State Formation and Bureaucratization: Evidence from Pre-Imperial China

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This paper studies the relationship between military conflicts and state-building in pre-imperial China. I develop an incomplete contract model to examine rulers' and local administrators' incentives in conflict. Defensive wars drive decentralization: landowning local administrators have more to gain from a successful defense and are therefore more committed to it. Offensive wars drive centralization: the landowning ruler has personnel control over the non-landowning local administrator and can therefore force the latter to participate in less lucrative attacks. Model predictions are corroborated with empirical evidence and historical case studies, and offer broader implications for the political divergence between China and Europe.

Building strong, functioning states has been a key objective of rulers and statesmen throughout human history. From ancient Egypt and medieval Europe to premodern Japan and present-day Middle East, one can find many examples of success and plenty more of failure. The question of why and how a centralized bureaucratic[1] state emerges has remained a topic of interest for generations of scholars (Hintze 1975; Mann 1986; Tilly 1990). Existing theories of state-building primarily draw from European history and place a heavy emphasis on the role of warfare. The common argument is that wars incentivize rulers to build up their extractive capacity and create fiscal infrastructures (Tilly 1990; Besley and Persson 2009), and that wars and military competition force states to adopt more efficient bureaucratic forms (Weber [1922] 1978).

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[1] A bureaucracy is marked by a hierarchical organization of officials, each with spheres of responsibility. These are weaker conditions of Weber's ([1922] 1978) ideal type of bureaucracy, and are applicable to various historical administrations (Eich 2015, p. 93).

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The Chinese empire, on the other hand, has received much less attention in the literature. As one of the longest-lived autocratic regimes, imperial China serves both as a case of global importance in its own right and as a case of immense value for understanding the formation and robustness of centralized bureaucracies. In the seventh century BCE, China was composed of over one hundred autonomous regional states (*zhuhou guo*) ruled by warlords and their vassals. Frequent warfare provided a breeding ground for processes of centralization and bureaucratization in the regional states over the next five centuries. These processes eventually culminated in the birth of the Chinese empire in 221 BCE, which was consolidated under and "administered by a centralized bureaucratic government" (Finer 1997, p. 87). Remarkably, many of the institutional innovations developed then were to persist for the next two millennia, even though the first empire collapsed within 15 years of its founding.

In this paper, I study the mechanisms of state-building in the context of pre-imperial China, using hand-collected datasets on military conflicts, administrative districts, and administrators over the Spring and Autumn Period (770–481 BCE) and the Warring States Period (480–221 BCE). I begin by presenting two motivating facts. First, the degree of centralization, measured by the number of counties—state-controlled local administrative districts—was highly uneven across the regional states. Second, the less centralized states were located in central China and faced a more hostile environment, whereas the more centralized states were located near the periphery and were more militarily aggressive.

Then, I develop an incomplete contract model of political delegation to show that centralized and decentralized local administrations have different advantages at military conflicts. In the model, the ruler appoints an agent to administer a land domain. She can give the agent a fief contract or a county contract, the key distinction between which is the ownership of the domain. Following the literature on incomplete contracts, ownership is defined as the residual right of control over domain resources, which includes the power to permit or exclude others from using domain resources (Grossman and Hart 1986; Hart and Moore 1990).

In the model, differences between counties and fiefs are reflected through income and personnel control. Under the fief contract, the agent is given ownership of the domain by the ruler, receives its taxable income, and commands her private armies. Under the county contract, the ruler retains ownership of the domain and therefore receives its income and has the power to replace the agent at will; the agent collects taxes and commands armies under the ruler's consent and receives a wage in return.

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The fief contract corresponds to decentralization, and the county contract corresponds to centralization and therefore state-building.

I analyze this model under offensive and defensive conflicts and examine how ownership affects the ruler's and the agent's incentives and payoffs. In a defensive setting, the ruler and her agent face invasion from a foreign enemy and make military investments for defense. In an offensive setting, they make military investments to attack a foreign enemy. If the conflict is won, they both survive and consume their corresponding payoffs, and if the conflict is lost, the agent receives zero payoff. The agent can opt out of a conflict.

This model generates two testable predictions. First, decentralization is more likely to occur in localities that face greater external threats. In order to incentivize her agent to defend the locality, the ruler may choose to concede land ownership to the agent, so that the latter has more to gain from a successful defense. Second, centralized districts are militarily more aggressive, in that county administrators will participate in less lucrative attacks. This is because the landowning ruler has personnel control over the non-landowning agent (she can remove the agent at will), so the latter must be more obedient to the ruler's orders. In other words, defensive needs drive decentralization, and offensive needs drive centralization.

I demonstrate that the model's predictions are consistent with empirical findings. I use data on bureaucratic counties and vassal fiefs in the states of Jin and Chu, which were two of the most powerful regional states in the Spring and Autumn Period. All counties and fiefs were created on lands without existing powerholders or whose powerholders had been eliminated by force. Using information from a historical atlas, I determine whether they were on the state border and, if so, what neighbors they had.

To assess the prediction on defense, I use border status and the military strength of neighbors as two proxies for military threats. I show that an administrative district located on the state border at its time of creation was around 27.5 percent more likely to be a vassal fief, and one that neighbored a militarily strong neighbor at its time of creation was around 40.4 percent more likely to be a vassal fief. This result is robust to controlling for geographical characteristics. I conduct two heterogeneity analyses that provide further evidence that external military threats affected the adoption of fiefs. I then address several alternative hypotheses and show that they do not drive this result.

To assess the prediction on offense, I use a subset of the military conflict dataset that contains every attack initiated by Chu and Jin, and I

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map conflict sites to their contemporary locations. I use the distance between administrative districts and war sites to proxy for the lucrativeness of wars. This is because more distant attacks involve higher logistical costs for army supplies and, therefore, smaller net gains. Since I do not have information on which administrative districts dispatched armies to which attacks, I use two complementary empirical strategies.

First, I use a difference-in-differences style approach to examine whether county-creation in a district affects the occurrence of nearby attacks. Results show that county-creation in a district is associated with 0.285 to 0.298 additional long-range attacks (within 51 to 150 miles of that district) per decade, which is approximately a 25 percent rise compared to the mean. Second, I assume that for each attack, its participating armies are dispatched from the nearest districts with an active administration, and I match each attack with its nearest 5 or 10 fiefs or counties. I then show that county armies travel 20 additional miles to attacks if the nearest 10 districts are used and 16.7 additional miles to attacks if the nearest 5 districts are used. These results are robust to the addition of geographical characteristics interacted with decade fixed effects. Last, I discuss how my findings relate to other regional states of the Spring and Autumn Period and the ensuing Warring States era, as well as to the political divergence between pre-imperial China and premodern Europe.

This paper contributes to a large strand of literature in economics and political science that studies the relationship between war and state capacity. While many argue that external war induces state-building (Tilly 1990; Dincecco, Federico, and Vindigni 2011; Becker et al. 2022), others demonstrate that war facilitates state-building only under certain conditions. Gennaioli and Voth (2015) highlight the importance of money for military success; Centeno (1997) emphasizes the availability of alternative taxable resources; and Karaman and Pamuk (2013) underscore regime type and urbanization.

These works primarily focus on the ruler's incentives to prepare for war by centralizing resource extraction. I extend the war-makes-states literature by exploring state-building from a novel perspective—political delegation—and employing the incomplete contract framework to model the incentives of the ruler and the administrator to participate in war. Rather than focusing on centralized extraction as the sole means to win wars, I study the ruler's choice between centralization, where she appoints an agent to extract and use resources on her behalf, and decentralization, where she cooperates with a vassal who owns local resources. Under this framework, I show that wars may produce ambiguous effects

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on state-building: offensive wars lead to state-building, while defensive wars do not. Moreover, offensive wars incentivize state-building through a different mechanism: centralization gives the ruler stronger personnel control over the bureaucrat and therefore can support greater military aggression.

The contribution of this paper also lies in its focus on pre-imperial China, an understudied yet important period of state-building that ultimately birthed the politically centralized, unified Chinese empire. The small body of works that studied war and state-building in this era is largely qualitative and include Kiser and Cai (2003), who posit that war facilitated bureaucratization by decimating the aristocracy; Hui (2005), who contends that political centralization was a product of the self-strengthening reforms in the regional states; and Zhao (2015), who argues it was the consequence of prolonged, inconclusive warfare. My paper enriches this literature by providing the first quantitative analysis of patterns of warfare and state-building in Spring and Autumn China and proposing a theory to account for observed patterns of centralization.

Recent scholarship also demonstrates that heterogeneities in conflicts and geography may affect state-building in different ways. Ko, Koyama, and Sng (2018) and Koyama, Moriguchi, and Sng (2018) examine how the number and direction of external threats and the size of the affected state impact the degree of centralization in Europe, China, and Japan; Michalopoulos and Papaioannou (2014) and Sng (2014) show that state institutions and extractive capacity decline in regions that are distant from the capital. My paper expands on their findings by demonstrating that the types of military conflict—offensive and defensive—produce opposite effects on state-building.

HISTORICAL BACKGROUND

State-Building

For several centuries prior to its first unification under the Qin in 221 BCE, central China was composed of many regional states, whose origins trace back to the Western Zhou (1041–771 BCE, abbreviated as WZ). The Zhou system was largely "feudal" (Hsu 1999, p. 545). Regional states were founded by relatives of the Zhou royal family on lands granted by the king, and were ruled by the founders and their descendants. Rulers of regional states—dukes—were given the power to administer state affairs, collect taxes, and maintain private armed forces. Similarly, dukes appointed their sons and relatives to be ministers (*qing-dafu*) of the states,

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and assigned to each *qing-dafu* a fief over which he and his descendants obtained their "independent base of territory, subjects, and resources" (von Glahn 2016, p. 48).

