sumption 2009, 291-292). In addition, the Church's opposition to concubinage, divorce, and illegitimate children in Europe left many monarchs without eligible heirs (Goody 1983, 44). In most European states, which practiced primogeniture (the eldest living son inherited), the absence of a male heir inevitably entailed a succession crisis (Kokkonen and Sundell 2017). When Charles II of Spain died in 1700 CE, childless and heirless, this helped trigger the War of the Spanish Succession.

show the importance of informal institutions (family practices) in sustaining formal institutions (succession rules) (Helmke and Levitsky 2004), joining a recent interest in examining informal sources of stability in autocracies (Abramson and Rivera 2016).

Figure 1 summarizes my overarching argument, and I use it to structure the rest of the article. In the following section, I describe the final outcome—ruler duration in China and Europe (*Evidence I*)—and use it to motivate the research. Then I discuss how religious control of royal marriage (or lack thereof) affected the number of male heirs and the feasibility of hereditary succession in China and Europe (*Evidence II*). The subsequent section tests the key links in the theory—that having at least one son enabled hereditary succession, which lengthened ruler duration (*Evidence III*) by preventing elite coups (*Evidence IV*). After that, I conclude with broader and contemporary implications.

STYLIZED FACTS

I first of all document changing trends in ruler duration across European and Chinese dynasties by compiling a dataset of 1,035 monarchs from 1000 to 1800 CE. To the best of my knowledge, this dataset is the first of its kind. Royal genealogies are one of the few data sources of medieval society that were recorded systematically. For European monarchs, my main sources are McNaughton (1973), Morby (1989), Blaydes and Chaney (2013), and Kokkonen and Sundell (2014).[3] For Chinese monarchs, my primary sources are *Chronologies of Chinese Emperors and Their Families* edited by Du (1995) and *The Complete Biographies of Chinese Emperors* edited by Qiao et al. (1996), the most reliable and systematic sources I can find on Chinese emperors. I ensure that my coding of deposed emperors is consistent with Kokkonen and Sundell's (2014, 442) coding to include any abnormal method of exit (discussed more later), so that any differences between Europe and China are not caused by coding discrepancies.

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[3]Kokkonen and Sundell (2014, 442) update Morby's data by adding their new coding of the way in which monarchs left office, so we can understand being deposed in the updated dataset as any method of exit other than natural death.

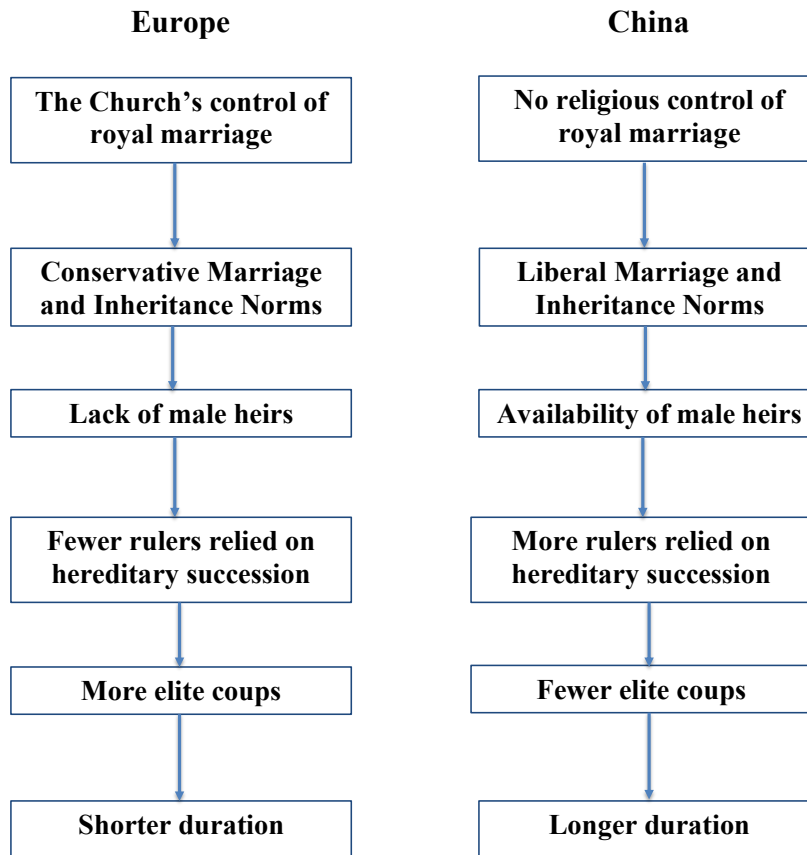| Europe	China
The Church's control of royal marriage	**No religious control of royal marriage**
↓	↓
Conservative Marriage and Inheritance Norms	**Liberal Marriage and Inheritance Norms**
↓	↓
Lack of male heirs	**Availability of male heirs**
↓	↓
Fewer rulers relied on hereditary succession	**More rulers relied on hereditary succession**
↓	↓
More elite coups	**Fewer elite coups**
↓	↓
Shorter duration	**Longer duration**

Figure 1: Comparison of Succession and Ruler Duration in Europe and China

Figure 2 plots the 100-year moving average of ruler duration in China and Europe (*Evidence I*). Except for a short interlude between 1300 and 1500 CE that was primarily caused by the short tenures of Mongolian emperors, ruler duration was longer in China than in Europe from 1000 to 1800 CE. The gap between China and Europe became larger toward the end of the 18th century.[4] Regression results presented in Appendix Table 1.2 show a similar pattern: in the 18th century—the dawn of the Industrial Revolution—Chinese emperors stayed in office an average of 12 years longer than their European counterparts.

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[4]The patterns look similar when I plot 200-year, 300-year, and 400-year moving averages. Please see Appendix Figures 1.1-1.3.
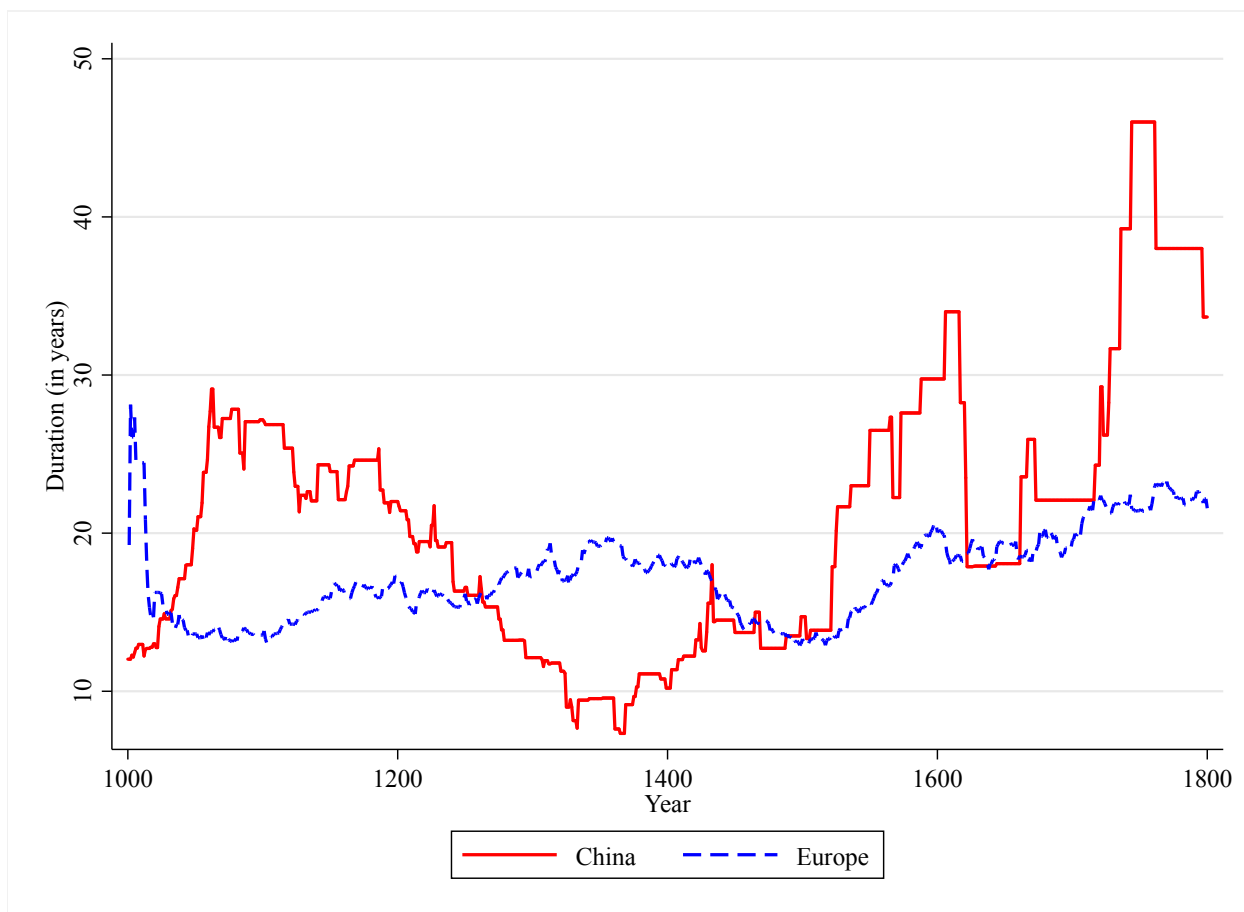
Figure 2: Rulers' Duration in China and Europe (1000–1800 CE)

