

A Longevity Mechanism of Chinese Absolutism

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Abstract

A counterpart of what is known as “European exceptionalism”—political stability and institutional arrangement that enabled modern economic growth and political development—is a “Chinese anomaly.” This anomaly takes the form of a sharp contrast with pre-modern Europe: Chinese imperial rulers stayed in power longer than their European counterparts but this political stability was accompanied by a high level of institutional stasis. In this paper, we argue that a well-known Chinese institution, the civil service examination (CSE) system, contributed to China’s imperial longevity. We utilize detailed historical data on individual CSE performance to demonstrate the longevity-contributory mechanisms of CSE—constraining access to power by aristocrats and other wealth-holders. We argue that a key to unpacking the so-called “Chinese anomaly” is to understand the role of bureaucracy in political development in China and potentially in other regions.

Keywords: historical political development, bureaucracy, absolutism, China

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1 Introduction

Scholars have long debated about the origins of what is known as “European exceptionalism,” the institutional developments in pre-modern Europe that gave birth to property rights protection, Industrial Revolution, and economic growth (Jones, 2003; Pomeranz, 2009; Mokyr, 2009, among others). A distinguished body of literature in political science emphasizes the importance of pre-modern political institutions—notably feudalism, representation, and parliaments—in paving the way for political stability (Blaydes and Chaney, 2013), executive constraints on the crown (North and Weingast, 1989), and eventually democracy and economic growth (Acemoglu and Robinson, 2005; De Long and Shleifer, 1993).

A more recent literature casts doubt on the exceptionality of European stability. The Chinese imperial system was established in 221 BCE and it retained many of its founding features until it collapsed in 1911. According to Wang (2017), Chinese rulers stayed in power 12 years on average longer than their European counterparts between 1000 and 1800. The stability and longevity of Chinese absolutism is truly impressive.

However, Imperial China had none of the executive constraints that could explain this extraordinary longevity of Chinese rulers. One of the indicators that scholars used for measuring political stability is ruler duration (Blaydes and Chaney, 2013; Wang, 2017; Kokkonen and Sundell, 2014). In Europe, the rising ruler tenure coincided with a dynamic development and evolution of the political form, in sharp contrast to the Chinese pattern—long ruler tenure on top of an extreme stasis of the political system itself. The Chinese political development in general and regime stability in particular, thus, must be rooted in factors orthogonal to the framework developed by the early literature rooted in European experience.

Our paper is an attempt to identify a potential mechanism in Imperial China that might have given rise to the longevity of the Chinese absolutist system. Worldwide, as noted by Svoblik (2009), the most prevalent triggers of political instability in authoritarian regimes are intra-elite conflicts (such as coup d’état) rather than popular rebellions. Historically, European rulers were frequently deposed by the nobility and they responded by creating power-sharing arrangements, such as parliaments, to resolve conflicts (North and Weingast, 1989; Blaydes and Chaney, 2013). Our conjecture is that Imperial China embarked upon a different path of conflict resolution, by scaling bureaucracy and institutionalizing the civil service examination (CSE) system.

This is a critical difference between pre-modern Europe and China. Bureaucracy only arose in Europe in the wake of democratic consolidation (after the late 17th century), while in China bureaucracy occurred early on

(before the 10th century) and, as historians argued and our paper shows, played a critical role of political development in China. Both regions attained regime stability—as measured by ruler tenure—but did so through dramatically different mechanisms.

The rise of bureaucracy in China, roughly concomitant with the rise of executive constraints in Europe in timing, may provide an analytically sharp perspective on the question of the political *Great Divergence*, a topic we will come back to in the concluding section of this paper.

CSE was established in China during the Sui dynasty (580-618), expanded and was formalized during the Tang dynasty (618-907) and Song dynasty (960-1279), and continued for more than a millennium until its abolition in 1905. In the online appendix, we provide macro-level evidence showing that the scale of the CSE is significantly and positively associated with stability indicators, such as ruler duration, and negatively associated with the probability of ruler being deposed. The main purpose of our paper is to explore the mechanism through which CSE could have contributed to the longevity of ruler duration and, by extension, to the longevity of Chinese absolutism.