The collapse of Western Zhou and the court's relocation to the east marked the beginning of the Spring and Autumn Period (770–481 BCE, abbreviated as SA), as well as a new political order in which the regional states gained *de facto* autonomy. Records of activity exist for around 148 states (Yang 1998, p. 278), though many did not survive long.

As inter-state conflict became increasingly frequent, first efforts at state-building emerged in Jin and Chu, two of the most powerful states. This is signified by the creation of administrative districts known as the county (*xian*), which were governed by an official appointed by and responsible to the central government (von Glahn 2016, p. 54). In contrast to the fief, whose resources were controlled by its holder, the county's tax revenue and troops were under the command of the duke (Yang 1998). Moreover, the office of county magistrates was not hereditary, and appointments were made directly by the duke. In Chu, it was possible for a county magistrate to be promoted to the Minister of War in the central administration (Gu and Zhu 2001, p. 280).

By 532 BCE, 49 counties had been founded in Jin, and at least 18 had been founded in Chu (Zhou and Li 2009). Over time, existing state territory began to be transformed into counties. In 635 BCE, Duke Wen of Jin founded eight counties in a domain that was granted to him by the king of Zhou. In 514 BCE, two prestigious ministerial families in Jin were exterminated by the joint efforts of six other families, and their landholdings were confiscated and transformed into ten counties, each administered by a state-appointed bureaucrat (Zhou and Li 2009).

With only 22 states surviving into the Warring States Period (480–221 BCE, abbreviated as WS) (Yang 1998, p. 278), the county system became widely adopted by the seven dominant states. They were Qin, Qi, and Chu, which were among the most powerful states in the Spring and Autumn Period; Yan, a northernmost state with little recorded activity in the previous eras; and Han, Zhao, and Wei, which formerly constituted the Jin. A county now became more structured, and its magistrate either had a fixed term or could be replaced at the ruler's will. Bureaucrats were generally selected on individual merit.[2] In contrast, fiefs became non-hereditary, and owners retained only economic powers.

[2] Shang Yang's reforms in the Qin created a "system of merit based on service to the state that would supersede the privileges of the old nobility" (von Glahn 2016, p. 56). Zhong Lian of Zhao, Shen Buhai of Han, and Zou Ji of Qi also promoted meritocratic selection and developed rules to evaluate the performance of state officials.

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By 221 BCE, Qin had successfully conquered the remaining states and established the first unified empire. A sophisticated imperial bureaucracy had been developed, along with a nationwide administrative hierarchy with counties at the lowest level. Elaborate rules governed the selection, promotion, and advancement of officials, their ranks and salaries, and their performance (Yates 1995). Officials were required to report administrative statistics to their superiors, and their performance was evaluated on an annual basis. They faced demotion for bad performance and fines and punishments for violating rules.

Military Organization

By early Spring and Autumn, military service in the regional states was generally confined to members of the nobility, which was formed by the lineage clans of the ruling class, as well as the urban populace. As the scale and ferocity of warfare dramatically increased throughout the Spring and Autumn Period (Lewis 1990, p. 243), bases of military recruitment also expanded to include the peasantry.

Armies of a regional state were comprised of the central army, local armies, and private armies of ministers (Huang 1998, pp. 64–70; Du 1990, p. 57). The central army was stationed in the capital, and consisted of both nobles and peasants residing in the capital region (Hsu 1999, p. 573). Local armies, on the other hand, were stationed in the counties and recruited from the local peasantry by local officials. In times of war, they were commanded by county magistrates upon authorization from the duke. Historical records indicate that magistrates of Chu counties such as Shen, Zhen, and Ling actively led their local troops in combat when inter-state conflicts transpired.

In contrast, private armies were owned and commanded by ministers. Those armies were comprised of ministers' clansmen, as well as peasants and dependents residing at ministers' fiefs. In times of need, dukes would call upon ministers to provide military assistance using their private armies (von Glahn 2016, pp. 17, 48–49). Historical accounts indicate that ministers' private armies were actively involved in inter-state wars and that they faithfully obeyed the orders of their masters rather than the duke. For example, Zhi Zhuangzi, a minister of Jin, led his private army to strike back at Chu after learning that his son had been captured by military leaders of Chu in their previous confrontation.[3]

[3] Year 12 of Duke Xuan, *Zuo's Commentary*. See Durrant, Li, and Schaberg (2016) for an English translation of this classical text.

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DATA DESCRIPTION

In this section, I document empirical patterns on counties and military conflicts throughout the Spring and Autumn and Warring States Periods. I begin by describing the construction of the main datasets used in the analysis.

Data Sources

Counties and Fiefs. Data on counties in the SA and WS Periods are collected from Zhou and Li (2009), a comprehensive study of regional and local administrative districts in pre-imperial China. For each county,[4] it has information on the latest year by which the county was created, the name and present-day location of the county, the reason for creating the county (if applicable), and whether the county was taken over by another state and when. From 772 to 221 BCE, a total of 240 counties were created by 16 distinct regional states.

Data on vassal fiefs in the state of Jin in the SA Period are extracted from Ma (2007), a study on the historical geography of Jin. Data on vassal fiefs in the state of Chu in the Spring and Autumn Period are extracted from Tian (2017), a study on noble clans in Chu. For each fief, these sources contain information on the latest year by which the fief was created, and its present-day location. From 772 to 496 BCE, there were a total of 26 Jin fiefs and 11 Chu fiefs for which such information existed.

All records of counties and fiefs from Zhou and Li (2009), Ma (2007), and Tian (2017) are gathered from historical accounts. Such accounts usually mention counties in three ways: that a duke appointed an individual as the magistrate of a county; that a duke annexed a regional (city-)state and turned it into a county; and that a duke created a county at a place. They mention fiefs in two ways: that an individual was enfeoffed at a place, or that a place was granted to an individual as a reward for meritorious service.

Military Conflicts. To construct the dataset on military conflicts, I used the *Catalogue of Historical Wars*,[5] complemented by *Zuo's Commentary*.[6] There are 695 records of inter-state conflicts during the SA and WS Periods, and 141 records of internal conflicts during the SA era. For each conflict, the *Catalogue* contains information on its year of

[4] A very small number of counties were created by vassals in their fiefdoms, and are excluded from my dataset.

[5] *Zhongguo Lidai Zhanzheng Nianbiao*, edited by China's Military History Editorial Committee. Beijing: Jiefangjun Chubanshe, 2003.

[6] *Zuo's Commentary* is one of the two primary texts used by historians to study the SA Period. For each year between 722 and 468 BCE, it recounts important political, diplomatic, and military events, at times with a great amount of detail.

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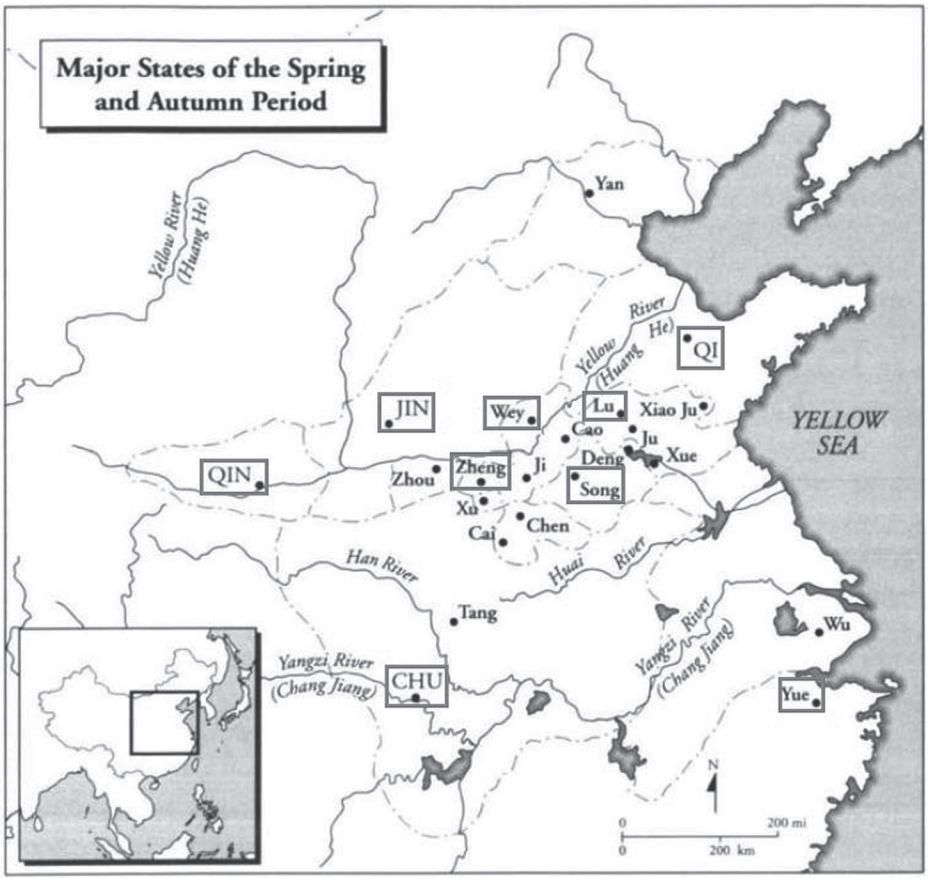


FIGURE 1
MAJOR STATES OF THE SPRING AND AUTUMN PERIOD

Notes: This is a map of the major states of the Spring and Autumn Period. States that are boxed maintained continuous activity throughout the majority of the SA and WS periods.
Source: Adapted from Hsu (1999, p. 548).

occurrence, duration, participants, initiator(s), and target(s); and for each external conflict, it provides information on its present-day location. It also records the outcome of each conflict for all participants—whether they won, lost, had an indeterminate outcome, conquered foreign land, or lost land to a foreign enemy.

