

Leviathan's Offer: State-Building with Elite Compensation in Early Medieval China

*

Joy Chen, Erik H. Wang, Xiaoming Zhang[§]

This Version: September 1, 2021.

Abstract

How to soften resistance to state-building efforts by reform losers? This paper highlights a strategy background and career histories of around 2,600 elites with information on medieval Chinese

strongholds, which we use to infer state weakness. Leveraging a comprehensive state-building reform in the late 5th century, difference-in-differences estimates document that the reform led to a sustained, substantial increase in the total number of powerful aristocrats from localities with strongholds recruited into the imperial bureaucracy. Subsequent estimates provide evidence for two mechanisms by which compensation facilitates state-building: 1) the offices taken by these elites came with direct benefits of prestige and power, and 2) by transforming these aristocrats from local powerfuls into national stakeholders, these offices potentially induced the realignment of their interests toward those of the dynasty. Further analysis suggests that the bureaucracy

1 Introduction

State capacity is pivotal for economic development, but enhancing state capacity is a difficult task. This difficulty is intuitive in the various established findings that state weakness tends to persist over time (e.g., [Migdal 1988](#), [Bockstette, Chanda and Putterman 2002](#), [Besley and Persson 2011](#), [Dell, Lane and Querubin 2018](#)). Across space and time, state-building efforts often fail because they provoke resistance from potential reform "losers" with vested interests in the status quo. Local elites, in particular, can block or undermine such efforts using the considerable powers available to them (e.g., [Soifer 2005](#), [Dincecco 2015](#), [Garas and Sellars 2021](#)). How can state-builders weaken elite resistance? We answer this critical question by highlighting an important yet often overlooked strategy: directly *compensating* the losers through prestigious and powerful positions in the bureaucracy that facilitate interest realignment and credible commitment. By exploiting a major state-building episode in Early Medieval China (ca. 220-589 AD), this study finds that powerholders in regions previously lacking state penetration saw their political careers substantially improved during and after the reform as part of a deal to relinquish local autonomy to the state.

The theoretical inquiry addressed here is also related to a historical puzzle. Barbarian invasions in Late Antiquity brought down the West Roman Empire and sowed the seeds of the so-called "Feudal Revolution." An emerging consensus in political economy argues that this process created the conditions of state weakness and political fragmentation that underlied the great political and economic divergence between Europe and the rest of the world (e.g., [Blaydes and Chaney 2013](#), [Ko, Koyama and Sng 2018](#), [Leon 2020](#)). Often referred to as the "Age of Disunion," early medieval China almost witnessed an identical phenomenon. As the Inner Asian equivalents of the Visigoths and Vandals destroyed the Chinese empire in the 4th century, political order collapsed into warring kingdoms and fragile d

We analyze a compensatory strategy adopted by the Northern Wei regime to placate the aristocracy in regions lacking prior state penetration. The respective aristocratic clans had enjoyed centuries of local autonomy without state presence, but now saw their vested interests in the status quo severely challenged and thus had incentives to block or undermine the Reform.

We hand-collect datasets on geo-coded career histories of 2,590 elites active from the 4th to 6th centuries as well as their family background, choronym, and ethnicity, using official histories compiled in the 6th century complemented with excavated tomb epitaphs. We also geocode the mentions of 4th century fortified castles (hereafter "strongholds") from a variety of historical records. With the collapse of political order and prolonged warfare among fragile barbarian kingdoms, peasants had to flee in massive numbers and become dependents of local aristocrats in exchange for subsistence

Our result is also robust to a rich gamut of additional checks, including but not limited to: a restrictive definition of aristocracy, using adjacent commanderies as the control group, removing elites with disputed identity or migration history, using non-aristocratic recruitment as a placebo test, controlling for the time-varying effects of earlier warfare, distance to the capital, and the pattern of earlier aristocratic settlement, and an instrumental variable strategy.

Theoretical contributions

Our findings contribute to research on state capacity. Existing studies recognize the importance of elite incentives, but emphasize *ex ante* conditions for incentive alignment in support of state-building. A prominent research tradition focuses on the central role of external conflict in compelling powerholders to accept reform (e.g., [Tilly 1990](#), [Besley and Persson 2011](#), [Gennaioli and Voth 2015](#)). It's joined by a new literature on internal conflict and state capacity ([Slater 2010](#), [Blattman and Miguel 2010](#), [Dincecco 2011](#), [Dincecco and Wang 2018](#)). Other contributing factors include demographic shock ([Garas and Sellars 2021](#)), economic crisis ([Garas 2018](#)), and politicians' time horizon ([Geddes 1994](#), [Grzymala-Busse 2007](#)).

We recognize state-building as a difficult and uncertain process that not only could be prevented from initiation, but also stopped or undermined after initiation (e.g., [Soifer 2005](#), [Wang 2021](#)). Relatedly, state-building is risky because it may reduce local elites' willingness to repress rebellions against the ruler ([Garas and Sellars 2021](#)).⁶ The reform in our setting is successful in that it led to deeper state penetration *without* inciting more rebellions. How the ruler could proactively mute elite resistance to state-building reforms therefore deserves more scholarly attention ([Berman 2021](#)). Our paper fills this lacuna with the empirical demonstration of a specific strategy: compensating the losers. In doing so, we also revise an existing paradigm based on the analytical dichotomy of the regime/ruler versus the local elites. Through elite compensation with offices in a centralized bureaucracy, our results show that state-builders may in fact try to align the preferences of local elites with that of the state by turning them into national stakeholders. These findings on interest realignment via bureaucratic compensation are related to [Jha \(2015\)](#), where developing stakes in a different framework mobilizes the individual to support reforms facilitating that framework.

Though relatively underexplored in the state capacity scholarship, the idea of compensating the losers figures prominently in the broader literature on political and economic reforms. Most works in this tradition emphasize avenues of new economic gains for groups who would otherwise lose from economic or political transitions. Important examples include the welfare state that helps compensate losers of free trade agreements (e.g., [Rodrik 1998](#), [Adsera and Boix 2002](#)) and financial integration and asset mobility that reduce elites' willingness to resist democratization ([Boix et al. 2003](#), [Freeman and Quinn 2012](#), [Jha 2015](#)). These tools and conditions were absent in most of human history prior to the ascent of modern economy and likely remain so in many severely underdeveloped regions today. This paper underscores *political* compensation via the bureaucracy as a new mechanism through which reformers soften resistance to their project. By documenting efforts to turn potential economic losers into political winners, our findings are related to [Acemoglu and](#)

⁶For rebellions induced by other kinds of reforms, see [Finkel, Gehlbach and Olsen \(2015\)](#).

Robinson (2000) and Acemoglu and Robinson (2006) that formulate the direct relations between political power, economic benefit, and the fate of reform. We also speak to a vast literature on authoritarian power-sharing by empirically highlighting that a key to political compensation is indeed credible commitment facilitated by the bureaucracy (e.g., Boix and Svolik 2013, Myerson 2015, Meng 2020).

This paper is organized as follows. Section 2 presents our argument. Section 3 describes the historical context of our empirical setting. Section 4 discusses data sources and identification strategy. Section 5 provides evidence on compensation. Section 6 examines mechanisms of compensation. Section 7 provides a discussion of other cases involving state-building with bureaucratic compensation, such as the Late Roman Empire and premodern Korea. Section 8 concludes.

2 Compensation, Bureaucracy, and Interest Realignment

We now describe the argument formalized by a simple model in Appendix D, which centers on a ruler and an aristocrat. The aristocrat is a local powerholder: he controls the productive assets and population of a locality that generate income for him. The ruler decides to *engage in state-building* by taking away the aristocrat's control of local resources, and deploying state-appointed staff to manage local population directly. This move benefits her in many ways, one of which is gaining access to more spoils (Garas and Sellars 2021).⁷

This move is often difficult, however, due to resistance by the aristocrat who would lose out in the process (Boone 2003, Ali et al. 2018). Local powerholders across various contexts of the developing world are endowed with the wherewithal to undermine or obstruct state-building efforts. They could deploy patron-client ties sustained through massive landed wealth (Faguet, Sanchez and Villaveces 2020). Their popularity with the local population as traditional leaders further enhances the power to prevent control (Logan 2009, Acemoglu, Moscona and Robinson 2016). Attempting to subdue resistance to state-building, the ruler thus has two options: she could build the state with force, or with an offer.

The option of state-building by force is obviously costly. Civil conflicts incur both economic and political costs, and can paralyze a regime's defense against foreign enemies.⁸ When the ruler is sufficiently strong, she may still prefer force as she can easily take over localities without having to make any concessions.⁹ Furthermore, when she is too weak, the aristocrat could reject any offer she

⁷Other benefits include improving her chances of political survival (Slater 2010), and completing a crucial prerequisite for a functional modern state (Acemoglu et al. 2014).

⁸Economically, the immediately dire consequence is also accompanied with various longer-term governance problems, such as increases in violent theft operations (e.g., Henn et al. 2021) and decreases in peasants' time horizons in economic activities (e.g., Lin 2020).

⁹The "by force" option can be exercised without force ~~is~~ actually carried out but only implied in the background.

makes in exchange for peaceful transfer of control and count on his relative strength against the ruler to defend local autonomy. This lower-bound on ruler strength coincides with the observation in [Berman \(2010\)](#) that a compensation-based state-building strategy requires enough military power to increase the cost of resistance by local strongpersons. Making an offer thus emerges as an attractive strategy when the ruler is neither too strong nor too weak.