Note: The solid red line denotes the 100-year moving average for China, whereas the dashed blue line denotes the moving average for Europe.

Figure 3 then shows the moving average of ruler duration and the probability of being deposed for rulers in China (upper graph) and Europe (lower graph). There is an inverse relationship between duration and the probability of abnormal exit, implying that ruler duration is a reasonable proxy for political stability. The probability of being overthrown for Chinese emperors declined to below 0.3 (or 30%) after the 17th century; for European kings, this probability remained around 30% until the 19th century.
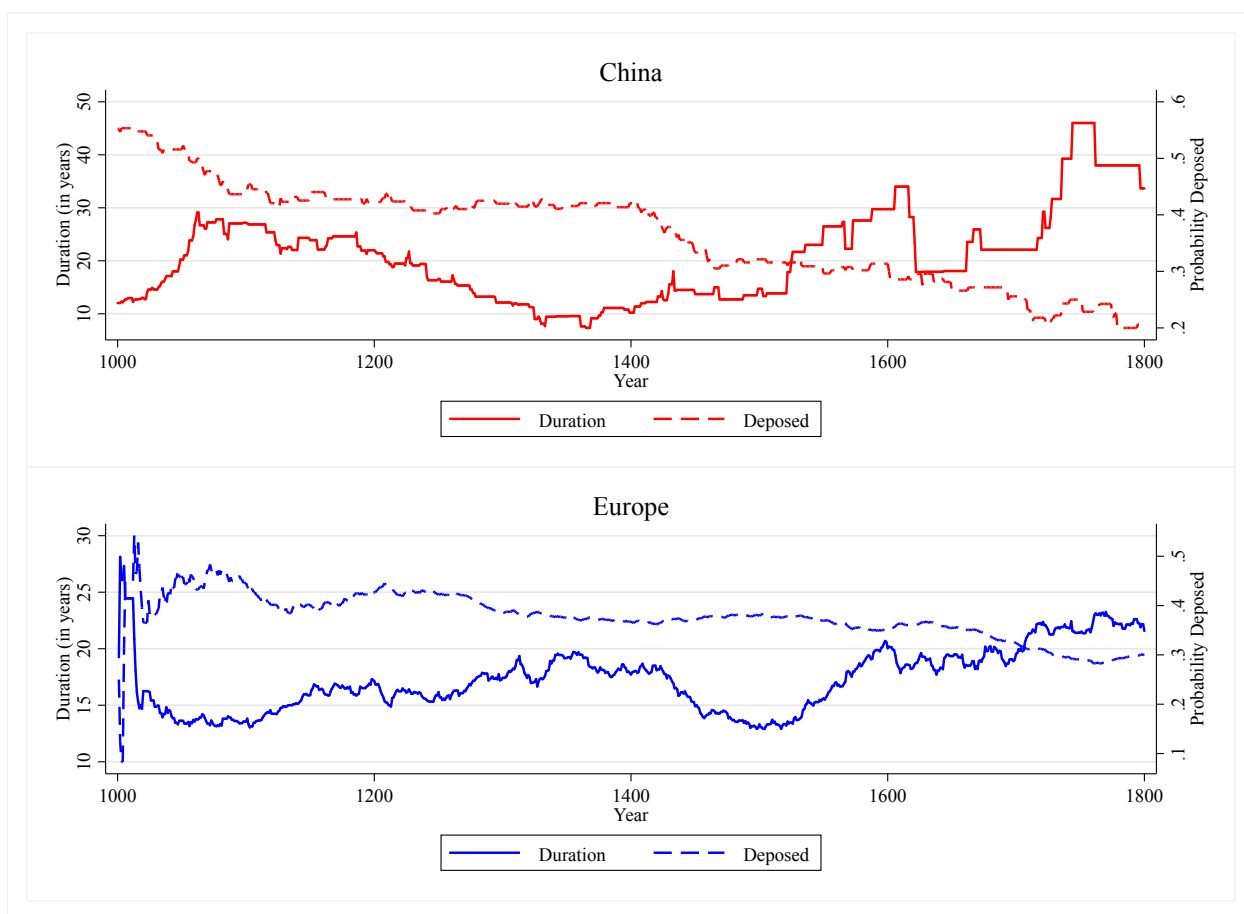
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Figure 3: Comparison of Rulers' Duration and Probability of Being Deposed in China and Europe (1000–1800 CE)

Note: The 100-year moving average of ruler duration is represented by the solid line, whereas the probability a ruler was deposed is shown with a dashed line. The upper graph provides results for China; the lower graph reports results for Europe.

FAMILY AND SUCCESSION

Imperial China, after the Qin Dynasty (221–206 BCE), was not a feudal system, and never developed representative assemblies as Europe did.[5] In contrast to Europe, where rulers granted land in exchange for military service, the Chinese empire relied on either a mercenary or a hereditary mili-

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[5]The Qin abolished feudal titles and appointed national officials to govern local jurisdictions (Hui 2005, 97-99).

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tary, neither of which was under the control of the landed elite (Lei 2016 [1940], 2-52; Kuhn 1970, 10-20). Given a sizable literature emphasizing the role of feudal and representative institutions in stabilizing the crown, the longer ruler duration in China (where there was neither feudalism nor parliament) than in Europe is worth exploring. In this section I discuss the importance of hereditary succession in maintaining political stability and then compare the familial institutions in historical China and Europe to examine whether hereditary succession was possible in both. I will show empirical evidence that certain family practices, such as the tolerance of polygyny and granting sons of concubines inheritance rights, gave Chinese emperors more male heirs, which made them more likely to rely on hereditary succession.