Based on detailed historical data of 12,752 exam candidates from the Ming dynasty (1368-1644), we demonstrate that the CSE extended political access to commoners, restricted political reproduction within the elites (in contrast to aristocratic inheritance), and it was biased against wealth holders. We call these the control functions of CSE. There can be multiple ways by which CSE exercises these control functions, as we will further discuss in Section 3.2. While our paper does not explicitly test the logic of these control functions, we provide some evidence of their effect: CSE curbed access to power on the part of those best positioned to threaten the safety and legitimacy of the throne—wealthy aristocracy and/or landed gentry. We argue that understanding this effect of CSE sheds light on the important question of the longevity of Chinese absolutism.

Our paper proceeds as follows. First, we review the related literature. Second, we present a quick tour of the historical background relevant to our empirical estimation and to the construction of our hypotheses. Third, we provide explanations about the dataset and the variables used. Fourth, we present our regression estimates. Fifth, we conclude and present some broader implications of our findings, in particular about the path-dependency nature of political development.

2 Literature Review

Our paper touches on four areas of literature. The most relevant literature is on the political development of historical states (Blaydes and Chaney,

2013; Dincecco and Wang, 2018; Kokkonen and Sundell, 2014; Ko et al., 2018; Wang, 2017; Hariri, 2012). An important theory in the literature is that aristocracy played a critical role in the political transition of the West. Herein lies a crucial difference between pre-modern Europe and China: Chinese aristocracy was thoroughly broken by the crown. According to Elman (1991), before 750 China was similar to Europe, with a strong landed aristocracy. The conflicts between the aristocracy and the emperor, as well as among the aristocrats, led to numerous civil wars and rapid dynastic transitions between the 3rd and the 7th century.¹ However, around the 8th century onward, we witness a diminution of the aristocracy and the rise of centralized absolutism. This is what we aim to explain in this paper.

Second, our paper revisits a seminal idea first proposed by Huntington (1968) and succinctly summarized by Fukuyama (1997): “[O]rder itself was an important goal of developing societies, independent of the question of whether that order was democratic, authoritarian, socialist, or free-market.” The great divergence between Europe and China between 8th and 11th centuries illustrates this Huntingtonian conjecture. Both Europe and China attained “order”—defined as political stability—but through diametrically opposite routes. Europe achieved democratic order on the basis of a power balance between the aristocrats and the crown whereas China achieved autocratic order through a gravitation of power to the crown at the expense of the aristocracy. Regime types, which are arguably a second-order feature of a political system, have received a lion share of empirical attention in political science. By highlighting the role of bureaucracy in political development, our paper revisits this historical development of regime order.

Less directly our paper is also related to the workings and mechanisms of authoritarian systems, with a focus on regime and leadership dynamics. Modern game theorists, most notably Acemoglu et al. (2004), Svoblik (2009), and De Mesquita et al. (2005), examine strategies that autocrats use to maximize their survival odds. Our paper borrows insights from this literature on power dynamics in authoritarian regimes and argues that CSE served the equivalent function of power consolidation mechanism.

A fourth area of literature is China-specific. The question why the Chinese political system was so durable has a very long pedigree. A dominant perspective in this genre emphasizes the ideological monopoly of Confucianism, which, some argue, was formalized by CSE.² This political cul-

¹Conflicts among the aristocracy led to the transition from the Northern Zhou dynasty to the Sui dynasty (AD 581), the transition from the Sui dynasty to the Tang dynasty (AD 618), and several dynastic transitions during the decentralized Jin period and the Northern and Southern dynasties.

²Much of previous research on the longevity of Chinese absolutism can be described as “speculative hypotheses,” such as those about the roles of political culture, geography,

ture perspective, however, is often formulated in the form of qualitative ruminations. As such, this perspective is not conducive to falsifications and empirical examinations.