A deal between a ruler and powerful social groups often has to be as credible as it is valuable ([Acemoglu 2003](#)).¹⁰ Offering posts in the bureaucracy mitigates commitment problems in two ways. First, the institution of bureaucracy implies delegation of power in the form of a principal-agent relationship. By construction, it consists of various formal rules that are common knowledge to both the ruler and members of her ruling coalition. This feature facilitates credible power-sharing because further expansion of personal power by the ruler at the expense of the ruling coalition entails the violation of one or more of such rules, the process of which could send a signal for all members of the ruling coalition to resist the ruler's power-grab ([Svolik 2009](#)). Second, certain offices in the bureaucracy can help their holders build personal power in the organization, thereby forming a de facto check on ruler's powers. Prominent ones include those that select, appoint and manage personnel in the bureaucracy. Holders of such offices could use this public power to build networks of personal loyalists and put them into important positions.¹¹

Valuable bureaucratic offices generate positive payoffs from monetary remuneration, power, and prestige to offset the economic losses by the aristocrat. That money generates payoff is self-evident. The power attached to an office enables its holder to extract political rents (e.g., [Xu 2018](#)). Prestige brings social and political recognition, which help accumulate political capital. Differences in the values of posts allow the ruler to compensate losers in accordance with their varied abilities to resist state-building, with more powerful ones receiving more valuable positions. All of the above presume the existence of a functioning national bureaucracy, in which offices have well-defined spheres of authority and are organized in a stable hierarchy ([Alkadry 2002](#)). Only then can the aristocrat form reliable expectations on the payoffs he can derive from office-holding.¹²

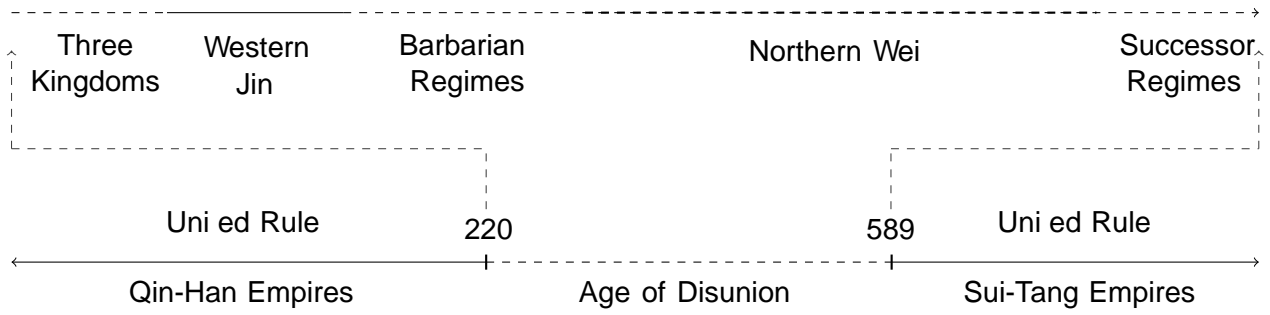
Another advantage of bureaucratic compensation to state-building is through interest realignment, which induces the holders of government offices to develop a stake in the system ([Berman 2021](#)). In

other words, it invites holders to share the gains of a strong state, thereby incentivizing them to participate in activities that benefit the regime as a whole (Jha 2012). Our model predicts that the ruler would optimally give out offices that are conducive to interest realignment: ones that facilitate the transformation of the holders' once localist interests into nationalized ones as well as political ventures that help expand the interests of the state. Senior posts in the central government, as opposed to regional ones in the aristocrat's hometown, are examples of such offices.

Two testable implications from the foregoing discussion guide our empirical analyses. In state-building reforms, a ruler who enjoys a medium level of strength implements bureaucratic compensation in the following ways:

1. Local powerholders receive meaningful positions in the bureaucracy as compensation for accepting state penetration. In particular, the more powerful among them receive even higher compensation.

2. Powerholders



local influence with the political, economic, and cultural capital accumulated through their roles in the prior dynasties (Ebrey 1978: 19-20).

It was during this century of endemic warfare, widespread misery, and political and economic collapse¹⁹ that mentions of "strongholds" (*wubaoor wub*) became prevalent in the historical records.²⁰ In massive numbers, dislocated people in the north took refuge in regions with strongholds for protection and subsistence, and subsequently became serfs in the estates of aristocratic families (Lewis 2011: 131, von Glahn 2016: 265-266²¹). With strongholds dotted across northern China in the absence of state, governance in many regions fell to the hands of local aristocrats with self-sufficient estates managed by the refugee population now dependent on them as clients in arms (Gra 2003: 55-56; von Glahn 2016: 265-266).

This locally fragmented landscape fell under the rule of warring barbarian regimes only nominally, and none of the regimes was able to establish a stable government (Ebrey 1978: 24). Self-perpetuating state weakness thus manifested itself in the barbarian rulers' struggle to extract manpower (let alone revenue) from the regions, as well as their failure to conquer one another.²² Due to their inability to register population and politically mobilize the elites," the northern regimes' administration in the 4th century "seem to have extended little beyond the immediate hinterland of the capital" (Lewis 2011: 125).

3.2 Northern Wei, Local Autonomy, and the Reform of 485-486 AD

Founded by the Tuoba branch of the inner Asian Xianbei people, the Northern Wei Dynasty would effectively reverse the process of feudalization of medieval China (Scheidt 2019: 227-247). In the several decades spanning from late 4th to early 5th centuries, the NW first secured Xianbei hegemony in the modern-day Inner Mongolia and then launched attacks southward, conquering the barbarian kingdoms located in the Chinese hinterland.²³ Their governance of northern China for most of the 5th century also involved the service by a small number of Chinese aristocrats in the imperial court, who helped establish basic sinicized institutions and rituals.

¹⁹Holcombe (2019: 144).

²⁰English translations of the same Chinese phrase are "strongholds," "forts," "fortified villages," "fortified communities," etc. We adopt "strongholds" as used in Pearce (2019). Strongholds were the Chinese equivalents to the "castles of Japan or medieval Europe" (de Crespigny 1995: 6). We believe that direct parallels to the Chinese aristocrats in stronghold regions were the Roman aristocratic "potentates" in the 5th century AD Gaul during barbarian invasions (Mathisen 2011).

²¹The same process through which disastrous wars led aristocrats to build fortifications, absorb dislocated people as their clients seeking protection, and expand their possessions of land and serfs was already in full display during Han Dynasty's collapse and the resulting Three Kingdoms period in the 3rd century AD Mathisen

To sustain nominal unification, the regime abandoned its efforts to register population in regions with strongholds by formally recognizing their local autonomy in exchange for a small amount of financial contribution and corvée labor delivered by locally powerful families (Pearce 2019: 174, Li 1986). Such legitimization further deepened aristocrats' control over the local society in these regions, and as the small number of independent farmers found the burden of corvée labor increasingly heavier, they fled to the private clientage of local aristocrats, further reducing the size of the registered populace for NW (von Glahn 2016: 299-300).

Under the reign of Empress Dowager Feng, NW implemented a reform package in 485-486 AD (hereafter, "the Reform") that broke the vicious cycle of state weakness. The Reform comprised of two interlocking procedures. The "equal-field system" (juntian-zhi) claimed state ownership of all land on earth and redistributed land to commoners.

prominent aristocratic families in stronghold regions.²⁶ As the Reform went on, however, no records indicate further resistance by aristocrats in the imperial court.

The discussion thus far reveals two aspects of the Reform: a) the Reform had astonishing success in enhancing state capacity, and b) despite clear potential and initial action, resistance to the Reform by local powerholders became muted later on. Appendix A brings forward key findings from the consensus by historians of China that are further supportive of a). Importantly, it also reports quantitative evidence using our data on state penetration and local rebellions that is consistent with both a) and b). The Reform is thus puzzling from a political economy perspective. In making sense of NW's success in re-establishing centralized direct rule over the Chinese population, Ebrey (1978) speculates that the regime might have reached a deal with the landed aristocrats, in which the former would offer powerful and prestigious government positions in exchange for the latter's local autonomy (p.25).²⁷ This compensation strategy will receive systematic evidence in the ensuing sections.

4 Data and Empirical Strategy

This section presents the data used for our empirical analysis and their sources, discusses the construction of key variables, and describes the main empirical strategy.

4.1 Data Sources

Political Elites. We hand-collect data on elites in NW. The main source we use is the *Book of Wei (Weishu)* that describes the dynastic history of NW and that forms a part of the official "Twenty-Four Dynastic Histories" collection. It was compiled in 544 AD, under NW's immediate successor regime, with exclusive access to NW archives and the wide availability of oral histories of elite families. The *Book* is also the only historical text exclusively devoted to describing NW that survives to this day. In a format consistent with other dynastic histories, the *Book of Wei* includes the biographies of statesmen and notable individuals. Example of a translated biographical excerpt can be found in Appendix F.3.

²⁶The two families in opposition were the Zheng clan of Xingyang and the Gao clan of Bohai. In addition to the Empress herself (whose family had completely relocated to the capital one generation ago), the two supporters of the Reform, Li Chong and Tuoba Pi, were both centralized elites. Li Chong was Empress Dowager's lover, and his family had completely relocated to the capital one generation ago, and his niece was married into the royal household. Tuoba Pi was a royal prince. See *Book of Wei*, volume 53.

²⁷Note that historians used to speculate that perhaps NW compromised at the implementation stage by letting clan members of landed aristocrats be the state-appointed villagers in charge of population registration and surveillance in the *hu* system. This view is systematically rejected by more recent research by Hou (2002), which points out

We complement the *Book of Wei* with excavated tomb epitaphs of NW individuals, assembled by Zhao (1992), Luo and Ye (2005), and the China Stone Inscription Database.³⁸ These tomb epitaphs are slabs of stones on which biographies of the deceased are inscribed, and are widely used by historians as primary sources for studying relevant historical periods.²⁹

These two sources cover every

military purposes. These strongholds map to 41 commanderies, which is 16.5% of all commanderies in our dataset.

Other Data. We hand-collect data on counties in each commandery from [Mu, Wu and Wei \(2016\)](#), a study of historical administrative divisions in China. For each county on record, we know its name, present-day location, and years of creation and abolition.

We also compile a dataset on conflicts in Northern Wei.³⁶ We are able to identify 157 conflicts with precise geographical information. Conflicts are of three types: external war between NW and other regimes, peasant uprisings led by civilians, and rebellions led by NW elites.

We collect a host of geographic characteristics for each commandery as our baseline controls: terrain ruggedness,³⁷ river density,³⁸ and the suitability index of two staple foods in China, rice and wheat.³⁹ Since a map of NW commanderies with clear boundaries does not exist, we compute the average values of each of those four variables across a 50-kilometer radius of the capital cities of each commandery.

Summary statistics and definitions for the main variables used in our empirical analysis can be found in [Tables A3](#) and [A16](#) respectively.