The Succession Dilemma

Recent studies on authoritarian legislatures highlight the role of representative institutions in co-opting outsiders.[6] For example, Gandhi and Przeworski (2007, 1280) argue that autocrats face two types of threats: those that emerge from within the ruling elite and those that come from outsiders within society. While authoritarian rulers can establish narrow institutions, such as consultative councils, juntas, and political bureaus, to defend against threats from ruling elites, they need nominally democratic institutions, legislatures in particular, to solicit outsiders' cooperation.

But outsiders do not usually threaten autocratic survival. According to Svolik (2009, 478), more than two-thirds of modern authoritarian leaders who lose power via non-constitutional means are removed by government insiders. The key to autocratic durability, therefore, is to invest the elite with a stake in the ruler's survival.

Building on the works of Tullock (1987), Brownlee (2007), Kokkonen and Sundell (2014), and Frantz and Stein (2017), we know that succession arrangement is an important mechanism for maintaining elites' loyalty. As Tullock (1987, 152) argues, under an appointed successor the elite

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[6]Some scholars make a more nuanced argument. For example, Boix and Svolik (2013, 301) contend that institutions such as parties, legislatures, and advisory councils facilitate power sharing by alleviating commitment and monitoring problems between the dictator and his allies caused by the secrecy associated with authoritarian governance.

"begin planning their own maneuvers on the theory that they will spend much more of their life under the rule of the successor than under the rule of the current dictator." Similarly, Frantz and Stein (2017, 935) contend that by assuaging the ambition of some elites who have more to gain with patience than with plotting, institutionalized succession rules hamper coordination efforts among coup plotters, which ultimately reduce a leader's risk of confronting coups. But appointing a successor is also risky. As Tullock (1987, 151) points out, "The basic problem that the dictator faces here is that if he formally anoints a successor, this gives that successor both strong motives for assassinating him and reasonably security that he will get away with it." Herz (1952, 30) dubs this the "crown-prince problem."

Tullock (1987, 163), therefore, suggests that hereditary succession increases regime stability during and beyond the ruler's lifetime because "the son is wise to simply wait for his father to die." In the same vein, Brownlee (2007, 597-606) argues that hereditary rule provides a "focal point" on which elites can agree, which can prevent elite revolt because "when given the choice between low-intensity conflicts over policy issues and high-intensity struggles for the top posts in the regime, elites tend to avoid the second kind of conflict." In Konrad and Mui's (2017, 2162-2171) theoretical model, appointing a prince can protect the incumbent ruler from other potential challengers by introducing a barrier. These theoretical arguments are supported by the observation that monarchies appear to be more stable than most other autocracies because of their clear succession arrangements (Magaloni 2008, 724). Kokkonen and Sundell (2014, 445-446) show that European monarchs who relied on primogeniture stayed in power longer than those who used other succession orders, such as election and agnatic seniority.

Familial Institutions and Succession Orders

Although every monarch wanted to pass the throne to a son, they were not always able to do so. In my dataset, 50.67% of Chinese emperors chose a son as their heir apparent; only 39.1% of European kings did so during the same period (difference=11.6%, $p <0.1$). Recent literature

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on institutions argues that for formal institutions to be effective, certain *complementary* informal institutions need to be in place. As Helmke and Levitsky (2004, 728) point out, complementary informal institutions may "serve as a foundation for formal institutions, creating or strengthening incentives to comply with formal rules that might otherwise exist merely on paper."

While most polities in Europe and China adopted *de jure* primogeniture (Kokkonen and Sundell 2014), we need to examine whether they had informal institutions to support their formal succession rules.[7]

Historians and anthropologists have discussed the role of familial institutions in shaping succession orders in Europe. In particular, monogamy—a practice that can be traced back to the ancient Greeks and Romans (Scheidel 2009, 280)—reduced the number of legitimate heirs and limited the applicability of hereditary rule in Western Europe (MacDonald 1995, 13-15). Scheidel (2009, 280) shows that Greek and Roman men (including rulers) were prohibited from being married to more than one wife at a time and from cohabiting with concubines during marriage. Greco-Roman "socially imposed universal monogamy" was then preserved and gradually reinforced by the Christian Church, which labored to suppress polygamy among Germans and Slavs at a time when the Arab conquests lent ideological support to polygamy in parts of the Mediterranean and across the Middle East (Scheidel 2009, 284). Although the strictness of monogamy in Europe varied (polygyny continued in Scandinavia, where Christian influence came later), by the end of the 12th century the Christian Church had transformed the family structure and imposed the social norm of monogamy (Brundage 1987, 223).

The Church—"the most influential and important governmental institution [of Europe] during the medieval period" (Ullmann 1970, 1)—engaged in a vigorous campaign against the secular aristocracy by regulating reproductive behavior. In addition to religious ideology, the prohibitions

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[7]An alternative explanation for why only a minority of European monarchs relied on hereditary succession was that foreign enemies threatened European states throughout the medieval and early modern periods, and succession orders needed to produce able and experienced leaders to lead the nation in war (Kern 1948, 47-49). Yet historical warfare alone did not appear to differentiate Europe from China (Hoffman 2015, 70). Also see Appendix Figure 1.4, which shows the number of wars in China and Europe from 1400 to 1800 CE.

on endogamy, adoption, polygyny, concubinage, divorce, and remarriage also benefited the Church economically, because by limiting the circumstances under which wealth could be passed onto heirs, the Church could inherit large amounts of property and attain political power (Goody 1983, 123).

Divorce and remarriage (serial monogamy), a typical way to obtain a male heir when the first marriage failed to produce one (e.g., Louis VII and Eleanor of Aquitaine in medieval France, Henry VIII in Renaissance England), was "virtually impossible except for a handful of the very rich" in England until the reform of 1857 (Stone 1990, 4). Even Charles II and George IV, both of whom lacked heirs, did not divorce (MacDonald 1995, 11). In the famous case of Henry VIII, Henry could not in the modern sense divorce his wife to marry Anne Boleyn: his efforts concentrated on proving that he had never been legally married to Catherine of Aragon since she was his late brother's wife (d'Avray 2015, 1).

Although every king was rumored to have multiple mistresses, the Church was actively opposed to granting rights to their illegitimate children. Boswell (1988, 72) finds a steady deterioration in the status of bastards under the Christian Roman emperors, and Brundage (1987, 543) finds a similar Christian influence during the early Middle Ages. The Church believed that illegitimate children had no legal standing, and prevented them from inheriting property (Goody 1983, 77). Henry I, rumored to have fathered more than 20 illegitimate offspring, treated his illegitimate brood far worse than his legitimate children: the latter were pampered, tutored at court, and prepared for life as great nobles, while bastards were excluded from inheriting the throne and were frequently denied marriages (Newman 1986, 200).

As a consequence, many European kings often died without a surviving son. In MacDonald's (1995, 14) calculation, 11 out of 18 English kings from Henry VII to George VI had no illegitimate sons, and most kings only had a small number of surviving sons when they died. So although hereditary rule can solve the succession dilemma, socially imposed monogamy and the indissolubility of marriage did not provide the crown with enough male heirs in Europe.

In imperial China, which allowed polygyny, emperors had much more control over the inheritance rights of their offspring, so hereditary rule could be sustained by the large number of male heirs. Ebrey (1986, 2) demonstrates that although a man could marry only one wife, he could take as many concubines as he could afford. She estimates that about one-third of the elite families in the Song Dynasty (960–1279 CE) had a concubine at some point (Ebrey 1986, 2). This percentage was much higher for emperors, who cared most about succession and least about costs.