Data Patterns

Geography. Figure 1 displays a map of the major states of the Spring and Autumn Period. States that are boxed in blue maintained continuous activity throughout the majority of the SA and WS periods. States

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TABLE 1
NUMBER OF NEWLY CREATED COUNTIES BY HISTORICAL PERIOD, 722–222 BCE

Panel A: All States

Period	Number of New Counties	County-Creating States
Early SA	7	2: Jin, Chu
Mid SA	21	3: Jin, Chu, Zhou
Late SA	32	5: Jin, Chu, Zhou, Qi, Wu
Early WS	31	6: Jin, Chu, Qi, Qin, Zheng, Zhongshan
Mid WS	58	7: Zhao/Han/Wei, Chu, Qi, Qin, Lu
Late WS	89	9: Zhao/Han/Wei, Chu, Zhou, Qi, Qin, Yan, Song
Period unknown	161	—

Panel B: Major States

Period	Jin	Chu	Qin	Zheng	Song
Early SA	1	6	0	0	0
Mid SA	10	9	0	0	0
Late SA	15	12	0	0	0
Early WS	11	7	8	1	0
Mid WS	5/7/14	3	23	—	0
Late WS	17/6/14	3	39	—	1
Period unknown	5/3/5	19	123	0	0

Notes: Panel A displays the number of new counties created and the number of states that created those counties for each time period from 722 BCE to 222 BCE. Panel B displays the number of new counties created by Jin, Chu, Zheng, Song, and Qin. Early SA is 772–674 BCE, mid SA is 673–577 BCE, late SA is 576–481 BCE; early WS is 480–395 BCE, mid WS is 394–308 BCE, and late WS is 307–222 BCE. Since Jin split into three independent states in 403 BCE, for mid and late WS, I display the counties created by the descendant states Zhao, Han, and Wei, in this order, under the same column as Jin. Since Zheng was conquered by Han in 375 BCE, the cells for mid and late Warring States are not applicable.
Source: Zhou and Li (2009).

with capitalized names—Qi, Jin, Chu, and Qin—were the "four major powers... [that] had each acquired a sphere of domination" (Hsu 1999, p. 562).

State-Building. Recall that counties were administrative districts whose resources and magistrates were directly controlled by the state. I hereby use the number of counties as a proxy for the degree of state-building, following Kiser and Cai (2003) and Zhao (2015).

Panel A of Table 1 contains a summary of the data on counties. The number of newly created counties shows a steady rise, indicating a growth in state-building efforts over time. Even though the number of county-creating states had also been increasing, they constituted a very small share of the SA states, of which there were more than one hundred. In contrast, roughly half of the WS states had counties.

Major states of the SA period exhibit stark differences in their degree of centralization. Panel B of Table 1 presents the number of counties

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founded by Jin, Chu, Qin, Zheng, and Song.[7] Jin and Chu were clearly the early state-builders. Qin, which eventually unified China in 221 BCE, engaged in aggressive state-building since the beginning of the WS Period. Estimates that account for territorial expansion show that the intensity of state-building has also been on the rise (Online Appendix C.3). Qi, another major power of SA, created many counties in the WS period, but information on the name, location, and year of creation only exists for 24 of them (Zhou and Li 2009, p. 313). In contrast, the remaining states experienced a staggered centralization process. Zheng and Song founded one county each prior to their collapse, and Yue had none. Lu and Wey also lagged behind. Their cities (*yi*) exhibited the same features as counties (Zhou and Li 2009, pp. 290–91), and by the end of SA, Lu had 5 centrally controlled cities on record and Wey had 1.

What could potentially explain this difference? A glance at Figure 1 suggests that most of the less-centralized states were in the central plain and were surrounded by and faced military threats from the major powers in the peripheries. A preliminary inspection of the data suggests that those less-centralized states did confront a more hostile external environment.

Warfare. Figure 2 displays trends in inter-state conflict. Panel (a) presents time series for the number of wars that a state engaged in, the number of participants in each war, and total wars. Wars declined over time, likely due to a fall in the number of regional states. The scale of war remained relatively steady, except during the sixth century BCE. The number of wars that each state engaged in showed an upward trend throughout the Warring States era, signaling a rise in the frequency of warfare.

To examine the military environment faced by states, I divide warfare into offensive and defensive wars. A state engages in an offensive war if it attacks an enemy and engages in a defensive war if it is the target of an attack. Panel (b) displays the fraction of offensive and defensive warfare in all wars, for large states (the four major powers) and for small states (ones that were active throughout SA and WS, but were not the four major powers), respectively. Compared to large states, small states were forced to self-defend much more frequently and attacked other states much less frequently.

To summarize, data patterns described previously highlight significant disparities in the degree of centralization across major states during the SA period. They also suggest that centralization, or the lack thereof, may

[7] The state of Jin split into the three states of Zhao, Han, and Wei in 403 BCE. Thus, from mid-WS onward, I display the number of counties instituted by each of those states in the exact order of Zhao, Han, and Wei under the same column as Jin.

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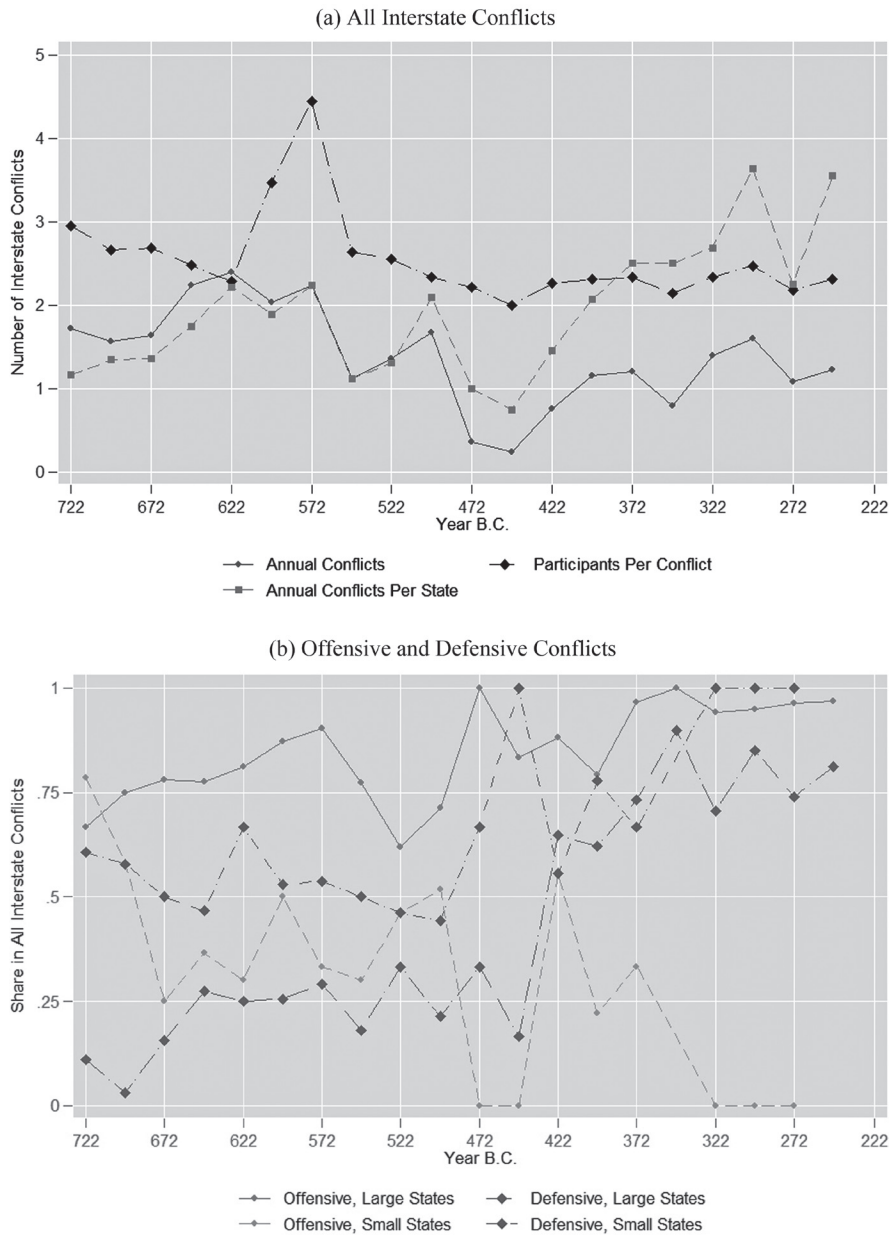


FIGURE 2
TRENDS IN INTERSTATE CONFLICTS, 722–222 BCE

Notes: Panel (a) plots 25-year averages of annual wars, number of participants in each war, and number of wars that each state engaged in. Panel (b) plots the fractions of offensive and defensive wars for large states and other states. Large states are the four major powers of the SA period: Chu, Qi, Qin, and Jin (and their three descendants). Small states are the remaining ones that maintained continuous activity throughout SA and WS: Zheng, Song, Wey, Lu, and Yue.
Source: Author's calculations based on warfare data from *Zhongguo Lidai Zhanzheng Nianbiao* (see footnote 5).

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have been the outcomes of states' responses to different military environments. This insight will be formalized by a model and tested with hand-collected data in the ensuing sections.

MODEL

Setup and Gameplay

In this model, there is one ruler,[8] R, and one agent, A. The game is one-shot and consists of two stages: in stage 1, the ruler chooses an agent to administer a landed domain D and gives him a contract; in stage 2, an armed conflict transpires. Payoffs are consumed at the end of stage 2. Note that this model studies the delegation of domain D in isolation and abstracts away from the administrative structure of the rest of the ruler's territory. In other words, it analyzes the ruler's incentives and trade-offs in the decision to centralize or decentralize *locally*.

Stage 1. The self-interested ruler appoints an agent for domain A. Domain D produces *taxable* output of size t and yields a ruler-specific benefit of α.[9] The agent is responsible for collecting taxes and commanding armies and has outside option v. This setting is consistent with the historical reality of the SA period, in which taxes were collected locally and ministers' armies and local armies were recruited and stationed locally.