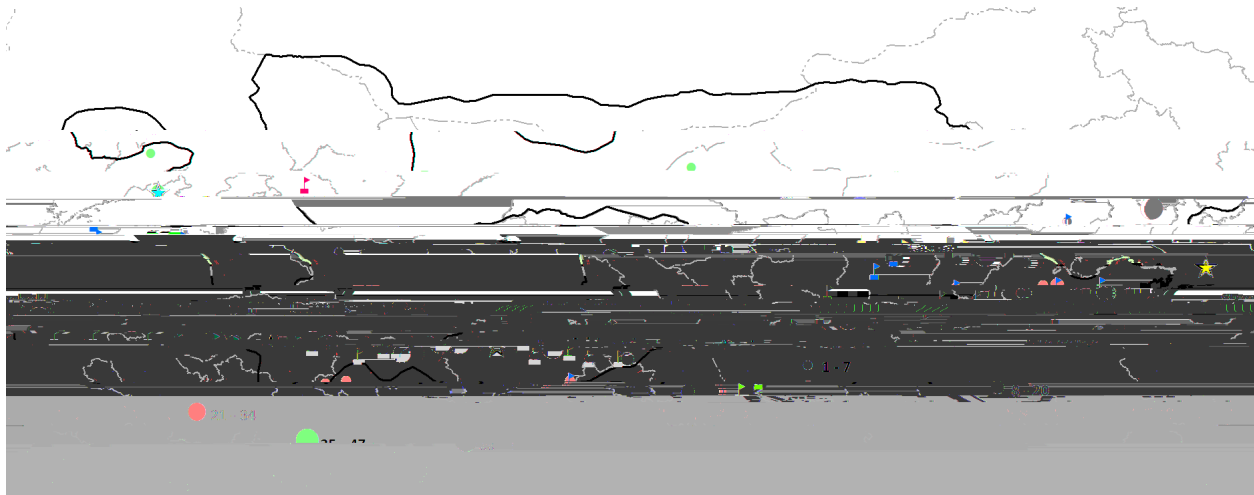
4.2 Defining Aristocracy

The centerpiece of our paper is the powerful aristocratic families, some of whom exercised control over local population and economy through local strongholds and therefore stood to lose from NW's state-building reforms. We operationalize the concept of aristocracy|one that captures the

collection. We use choronym-surname to identify family affiliations because it was common practice for prominent families in imperial China to distinguish themselves by associating the family surname with their place of origin. Famous examples of the medieval period include the Clan Cui of Qinghe and Clan Du of Jingzhao, whose members held prestigious offices in various regimes and wielded significant social and political influence.

We choose the Later Han Dynasty as the earliest dynasty from which to draw on historical biographies because the first century was commonly understood as the era during which many prominent medieval Chinese families began to emerge (see Section 3.1). Inclusion in historical biographies suggests that ancestors of the family were politically active and highly likely to have made accomplishments in administration, military, literature or moral integrity. Thus, they were at a particularly advantageous position to further accumulate and transmit political, economic and cultural capital to their descendants.⁴¹ Importantly, regime transitions in the 3rd century, which

Figure 2. Geographical Distribution of Strongholds and Aristocrats



Note : this figure displays the geographical distribution of strongholds and aristocrats (main definition) recruited into the NW regime. The black line depicts the territory of NW in approximately 504 AD. We construct this map based on the historical map of China in 448 AD, which is taken from [ChinaXmap 3.0 Three Kingdoms and the Period of Division](#), Harvard WorldMap database.

4.3 Empirical Strategy

In the most ideal world, our theory would be tested with data on more direct measures of elite wealth such as land and the number of private serfs and armed clients, but such information do not exist as far back as 1600 years ago. Thus, we focus on *aristocrats in stronghold commanderies* as an essence of the powerful landed elites willing to and capable of resisting the Reform.⁴⁴ By restricting our attention to the most politically prominent group, our method of measuring locally powerful attractive elites is similar to the one in [Acemoglu, Reed and Robinson \(2014\)](#) that identifies a set of local chiefs in modern-day Sierra Leone. Although our argument is based on economic vested interests and power, this method is well suited to our research because, as described in [Section 3](#), a family's local economic dominance largely dovetailed with its socio-political capital that reflected in the enduring clan pedigree and the strongholds that helped prevent state penetration.⁴⁵

We use the difference-in-differences (DD) strategy to test Prediction 1 of Section 2 by estimating Equation 1 below at the level of commandery-period.⁴⁶ Commanderies were the second lowest level of the imperial administrative hierarchy in

⁴⁴As in [Acemoglu, Reed and Robinson \(2014\)](#) and [Garas and Sellars \(2021a\)](#), we do not further distinguish between willingness and capacity to resist state-building reforms because the amount of economic vested interests, which reflect willingness, also underpin the ability to hire self-defense and engage in practices of subversion.

⁴⁵Of course, strongholds can also be viewed as <#>

medieval China, with the lowest level being counties. The treatment group consists of commanderies with pre-existing strongholds, which reflects a high degree of aristocratic control of the local economy and population, and the control group consists of commanderies without strongholds. Aristocrats in commanderies with strongholds are the local powerholders, and therefore economic losers of the Reform that the regime seeks to compensate.

$$Y_{ct} = \text{Stronghold}_c \cdot \text{Reform}_t + \alpha_c + \beta_t + \epsilon_{ct} \quad (1)$$

Here, Y_{ct} is the outcome of interest for commandery c during period t , which, in our main analyses, is the number of aristocrats recruited. Stronghold_c is an indicator variable that is equal to 1 if commandery c has 4th century strongholds. Reform_t is equal to 1 if period t is during or after the reign of Empress Dowager Feng, which is from 477 to 490 AD. Commandery fixed effects α_c control for time-invariant unit-specific differences, and emperor fixed effects β_t control for variations over time that are common to all commanderies. To allow for serial correlation of the error terms, we cluster standard errors at the commandery level.

The identifying assumption for our DD strategy is that, non-stronghold commanderies provide an appropriate counterfactual for what would have happened in stronghold commanderies, in the absence of the Reform. The coefficient therefore estimates the causal effect of the Reform on the outcomes of interest.

5 Main Results

As described in Section 3, the Reform was remarkable both for its success in reviving the Chinese state and for the relative lack of documented resistance. We provide further evidence, in Section A of the Appendix, that the Reform enhanced state capacity but did not lead to local resistance, the facts of which motivate us to investigate how a state-building regime could soften resistance by powerful vested interests. This section and the one that ensues report a diverse array of evidence to document the bureaucratic compensation strategy theorized in Section 2.

5.1 Reform and Recruitment

We now establish the main result of the paper: the NW massively recruited aristocrats from stronghold areas as a result of the Reform. We estimate Equation 1, using as dependent variable

Table 1. Effects of Reform on Aristocratic Recruitment

		Number of Aristocrats Recruited			
		(1)	(2)	(3)	(4)
Stronghold	Reform	0.081*** (0.031)	0.077** (0.030)	0.072** (0.029)	0.048** (0.019)
Mean of D.V.		0.020	0.020	0.020	0.020
Period FE		Yes	Yes	Yes	Yes
Commandery FE		Yes	Yes	Yes	Yes
Controls		No	Yes	Yes	Yes
Province-Period FE		No	No	Yes	No
Commandery linear trend		No	No	No	Yes
Observations		2,739	2,739	2,739	2,739
R-squared		0.474	0.482	0.493	0.803

Note : This table presents the effect of reform on the aristocratic recruitment. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

Table 1 reports the results. Column (1) indicates that 0.081 additional aristocrats from stronghold commanderies are recruited into the regime per year, compared to non-stronghold commanderies. This magnitude represents a 4.05 fold increase relative to the mean of 0.02, which is statistically significant at the 1% level. This estimate remains practically unchanged with the addition of geographical characteristics (interacted with the post-Reform dummy) and commandery-level lagged conflicts as controls (column 2), or with province-time fixed effects, and is robust to commandery-specific linear trends. These estimates show that the Reform caused a large number of aristocrats to be recruited from the strongholds commanderies.

Checking Pre-Trends. The DD design relies on the parallel trend assumption. To provide stronger support that this assumption holds, we perform an event study analysis by estimating a dynamic version of Equation 1:

$$\text{NumAristocrats}_{ct} = \sum_{j=1}^N \beta_j \text{Stronghold}_c \text{Period}_j + \alpha_c + \gamma_t + \delta_{ct}; \quad (2)$$

where Period_j denotes dummy variables indexed by j for each period.

Figure 3 presents the coefficient plot for each emperor reign.⁴⁸ The omitted category serving as the benchmark is the period right before the reign of Empress Dowager Feng. Coefficients for pre-reform periods are not statistically or substantively different from zero, and estimates for

⁴⁸ Regression results are reported in Appendix Table A5.

Figure 3. Test for Parallel Pre-trend

Notes: This figure plots event study estimates for equation (2). Vertical bands represent 95% Confidence Interval

post-reform periods are positive and statistically significant. This exercise shows that there are no differential pre-trends in aristocratic recruitment for stronghold and non-stronghold commanderies. Equally importantly, the substantial spike of the treatment effect sustains in the long run and becomes even larger.

5.1.1 Robustness Checks

This subsection reports a large battery of robustness checks for our result on aristocratic recruitment.

Alternative Definition of Aristocracy. We employ the more restrictive definition stated in Section 4.2, that an elite is an aristocrat if individuals with the same choronym-surname took top government offices in earlier empires. Our main results are robust to this alternative definition (Table A6).

Adjacent Commanderies Only. In our baseline results, we control for pre-existing differences between commanderies by interacting a set of geographical characteristics with the post-Reform dummy. To further exclude the effects of any pre-existing differences not picked up by the control variables, we restrict our sample to commanderies that either have strongholds themselves (treatment group) or do not have strongholds but are adjacent to a commandery with strongholds (control group). This exercise using spatially similar commanderies does not affect our results (columns (1) and (2) of Table A7).

Territorial Changes. Our baseline results use the territory of NW in 504 AD. Even though most of NW's territorial expansion took place during the late 4th and the early 5th centuries, which is more than 50 years before the Reform, we nevertheless remove commandery-period observations that are unoccupied from our sample to eliminate the effects of territorial changes.⁴⁹ Our results remain robust (columns (3) and (4) of Table A7).

Measurement. In medieval China, individuals of humble origins occasionally tried to fabricate their aristocratic identity by claiming that their families belonged to a prestigious choronym-surname. Even though historians do not believe that this was a problem for dynasties before Sui and Tang (Fan 2014), we nevertheless exclude aristocrats with disputed origins from our sample.⁵⁰ Our results are robust to this exercise (columns (1) and (2) of Table A8).

Warfare and political turmoil in the 4th century caused migration. We re-estimate our baseline regression on the sample of elites who never migrated, and show that results remain robust in columns (3) and (4) of Table A8.