In my dataset, from the Qin Dynasty to the Qing Dynasty (221 BCE–1911 CE), Chinese emperors on average had 7.57 spouses, 6.97 sons, and 3.12 daughters. Over 80% of Chinese emperors had at least one son, often with concubines. In the most extreme cases, Emperor Huizong of Song (1082–1135 CE) had 148 partners, and Emperor Xuan of Chen (530–582 CE) fathered 42 sons. The children of concubines would have been deprived of their inheritance rights if they were in Europe; in imperial China, as Ebrey (1986, 1) argues, the sons of a concubine had the same rights of inheritance as the sons of a wife. This is consistent with my data: from 221 BCE to 1911 CE, among the emperors who were succeeded by their sons, only 57.69% were succeeded by sons of their wives (嫡子); the other 42.31% passed their throne to sons of concubines (庶子). Chinese emperors also adopted a system that was more flexible than primogeniture, so they could often designate the most competent son (rather than the oldest) as their successor. According to my calculations, among the emperors who relied on hereditary rule, only 44.62% were succeeded by their first-born sons; the majority were succeeded by younger, and probably more competent, sons.

Figure 4 compares the sizes of royal families in China and Europe (*Evidence II*). Chinese emperors, on average, had more legitimate wives (including concubines) (upper-left panel) and legitimate sons (upper-right panel) than their European counterparts. Among the rulers who had children, Chinese emperors were more likely to have at least one son than European rulers (lower-left panel). As a consequence, Chinese emperors were more likely to appoint a son as the successor (lower-right panel). Regression results further confirm these patterns (Appendix Table 1.2).
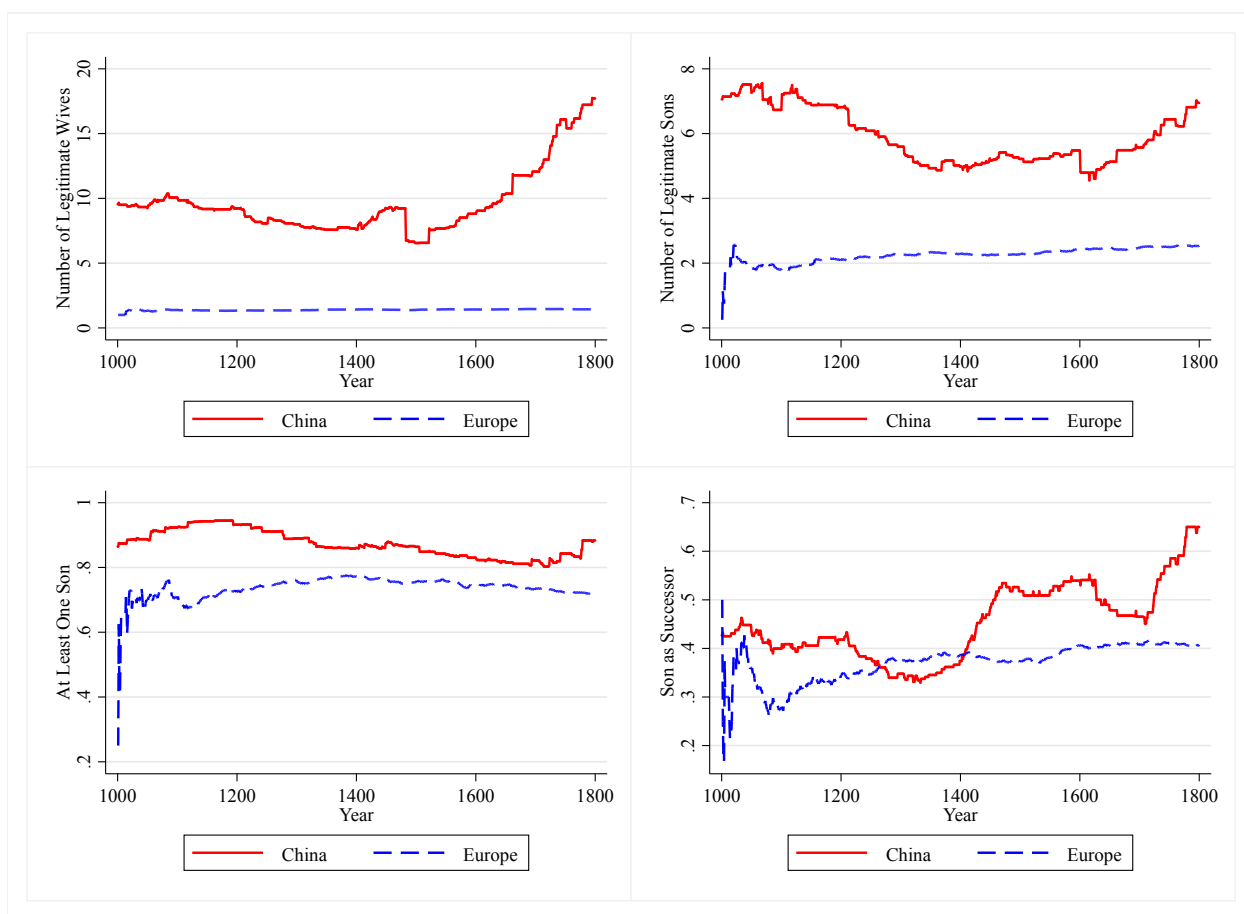
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Figure 4: Comparison of Rulers' Families in China and Europe (1000–1800 CE)

Note: These graphs show the 500-year moving average of *Number of Legitimate Sons* (upper-left), *Son as Successor* (upper-right), *Number of Legitimate Daughters* (lower-left), and *Number of Legitimate Wives* (lower-right) for Chinese (solid, red line) and European rulers (dashed, blue line).

While a liberal marriage norm provided Chinese emperors with a large number of male heirs, it also increased competition *among* the heirs. Sometimes, a son killed his brothers to eliminate the competition (e.g., Li Shimin murdered two of his brothers in 626 CE before he became Emperor Taizong of Tang). Chinese emperors tried to prevent competition among the candidates by anointing a crown prince (太子)—the heir apparent. By elevating one son's status, the emperor could alter "the structures of conflicts that take place among his potential challengers" (Konrad and Mui 2017, 2158). Emperors often designated their crown prince relatively early on, to leave enough

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time for him to be groomed for the throne by the emperor and the elite. For example, my data show that 18% of the emperors designated a crown prince in the same year they were crowned, and more than half of the Chinese emperors (54.92%) anointed a crown prince within the first five years of their reign (Appendix Figure 1.5). Once anointed, crown princes also held important positions in the government and the military, in order to control the necessary resources to defend against challenges from their brothers and other potential contenders.[8]

Although hereditary rule was the default succession arrangement in imperial China, not every emperor had a son successor. The reasons are twofold. First, about 14% of Chinese emperors had no children because of biological constraints. And among the emperors who had children, 7% did not have a son. These emperors were often succeeded by their brothers, nephews, or uncles. Second, while Han emperors relied on hereditary succession, ethnic minority rulers had different succession orders. For example, during the Mongol Empire that ruled China from 1271 to 1368 CE, the Mongolians relied on a combination of lateral succession (principles of seniority among members of a dynastic clan) and election to choose a new leader (the great khan). In the elections, a central assembly, *kurultai*, consisting of Mongol chiefs was convened to select each new great khan (Riasanovsky 1948, 167). As a consequence, only 33.33% of Mongol emperors were the sons of their predecessors. And consistent with my theory, the deviation from the son successor as a focal point shortened the duration of Mongol rulers: Mongol emperors' average tenure was 10.8 years, much shorter than their Han counterparts' 17.8 years in the next dynasty (the Ming). This helps explain why ruler duration was shorter in China than in Europe in the 14th century (Figure 2).