The ruler gives the agent a contract, which can be of two types: a fief contract or a county contract. The key difference between the two contracts lies in the ownership of D: under the fief contract, the agent claims ownership of D and becomes a *vassal* to the ruler; under the county contract, the ruler claims ownership of D, and the agent becomes a *bureaucrat*. The county contract is associated with state-building, as it gives the ruler ownership and centralized control over domain resources. Note that this model assumes that the ruler can choose between the fief and the county contracts at will. The applicability of this assumption is discussed in Online Appendix C.3.

In an incomplete contract setting, ownership of land entails the residual right of control over its resources in contingencies not governed by explicit contracting (Grossman and Hart 1986). This includes the right of control over human resources, meaning that the owner has the right

[8] In SA China, the "ruler" of a state can embody one individual or a ruling coalition with the ability to dictate state affairs. In Jin, for example, politics were controlled by a group of powerful noble clans for a hundred years, who took turns to act as the *de facto* rulers of the state. This should not affect the interpretation of the model's predictions, as *de facto* and actual rulers both face similar trade-offs in choosing the form of local administration.

[9] This benefit could derive from the ability to hold strategic positions or access to important natural resources such as forests, rivers, or mineral ores.

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to permit or exclude others from using her asset (Hart and Moore 1990). Contract incompleteness arises when it is costly to specify actions and payments in every contingency.

I argue that the incomplete contract framework is relevant in the context of political delegation in pre-imperial China. First, in premodern societies with primitive communication technologies, it is difficult to monitor local conditions and precisely specify military investment and actions in each contingency. As a result, decisions regarding the amount of military training offered to soldiers and the types, quality, and maintenance of military equipment involved a great deal of discretion. Second, by definition, the ruler's ownership of the domain under the county contract gives him the ability to exclude others from using it. This makes the county contract consistent with the notion of a bureaucracy, which is characterized by officials who "do not own their positions" (Kiser and Cai 2003, p. 511), and with the historical reality that appointments of county magistrates were made by rulers of regional states. Lastly, residual control rights determine who has the authority to approve decisions in contingencies (Hart, Shleifer, and Vishny 1997). This is in line with the historical background: ministers held ownership over fiefs and controlled their resources, while county bureaucrats needed to report to superiors.

In this model, differences in ownership are reflected through two dimensions: income and control over human resources. I leave the discussion of the human resources element to stage 2. For income, I assume that a fraction $\lambda \in (0,1)$ of taxation income is paid to the bureaucrat's labor, following Hart, Shleifer, and Vishny (1997). That is, while a vassal claims all tax income t from ownership of D, a bureaucrat receives an income of λt.

This functional form assumes that vassals and bureaucrats are equally efficient in raising taxes—that, inherently, any efficiency-improving taxation policy can be adopted by both parties. Even though this assumption may be somewhat restrictive as it abstracts away from potential differences in efficiency, it can find support on two grounds. From a theoretical perspective, vassals have at least the same incentives as the bureaucrat does to adopt more efficient taxation policies, as he receives all of the taxation income. From a historical perspective, records from the SA period show that ministers of Jin and Qi had the liberty to adopt a range of different economic policies in their fiefs to garner the support of the people (Yang 1998, p. 166).

Stage 2. After A has been appointed, an armed conflict breaks out. The agent decides whether or not to go to war and makes military investments accordingly. I subject this model to two types of military conflicts and study its implications.

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The two types of military conflicts are: (a) external invasion from an enemy *e*, or (b) self-initiated attack on an enemy *e*. The enemy has military strength m_e. In case (a), a defensive game is played, in which *A*'s mission is to defend domain *D*. In case (b), an offensive game is played, in which *A*'s mission is to participate in the attack. The agent can also opt out of conflict, in which case he makes no military investment ($m = 0$) and forfeits any potential gain he may receive from winning.

The outcome of an armed conflict is binary: success or failure. In line with the literature on conflict (Hirschleifer 1995; Skaperdas 1996), I use the contest success function to model the ruler's probability of winning a military conflict against enemy *e*, which depends on the military investment of both sides:

$$P(m,m_e)=\frac{m}{m+m_e}. \tag{1}$$

I assume that, when the military mission fails, *A* dies and receives no payoff. This implies that *A* will be inclined to avoid conflicts that he is unlikely to win. More specifically, the benefits and costs associated with success and failure are outlined separately for defense and offense.

(a) Defense:
- If successful, the owner of *D* retains control over the domain, and both *R* and *A* consume their payoff.
- If failed, *D* becomes conquered by the enemy; *A* dies and gets zero payoff; and *R* derives no gains from *D*.

(b) Offense:
- If successful, a prize of t_e is obtained and distributed between *R* and *A*. Following the same rationale as for taxes, the agent gets a share λt_e that is paid to his labor, and *R* gets the remainder $(1-\lambda)t_e$.[10]
- If failed, no prize is obtained, and *A* dies and gets zero payoff. The ruler simply receives her due payoff from *D*—under the county contract, she gets $\alpha + (1-\lambda)t$, while under the fief contract, she gets α.

[10] This formulation assumes that vassals and bureaucrats receive the same economic prize for conflict victories—that is, the ruler did not have systematically different means to reward either party. This assumption is broadly consistent with the historical situation in SA and WS China, where administrators and soldiers were granted valuable goods or land for successes on the battlefield (Du 1990, p. 179). One may wonder if, by definition, vassals could receive land while bureaucrats could not—this was not the case. Recipients of land did not necessarily become vassals: while all could collect taxes (*shi zushui*) from their land, vassals would have *additional* rights to administer and maintain private armies in their land (Yang 1998, p. 259). That is, bureaucrats could obtain the same level of economic gain as vassals under this land reward system, which originated in the SA era (Yang 2010) and was widely used in the WS era (Yang 1998, pp. 259–69).

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Recall that the second element that differentiates the two contracts is control over human resources. This factor comes into play when *A* opts out of conflict to stay alive for certain. Next, I discuss the consequences of avoiding conflict under the two types of contracts.

In the defensive game, opting out of conflict means surrender, in which case *D* becomes conquered by the enemy. In other words, a surrendering vassal forfeits his ownership of and income from domain *D*, and a surrendering bureaucrat forfeits his income and causes the ruler to lose domain *D*. Both get their outside option *v*.

In the offensive game, opting out of conflict means receiving no prize. A bureaucrat who chooses not to attack is not following the ruler's instructions in his use of the ruler's resources. Thus, he will be removed from office by the ruler, whose ownership of *D* grants her control over human resources, and get his outside option *v*. In contrast, a vassal who chooses not to attack is simply dictating a particular use for his own resources and will retain ownership of and income from *D*.[11]

In reality, the ruler may certainly wish to remove a disobedient vassal, but doing so will be much more costly compared to removing a disobedient bureaucrat.[12] In other words, a vassal would face less severe consequences for choosing not to attack. To capture this cost wedge, I make the simplifying assumption that the ruler can remove a disobedient bureaucrat at no cost and that she does not remove a disobedient vassal (the cost of doing so is too high).

The gameplay is summarized in Figure 3, for defense and offense, respectively. The ruler's and the agent's payoffs are listed at the end of each node. For ease of exposition, I define a contract as *feasible* in equilibrium if *A* receives an expected payoff that is greater than or equal to *v*, his outside option.

[11] This formulation is consistent with Hart, Shleifer, and Vishny (1997), where only owners have the authority to approve decisions in contingencies. A vassal does not need to seek approval for not using his private armies. A bureaucrat, when choosing to avoid conflict, must seek the ruler's approval. In the offensive game, the ruler will not approve and will remove him from office as punishment. In the defensive game, the ruler will also not approve, but removal would not matter as the surrendering bureaucrat loses his office anyway.

[12] A vassal retains full control over his dependents and private forces, who swore allegiance only to him (Zhu 2004, p. 483). In contrast, a bureaucrat does not have private armies to command. Thus, in the history of the SA period, the removal of a *qing-dafu* often led to internal conflict. For example, in 605 BCE, Minister Ziyue of Chu led an armed rebellion against the king when he felt the threat of removal; in 550 BCE, Minister Luan Ying of Jin led his private armies to attack the capital after he was expelled. These were conflicts that did not displace or kill the ruler, but were costly to suppress.

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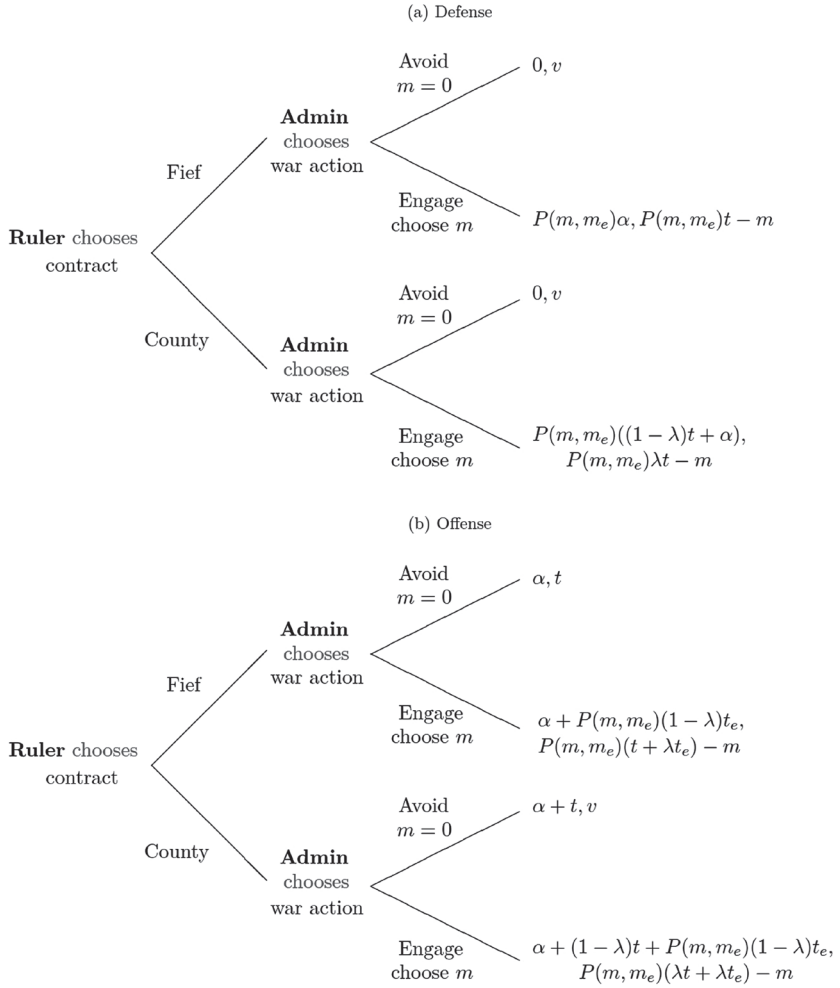


FIGURE 3
GAME TREE

Source: Author's illustration.