Alternative Outcomes. Recall that our main dependent variable is the number of aristocrats who entered the bureaucracy for the first time in each period. To verify that aristocrats from stronghold commanderies also enjoyed continued presence in the bureaucracy, we re-estimate our baseline results, using as dependent variable the total number of aristocrats serving in each period. Results in columns (1) and (2) of Table A9 show that the Reform produced a persistent, positive effect on the presence of aristocrats from stronghold commanderies. For an additional test, we also use the log number of aristocrats as the dependent variable to diminish the impact of outliers (columns (3) and (4) Table A9).

Placebo Tests. Non-aristocrats did not have the socio-political capital required to maintain local economic dominance and were therefore not the losers the regime had to compensate. We further use the number of non-aristocrats and the number of non-aristocratic ethnic Han elites as placebo

⁴⁹The year of occupation for each commander is compiled from Mu, Wu and Wei (2016).

⁵⁰An elite has disputed origin if the Book of Wei recounts that he "self-reported" or "asserted" his family to be some choronym-surname.

outcomes, and our results in Table A10 provide verification that increased recruitment in stronghold commanderies was not driven by unobserved shocks.

Other Political Factors. We use two methods to account for any potential impact that capital regions might have on aristocratic recruitment. First, we include interaction terms between the distance from commanderies to the two capital cities and the post-Reform dummy (columns (1) and (2) of Table A11).⁵¹ Second, we exclude capital commanderies from our sample (columns (3) and (4) of Table A11). Our results remain robust.

Warfare in the fourth century may also affect aristocratic recruitment. To explicitly control for the time effect of initial differences in war on the outcome variable, we include the interaction term between the presence of 4th century warfare in each commandery and the post-reform dummy (columns (1) and (2) of Table A12).

The surge in aristocratic recruitment in stronghold commanderies may reflect pre-existing differences in patterns of aristocratic settlement. We thus include the interaction term between the number of historical aristocratic clans in each commandery and the post-reform dummy (columns (3) and (4) of Table A12).⁵² In addition, we interact a dummy indicating whether a commandery served as a provincial or national capital prior to NW with the post-reform dummy to account for that commandery's historical political development (see columns (5) and (6) of Table A12).

Instrumental Variable. Appendix Section E describes an instrumental variable strategy that leverages commandery-level variation in exposure to an excessively catastrophic historical episode between 301 and 307 AD that paralyzed the local state and socio-political order of northern China. Our results are robust to all of the tests outlined above.

5.2 Recruitment as Compensation

Having established the causal relationship between Reform and aristocratic recruitment in stronghold areas, we now discuss richer evidence for the theory of bureaucratic compensation and against alternative interpretations.

Broad Recruitment Strategy

The host of geographic controls in Equation 1 should go a long way towards addressing the concern that our results could potentially be driven by natural expansion of the aristocratic population. Furthermore, the DD design and the likely parallel trends in Figure 3 further help

⁵¹The capital of NW had been Pingcheng until 494 AD, when Emperor Xiaowen moved the central government to Luoyang. See Sections F.1 and F.2 of the Appendix.

⁵²This variable is defined in a consistent manner with our main definition of the aristocracy. We compute this variable as the number of distinct surname-choronym pairs at a commandery, where each surname-choronym pair is associated with at least one biographee in the three books of earlier empires (*Book of Han*, *Book of Jin*, *Book of Wei*).

rule out secular growth as an alternative explanation. Here we present further evidence against any interpretation based on potentially different demographic growth between stronghold and non-stronghold aristocratic families.

We re-estimate Equation 1 with an alternative dependent variable. In each commandery at time t , rather than the total number of aristocrats recruited, we now use the total number of aristocratic clans that had one or more member recruited.⁵³ If our main result is driven by the alternative explanation based on secular population expansion within aristocratic clans in stronghold areas, then we would not find any effect using this alternative coding that shifts the focus away from the number of recruits within clan to the total number of clans that saw recruitment. Consistent with our argument and inconsistent with the alternative interpretation, corresponding results in Panel A of Table 2 indicate that the NW state recruited from a greater number of aristocratic clans in the stronghold commanderies as a result of the Reform, compared with non-stronghold commanderies.⁵⁴

Heterogeneity

Even though a wider range of the aristocracy in stronghold commanderies were recruited into the regime in the post-Reform period, the theoretical framework in Section 2 suggests that the extent of recruitment should not have been shared equally across all clans. More specifically, clans with higher socio-political capital were likely to be the ones that controlled more local resources, and were therefore likely to pose a stronger threat of resistance to the Reform. In order to weaken such resistance, the NW regime may need to recruit greater numbers of them as concessions.

To examine this implication, we restrict our sample to aristocrats only, and conduct further analysis at the clan level. We use two proxies to measure the socio-political capital of aristocratic clans. The first proxy, *TopOffice*, derives from the more restrictive definition of the aristocracy. It is a dummy variable that equals to 1 if a clan's ancestors held top bureaucratic offices in earlier empires, which captures the fact that more prominent statesmen could amass greater political and economic privileges. The second proxy, *Longevity*, is a dummy equal to 1 if a clan's ancestors have biographies in at least two of the three dynastic histories of earlier empires, which reflects the clan's degree of local entrenchment.

We then interact this proxy with the post-treatment indicator `Reform`
rwid515q339(f 8)-384 149ges8936 20372.64

$$\text{NumAristocrats}_{ckt} = \text{Prominence}_{ck} \text{ Post}_t + \epsilon_{ck} + \epsilon_t + \epsilon_{ckt} \quad (3)$$

Here, Prominence_{ck} is the dummy equal to 1 if clan k from commandery c has higher levels of socio-political capital. ϵ_{ck} is the clan-commandery fixed effect.

Results for clans in stronghold commanderies are reported in Panel B of Table 2. The first two columns use TopOffice , and the last two columns use Longevity as relevant proxies. In line with our prediction, clans with higher socio-political capital had a significantly greater number of members recruited into the regime, compared to clans with lower socio-political capital. In contrast, we do not find a statistically significant effect for commanderies without strongholds (see Table A4).

Demand for Talent

As an alternative interpretation to compensation, the observed pattern of aristocratic recruitment may be driven by an increase in demand for: (1) officials at the front-line bureaucracy, or (2) more capable officials, following the state-building reform. Our own empirical evidence and the consensus in historical research rule out these interpretations.

The first interpretation has no bearing on our quantitative results because 0% of the individuals in our data (aristocrat or non-aristocrat) had ever assumed the office of "three-elder," a front-line post in the bureaucracy created by the Reform to register and monitor local population under state control. This empirical pattern is not surprising at all because the NW elites were indeed unwilling to serve positions in the new "Three-Elders" system. It is important to note that the "Three-Elders" system was a grassroots state organ that created a network of village-level petty clerks (von Glahn 2016:175). Positions as such were at the bottom level of imperial officialdom, and had low social status (Hou 2002). Moreover, "three-elders" officials were tasked with gruelling work, and enjoyed few privileges: they were required to meet stringent targets in tax collections, and even had to make up for the deficiency themselves. Taken together, existing evidence shows that our results on aristocratic recruitment could not have been driven by a surge in demand for officials in the front-line bureaucracy.

To rule out the second interpretation, we systematically demonstrate that aristocrats from stronghold commanderies, the treated group, did not possess more superior administrative ability than aristocrats from non-stronghold commanderies, the control group. To do so, we manually extract descriptions of six types of personal merits from elites' biographies in the Book of Wei.⁵⁵ We classify those merits into two categories, administrative ability and personal character. The administrative ability category consists of military prowess, good governance, and institutions and

⁵⁵We leave out elites from the tomb epitaphs because epitaph passages are intended to describe the accomplishments of the deceased, and therefore lack objectivity. Book of Wei, on the other hand, was solo-authored and therefore lends much more consistency in its evaluations of elites.

Table 2. Number of Aristocratic Clans Producing New Recruits

Panel A: Recruitment of Aristocratic Clans

		Number of Aristocratic Clans Recruited			
		(1)	(2)	(3)	(4)
Stronghold	Reform	0.301*** (0.104)	0.293*** (0.108)	0.283*** (0.108)	0.186* (0.099)
Mean of D.V.		0.116	0.116	0.116	0.116
Period FE		Yes	Yes	No	Yes
Commandery FE		Yes	Yes	Yes	Yes
Controls		No	Yes	Yes	Yes
Province-Period FE		No	No	Yes	No
Commandery linear trend		No	No	No	Yes
Observations		2,739	2,739	2,739	2,739
R-squared		0.537	0.539	0.549	0.720

Panel B: Clan-Level Heterogeneity in Recruitment

		Number of Clan Members Recruited			
		(1)	(2)	(3)	(4)
Top o ce	Reform	0.154** (0.062)	0.178** (0.074)		
Longevity	Reform			0.148** (0.057)	0.171** (0.066)
Mean of D.V.		0.051	0.051	0.051	0.051
Clan FE		Yes	Yes	Yes	Yes
Period FE		Yes	No	Yes	No
Commandery FE		Yes	Yes	Yes	Yes
Controls		Yes	Yes	Yes	Yes
Province-Period FE		No	Yes	No	Yes
Observations		528	528	528	528
R-squared		0.498	0.544	0.497	0.542

Note : Panel A presents estimates of the Northern Wei's reform on the number of clan recruited. Panel B represents estimates of the heterogeneous effect of reform. We restrict the sample to the aristocratic clans commanderies with strongholds. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction

policy; and the personal character category comprises of literature, intelligence, and integrity.⁵⁶

To illustrate how merits were recorded, we select a short excerpt from the biography of Cui Hao, a member of the prestigious Clan Cui of Qinghe. Volume 35 of *Book of Wei* recounts:

"Since youth, [Hao] was fond of literature, and was well-versed in classics and history... Court rituals, statements of commendation and imperial edicts, military and administrative orders, were all authored by Hao."

Thus, Cui Hao has merits in institutions and policy, as well as literature.

Table 3 displays comparisons of personal merits. We exclude from our sample members of the imperial household and eunuchs, as they were not recruited into the bureaucracy in the same way as other elites. We first establish the validity of those merits records by comparing the merits of aristocrats and non-aristocrats. Results in Panel A suggest that aristocrats demonstrate higher ability in institutions and policy and literature, and lower ability in military prowess, in comparison to non-aristocrats. This finding is consistent with historical research showing that medieval Chinese aristocratic families were characterized by a rich tradition of literature, classics, and institutional and policy knowledge (Yan 2021, Chen 1998).