Partially inspired by the *Great Divergence* debate,³ modern researchers have become increasingly interested in the potential impact of China's historical political institutions on its developmental trajectory. A distinctive feature of Chinese political history is the early rise of a centralized and bureaucratic state ruled by an absolutist ruler. A burgeoning branch of this literature seeks to understand the implications of this feature, with specific emphasis on centralization (Ko et al., 2018; Rosenthal and Wong, 2011), bureaucracy (Fukuyama, 2011), state capacity (Ma, 2013; Sng and Moriguchi, 2014; Sng, 2014), and conflicts and political stability (Dincecco and Wang, 2018; Bai and Kung, 2011; Wang, 2017). In this paper, using detailed micro data on CSE, we aim to make contributions to the growing quantitative literature on Chinese history and historical political development.⁴

Our paper also builds on prior research on CSE (Ho, 1962; Elman et al., 2000; Bai and Jia, 2016; Jiang and Kung, 2015). The recruitment function of CSE has been well documented (Fukuyama, 2011; Ho, 1962; Jiang and Kung, 2015, among others). However, our focal point is different. Much of the existing literature emphasizes the meritocracy and social mobility aspect of CSE. We accept as an established fact that social mobility contributed to regime stability and our empirics corroborate this line of reasoning. Hypothesizing and empirically demonstrating how CSE performed the political control function of pacifying intra-elite conflicts is arguably an innovation in our paper.

3 Political Stability in Historical China

Two indicators are widely used by scholars to measure political stability of historical states (Blaydes and Chaney, 2013; Wang, 2017; Kokkonen and Sundell, 2014). One is to examine ruler duration: the number of years that a ruler stayed in power. The second is to compare the odds of the different channels for rulers to exit power, whether deposed or upon natural death. Political instability is presumed to have arisen when the rulers stay

idiosyncratic decisions by particular emperors (such as the banning of overseas voyages), or the weaknesses of the bourgeoisie. For a literature survey, see Zhao (2015).

³As one of the classic questions in the field of economic history, the vast literature on the Great Divergence includes many classic texts, such as Landes (1998); Jones (2003); Pomeranz (2009), among others.

⁴For a survey of quantitative studies on Chinese economic history, Mitchener and Ma. (2016).

in power for shorter periods of time and when the chances of deposed exits rise relative to the natural exits of rulers or emperors.

We collect data on ruler duration and exits in China, from 221 BCE to 1911. The various measures are broadly consistent in highlighting the following pattern, as shown in Figure 1: political stability in Imperial China, similar to that in Western Europe, has been largely increasing over the past millennium, despite the fact that the two regions diverged greatly in the development of the form of governance.

[Figure 1 about here.]

This pattern is consistent with a near consensus finding among China historians. Fu (1993) documented many cases of court officials unseating emperors before Song dynasty (960-1279) but only one case—that of Chengzu (reigning from 1403 to 1424) successfully deposing another emperor—since Song dynasty. He remarked, after Song, “there was no case of a powerful minister or general usurping the imperial throne, no case of an assassination or deposition of an emperor, engineered by a palace eunuch, and only one case of usurpation of imperial authority by an empress dowager, involving Empress Cixi in 1861, which might have contributed to the ultimate fall of the last imperial dynasty.”

Fu’s observation is fully corroborated by data shown in Figure A1 in the Online Appendix. There was a pronounced decline of the frequencies with which rulers were forcibly deposed and much of this decline was due to the declining occurrences of intra-elite conflicts. (The Online Appendix goes into details about measures and definitions of intra-elite conflicts.) The transition toward ruler stability after the Song dynasty also helps rule out a number of factors sometimes speculated to have affected the Chinese imperial longevity, such as hereditary rule and the power of eunuchs. Hereditary rule is a fixed feature of Imperial China and it does not differentiate between the pre- and post-Song China. The power of eunuchs waxed and waned during the entire lifetime of Imperial China and there is no *prima facie* evidence that Chinese ruler stability is systematically correlated with power and fortunes of eunuchs.