Throughout the analysis, I maintain the following assumptions for the model.

Assumption 1. $m_e < t$.

Assumption 2. $v < \lambda t$.

Assumption 1 states that the enemy state cannot be too strong. As will become clear in the ensuing subsection, this is largely a functional assumption to ensure that the county contract can be feasible. Assumption

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1 states that A's outside option is less than the risk-free wage that he receives as a bureaucrat. This is again a functional assumption to ensure that the county contract is feasible.

Equilibrium Analysis

In this subsection, I present solutions to the model. I begin with the defensive game.

DEFENSE

In the conflict outcome of the fief contract, the vassal chooses military investment m to solve:

$$\max_m \pi_{afd} = P(m, m_e)t - m. \tag{2}$$

In the conflict outcome of the county contract, the bureaucrat chooses m to solve:

$$\max_m \pi_{acd} = P(m, m_e)t - m. \tag{3}$$

Letting π_{afd} and π_{acd} denote A's payoff under the fief and the county contracts, respectively, we arrive at the following observation (see Online Appendix for proof).

Proposition 1. $m_{fd} > m_{cd}$, $\pi_{afd} > \pi_{acd}$.

This is intuitive because a vassal has more to gain from a successful defense—he receives the full amount of domain income from D, whereas a bureaucrat only gets a fraction. Thus, a vassal optimally chooses a higher m, resulting in a higher probability of successful defense (since $P(m,m_e)$ is increasing in m). This aligns with the ruler's interests, since now R has a higher chance of keeping the ruler-specific benefit, α.

It is also obvious that R always prefers defense over the zero-conflict outcome. This suggests that A's payoff from the defense contract alone determines whether he participates in defense. Proposition 1 suggests that the fief contract is more likely to be feasible because it gives A a higher payoff. Moreover, Equations (B1) and (B3) in the Online Appendix show that military investment m under the fief contract is non-negative (that is, feasible) over a greater range of enemy strength, m_e. This is again quite intuitive—the vassal is more willing to take on stronger enemies than the bureaucrat because he benefits more from a successful defense. In summary:

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Proposition 2. When $m_e \in (\lambda t, t]$, the fief contract is potentially feasible, while the county contract is not. When $m_e \leq \lambda t$, the fief contract is more likely to be feasible than the county contract.

Clearly, R will choose the fief contract if it is the only feasible contract. I now move on to examine the ruler's preferences when $m_e \leq \lambda t$. Letting π_{rfd} and π_{rcd} denote R's payoff under the fief and the county contracts, respectively, the following proposition illustrates how the strength of the enemy state affects the ruler's choice of contracts (see Online Appendix for proof).

Proposition 3. Suppose that $m_e \leq \lambda t$. Then, for large m_e, we have $\pi_{rfd} > \pi_{rcd}$. That is, the ruler prefers the fief contract over the county contract.

Proposition 3 suggests that the ruler prefers the fief contract over the county contract for defense when the enemy state is militarily strong. This is intuitive if we examine the ruler's trade-off: a county contract gives R a higher income from D, but a lower probability of successful defense, according to Proposition 1. Thus, being able to receive a higher income from D is more important when the enemy is relatively weak, and a higher probability of successful defense is more important when the enemy is relatively strong.

Combining results from Propositions 2 and 3, we see that:

Corollary 1. The fief contract is more likely to prevail in the equilibrium when external threat, m_e, is large.

OFFENSE

In the conflict outcome of the fief contract, the vassal chooses m to solve:

$$\max_m \pi_{afo} = P(m, m_e)(t + \lambda t_e) - m. \tag{4}$$

In the conflict outcome of the county contract, the bureaucrat chooses m to solve:

$$\max_m \pi_{aco} = P(m, m_e)(\lambda t + \lambda t_e) - m. \tag{5}$$

Letting π_{afo} and π_{aco} denote A's payoff under the fief and the county contracts, respectively, it is clear that:

Proposition 4. $m_{fo} > m_{co}$, $\pi_{afo} > \pi_{acd}$.

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This is a natural result, since a vassal benefits more from a successful attack. Even though the vassal and the bureaucrat receive the same share of the war prize, the vassal gets to consume the full amount of domain income if he wins the attack and stays alive, whereas the bureaucrat only gets to consume a fraction. Here again, the vassal makes a higher level of optimal military investment.

Now, I turn to examine the agent's decision to participate in the attack. Recall that a vassal gets t and a bureaucrat gets v if they choose the zero-conflict outcome. We see that a vassal chooses to engage in conflict if and only if:

$$\pi_{afo} = P(m_{fo}, m_e)(t + \lambda t_e) - m_{fo} \geq t.$$

Similarly, a bureaucrat participates in conflict if and only if:

$$\pi_{aco} = P(m_{co}, m_e)(\lambda t + \lambda t_e) - m_{co} \geq v.$$

For the bureaucrat, an increase in the zero-conflict payoff v would clearly induce him to opt out. For the vassal, an increase in t produces two opposing effects on his participation decision. On the right hand side, a higher zero-conflict payoff weakens his incentive to engage in the attack. On the left hand side, a larger domain income increases the vassal's payoff in the case of success and induces a higher level of military investment (which translates to a bigger probability of winning) as he now has a stronger incentive to avoid losing.

Recall that the ruler has the power to costlessly punish the bureaucrat for opting out of conflict, but not the vassal, as she has control over human resources in domain D. This implies that, everything else being equal, the bureaucrat should have stronger participation incentives compared to the vassal. That is, it should take a smaller war prize to induce the bureaucrat to engage in conflict. More formally, Proposition 5 examines the effect of t_e on administrators' participation decisions (see Online Appendix for proof).

Proposition 5. The vassal engages in attack if $t_e > t_e^f$, *and the bureaucrat engages in attack if* $t_e > t_e^c$, *where*

$$t_e^f = \frac{m_e + 2\sqrt{m_e t}}{\lambda}, \; t_e^c = \frac{(\sqrt{v} + \sqrt{m_e})^2 - \lambda t}{\lambda}$$

and $t_e^c < t_e^f$. *Hence, when* $t_e \in [t_e^c, t_e^f)$, *the bureaucrat engages in the attack, and the vassal does not.*

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In the case that $t_e \in (t_e^c, t_e^f]$, so that the bureaucrat participates in the attack but the vassal does not, the ruler would clearly prefer the county contract as she would receive both the tax income and the expected war prize. The alternative scenario is $t_e > t_e^f$, so that both the vassal and the bureaucrat choose to participate in the attack. Then, there are two trade-offs that R must consider in selecting a contract: first, the county contract gives R positive tax income from D, while the fief contract does not; second, the county contract yields a lower probability of winning the attack compared to the fief contract. The ruler's preferences will depend on the relative size of t and t_e. If parameter values are such that R's gains from additional taxes outweigh the loss from the expected war prize, then R will prefer the county contract.

TESTING MODEL PREDICTIONS

In this section, I empirically test two predictions of the model using data on fiefs and counties created by the rulers of Jin and Chu, the only two states for which there exist data on both types of administrative districts. In Online Appendix C.1, I discuss their implications in light of historical examples.

Military Defense

First, I test the prediction from Corollary 1.

Prediction 1. Compared to a county, a fief is more likely to be chosen when external military threats are large.

Here, I examine the effect of external military threat on the type of local administration. I construct two variables to proxy for military threats. The first is a dummy indicating whether a district is located on the state border. While the risk of external invasion may be endogenous to a state's domestic conditions, this proxy attempts to capture location-induced variations in external threat—that is, border districts are more exposed to the threat of invasion relative to inland districts, taking such threats as given. The second proxy further disentangles the degree of external threat faced by border districts by classifying the military strength of the districts' neighbors as either strong or weak. Districts bordering a strong neighbor would face the greatest threat and be more likely to serve a defensive function.

I define an administrative district to be located on the state border if it is within 30 miles of the border or if there is a foreign enemy (a regional

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state or a non-Chinese tribe; the latter was not part of the Zhou system like the regional states—see Historical Background section) less than 30 miles away from it.[13] I obtain state borders for Jin and Chu from Ma (2007, pp. 238–54) and Zuo (2012, pp. 51–69), studies of the historical geography of the two states.

For military strength, I define the four major powers, Jin, Chu, Qin, and Qi, to be strong, and all other states to be weak, including the Zhou. This classification follows from Hsu (1999, p. 559): "by the mid-seventh century BCE, the Zhou world was dominated by four powers: Qi, Jin, Qin, and Chu... while those states in the Central Plain, such as Zheng, Song, Lu, and Wey, were becoming ever less important in interstate politics." Non-Zhou tribes are also classified as strong neighbors, as they "posed a serious threat to the security of [regional states]" (p. 555).