To examine pre-treatment "balance," we now restrict our sample of to *aristocrats only* and compare the merits of aristocrats from stronghold commanderies with ones from non-stronghold commanderies. Results in Panel B of Table 3 indicate that there exist no statistically meaningful differences between those two groups of aristocrats along all dimensions of merit in the *pre-Reform* period. This suggests that aristocrats who came from stronghold commanderies and held offices in the regime did not exhibit superior ability compared to their counterparts from non-stronghold commanderies *prior* to the Reform. Taken together, these findings reject the interpretation that the increase in the number of aristocrats from the stronghold commanderies was due to superior ability.

However, as implied by our theory and by the substantial recruitment result established previously, one would expect that aristocrats from commanderies with strongholds serving in the NW bureaucracy *after* the Reform were of less quality. Since the compensation strategy entailed massively recruiting aristocrats from one particular group to serve in government offices as political concessions, the selection process may not have been highly meritocratic.⁵⁷ Panel C of Table 3 shows that aristocrats from stronghold commanderies indeed became less capable in governance and institutions and policy, and the difference is statistically significant at the 5% and 1% levels

Table 3. Merits Comparison for Northern Wei Elites

Pa: Aristocracy vs Non-Aristocracy

Merits	Aristocracy	Non-Aristocracy	Difference
Military Prowess	0.117 (0.323)	0.260 (0.439)	-0.143*** (0.000)
Governance	0.207 (0.407)	0.202 (0.402)	0.005 (0.909)
Institutions & Policy	0.144 (0.353)	0.057 (0.233)	0.087*** (0.014)
Literature	0.261 (0.441)	0.108 (0.311)	0.153*** (0.001)
Intelligence	0.171 (0.378)	0.129 (0.335)	0.042 (0.280)
Integrity	0.063 (0.244)	0.032 (0.177)	0.031 (0.210)
Observations	111	435	546

Pb: Aristocracy vs Stronghold

Merits	Stronghold	Non-Stronghold	Difference
Military Prowess	0.159 (0.370)	0.090 (0.288)	0.070 (0.293)
Governance	0.205 (0.408)	0.209 (0.410)	-0.004 (0.956)
Institutions & Policy	0.182 (0.390)	0.119 (0.327)	0.062 (0.381)
Literature	0.205 (0.408)	0.299 (0.461)	-0.094 (0.262)
Intelligence	0.227 (0.424)	0.134 (0.344)	0.093 (0.226)
Integrity	0.045 (0.211)	0.075 (0.265)	-0.029 (0.521)
Observations	44	67	111

Pc: Aristocracy vs Stronghold

Merits	Stronghold	Non-Stronghold	Difference
Military Prowess	0.124 (0.331)	0.145 (0.353)	-0.021 (0.502)
Governance	0.145 (0.353)	0.220 (0.415)	-0.074** (0.032)
Institutions & Policy	0.017 (0.128)	0.063 (0.243)	-0.046*** (0.008)
Literature	0.203 (0.403)	0.278 (0.449)	-0.075* (0.050)

Inte8(fr)53(om)-367(Commanderies)-368(((0.120 m 37470 d97*))TJ 141.lha130.075*ernance-44925 2c757l(020

Table 4. Mechanism of Compensation: Direct Benefit and Interest Realignment

	Max Rank (1)	Pure Offices (2)	Senior Offices		Junior Offices
			Central (3)	Regional (4)	Central (5)
Reform Stronghold Arist	3.381*** (1.117)	0.188** (0.079)	0.163** (0.067)	0.043 (0.071)	0.013 (0.090)
Stronghold Arist	-2.435** (1.015)	-0.267*** (0.081)	-0.128* (0.073)	-0.033 (0.077)	-0.068 (0.088)
Reform Stronghold	-1.932*** (0.640)	-0.155*** (0.054)	-0.070* (0.038)	-0.038 (0.034)	-0.036 (0.049)
Reform Arist	-0.934 (0.659)	-0.128*** (0.037)	0.021 (0.042)	-0.044 (0.042)	-0.127** (0.056)
Mean of D.V.	11.171	0.435	0.175	0.096	0.668
Period FE	Yes	Yes	Yes	Yes	Yes
Commandery FE	Yes	Yes	Yes	Yes	Yes
Observations	3,509	3,672	3,672	3,672	3,672
R-squared	0.088	0.111	0.098	0.061	0.099

Note : This table provides the results of direct benefits of compensation. The unit of observation is the individual-period. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level. Controls include aristocracy, royal membership, ethnic Han dummy and father's rank.

where i , c , and t denote individual, commandery and emperor reign respectively. Y_{ict} is the outcome of interest for individual i from commandery c during period t . $Aristocracy_i$ is a dummy that is equal to 1 if individual i is an aristocrat. X_i is a set of individual-level controls that include indicator variables for aristocracy status, membership to imperial household, ethnic Han status, and whether the individual's father has ever held offices above Rank Five.⁵⁹ $Reform_{t,c}$ are defined as in Equation 1. To allow for serial correlation of the error terms, we cluster standard errors at the commandery level. The coefficient of interest, β , captures the treatment effect of the Reform on office-holding outcomes for aristocrats from stronghold commanderies.

Results are reported in Table 4. Column (1) uses the maximum rank achieved by an elite during each period as the dependent variable, and shows that aristocrats from stronghold commanderies on average held higher-ranked offices in the post-Reform period. Recall that an increase in numerical value of 2 corresponds to a rise of one rank (see Sections 4.1 and Appendix G.1), the coefficient of 3.381 therefore indicates a rise of 1.69 in actual rank. This is a substantial change, given that offices only have nine ranks. From column (2), it is evident that aristocrats from stronghold commanderies were also more likely to hold pure offices. Taken together, these results suggest that the NW regime compensated aristocrats by giving them higher-ranked and more prestigious offices.

We now give closer scrutiny to high-ranked offices, as they entail substantial power and respon-

⁵⁹Rank Five is the middle rank of all state offices, which are ranked from nine (lowest) to one (highest).

sibilities. We define senior offices to be ones that are above Rank Three Junior, and divide them based on whether they are in the central or in the regional bureaucracy.⁶⁰ For instance, Head of the Imperial Library is an office in the central bureaucracy, whereas Commandery Governor is an office in the regional bureaucracy.

Columns (3) and (4) display regression results using central and regional senior offices respectively, and show that compensation to aristocrats came through powerful offices in the central, but not the

office after they have given up local control. This subsection empirically highlights the Ministry of Personnel (*ibu*) in the central state bureaucracy, responsible for recruiting, assigning offices to, evaluating and promoting bureaucrats, as a pivotal device for credible commitment.

The nature of the Ministry of Personnel would enable its officials to form alliances by appointing their friends and relatives to important positions. This advantage at building patronage network not only helps transform aristocrats' local influence into *de facto* political power at the national level, but also substantially increases the cost for the emperor to renege on the political deal. The emperor would face costly consequences for punishing aristocrats, and even if he could punish individual aristocrats, he would not be able to eliminate the entire alliance of aristocrats as their interests are interlocked and reinforced by their control over bureaucratic personnel.

We first establish the fact that our proposed mechanism of credible commitment was utilized by the NW regime as part of its compensation strategy. Column (1) of Table 6 shows that aristocrats from stronghold commanderies indeed were more likely to hold offices in the Ministry of Personnel. Since the Ministry of Personnel is part of the Department of State Affairs, the core of the executive branch of the central government, we verify that our Personnel-specific result was not driven by the regime's overall attempts to recruit stronghold aristocrats into this Department. To do so, we use offices in other ministries in the Department of State Affairs as a placebo.⁶³ Column (2) shows that the estimate is small and statistically indistinguishable from zero.

In column (3), we examine a regional position which entails significant power over the evaluation of candidates for bureaucratic offices, the *rectifier* (*zhong-zheng*).⁶⁴ The estimate, which is rather small in magnitude compared to the mean, suggests that aristocrats of stronghold commanderies were not significantly more likely to be appointed as *rectifiers*. This suggests that, while control over bureaucratic personnel was employed as a credible commitment device, the interest realignment mechanism is still at work: the regime did not want to increase aristocrats' local power by granting them more positions that could affect selection of candidates to join the imperial bureaucracy from their hometowns.

We perform a series of tests to show that the credible commitment device is indeed functional. Column (4) of Table 6 shows that aristocrats from stronghold commanderies were more likely to receive a promotion. Meanwhile, the estimate in Column (5) shows that they were not more likely to be punished.⁶⁵ These results demonstrate that the regime committed itself to the compensation

⁶³They include the Ministry of War, Ministry of Provisions, Ministry of Revenue, Census Section, Land Tax Section and Justice Section. Corresponding Chinese terms are *jiabu*, *kubu*, *duzhi*, *zuo-mincao*, *you-mincao* and *duguan*.

⁶⁴*Rectifiers* are responsible for assessing the meritoriousness of and assigning grades to local candidates who aspire to enter civil service. A given local grade led to a given level of appointment at court (Lewis 2011). For more details, see Yan (2021), Miyazaki (2007).

⁶⁵An elite is punished if he is removed from office, killed by the emperor, or received death sentence for committing crimes.

Table 7. Importance of Offices in the Ministry of Personnel

	Senior Offices		
	Central (1)	Regional (2)	Pure Office (3)
Clan Member in Personnel Ministry in Periods	0.088*** (0.026)	0.052*** (0.016)	0.087*** (0.033)
Mean of D.V.	0.176	0.096	0.434
Clan FE	Y	Y	Y
Period FE	Y	Y	Y
Commandery FE	Y	Y	Y
Observations	3,715	3,715	3,715
R-squared	0.164	0.112	0.184

Note : This table presents the effect of personnel office-holding on the career development. The unit of analysis is individual-period. Patronage network in personnel office denotes whether other clan members of a elites had served in the personnel office before the current position. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

7 Case Illustrations beyond China

This section discusses the application of our bureaucratic compensation theory to two cases beyond China: the Late Roman Empire and premodern Korea.

Late Roman Empire, 4th -6th centuries AD

In response to the so-called "Crisis of the Third Century," emperors from Diocletian to Constantine I took major steps to enhance the Roman state, strengthening its fiscal capacity and extractive power. The resulting "Late Roman Empire" was a much more centralized bureaucratic machinery capable of exploiting and deploying material resources and manpower efficiently.⁶⁶ Critical to the state-building project was the shift from indirect to direct rule over grassroots population that "consolidated the annual flow of funds" to the local city councils, which in turn lost its administrative power before eventual disappearance, in ways that "all the work and none of the play were left for local elites" (Heather 2018: 63).