Thus far I have provided descriptive evidence that Chinese emperors had more male heirs, and

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[8]The naming of a crown prince seems to be a key difference between imperial China and the Islamic world. Islamic rulers, despite having multiple heirs because of polygyny, did not establish a clear succession line. During the Mamluk Sultanate, as Waterson (2006, 22) shows, "succession and the power struggle to dispute succession were based chiefly on the size of a candidate's powerbase, in terms of numbers of men in arms and client lords, that he could muster." So irregularities in succession were frequent, and rulers were often assassinated during succession crises (Trigger et al. 1983, 223). For example, Ramesses III, the second Pharaoh of Egypt's 20th Dynasty, was assassinated in the Harem Conspiracy led by one of his secondary wives, Tiye, her son Pentawer, and a group of senior officials during a succession crisis (Trigger et al. 1983, 223).

were therefore more likely to rely on hereditary succession (*Evidence II*). Next I provide more rigorous evidence that monarchs who had at least one son were less likely to be deposed than those who did not, and that a main mechanism is through appointing a son as the successor.

SUCCESSION AND DURATION

In this section I carry out three empirical exercises to show that having at least one son lengthened a ruler's duration by preventing elite coups. First, applying survival analysis to a pooled dataset of Chinese and European monarchs from 1000 to 1800 CE, I show that monarchs who had at least one son were less likely to be deposed than those who did not (*Evidence III*). Second, examining the mechanisms, I show that monarchs who had at least one son were more likely to appoint a son as the successor, and that those who had a son as successor were less likely to be deposed. Last, I provide direct evidence using the Chinese data to support the argument that the emperors who designated a crown prince were less likely to be deposed by elites (*Evidence IV*).

Survival Analysis

My key outcome variable is an indicator of whether the monarch was deposed. This variable is coded by Kokkonen and Sundell (2014, 442) for European monarchs, and the "deposed" category includes monarchs who were deposed by elites, murdered, died in civil wars, or suffered other unnatural deaths. To be consistent, I collect detailed information on how Chinese emperors exited office from Du (1995) and Qiao et al. (1996) and use the same coding rule to decide whether an emperor was deposed. 34.8% European monarchs and 30.7% Chinese monarchs were deposed.

My key independent variable is an indicator of whether the monarch had at least one son (*At Least One Son*). There is an extensive literature showing that the sex composition of children is exogenous. Some recent studies use the number of female children, conditional on number of children, to study the effect of having daughters on politicians' policy preferences (Washington

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2008; Glynn and Sen 2015). This identification strategy relies on the assumptions that 1) the parents could not choose the gender of any individual child, and 2) the parents did not follow a fertility stopping rule that would have an impact on the proportion of female children.

We must then examine whether these assumptions held in medieval Europe and China. While it was impossible to choose the gender of children in the medieval period (sex-selective abortion was impossible), it was very likely that monarchs followed a fertility stopping rule. For example, consider two royal couples facing different political environments. Couples of Type I face greater risks of having a son assassinated. They ideally would like three children, but will continue having children until they have at least three children and at least two sons. Couples of Type II also ideally would like three children. They, however, perceive lower risks of losing a son. So they will continue having children until they have three children and at least one son. There will be a correlation between political risks and child gender mix, conditional on number of children. Among couples with three children, for example, those with one boy will be those facing lower political risks, while those with two or three boys will be a mixture of those with and without political risks. Hence, if monarchs who were deposed were the same monarchs who faced greater risks, then the identification strategy would be invalid.

To address possible fertility stopping, a recent study estimates the effect of *having at least one daughter*, conditional on having at least one child, on firm managers' corporate social responsibility (Cronqvist and Yu 2017, 548). This strategy relaxes the identifying assumptions and only requires that the parents cannot choose the gender of any individual child, which was plausibly met in our setting. Because the number of surviving sons when the monarch died was endogenous to political risks, I collect data on the number of sons who were *ever born*. So as long as nature exogenously assigned the gender of a monarch's child, having a son was plausibly random for monarchs who had at least one child. 71.9% European monarchs and 86.4% Chinese monarchs had at least one son.

I also include covariates to consider several alternative hypotheses. A prominent argument for

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why some autocracies are more durable than others is the emergence of parliaments (Gandhi and Przeworski 2007), which is also highlighted in research on state formation in Europe (Downing 1992, 18-38; Ertman 1997, 68-74; Blaydes and Chaney 2013, 19-22). To estimate the impact of parliaments, I use Blaydes and Chaney's (2013, 27) coding, which is based on data about the history of European parliaments from Stasavage (2011, 65-66) and Van Zanden, Buringh and Bosker (2012, 841), who measure, for each state and century, whether the state had a parliament that met at least once during the century. The indicator variable *Parliament* takes a value of one if the state had such a parliamentary meeting, and zero if it did not. Because imperial China never developed a parliament in the European sense, China was coded as zero.

Another formal institution that determined ruler survival is *De Jure Primogeniture*—whether a polity formally adopted primogeniture (succession belonging to the firstborn son) as a codified succession rule. My data for European monarchs are from Kokkonen and Sundell (2014, 443), who collected information on *de jure* succession rule for each country from various sources.[9] For China, I collect the data from Li (2004, 2005) and Yang (2009), which discuss the inheritance law in Chinese history with an emphasis on nomadic dynasties.

Other covariates that could influence ruler duration include whether the monarch was the son of the last monarch (*Last Ruler's Son*), whether the state was *Catholic*, *Protestant*, or *Orthodox*,[10] age of the monarch at ascension (*Age at Ascension*), and variables measuring external threats by coding whether the monarch's predecessor was deposed by either domestic or foreign enemies (*Predecessor Deposed (Foreign)*, *Predecessor Deposed (Domestic)*), and a time trend variable.[11] Appendix Table 1.1 presents the data sources and summary statistics of these variables.

Figure 5 shows that *At Least One Son* is balanced across these covariates, supporting the identifying assumption that having at least one son was as-if random. In case some unobservables are not balanced, I also conduct a formal sensitivity analysis proposed by Altonji, Elder and Taber (2005)

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[9]Please see their appendix at `https://goo.gl/77nzBy` (accessed April 12, 2017).

[10]When models do not include country fixed effects, no religion is the base category; when country fixed effects are included, the coefficient on *Protestant* indicates the effect of the Reformation.

[11]I mean centered and divided the year of ascension by 100 to avoid collinearity and convergence issues.