The border status and immediate neighbors of the 95 fiefs and counties in Chu and Jin are displayed in Figure 4. The majority of Jin fiefs were located on its western side and formed an insulation barrier against Qin and a number of tribes. In contrast, Jin counties tended to be inland or to border the weaker regional states in the central plain. Similarly, Chu fiefs were spread across its northern border, which faced a stronger military threat.

I use the following empirical strategy to evaluate Prediction 1.

$$1(Fief_{ij}) = \alpha + \beta M_{ij} + X_{ij} + \psi_j + t_i + \varepsilon_{ij} \tag{6}$$

Here, $1(Fief_{ij})$ is a dummy equal to 1 if administrative district i in state j is a fief, 0 if it is a county; M_{ij} represents the military threat faced by district i; ψ_j is state fixed effects; t_i is a period dummy indicating whether administrative district i was created prior to 574 BCE—the median year of creation of administrative districts in the sample—and controls for potential differences between early and late SA periods; X_{ij} are geographical controls, which include terrain roughness (computed using the relative topographic position metric) and the suitability indexes of two staple foods in China, millet and rice.[14] If Prediction 1 was correct, β should be positive and statistically significant.

Estimates are presented in Table 2. In Columns (1) to (3), I use a district's border status to proxy for military threats, M_{ij}. Column (2) adds geographical controls, and Column (3) further adds the period dummy. Results show that, compared to inland districts, a district located on the

[13] This is roughly the distance that can be covered by a walking horse in one day. The second part of the definition is necessary because some tribes live within the borders of regional states.

[14] Source: FAO (https://gaez.fao.org/).

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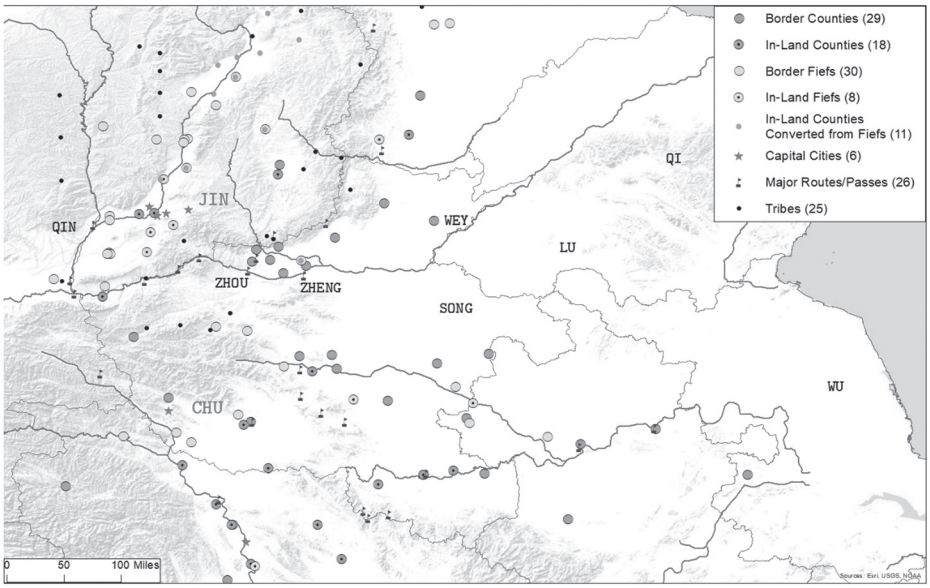


FIGURE 4
LOCATION OF COUNTIES AND FIEFS IN THE STATES OF JIN AND CHU, 772–496 BCE

Notes: This figure displays the locations of fiefs and counties in the state of Jin from 772 to 496 BCE. Red units are counties, and green units are fiefs. Circles are units on the state border, and dotted circles are inland units. Smaller red dots are counties that were converted from fiefs, and located inland at the time of conversion. Red stars are capital cities. Purple castles are major transportation routes or passes. Black dots are non-Zhou tribes. Names of neighboring states are displayed in black text.
Sources: Data on counties and fiefs are obtained from Zhou and Li (2009), Ma (2007), and Tian (2017), as described in text. Major transportation routes or passes are obtained from Ma (2007, pp. 259–60) and Zuo (2012, pp. 157–66). Geographical coordinates of counties, fiefs, routes and passes, as well as non-Zhou tribes, are obtained from Tan (1996), a historical atlas of China.

state border is from 25.3 to 29.6 percent more likely to be a fief. These estimates are statistically significant at the 1 percent level.

Columns (4) to (6) report results using the strength of neighbors as a proxy for military threat. In this specification, an inland district has no neighbor. *StrongNeighbor* is a dummy equal to 1 if a border district has one or more strong neighbors, and *WeakNeighbor* is a dummy equal to 1 if a border district has one or more weak neighbors. Results show that, compared to inland districts, a border district with strong neighbors is 39.1 to 40.4 percent more likely to be a fief, and that having weak neighbors does not make a district more likely to be a fief. These estimates are robust to controlling for geographical characteristics and period dummy. This suggests that the results in Columns (1) to (3) are driven by border districts next to strong regional states or non-Zhou tribes.

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TABLE 2
MILITARY THREAT AND CREATION OF FIEFS AND COUNTIES IN JIN AND CHU, 772–496 BCE

	Whether Administrative District Is a Fief					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
OnBorder	0.275***	0.253**	0.296***			
	(0.096)	(0.094)	(0.096)			
StrongNeighbor				0.404***	0.391***	0.397***
				(0.111)	(0.110)	(0.109)
WeakNeighbor				0.018	0.001	0.016
				(0.104)	(0.105)	(0.117)
Observations	95	95	95	95	95	95
R^2	0.121	0.176	0.186	0.180	0.233	0.234
Controls	No	Yes	Yes	No	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Period dummy	No	No	Yes	No	No	Yes

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors are reported in parentheses.
Source: Author's calculations.

Heterogeneity Analysis. The positive relationship between a district's border status and fief status presented in Table 2 may have been driven by factors other than military threat. To provide further evidence that military threat as a mechanism affected the ruler's choice of local administration, I exploit temporal variations in the degree of military threat posed by a district's nearest neighboring states prior to the district's establishment.[15] I then conduct a heterogeneity analysis by estimating the following regression, under the premise that military aggression from nearest neighbors should affect border districts more than inland districts.

$$1(Fief_{ij}) = \alpha + \beta B_{ij} * M_{ij} + B_{ij} + M_{ij} + X_{ij} + \psi_j + t_i + \varepsilon_{ij} \quad (7)$$

Here, B_{ij} is a dummy indicating district *i*'*s* border status, and other variables are as in Equation (6). To proxy for M_{ij}, I exploit two sources of plausibly exogenous variations in the internal politics of the nearest neighboring states. The first is the neighbor's political stability, where a neighbor is defined as politically stable if it has *not* experienced any internal conflict during the 20 years prior to the district's establishment. The intuition is that a politically stable neighbor can invest its

[15] I use nearest neighbors to distinguish this empirical strategy from the previous one, under which an inland district had no neighbors. Here, the nearest neighbors for both inland and border districts are the foreign states that are nearest in distance.

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TABLE 3
HETEROGENEITY ANALYSIS OF MILITARY THREAT AND CREATION OF FIEFS AND COUNTIES

	Whether Administrative District Is a Fief					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
OnBorder	–0.220	–0.303	–0.261	0.220**	0.198*	0.256**
	(0.307)	(0.305)	(0.319)	(0.102)	(0.101)	(0.101)
NeighborStability	–0.267	–0.323	–0.309			
	(0.302)	(0.302)	(0.306)			
*OnBorder * NeighborStability*	0.701**	0.773**	0.754**			
	(0.323)	(0.321)	(0.327)			
NeighborHegemon				–0.219**	–0.183	–0.148
				(0.102)	(0.243)	(0.204)
*OnBorder * NeighborHegemon*				0.571***	0.532*	0.572**
				(0.192)	(0.286)	(0.251)
Observations	95	95	95	95	95	95
R^2	0.251	0.318	0.321	0.158	0.209	0.230
Controls	No	Yes	Yes	No	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Period dummy	No	No	Yes	No	No	Yes

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors are reported in parentheses.
Source: Author's calculations.

energy and resources in military aggression. The second is whether the neighbor had a strong ruler at the time of the district's establishment, where a ruler is defined as strong if he was one of the "five hegemons."[16] If Prediction 1 was correct, β should be positive and statistically significant.

Estimates are reported in Table 3. Columns (1) to (3) display results using political stability as the proxy, and Columns (4) to (6) display results using hegemon as the proxy. Both interaction terms are statistically significant, suggesting that the degree of military threat from nearest neighbors is associated with a greater increase in the probability of receiving fief status for border districts than for inland districts. This is consistent with the hypothesis that external military threats are conducive to the creation of fiefs.

In Online Appendix C.1, I discuss how Prediction 1 also applies to Zheng and Song.

[16] Rulers usually earn the status of hegemon through superior military strength (Hsu (1999) contains a chronology). While there are different versions of the five hegemons, most include the following rulers: Duke Zhuang of Zheng, Duke Huan of Qi, Duke Wen of Jin, Duke Mu of Qin, Duke Xiang of Song, Duke Zhuang of Chu, and King Helu of Wu.

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Military Offense

I use two complementary empirical strategies to test the prediction from Proposition 5.

> *Prediction 2. Compared to fiefs, counties are more aggressive in that they attack enemies in a broader range of circumstances. More specifically, counties are more likely than fiefs to engage in attacks when war prizes are small.*

I use a subset of the military conflict data that contains every attack initiated by Chu or Jin against an enemy state. For each conflict, I extract its location from the *Catalogue of Historical Wars* and determine the geographical coordinates of these locations from Tan (1996). For conflicts that do not have a location recorded, I use the capital city of the target state. The geographical distribution of these attacks, along with fiefs and counties, is presented in Online Appendix Figure A1. Unsurprisingly, a large fraction of those attacks were directed at states in the central plain. Relatedly, many of the administrative districts on the eastern side of Jin and Chu were counties.