As concessions to the local aristocrats who saw their vested interests in the pre-reform status quo severely undermined, the Empire massively recruited them into the new imperial bureaucracy and even designed institutionalized routes for their advancement (Heather 2018: 63 - 67). Extensive

⁶⁶For a general introduction to the Late Roman imperial bureaucracy, see Eich (2015). Also see Chapter 2 of Heather (2018) for the transformation from early to late Roman imperial bureaucracy.

historical evidence in the 4th century now reveals that "the vast majority of the new imperial bureaucrats were actually recruited from the old city-level gentry and above, the same class that had previously run the city councils" (Heather 2018: 63). The Roman case also provides evidence for the interest realignment component of our theory, where state-building through elite compensation "was massively to increase the extent to which local landowning elites had a direct stake in the imperial administrative system" (Heather 2018: 64).

Why, then, didn't the European state re-consolidate like its Chinese counterpart did following similar barbarian invasions? A question of such a scale would render any monocausal explanation futile.⁶⁷ Here we only provide a bureaucracy-centered mechanism to shed new light. It is noteworthy that the strategy of bureaucratic compensation, while successful in bolstering the Roman imperial state, was only employed in regions of the East, such as Greece, the Balkans, Egypt, and Antioch, but not Western regions such as Gaul, Spain, and Britain. In fact, much of the Roman West experienced de-bureaucratization starting in the 5th century.⁶⁸ Some ostensible Roman legacy notwithstanding, the Germanic rulers might have found themselves with fewer precedents and protocols of the Roman bureaucracy from which to develop a central state and compensate the local aristocrat-turned castle magnates than the Xianbei leaders had with the Chinese bureaucracy in Northeast Asia.⁶⁹ Another obstacle to employing a bureaucratic compensation strategy to deepen local state penetration lies in the presence of "competing offers" from opportunities to become leaders of Christian churches. Mathisen (2011) provides a detailed discussion of how local Roman potentates, in an attempt to sustain their aristocratic prestige despite the lack of office-holding opportunities in the de-bureaucratized 5th century, became bishops in large numbers. For example, the highly prestigious Gallo-Roman aristocratic family of Sidonius Apollinaris, whose status, careers, and interactions with the barbarian rulers shared fascinating parallels to the clan of Cui Hao used for illustrating Table 3

built with this strategy in the 4th

already centralized aristocratic clans, now known as the *yangban*, "whose primary source of status and prestige was the offices they and their forebears held in the dynastic government," took on an ideology oriented towards a "strong, activist central regime" and championed state-building reforms to crush particularistic local interests once and for all (Duncan 2000: 264). They saw in the military strongman Yi Seong-gye the ideal candidate to provide monarchical leadership for reform, and thus supported the latter's bid for power in the palace coup that replaced the Koryo with Choson Dynasty (1392 - 1897 AD) (Duncan 2000: 274-275). The renewed centralization drive, proposed by the *yangban* and approved by early Choson rulers, significantly tightened the state's grip over human resources and radically deepened the degree of direct central control over localities.⁷¹

8 Conclusion

State-building involves many challenges. Enhancing the state's extractive capacity usually comes at the expense of local powerholders, and unquestionably triggers resistance. This paper provides evidence for a compensatory strategy used by rulers of medieval China, in which economic losers from a nationwide state-building reform were given powerful, prestigious offices in the state bureaucracy in exchange for their acceptance of the reform, and commitment problems were mitigated by granting offices that controlled bureaucratic personnel.

Origins of the Great Divergence, in which Western Europe surpassed the rest of the world in achieving sustained economic growth, can be traced back to an institutional divergence that took place in the early Middle Ages (Scheidel 2019). While the collapse of the Roman Empire gave rise to over a millennium of political fragmentation and polycentricity in Europe, China was able to restore imperial rule under a centralized bureaucracy.

References

Acemoglu, Daron. 2003. "Why not a political Coase theorem? Social conflict, commitment, and politics."

Berman, Sheri. 2021. "The Challenge of State-Building in Historical Perspective." In *The Oxford*

Dell, Melissa, Nathan Lane, and Pablo Querubin. 2018. "The historical state, local collective action, and economic development in Vietnam." *Econometrica*, 86(6): 2083-2121.

de Mesquita, Bruce Bueno, Alastair Smith, Randolph M Siverson, and James D Morrow. 2005. *The logic of political survival*. MIT press.

- Jensen, Je rey L, and Adam J Ramey. 2020. "Going postal: State capacity and violent dispute resolution." *Journal of Comparative Economics* 48(4): 779{796.
- Jha, Saumitra. 2012. "Sharing the Future: Financial Innovation and Innovators in Solving the Political Economy Challenges of Development." In *Institutions and Comparative Economic Development*, ed. Masahiko Aoki, Gerard Roland and Timur Kuran, 131{151. London:Palgrave Macmillan.
- Jha, Saumitra. 2015. "Financial asset holdings and political attitudes: evidence from revolutionary England." *The Quarterly Journal of Economics* 130(3): 1485{1545.
- Jia, Ruixue. 2017. "Pollution for promotion." *21st Century China Center Research Paper* (2017-05).
- Jia, Ruixue, Masayuki Kudamatsu, and David Seim. 2015. "Political selection in China: The complementary roles of connections and performance." *Journal of the European Economic Association* 13(4): 631{668.
- Johnson, David George. 1970. *The medieval Chinese oligarchy: a study of the great families in their social, political, and institutional settings*. University of California, Berkeley.
- Jones, Benjamin F, and Benjamin A Olken. 2005. "Do leaders matter? National leadership and growth since World War II." *The Quarterly Journal of Economics* 120(3): 835{864.
- Jones, Benjamin F, and Benjamin A Olken. 2009. "Hit or miss? The effect of assassinations on institutions and war." *American Economic Journal: Macroeconomics* 1(2): 55{87.
- Kim, Jinwung. 2012. *A history of Korea: from "Land of the Morning Calm" to states in conflict*. Indiana University Press.
- Ko, Chiu Yu, Mark Koyama, and Tuan-Hwee Sng. 2018. "Unified china and divided Europe." *International Economic Review* 59(1): 285{327.
- Leon, Gabriel. 2020. "Feudalism, collaboration and path dependence in England's political development." *British Journal of Political Science* 50(2): 511{533.
- Lewis, Mark Edward. 2011. *China Between Empires: the Northern and Southern Dynasties*. Vol. 2, Harvard University Press.
- Lin, Erin. 2020. "How War Changes Land: Soil Fertility, Unexploded Bombs, and the Underdevelopment of Cambodia." *American Journal of Political Science*, forthcoming

Li, Ping.

Mu, Fasong, Youjiang Wu, and Junjie Wei. 2016. *Zhongguo Xingzheng Quhua Tongshi*
(*History of Administrative Divisions in China*) Vol. Sixteen Kingdoms and Northern Dynasties,

Tilly, Charles. 1990. *Coercion, capital, and European states, AD 990-1990*. Cambridge, MA: Blackwell Publishers.

von Glahn, Richard. 2016. *An Economic History of China: From Antiquity to the Nineteenth Century*. Cambridge University Press.

Wang, Yuhua. 2021. "Elite Kinship Networks and State-Building Preferences in Imperial China." Available at SSRN 3355692

Wang, Zhongluo. 2003.

Zhang, Jinlong. 2004. *Weijin Nanbeichao Jinwei Wuguan Zhidu Yanjiu (A Study of the Institutions*

A Empirical Motivation

The long-term impact of the Reform is overwhelmingly acknowledged by scholars of Chinese and world history. From a comparative perspective, NW's state-building efforts contributed to the "First Great Divergence" between China and Europe that had faced similar barbarian invasions but saw the contrasting outcomes of state consolidation versus political fragmentation (Scheidel 2019). From the perspective of Chinese economic history, recent scholarship identifies the year 485 AD as a key watershed of the first millennium (von Glahn 2016). The "Northern Dynasty Thesis" in recent historiography argues that the Reform provided a necessary condition for the revival of state capacity and imperial power that ultimately enabled China to climb from the "trough" to the "crest" of history (Yan 2017:224-225). This view echoes an earlier observation in Huang (1996) that credited the Tuoba rulers of NW for having built "the infrastructure of a regenerated empire" through "the creation of a new, homogeneous peasantry base, which had proven indispensable to any working imperial order" (pp. 93-94).

Historians have also assessed the impact of the Reform on state capacity at a more micro level. By comparing changes in registered population in the few commanderies that were once controlled by the southern dynasties and then became part of NW, Zhou (1997) finds compelling evidence that the Reform increased the regime's tax base and improved its ability to detect and re-register peasants sheltered by local aristocrats. Population data only exist in a small number of cross-sections over the course of medieval China, but Hou (2002) confirms this finding using another metric: the number of county government agencies. Indeed, Hou (2002) provides a variety of examples showing

Table A1. Effects of Reform on State Capacity and Elite Rebellions.

		County Government Offices (1)	(2)	Elite Rebellions _{t+1}		Peasant Uprisings _{t+1}	
				(3)	(4)	(5)	(6)
Stronghold	Reform	1.050*** (0.337)	0.944*** (0.339)	0.006 (0.049)	0.041 (0.044)	-0.079 (0.096)	-0.052 (0.091)
Mean of D.V.		4.144	4.144	0.087	0.087	0.207	0.207
Period FE		Yes	No	Yes	No	Yes	No
Commandery FE		Yes	Yes	Yes	Yes	Yes	Yes
Controls		No	Yes	No	Yes	No	Yes
Province-Period FE		No	Yes	No	Yes	No	Yes
Observations		1,478	1,478	2,739	2,739	2,739	2,739
R-squared		0.892	0.902	0.302	0.431	0.326	0.444

Note : This table shows the effect of reform on the state capacity building, measured by the number of counties, elite rebellions and uprisings. The unit of observation is commandery-period. The data of county is not available for each commandery so we only have 1478 observations. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

B Additional Tables

Table A2. Definition of Time Period

Years	Period Name	Reigning Emperor
398{409	Later Daowu	Emperor Daowu
410{423	Mingyuan	Emperor Mingyuan
424{438	Earlier Taiwu	Emperor Taiwu
439{452	Later Taiwu	Emperor Taiwu
453{465	Wencheng	Emperor Wencheng
466{476	Xianwen	Xianwen, first as Emperor, then as Emperor Emeritus
477{490	Empress Dowager Feng	Xiaowen as Emperor, Empress Dowager Feng as Regent
491{499	Xiaowen	Emperor Xiaowen
500{514	Xuanwu	Emperor Xuanwu
515{527	Xiaoming	Emperor Xiaoming
528{534	Last Years	Emperors Xiaozhuang, Jiemin and Xiaowu

Note : This table shows our coding of emperor reign.