to estimate how strong the influence of an unobserved confounder would have to be in order to overturn my results. I find that an unobservable needs to be at least seven times stronger than an existing observable to change my results.
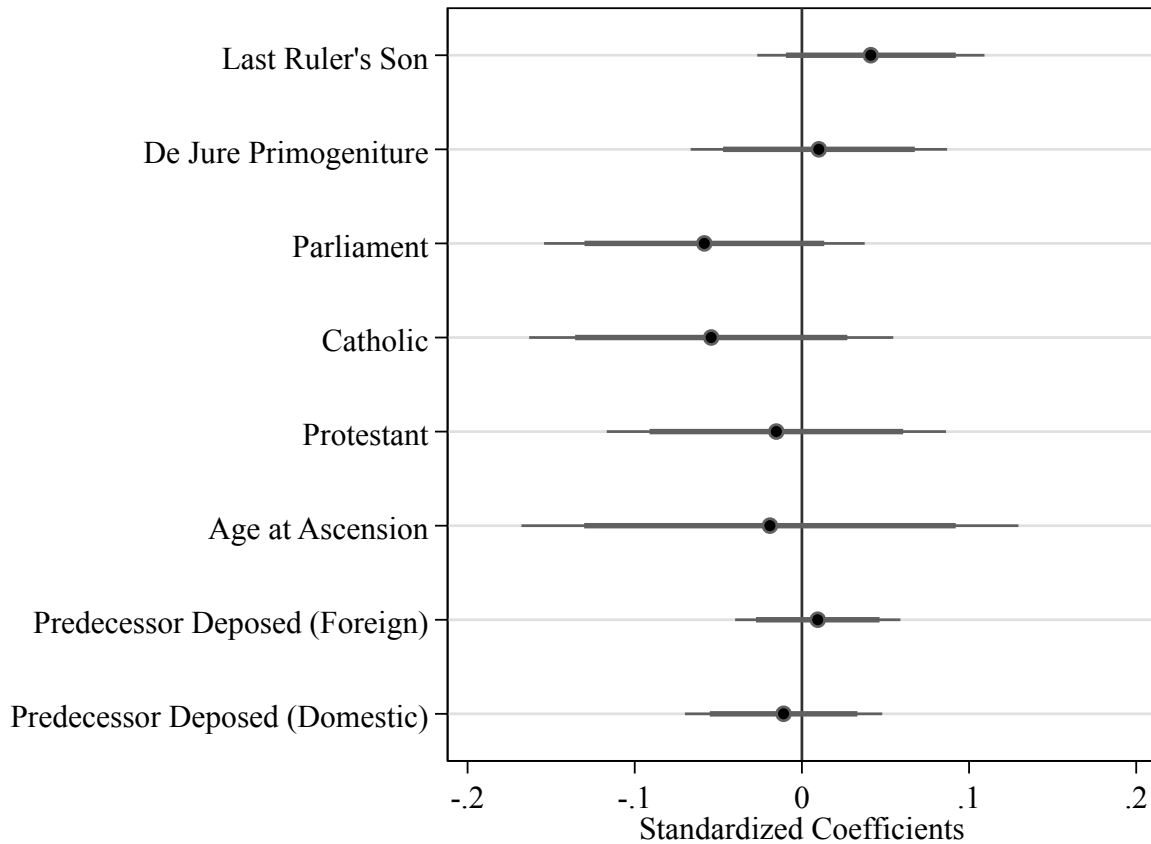

Figure 5: Balance between Monarchs with At Least One Son and Monarchs without Sons

Note: The coefficient plot shows the standardized coefficients and their 90% and 95% confidence intervals when regressing *At Least One Son* on a variety of covariates, controlling for country fixed effects and restricting the sample to monarchs who had at least one child. Standard errors are clustered at the country level. Appendix Table 2.1 shows the estimates.

I employ survival analysis because I care about *whether the monarchs survived* without being deposed, as well as *how long they endured*. I also use this method because the observations are right-censored: we do not know whether the monarch would have been deposed later if he died naturally. Survival time is calculated as the number of years a monarch stayed in power without

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Table 1: Survival Analysis of Monarchs in China and Europe (1000–1800 CE)

	Failure=Deposed					
	Shared Frailty Cox Models			Stratified Cox Models		
	(1)	(2)	(3)	(4)	(5)	(6)
	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio
	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)
At Least One Son	0.47***	0.47**	0.54**	0.47**	0.47**	0.57*
	(0.11)	(0.11)	(0.13)	(0.11)	(0.11)	(0.16)
Last Ruler's Son			√			√
De Jure Primogeniture			√			√
Parliament			√			√
Catholic			√			√
Protestant			√			√
Orthodox			√			√
Age at Ascension			√			√
Predecessor Deposed (Foreign)			√			√
Predecessor Deposed (Domestic)			√			√
Time Trend		√	√		√	√
Monarchs	751	751	661	751	751	661

Note: Exponentiated coefficients; Standard errors in parentheses. $+ p < 0.10$, $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$.

being deposed, and failure is coded as one if the monarch was deposed and zero otherwise. I use a Cox proportional hazard model to estimate the risk of monarchs being deposed, because such models are more suitable when there are no "strong theoretical reasons to expect one distribution function over another" (Box-Steffensmeier and Jones 2004, 48).

I rely on two kinds of specifications. First, I use shared frailty models (based on country) to account for both *between-* and *within*-country variation in succession arrangement and ruler survival. Second, I estimate stratified models to focus on *within*-country variation in succession arrangement. These stratified models (similar to controlling for country fixed effects) remove all confounding influences from unobserved, time-constant, and country-level factors that make monarchs in particular countries more vulnerable to deposition than others. In both estimations, I restrict the sample to monarchs who had at least one child, so the estimates should be understood as the effect of having at least one son on being deposed, conditional on having at least one child.

Table 1 presents the estimates of the hazard ratios.[12] A hazard ratio greater than one indicates a higher probability of being deposed; a hazard ratio smaller than one suggests a lower probability

[12]Appendix Table 2.2 presents the full results.

of being deposed. To avoid biases introduced by control variables, I include in Model (1) only *At Least One Son*. The model shows that monarchs who had at least one son had a 53% lower hazard of being deposed than those who did not. In Model (2), I add *Time Trend*, and in Model (3) I add all the other covariates. The results remain the same when adding more controls. And stratified models (Models (4)–(6)) produce the same results, indicating that, within the same country, having a son could significantly change rulers' risk of being deposed.

These results are highly robust. Appendix Figures 2.1-2.2 show that the estimates stay stable when dropping any one country from the sample. I also examine the difference between monarchs with only one son and those with more than one son. One might think that having multiple sons may lead these potential heirs to conflict over succession, resulting in shorter durations of the rulers. As I argued earlier, however, this should not be the case because most polities had relatively clear succession orders for close males relatives of the monarch regardless of the succession rule. For example, in Europe where most polities used primogeniture, the monarch's oldest male son is first in the line of succession, followed by the second oldest male son, etc (Kokkonen and Sundell 2014; Acharya and Lee 2016). In China, the emperors often appointed a crown prince early in their reign to groom the heir, so each potential male successor was likely to have known his position in the succession hierarchy. My results are consistent with this proposition: having multiple as opposed to only one son is only beneficial for the ruler (Appendix Table 2.3).

Figure 6 displays the estimated survival rates (left panel) and hazard rates (right panel) for monarchs who had at least one son (red, solid line) and who had no sons (blue, dashed line).