I use the distance from administrative districts as a proxy for the size of war prizes. The intuition is that more distant attacks involve longer travel routes and, therefore, higher logistical costs, resulting in lower net gains. In ancient times, warfare outside home territories were usually constrained by logistic considerations. To participate in more distant attacks, armies must prepare and carry greater loads of provisions. As a result, wars that lasted longer required extra manpower, wheels, or animals for logistics (Keegan 1993, pp. 301–305). Therefore, net prizes from more distant attacks should be lower than expected due to the high logistical costs incurred.

My first empirical strategy for testing Prediction 2 uses a difference-in-differences style approach. As I do not have information on which local armies participated in which attacks, I cannot directly test whether counties are more likely to send armies to more distant attacks. Instead, my difference-in-differences style approach examines whether county creation in a district leads to an increase in the number of nearby attacks relative to fief creation. The underlying assumption is that attacks that take place in surrounding areas of a district are associated with local armies in that district. The regression is specified as:

$$NumAttack_{ijrt} = \alpha + \beta 1(County_{ijt}) + \phi_i + \delta_t + \varepsilon_{ijt}. \quad (8)$$

Here, $NumAttack_{ijrt}$ represents the number of attacks that were initiated by state j in decade t, and occurred within r miles of its own district i;

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$1(County_{ijt})$ is a dummy equal to 1 if a county administration is present in district i of state j in decade t. Of course, the decision of whether and whom to attack is influenced by numerous internal and external factors. Decade fixed effects δ_t account for time shocks that are common to all districts. To further account for time factors that are specific to districts in each state, such as war technology and ruler aggression, state-by-decade fixed effects are used in alternative specifications. District fixed effects ϕ_i control for time-invariant characteristics such as a district's relative location to other states. Interaction terms between geographical controls and decade fixed effects are also included to allow for the possibility that counties can differentially utilize a district's endowments relative to fiefs. Standard errors are clustered at the district level. Under these specifications, β should capture the effects of county creation on attacks, and if Prediction 2 was correct, β should be positive and statistically significant for attacks at a longer range.[17]

Table 4 reports regression results. The first three columns display estimates for attacks within 0 to 50 miles: Column (1) is the baseline specification; Column (2) uses state-by-decade fix effects; and Column (3) replaces the number of attacks with a dummy variable to capture changes at the extensive margin. Columns (4) to (6) repeat this analysis for attacks between 51 to 150 miles. Results in Columns (1) to (3) suggest that county creation is not significantly associated with either the number or the probability of attacks occurring within 0–50 miles. In contrast, county creation is associated with 0.285 to 0.298 more attacks per decade (Columns (4) and (5)), with statistical significance at the 5 percent level. Given that the average number of decadal attacks within 51–150 miles is 1.23, these coefficients roughly represent a 25 percent rise. Moreover, Column (6) shows that county creation leads to a 10.6 percentage point increase in the likelihood of distant attacks.

An alternative interpretation of the above finding is that counties were established at locations with a greater tax base, which would enable them to finance and support longer-range attacks. It should be noted that the results in Table 4 account for the effects of agricultural potential—which is a proxy for tax base—by including interaction terms between decade fixed effects and millet and rice suitability. Online Appendix Table A4 further shows that county status and the two suitability indices are weakly correlated. Coefficients for millet are negative and insignificant across all

[17] Some may argue that battle sites are determined by the ruler rather than local administrators who fight in battles. While this is true, note that the ruler also needs to consider the cost of mobilizing armies when choosing the target of attack. If county agents are more easily mobilized, we should still expect the presence of counties to lead to more occurrences of attacks in surrounding areas.

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TABLE 4
NUMBER OF ATTACKS AGAINST FOREIGN ENEMIES NEAR FIEFS AND COUNTIES

	0–50 Miles			51–150 Miles		
	Number		Dummy	Number		Dummy
Variables	(1)	(2)	(3)	(4)	(5)	(6)
County	0.014	–0.007	0.000	0.285**	0.298**	0.106**
	(0.050)	(0.052)	(0.033)	(0.124)	(0.126)	(0.043)
Observations	2,457	2,457	2,457	2,457	2,457	2,457
R^2	0.142	0.256	0.290	0.391	0.582	0.523
Controls * Decade	No	Yes	Yes	No	Yes	Yes
State-decade FE	No	Yes	Yes	No	Yes	Yes

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses are clustered at district level.
Source: Author's calculations.

three columns, and coefficients for rice are positive, and their significance varies between 5 and 10 percent.

If personnel control was indeed the mechanism behind the result in Table 4, this mechanism would only be functional if the incumbent bureaucrat faced an actual threat of replacement. This was likely to hold for two reasons. First, rulers at the time likely had a large pool of candidates from which to choose replacements. Commoners and small nobles, who were more populous in number, became increasingly active in administrative roles throughout the SA and WS periods (Chen 2024). A dataset of 57 county administrators further shows that 40.35 percent of them had low socio-political status (more details in the next subsection). Second, *Zuo's Commentary* contained records showing that county magistrates were punished for avoiding conflict: Year 18 of Duke Zhuang recounts that a county magistrate of Chu was put to death by the king for fleeing from a battle.[18]

A potential concern with the approach in Equation (8) is that it might overcount the number of distant attacks associated with a district. Suppose a state had two parallel borders—say, north and south—that were 100 miles apart from each other. Then, an attack that occurred 30 miles north of the northern border would be registered as an attack that occurred within 150 miles of the southern border. However, this attack is unlikely to be associated with administrative districts on the southern border, as it would have been inefficient to send out armies from the south to participate in this attack.

To address this concern, I utilize a second empirical approach and assume that armies participating in attacks are dispatched from the

[18] Such records were few, as avoidance of conflict by magistrates is an understandably rare event.

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nearest k districts with an active administration (i.e., if a fief or a county has been created in that district). This way, I am able to match each attack with specific districts. Then, I estimate the following regression:

$$AvgDistance_{ijkt} = \alpha + \beta 1(County_{ij}) + \psi_j + \delta_t + X_{ij} + \varepsilon_{ijt}. \quad (9)$$

Here, $AvgDistance_{ijkt}$ represents the average distance traveled to attacks by armies in administrative district i of state j in decade t. In my regressions, I use $k = 5$ and $k = 10$ to compute district-attack matches; $1(County_{ij})$ is a dummy equal to 1 if district i of state j is a county; ψ_j and δ_t are state fixed effects and decade fixed effects, respectively; X_{ij} contains the same geographical controls as before. If Prediction 2 was correct, β should be positive and statistically significant. Given the assumption underlying this approach, this means that counties should, on average, dispatch armies to more distant (and therefore less lucrative) attacks.[19]

Regression results are displayed in Panel A of Online Appendix Table A6. Columns (1) and (2) display estimates for district-attack matching using the nearest 10 districts. Column (1) is the baseline specification, and Column (2) replaces the two-way fixed effects with state-by-decade fixed effects. Estimates suggest that county armies on average need to travel 15.87–19.95 additional miles in attacks, and are statistically significant at the 5 percent level. Given that the mean distance is 78.52 miles, this represents a 20–25 percent increase. Columns (3) and (4) replicate these specifications for district-attack matching using the nearest 5 districts. Estimates show that county armies on average need to travel 12.09–16.71 additional miles to attack, which is approximately a 27–38 percent rise.

Last, recall that one limitation of the previous analysis is that I do not have information on which districts sent out armies to which attacks. Since border districts are more likely to send armies to attacks as they are situated closer to foreign enemies, my findings should also hold for districts on the state border. I re-estimate Equations (8) and (9) on the subsample of border districts and present corresponding results in Table A5 and Panel B of Table A6 of the Online Appendix. Compared to full-sample estimates, subsample estimates are sharper indeed—they are larger in magnitude and have higher statistical significance.

Taken together, estimation results using the two empirical approaches outlined earlier are both consistent with Prediction 2, suggesting that counties serve a stronger offensive purpose and can support military

[19] This strategy simply compares the average distance of attacks from *active* administrative districts and does not speak to districts' pre-existing levels of military offense. The previous DID-style approach addresses this issue.

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aggression over a longer distance. In Online Appendix C.1, I present a historical example to corroborate this finding.

Robustness Tests

In this subsection, I address several alternative hypotheses to the previous findings.

Monitoring Cost. The literature on bureaucracy identifies monitoring costs as an obstacle to bureaucratization (Sng 2014). Since borderlands tend to be further away from the capital city, the defense results in Table 2 could be driven by greater monitoring difficulty. I re-estimate Equation (6), adding a variable $DistToCapital_{ij}$, which represents the distance between district i of state j, and the capital of state j at the time of i's creation. Results are displayed in Columns (1) and (2) of Online Appendix Table A2. Estimates for distance to the capital city are negative, which is likely due to territorial expansion, and their statistical significance varies. Meanwhile, estimates for border status and neighbors' military strength remain robust, and coefficient sizes are very similar to the results in Table 2. Hence, no conclusive evidence suggests that the cost of monitoring or transportation affected the ruler's choice of local administration. This result is valid to the degree that Jin and Chu were not very large states.[20]

Irrigation. Wittfogel (1957) argues that the need for irrigation and flood control required centralized bureaucracies and gave rise to despotism. Indeed, regional states in the SA and WS Periods actively engaged in the construction of dykes, canals, and irrigation facilities (Yang 1998, pp. 57–65). Since there is no systematic data on irrigation projects undertaken by the regional states, I compute the irrigation potential for each district to capture the gains in productivity from introducing irrigation (Bentzen, Kaarsen, and Wingender 2017). I then re-estimate Equation (6), adding an $IrriPotential_{ij}$ variable. Results are displayed in Columns (3) and (4) of Online Appendix Table A2. Coefficient estimates for irrigation potential are negative, and their statistical significance varies. Meanwhile, results for border status and neighbors' military strength stay robust, and coefficient sizes do not change much. This suggests that external military threats still play a role in rulers' (de)centralizing decisions.