Table A3. Summary Statistics of Main Variables

Variables	N	Mean	SD	Min	Max
<i>Panel A: Commandery-Period Level</i>					
Aristocrats recruited per year (main)	2,739	0.020	0.100	0.000	1.500
Aristocrats recruited per year (restrictive)	2,739	0.010	0.090	0.000	1.330
Aristocratic clans recruited	2,739	0.100	0.400	0.000	4.000
Number of county government offices	2,739	4.1441	2.484	1	23
Civil conflicts	2,739	0.050	0.270	0.000	5.000
Foreign invasions	2,739	0.010	0.120	0.000	2.000
<i>Panel B: Commandery Level</i>					
Has stronghold(s)	249	0.165	0.372	0	1
Number of great clans in 4 th century	249	2.117	3.592	0	27
Presence of 4 th century warfare	249	0.458	0.500	0	1
Provincial capital dummy	249	0.245	0.431	0	1
Terrain ruggedness index	249	466.816	362.069	7.106	1,388.678
River density	249	447.986	185.522	0	1,247.706
Rice suitability index	249	669.794	1,011.557	0	5,749.424
Wheat suitability index	249	3,300.505	1,965.893	0	8,277.250
<i>Panel C: Individual-Period Level</i>					
Max rank	3,509	11.172	4.651	0	18.25
Pure office	3,672	0.435	0.496	0	1
Regional senior office	3,672	0.096	0.295	0	1
Central senior office	3,672	0.175	0.380	0	1
Central junior office	3,672	0.668	0.471	0	1
Regional civil chief	3,672	0.318	0.466	0	1
Regional civil chief: other jurisdictions	3,672	0.290	0.454	0	1
Regional civil chief: home jurisdiction	3,672	0.040	0.195	0	1
Regional military chief	3,672	0.154	0.361	0	1
Regional military chief: other jurisdictions	3,672	0.154	0.361	0	1
Regional military chief: home jurisdiction	3,672	0.003	0.057	0	1
Personnel office	3,672	0.021	0.144	0	1
Rectifier	3,672	0.041	0.199	0	1
Promotion	3,054	0.597	0.491	0	1
Punishment	3,672	0.087	0.283	0	1
<i>Panel D: Individual Level</i>					
Father above rank level	2,524	0.601	0.490	0	1
Member of imperial household	2,524	0.175	0.380	0	1
Ethnic Han	2,524	0.622	0.485	0	1

Note : This table presents summary statistics of main variables used in the analysis. For definitions of main variables, see Table A16.

Table A4. Placebo Test Using Non-Stronghold Commanderies

		Number of Clan Members Recruited			
		(1)	(2)	(3)	(4)
TopPosts	Reform	0.109	0.124		

Table A5. Pre-trend Test

		Number of Aristocrats Recruited (1)
Stronghold Reform	$t-6$	-0.016 (0.011)
Stronghold Reform	$t-5$	-0.015 (0.013)
Stronghold Reform	$t-4$	-0.13 (0.010)
Stronghold Reform	$t-3$	-0.010 (0.009)
Stronghold Reform	$t-2$	-0.003 (0.013)
Stronghold Reform		0.045*** (0.017)
Stronghold Reform	$t+1$	0.087*** (0.033)
Stronghold Reform	$t+2$	0.059* (0.031)
Stronghold Reform	$t+3$	0.061*** (0.023)
Stronghold Reform	$t+4$	0.105** (0.053)
Controls		Y
Period FE		Y
Commandery FE		Y
Observations		2,739
R-squared		0.478

N6

Table A6. Alternative Definition of Aristocracy

	Number of Aristocrats Recruited			
	(1)	(2)	(3)	(4)
Stronghold Reform	0.063** (0.027)	0.058** (0.027)	0.055** (0.026)	0.031* (0.016)
Mean of D.V.	0.014	0.014	0.014	0.014
Period FE	Yes	Yes	No	Yes
Commandery FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Province-Period FE	No	No	Yes	No
Commandery linear trend	No	No	No	Yes
Observations	2,739	2,739	2,739	2,739
R-squared	0.462	0.471	0.482	0.801

Note : This table presents the robustness of definition of aristocracy. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

Table A7. Robustness Checks with Sub-samples

	Number of Aristocrats Recruited			
	(1)	(2)	(3)	(4)
Stronghold Reform	0.068** (0.033)	0.054** (0.027)	0.083** (0.037)	0.063** (0.030)
Mean of D.V.	0.033	0.033	0.028	0.028
Period FE	Yes	No	Yes	No
Commandery FE	Yes	Yes	Yes	Yes
Adjacent commanderies only	Yes	Yes	No	No
Dropping unoccupied commanderies	No	No	Yes	Yes
Controls	No	Yes	No	Yes
Province-Period FE	No	Yes	No	Yes
Observations	1,309	1,309	1,938	1,938
R-squared	0.458	0.496	0.509	0.538

Note : This table presents the robustness checks using adjacent commanderies that didn't have strongholds as the control group. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

Table A8. Alternative Measurement

	Number of Aristocrats Recruited			
	(1)	(2)	(3)	(4)
Stronghold Reform	0.062** (0.027)	0.053** (0.024)	0.068** (0.029)	0.058** (0.027)
Mean of D.V.	0.014	0.014	0.014	0.014
Period FE	Yes	No	Yes	No
Commandery FE	Yes	Yes	Yes	Yes
Excluding aristocrats with disputed origins	Yes	Yes	No	No
Excluding migrated aristocrats	No	No	Yes	Yes
Controls	No	Yes	No	Yes
Province-Period FE	No	Yes	No	Yes
Observations	2,739	2,739	2,739	2,739
R-squared	0.479	0.505	0.479	0.502

Note : This table presents the robustness of the measurement of aristocracy. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

Table A9. Alternative Outcomes

	Total Aristocrats Serving		Aristocrats Recruited (logged)	
	(1)	(2)	(3)	(4)
Stronghold Reform	0.156*** (0.055)	0.141*** (0.054)	0.063*** (0.022)	0.057*** (0.022)
Mean of D.V.	0.036	0.036	0.016	0.016
Period FE	Yes	No	Yes	No
Commandery FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
Province-Period FE	No	Yes	No	Yes
Observations	2,739	2,739	2,739	2,739
R-squared	0.474	0.494	0.514	0.532

Note : This table presents the robustness of results using alternative outcomes. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

Table A10. Placebo Test Using Non-Aristocrats

	Non-Aristocrats		Non-Aristocratic Han	
	(1)	(2)	(3)	(4)
Stronghold Reform	0.033 (0.023)	0.020 (0.024)	0.034 (0.022)	0.029 (0.020)
Mean of D.V.	0.031	0.031	0.018	0.018
Period FE	Yes	No	Yes	No
Commandery FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
Province-Period FE	No	Yes	No	Yes
Observations	2,739	2,739	2,739	2,739
R-squared	0.823	0.834	0.577	0.611

N/A

Table A12. More Controls Added

	Number of Aristocrats Recruited					
	(1)	(2)	(3)	(4)	(5)	(6)
Stronghold Reform	0.071** (0.035)	0.065** (0.032)	0.055** (0.027)	0.048* (0.026)	0.078** (0.032)	0.069** (0.030)
Mean of D.V.	0.020	0.020	0.020	0.020	0.020	0.020
Period FE	Yes	No	Yes	No	Yes	No
Commandery FE	Yes	Yes	Yes	Yes	Yes	Yes
Wars (4th century) Reform	Yes	Yes	No	No	No	No
Historical aristocrats Reform	No	No	Yes	Yes	No	No
Provincial capital Reform	No	No	No	No	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Province-Period FE	No	Yes	No	Yes	No	Yes
Observations	2,739	2,739	2,739	2,739	2,739	2,739
R-squared	0.477	0.495	0.491	0.512	0.474	0.494

Note : This table presents the robustness of main effect by adding more controls. The unit of observation is commandery-period. Controls include the number of civil conflicts and foreign invasions (lagged), and the interaction between post-reform dummy and terrain ruggedness index, river density, and suitability index of rice and wheat. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

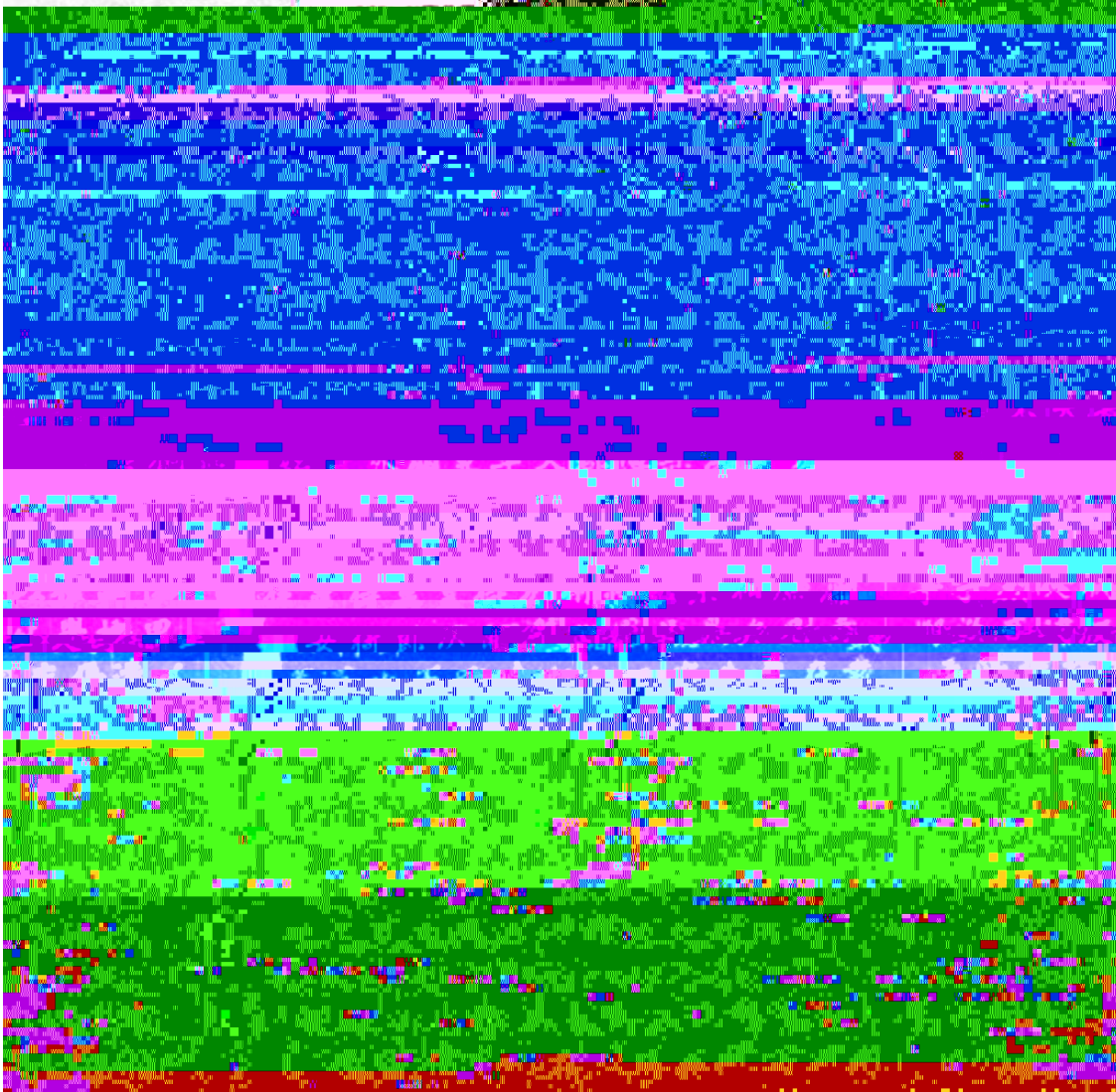
Table A13. Importance of Offices in the Ministry of Personnel