The results in Table 1 demonstrate that having at least a son was important for ruler survival, which supports the proposition that Chinese emperors stayed in power longer than European kings because of China's more liberal marriage and inheritance norms.
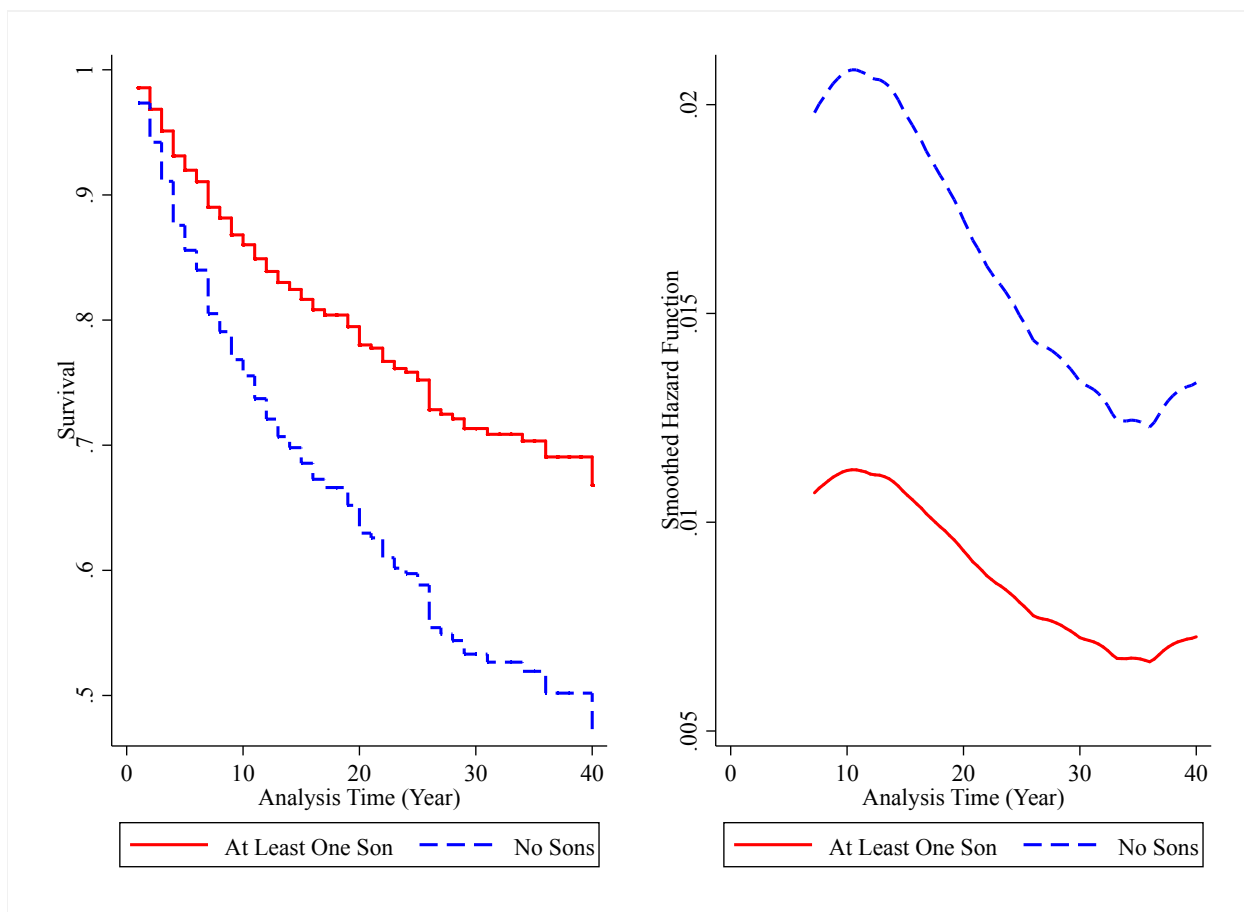
Figure 6: Estimated Survival and Hazard Functions of Monarchs with and without At Least One Son

Mechanisms

As Figure 1 shows, there is a long causal chain linking marriage institutions and ruler survival. So far, I have shown that Chinese monarchs were more likely to have a son (Figure 4) and having a son decreased monarchs' probability of being deposed (Table 1). In the following analyses, I will show more evidence to connect the links: 1) monarchs who had at least one son were more likely to appoint a son as the successor, and 2) appointing a son as successor decreased the probability of being deposed.

I construct an indicator of whether the monarch designated a son as his heir apparent (*Son as*

Successor). The most relevant evidence for my theory is whether the ruler publicly designated a son as his heir apparent. For European monarchs, Kokkonen and Sundell (2014, 444) collect data on whether monarchs were succeeded by their sons and assume that most sons "who succeeded monarchs are likely to have been intended successors." For Chinese dynasties, I collect the biographies of every Chinese emperor and their sons and carefully examine whether the emperor designated a crown prince and whether a son was chosen as the heir apparent. Because designating a crown prince was a significant event in imperial China, it was well documented in historical accounts, and the records from various sources were largely consistent (Du 1995; Qiao et al. 1996).

Table 2 (Panel (a)) shows the ordinary least squares (OLS) estimates of the effect of *At Least One Son* on *Son as Successor*, with country fixed effects and standard errors clustered at the country level.[13] The various specifications show a consistent finding that having at least one son increases the probability of appointing a son as successor. The effect size is striking: having at least one son increases the probability of appointing a son as successor by 40%.

Table 2 (Panel (b)) then shows the next link. *Son as Successor* has a significantly negative effect on being deposed: the monarchs who appointed a son as successor were 25% less likely to be deposed than those who did not.[14] This relationship, however, is merely correlational. As Abramson and Rivera (2016, 1280-1283) demonstrate, only consolidated emperors had the reputation and power to anoint a crown prince. I cannot use my observational data to address this reverse causality problem and leave it for future research.

I also employ an estimator proposed by Imai et al. (2011) to estimate the *average causal mediation effect* (ACME) of *At Least One Son* on being deposed through *Son as Successor*. The ACME is estimated to be -0.14 (95% confidence interval: [-0.20, -0.08]), while the total effect is -0.15. This indicates that appointing a son successor is a major mechanism through which having at least one son affects the probability of being deposed. Because my observational data do not necessarily meet the sequential ignorability assumption, I flag this evidence as suggestive.

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[13]Appendix Table 3.1 shows the full estimates.
[14]Appendix Table 3.2 shows the full estimates.

Table 2: Testing Mechanisms: OLS Estimates

Panel (a): The Effects of *At Least One Son* on *Son as Successor*

	(1)	(2)	(3)
	Coeff.	Coeff.	Coeff.
	(C.S.E.)	(C.S.E.)	(C.S.E.)
At Least One Son	0.41***	0.41***	0.39***
	(0.07)	(0.07)	(0.07)
Outcome Variable Mean	0.53	0.53	0.54
Controls			√
Time Trend		√	√
Country F.E.	√	√	√
Intercept	√	√	√
Monarchs	750	750	750
No. of Clusters	43	42	42

Panel (b): The Effects of *Son as Successor* on *Deposed*

	(1)	(2)	(3)
	Coeff.	Coeff.	Coeff.
	(C.S.E.)	(C.S.E.)	(C.S.E.)
Son as Successor	-0.26***	-0.25***	-0.23***
	(0.04)	(0.04)	(0.04)
Outcome Variable Mean	0.30	0.30	0.29
Controls			√
Time Trend		√	√
Country F.E.	√	√	√
Intercept	√	√	√
Monarchs	762	762	668
No. of Clusters	43	42	42

Note: Panel (a) presents OLS estimates of the effect of *At Least One Son* on *Son as Successor*. Appendix Table 3.1 shows the full results. Panel (b) presents OLS estimates of the effect of *Son as Successor* on *Deposed*. Appendix Table 3.2 shows the full results. Controls include *Last Ruler's Son*, *De Jure Primogeniture*, *Parliament*, *Catholic*, *Protestant* (*Orthodox* as the reference group), *Age at Ascension*, *Predecessor Deposed (Foreign)*, and *Predecessor Deposed (Domestic)*. Standard errors clustered at the country level are in parentheses. $+ p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

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In sum, there is evidence that the monarchs who had at least one son were more likely to appoint a son as successor, and the monarchs who had a son as successor were less likely to be deposed.

Testable Implication

My theory implies not only that monarchs who appointed a son successor were less likely to be deposed in general, but also that they had a lower risk of being overthrown *by the elite*. To provide direct evidence for my argument, I analyze an original dataset that I compile on Chinese rulers from the first emperor (Qin Shi Huang (220–210 BCE)) to the last emperor (Xuantong Emperor (1908–1911 CE)). This dataset includes fine-grained information on how emperors exited office, which enables me to test my proposition in a more direct way.