Multi-Directional Threat. Ko, Koyama, and Sng (2018) argue that multi-directional invasion threats induce political fragmentation, whereas unidirectional threats foster centralization. To address this explanation, I use maps in Tan (1996) to determine the orientation of the neighbors

[20] During SA period, the territories of Chu and Jin were at best equivalent to around three contemporary Chinese provinces.

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of administrative districts. I classify orientation into eight groups: north, north-west, west, south-west, south, south-east, east, and north-east. If a district has neighbors in directions that are more than 90 degrees apart from each other, then it faces a multi-directional threat.

I estimate Equation (6), using as a key explanatory variable a dummy equal to 1 if an administrative district faces a multi-directional threat. Result for the full sample is shown in Column (5) of Online Appendix Table A2, and the result for the subsample of border districts is shown in Column (6). Estimates are positive, but statistically insignificant. This suggests that the baseline results in Table 2 are not driven by the multi-directionality of external threats.

Political Alliance. One may be concerned that fiefs were created at the border because the ruler strategically sent non-kin to the border to maintain internal stability. To examine this possibility, I collect every known administrator for the vassal fiefs and bureaucratic counties in the states of Jin and Chu using Ma (2007), Tian (2017), and Zhou and Li (2009). I digitize information on their clans and family trees from genealogies of the Spring and Autumn clans.[21]

In Online Appendix Table A3, I test whether districts that were located on the border or had strong neighbors were more likely to receive administrators who were rulers' kin. I use three generations as the cut-off in Columns (1) and (2),[22] and five generations as an alternative cutoff in Columns (3) and (4). Both measures yield coefficients that are statistically insignificant, suggesting that non-kin were no more likely to be sent to border districts.

Then, I examine whether fiefs were more likely to be created at the border or against strong neighbors when the ruler was relatively weak and internal stability was likely low. I define a ruler as weak if he was a minor at the time of succession, as he would have a lower legitimacy endowment and be subject to a regent (Greif and Rubin 2024). In Columns (5) and (6) of Online Appendix Table A3, I perform a heterogeneity analysis, adding a dummy that indicates ruler weakness and its interaction term with proxies of external military threat. Coefficients on the proxy variables remain positive and statistically significant, while coefficients on the interaction terms are insignificant. This shows that my fief results are not driven by ruler strength.

[21] Sources: Xuxiu Siku Quanshu Committee, eds. *Zengding Chunqiu Shizu Yuanliu Tukao (Revised Genealogies of Clans in the Spring and Autumn Period)*. Xuxiu Siku Quanshu. Shanghai: Shanghai Guji Chubanshe, 2002; Wang, Guimin, and Zhiqing Yang, eds. *Chunqiu Huiyao (Institutional History of the Spring and Autumn Period)*. Beijing: Zhonghua Shuju, 2009.

[22] According to Zhu (2004, pp. 438–41), an elite would be regarded as the ruler's kin (*gong zu*) if his father or grandfather was a ruler.

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Strong Local Lords. One potential concern with the defense result is that borderlands may have historically powerful lords who were able to resist centralization. This was unlikely to be the case for SA China, as enfeoffment in SA China was not an agreement with existing local powers (see the Data Sources section), and lands were almost exclusively granted to political insiders of the regime. In other words, they did not possess pre-existing, independent power bases at the fiefs and were not pre-existing local lords that the duke was trying to win over. Thus, the resistance-to-centralization interpretation is unlikely to hold for the baseline results in Table 2.

State-Building in China and Europe

In this subsection and Online Appendix C.2, I discuss how my theoretical framework relates to WS China and compare the state-building experiences of pre-imperial China and premodern Europe. I focus on the role of human capital and argue that the rise of individuals who had low socio-political status and were qualified for administrative office-holding may have contributed to extensive centralization in WS China. I also discuss the relevance of human capital to European history. Online Appendix C.2 contains an extended discussion on political divergence and other factors.

Warring States China. An important trend that was initiated in the latter part of the SA era was the rise of the *shi*, a group of individuals who were literate and qualified to hold administrative offices (Zhao 2015, p. 170). They were largely comprised of former noblemen and commoners, who became practically indistinguishable by the end of the SA era (Yu 2003). Using data on political elites in the SA and WS periods, Chen (2024) corroborates this observation by documenting an increase in the activity of commoners and *shi* in administrative roles.[23]

Compared to nobles, individuals of low socio-political status would have a weaker bargaining position vis-à-vis the ruler, as they possessed little political power. An increase in the supply of such individuals would further reduce their bargaining power, especially as states began to develop methods of meritocratic selection (Zhu 2004). In the model, this would be captured by a decrease in the candidates' outside option, which in turn would make the county contract more likely to transpire

[23] Chen (2024) also proposes a mechanism that enabled commoners to acquire literacy: an increased supply of literary instruction by learned men who became displaced in coups and civil conflicts, and an increased demand for literacy by commoners due to improvements in agricultural productivity.

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in equilibrium as administrators would be more willing to accept it (see proof in Online Appendix B.2.6).[24] Thus, the model predicts that the availability of candidates with low socio-political status would facilitate state-building through the adoption of counties as devices of centralized rule.

I test this hypothesis with a dataset on the administrators of fiefs and counties in Chu and Jin (see footnote 21). I proxy for the administrator's socio-political status using the political prominence of his clan lineage. For each administrator, I determine whether he belonged to a noble clan and, if so, the type of clan. I categorize clan types as follows. If there had been one or more high-officials (*qing*) within the last three generations of the administrator's patrilineal line, then he belongs to a *qing* clan.[25] If there had been no high-official, but the clan's founder is known, then the clan is *large*,[26] and if the founder is not known, then the clan is *small*. An individual who comes from a small clan or belongs to no clan is viewed as having low socio-political status. Results are displayed in Online Appendix Table A7. County magistrates were around 30 percent more likely to have low socio-political status (Columns (5) and (6)), and coefficients are statistically significant at the 1 percent level. Corresponding estimates for members of *qing* and *large* clans are negative and insignificant.

The hypothesis that the expansion of administrative talent is positively associated with state-building in WS China also finds support from historical examples. Qin, which ultimately unified China and founded the first empire, adopted extensive state-building measures such as the creation of counties and the household registration system, as its old nobility became superseded by the newly selected bureaucrats (von Glahn 2016, p. 58). Tang and Song China, which had a high level of state capacity, saw an increase in bureaucrats from lower social strata who were recruited via the newly-instituted civil examination system (Wen, Wang, and Hout 2024) and whose access to literary education was facilitated by improved printing technology. Moreover, the initial bargaining position of administrative candidates vis-à-vis the ruler may have opened a "window of opportunity" (Cox, Dincecco, and Onorato 2023) for some states to centralize early. For example, nobles in Chu possessed smaller and fewer fiefs during the SA era because the system of enfeoffment in Chu was much less developed (Tian 2017, pp. 213–14). The power balance in Chu was therefore more favorable to the adoption of counties,

[24] A reduction in the bureaucrats' outside option can also induce state-building by allowing the ruler to pay a smaller fraction of total taxes to the bureaucrats, making counties less "costly" than fiefs.

[25] In the SA era, high-officials were the most prominent statesmen and had very powerful clans.

[26] A clan needs to have maintained a sufficient degree of activity for its members to be able to trace back to their common ancestor.

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which is consistent with Chu's aggressive state-building attempts since early SA.

Premodern Europe. The supply of administrative personnel also affected outcomes of state-building in premodern Europe. Ertman (1997) argues that, when administrative skills were scarce in supply, experts could exploit their strong bargaining position to "promote institutional arrangements like proprietary office-holding and tax farming" (p. 27). As a result, state-building efforts by rulers of France and England prior to 1450 led to considerable patrimonialization—the conversion of government offices and their associated benefits by officeholders into private property.

The proliferation of universities since the fifteenth century contributed to a substantial expansion of personnel with administrative expertise, which improved the rulers' bargaining position relative to the experts and facilitated the centralization of power. Owing to the "steady stream of graduates trained in Roman and canon law suitable for positions in government service" (Ertman 1997, p. 244), princes in German lands were able to create centralized bureaucratic administrations that led to increased state survival and consolidation (Cantoni, Mohr, and Weigand forthcoming).

CONCLUSION

Military conflict and the formation and destruction of states are recurring themes in human history. In this paper, I study the mechanisms of state-building in the context of pre-imperial China. I hand-collect datasets on military conflicts, administrative districts and administrators, and present systematic evidence on patterns of state-building in this era. I develop an incomplete contract model of land ownership to examine the effects of offensive and defensive military needs on rulers' decisions to (de)centralize. I demonstrate, both in theory and empirics, that decentralization serves defensive needs by incentivizing local administrators to participate in defense, and that centralization serves offensive needs by giving the ruler greater personnel control over her agents in attacks.

My analysis provides new insights into mechanisms of state formation, and results derived in this paper exhibit historical relevance beyond pre-imperial China. The finding on fiefs as a defensive device is consistent with the rise of military feudalism in Europe and the creation of military governorships in Tang China. The finding on counties as an offensive device accords with existing literature and adds a principle-agent perspective to the "war-makes-states" theory.

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This paper also raises important questions that deserve closer scrutiny in the future. It may be interesting to examine power struggles among nobles and political elites in Spring and Autumn China, as internal cohesion could affect state-building (Centeno 1997). The relationship between centralization in the regional states and political unification in 221 BCE also warrants further work, as answers would enrich our understanding of the institutional foundation of a political transition as monumental as the establishment of the Qin empire, as well as the remarkable institutional continuity that Imperial China ultimately manifested.

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