	Senior Offices		
	Central (1)	Regional (2)	Pure Office (3)
Clan Member in Personnel Ministry in Periods Reform	0.018 (0.038)	0.105*** (0.038)	0.004 (0.039)
Clan Member in Personnel Ministry in Periods	0.074** (0.030)	-0.032 (0.032)	0.084** (0.037)
Mean of D.V.	0.176	0.096	0.433
Clan FE	Yes	Yes	Yes
Period FE	Yes	Yes	Yes
Commandery FE	Yes	Yes	Yes
Observations	3,715	3,715	3,715
R-squared	0.164	0.114	0.184

Note : This table presents the effect of personnel office-holding on the career

C Additional Figures

Figure A1. Example of a Tomb Inscription from Northern Wei



Epitaph of Pei Jing (454-515). The blue rectangle shows that Pei Jing comes from Wenxi county of Hedong commandery. The red rectangle shows his career history with office title description. The yellow rectangle shows his age and date of death. The green rectangle shows offices held by his father and grandfather.

D An Illustrative Model

Setup. In the model, there is one autocratic ruler, R , and one aristocrat, A . The ruler has total political rents s . The aristocrat controls the productive assets and population of a locality L . He is able to tax the productive output of L , and receive an income of τ_L .

The self-interested ruler wants to build state capacity. That is, she decides to take over the aristocrat's taxation income from locality L . In our historical context, this corresponds to taking over A 's control of the population of L . The ruler can choose to seize A 's control by force, or by offering him an office in the bureaucracy as compensation for his e1.0e7 Tm [(in)-337(the)af 128.213 0 Td him

success, and therefore the aristocrat's expected gain $\mathbb{E}(L)$ is increasing in L .

the following two conditions must be met:

$$\text{Aristocrat: } q \cdot 1(u_{Ai} > r_i s) w_{Ai}^S + 1(u_{Ai} \leq r_i s) w_{Ai}^R = P(L) L + C_A$$

$$\Rightarrow q u_{Ai} + r_i s + g_i \max\{u_{Ai}; r_i s\} = P(L) L + C_A \quad (4)$$

$$\text{Ruler: } L + A t_i + (1 - q r_i) s + 1(u_{Ai} \leq r_i s) g_i (1 - q r_i) s + (1 - P(L)) L = C_R$$

$$\Rightarrow q r_i s + A t_i + 1(u_{Ai} \leq r_i s) g_i (1 - q r_i) s = P(L) L + C_R \quad (5)$$

Combining the two conditions yields:

$$P(L) L = 2 q r_i s + A t_i + 1(u_{Ai} \leq r_i s) g_i (1 - q r_i) s - C_R;$$

$$q r_i s + q u_{Ai} + C_A + g_i q \max\{u_{Ai}; r_i s\} :$$

building his own military strength. Thus, this aristocrat will accept the compensation deal only if the deal gives him a sufficiently high payoff.

Proposition 3 (Aristocratic Ability) . Let A, A^0 be two aristocrats, with claims to taxation income L, L^0 , and administrative ability α, α^0 respectively. Suppose $\alpha > \alpha^0$. All else being equal, there exists $\beta < \frac{L^0}{L}$ such that the ruler prefers A over A^0 when $\beta \in [\beta; \frac{L^0}{L}]$. In other words, the ruler is

regime-improving policy are as follows: growth on the stock of s ; and rents shared with A in order to align his interests. Since the latter is bounded by A 's payoff from the conflict outcome (his "outside option"), the ruler will prefer the regime-improving policy if growth on the stock of s can more than offset the cost of this policy. In other words, she will prefer to realign A 's interests to the regime if gains from policy investments are sufficiently high.

E Instrumental Variable (IV)

This section reports results obtained by instrumenting for stronghold commanderies with the shortest

Table A14. Exclusion Restriction

		Elite Rebellions		Uprisings	
		(1)	(2)	(3)	(4)
Distance	Reform	-0.008 (0.022)	-0.017 (0.021)	0.038 (0.031)	0.024 (0.030)
Mean of D.V.		0.020	0.020	0.020	0.020
Geographic conditions	Reform	Yes	Yes	Yes	Yes
Period FE		Yes	No	Yes	No
Commandery FE		Yes	Yes	Yes	Yes
Province-Period FE		No	Yes	No	Yes
Observations		2,442	2,442	2,442	2,442
R-squared		0.273	0.454	0.309	0.460

Note : This table presents exclusion restrictions test. The unit of observation is commandery-period. Geographic conditions include terrain ruggedness, agriculture potential and river density. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

The validity of the IV also requires that it only affects aristocratic recruitment through the presence of strongholds. One may concern that this civil war in the very beginning of the 4th century could affect future conflicts, which would in turn affect recruitment. It's reassuring to us, however, that the instrument actually has no effect on either type of conflict, elites r696N1sT0e(a ect61)9

Table A15. IV Results

		Reform Stronghold		Number of Aristocrats Recruited	
		First stage		Second stage	
		(1)	(2)	(3)	(4)
Distance	Reform	-0.133*** (0.023)	-0.142*** (0.023)		
Stronghold	Reform			0.221*** (0.078)	0.233*** (0.082)
Mean of D.V.		0.088	0.088	0.375	0.375
Geographic conditions	Reform	Yes	Yes	Yes	Yes
Period FE		Yes	No	Yes	No
Commandery FE		Yes	Yes	Yes	Yes
Province-Period FE		No	Yes	No	Yes
Observations		2,442	2,442	2,442	2,442
Kleibergen-Paap F-statistic				32.544	36.752

Note : This table presents instrumented results. The unit of observation is commandery-period. Geographic conditions include terrain ruggedness, agriculture potential and river density. Robust standard errors in parentheses are clustered at commandery level. ***, **, * denote significance at 1%, 5%, 10% level.

F Additional Historical Context

F.1 Emperor Xiaowen's Sinicization Reforms

Contemporary Chinese state propaganda tends to highlight a cultural reform of ethnic integration beginning in 493 AD under Emperor Xiaowen.⁸⁵ This so-called "sinicization" narrative focuses on the Tuoba rulers adopting Han Chinese clothing, language, and surnames, as well as relocating the central government to Luoyang, the capital of former Chinese dynasties such as the Later Han and Western Jin empires.

F.2 The End of NW in 534 AD

NW collapsed in 534 AD due to rebellions that were initiated by the Six Garrison populations settled in the regime's northern frontier (Pearce 2019: 181). Such uprisings led to a destructive chain of events culminating in the general Erzhu Rong marching to the capital and massacring the ruling elites attending his arrival ceremony with a large army consisting of co-opted rebels. Although traditional accounts attributed the rebellions to Emperor Xiaowen's sinicization drive that alienated the left-behind northerners with the relocation of capital southward to Luoyang and the aristocratization policy, more recent research rejects this interpretation. Analyzing detailed data for the proles of elites involved in this episode, Xue (2020) shows that the so-called "Six Garrison Rebellion" had little to do with the northerners' resentment of the elevated, integrated Chinese-Xianbei aristocracy based in Luoyang, because it was essentially a class conflict within the northern frontier settlement seeded in the inequality between upper-class officers and the lower-class settlers exacerbated by severe weather conditions (Chapters 1-2).

In fact, NW's successor states, founded by the Six Garrison elites, both continued the aristocratization policy in their own ways (Zhang 2015). It's well-established in empirical political economy research that individual leaders do matter in altering a country's political fate, particularly in authoritarian regimes like NW (e.g., Jones and Olken 2005, 2009). A closer attention to basic biographic data of NW emperors is largely in line with this well-known finding. Emperor Xiaowen naturally died of a young age at 33, his

G Additional Details on Variable Construction

G.1 Rank of Offices

The main source of information on office ranks is the *Treatise on State Offices* in the *Book of Wei*. The *Treatise* records two decrees released by Emperor Xiaowen that tabulated office titles against ranks, one in 493 and the other in 499 AD. The two decrees differ in two respects: first, they cover different offices, though some overlaps do exist; second, they follow different rank classifications, which we discuss below.

4. Each half-rank then corresponds to a difference of 1 in numerical value. Thus, Rank 3A would be 14.25, and Rank 1A would be 18.25.

We then return to the 493 decree. Its rank classification works as follows. All offices fall under nine ranks, but *every rank*

County government offices, number of	9	Number of active county government offices under the jurisdiction of each commandery.
Elite, disputed origin	1	If the <i>Book of Wei</i> recounts that an elite "self-reported" or "asserted" his family to be some choronym-surname.
Elite, ethnic Han	1,7	If elite is recorded-

Regional offices	1	Offices in the regional bureaucracy.
Rice suitability	12	Index ranges between 0-10,000; a larger number indicates higher suitability.
River density	14	Total kilometers of rivers within a 50-kilometer radius of a commandery's capital, divided by the area of a circle with 50-kilometer radius.
Senior offices	1	Offices that are above Rank Three Junior (cong sanpin) and are substantive.
Strongholds	2-5	A sanpin