Table 3: Exit of Chinese Emperors (221 BCE–1911 CE)

Cause	Method of Exit	Frequency	Percent
Health	Natural Death	152	53.90%
Elites	Murdered by Elites	34	12.09%
	Deposed by Elites	24	8.51%
	Forced by Elites to Abdicate	17	6.03%
	Committed Suicide under Pressure from Elites	1	0.35%
	Subtotal	76	26.95%
Civil War	Deposed in Civil War	20	7.09%
	Died in Civil War	10	3.55%
	Committed Suicide during Civil War	1	0.35%
	Forced to Abdicate facing Internal Threats	1	0.35%
	Subtotal	32	11.34%
External War	Committed Suicide during External War	4	1.42%
	Forced to Abdicate facing External Threats	3	1.06%
	Subtotal	7	2.48%
Family	Murdered by Son	5	1.77%
	Murdered by Concubine	1	0.35%
	Subtotal	6	2.12%
Other	Elixir Poison	4	1.42%
	Volunteer to Abdicate	4	1.42%
	Accidental Death	1	0.35%
	Subtotal	9	3.19%
	Total	282	100%

Table 4: Hereditary Succession and Deposition by Elite in China (221 BCE–1911 CE)

	Failure=Deposed					
	Shared Frailty Cox Models			Stratified Cox Models		
	(1)	(2)	(3)	(4)	(5)	(6)
	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio	Haz. Ratio
	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)
Son as Successor	0.19***	0.18***	0.20***	0.18***	0.23***	0.27**
	(0.05)	(0.05)	(0.06)	(0.06)	(0.09)	(0.11)
Last Ruler's Son			√			√
Dynastic Duration			√			√
Age at Ascension			√			√
Predecessor Deposed (Foreign)			√			√
Predecessor Deposed (Domestic)			√			√
Monarch Ethnicity FE			√			√
Time Trend		√	√		√	√
Monarchs	282	282	232	282	282	232

Note: Exponentiated coefficients; Standard errors in parentheses. $+ p < 0.10$, $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$.

Table 3 shows the exits of all 282 Chinese emperors. Half died peacefully, while the other half exited office unnaturally. Of these unnatural exits, about half were deposed by the elite (murdered, overthrown, forced to abdicate, or forced to commit suicide). This is consistent with Svolik's (2009, 478) argument that most autocratic leaders were overthrown by government insiders. The next category is death or deposition in civil wars; very few (seven) were deposed by (or in) external wars. Very few (five) Chinese emperors were murdered by their sons, suggesting that Chinese emperors have handled the crown-prince problem well.

I now investigate whether emperors who had a crown prince were less likely to be deposed *by the elite*. Table 4 presents the Cox models in which failure is defined as an exit caused by the elite.[15] I try different specifications with and without covariates, and include ethnicity dummies to consider the various dynasties established by different ethnic groups.[16] Consistent with my theoretical prediction, emperors who had a son as their heir apparent were 73–82% less likely to be deposed by the elite. This lends direct support to the idea that monarchs can avoid elite coups by appointing a crown prince.

Combining *Evidence I* through *IV*, the results strongly support the idea that Chinese familial institutions gave Chinese emperors an advantage by providing a large number of male heirs, which enabled them to appoint a crown prince to maintain the loyalty of both the successor and the elite. Chinese emperors, as a result, were able to stay in power longer than European monarchs.

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[15] Appendix Table 4.2 presents the full results.

[16] Appendix Table 4.1 presents the summary statistics for this China-specific dataset.

CONCLUSION

Economic historian Philip Hoffman recently asked, "Why did Europe conquer the world?" By the early 20th century, Europeans had gained control of 84% of the globe, and they ruled colonies on every other inhabited continent (Hoffman 2015, 2). The European experience has become a benchmark against which other countries are compared, and much scholarly effort has been devoted to explaining why Europe has been exceptional. Most political scientists, however, explain "European exceptionalism" without examining other ancient civilizations.[17] This Euro-centric approach often exaggerates Europe's uniqueness.

By comparing Europe and China, I show that European political stability was not exceptional: from 1000 to 1800 CE, Chinese emperors stayed in power longer than most European monarchs. The longer ruler tenure in imperial China contradicts a distinguished literature that emphasizes the role of feudalism and representation in lengthening autocratic rule. I then show that hereditary succession, which was sustained by China's familial institutions, was key to the country's stability. I test these arguments using a novel dataset of over 1,000 monarchs in China and Europe.

My study has implications for two important debates. The first debate revolves around the great divergence between Europe and China in the early 19th century (Pomeranz 2000, 3-10; Rosenthal and Wong 2011, 8-9). A prominent argument is that political stability contributes to long-term economic development by giving rulers a long time horizon to focus on pro-growth economic policies (Olson 2000, 6-9). Applying this argument to Europe, many scholars attribute its rise to exceptional stability in the premodern era. For example, Strayer (1970, 19) argues, "a notable increase in stability and security in the period following the year 1000 ... was great enough to touch off an impressive revival in most parts of western Europe." Acharya and Lee (2016, 20-22) empirically show that European regions that had longer ruler durations in the premodern era are now wealthier than other regions. In the same vein, Cox and Weingast (2018, 287-290) analyze a panel dataset of more modern periods and show that a strong legislature contributes to both political stability and economic growth. But the long tenures of Chinese emperors cast doubt on this long-held view: if long-lasting rulers promoted economic growth, China's economy should have taken off in the Ming Dynasty. China during the Ming and Qing, however, was caught in what Elvin (1973, 298-315) terms a "high-level

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[17]Notable exceptions include Hui (2005), Kuran (2011), Blaydes and Chaney (2013), Stasavage (2016), and Dincecco and Wang (2018).

equilibrium trap" or what Jin (1984) calls an "an ultra-stable system," in which political stability was associated with economic stagnation. Although exploring the relationship between ruler duration and economic development is beyond the scope of this article, my findings point to the importance of re-examining the stability–development link in the premodern era.

The second debate centers on the question of autocratic survival. In the emerging literature on authoritarian regimes, many scholars have examined the roles of formal, political institutions in lengthening ruler duration, such as legislatures and elections (Gandhi and Przeworski 2007, 1281-1284; Gandhi 2008, 73-101; Magaloni 2008, 4-10) and power sharing institutions (Bueno de Mesquita et al. 2003, 29-31; Svolik 2012, 3-8). My findings about the importance of informal institutions, in particular, marriage and inheritance norms, expand this literature and call more attention to how informal institutions complement formal institutions (Helmke and Levitsky 2004). In the premodern era, representative assemblies were rare outside Europe (Stasavage 2016, 146), yet many ancient rulers stayed in power for decades. This study points to one possible explanation that travels beyond Europe.

Although my evidence is from the remote past, my findings have contemporary implications. A handful of ruling monarchs remain—in Bahrain, Brunei, Jordan, Kuwait, Liechtenstein, Monaco, Morocco, Oman, Qatar, Saudi Arabia, Swaziland, and United Arab Emirates, and many autocracies still rely on hereditary succession, such as North Korea and arguably Singapore. In authoritarian regimes that do not rely on hereditary succession, choosing a loyal successor is still important for the ruler. A sizable literature on Chinese and Soviet politics emphasizes the importance of succession for regime stability (MacFarquhar 1959, 312; Lieberthal 1978, 239; Esherick and Perry 1983, 171-173; Bunce and Roeder 1986, 215; Dickson and Murdoch 1997, 64; Shirk 2001, 139; Fewsmith 2003, 1). The "crown-prince problem" that Mao Zedong encountered when his heir apparent Lin Biao attempted to blow up his train is still in living memory for many Chinese and especially Communist Party leaders.

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