We argue that CSE contributed to the aforementioned decline in intra-elite conflicts in Imperial China by inducing a relatively high level of political mobility and thus preventing the rise of an aristocracy who derived power from a source independent of the crown, such as land or inheritable positions.⁵ In the next section, we provide micro-level evidence that CSE fulfilled this political control function mainly in two ways: it implemented

⁵Fu and many other historians also attributed this effect to CSE (although without much statistical proof or discussion about the mechanism).

strict anonymity at the lower level to minimize the impact of family background on political access, and it discriminated against wealthy families at the higher level when determining power allocation at the top of the political hierarchy.

4 The Political Functions of CSE

4.1 Historical background

Similar to the rise of executive constraints around 9th or 10th centuries in Europe, China in the 8th century went through a profound transformation. China historians believe that the most important development during this period was the establishment, formalization and expansion of CSE system.⁶

The dating of the establishment of CSE may not be precise. (More details on CSE are presented in the Online Appendix.) As early as the Western Han dynasty (206 BCE–9 BCE), a version of CSE already existed, but it was small in scale and informal in operation. Prior to the Sui Dynasty (580–618), candidates were first recommended and then tested. By necessity, recommendations relied on personal connections and family backgrounds, and this practice led to a ruling elite dominated by aristocrats (Elman, 1991).

The consensus among historians is that CSE was formally inaugurated during the Sui dynasty, around 605. At the time of its establishment, most of the candidates were drawn from the capital city and nearby regions, such as Chang'an and Luoyang, and from elite aristocratic families. The person who broke the aristocratic capture of the CSE and of the bureaucracy as a whole, according to Elman (1991), was Wu Zetian. Wu was the only female emperor in all of Chinese history, and her rise to power faced fierce resistance from incumbent nobility. As an ultimate outsider, a woman, Empress Wu, reigning between 690 and 705, needed an instrument to break the power of the entrenched interests who were hostile to her. That instrument was CSE.

Empress Wu expanded both the scale and the scope of CSE in order to curb the power of Chinese aristocracy. She moved the capital from Chang'an to Luoyang, thus moving the center of political gravity from the aristocratically strong northwest to the north, which was populated by commoners at the time. She actively recruited people from northern China

⁶This is known as “Tang-Song transition” hypothesis that posits that following the establishment of CES China entered into an impersonal, modern era. Others argue that CES led to a homogenization of Chinese ideological norms and that CES led to a demolition of the power of Chinese aristocracy.

to participate in CSE at the expense of the aristocratic incumbents from the northwest. Empress Wu also removed many restriction on CSE, and changed it from a conditional open-access system to one that was nearly universally open to all male citizens.

CSE acquired its widely-known format—held triennially and comprising of three tournament tiers—starting in the Northern Song dynasty (960-1125) and it prevailed throughout the Ming and the Qing dynasties until it was abolished in 1905. During the Ming dynasty, a CSE event consisted of three separate examinations held between August of the exam year and March of the following year. The first stage of CSE was known as a Provincial Examination (PRE), which took place in the provincial capitals. Those who succeeded on the PRE then continued on to the next stage of the examination, known as the Metropolitan Examination (ME). The ME was held in the national capital, typically during February of the following year. An important operational detail is that both the PRE and the ME were anonymized, i.e., the candidates and examiners had no identifying information about each other.⁷

Those candidates who successfully passed the ME then proceeded to the third stage to take the Palace Examination (PLE), usually held in March. Like the ME, the PLE was held in the national capital. A typical PLE lasted one day and was administered in the palace court (hence, the name “Palace Examination”). The PLE was often presided over by an emperor, a practice that Empress Wu institutionalized and subsequent emperors continued.⁸

The personal supervision of PLE by the crown was explicitly justified by a rationale we tested in our paper—to ensure that aristocracy would not monopolize the pipeline to the imperial bureaucracy. Emperor Taizong (939 – 997), the second emperor of the Song dynasty, made the following statement in a royal decree, “[I]n the past, most of the people who passed the Imperial Examinations were descents of those aristocratic families. This blocked the path towards serving the court for those people with humble backgrounds. [The old imperial examination system] is thus meaningless and worthless. Nowadays, I personally preside over the exam, and decide who can pass the exam. This can completely eliminate the ills of

⁷Historians have debated the true extent of anonymization. Our findings seem to suggest that anonymization was adhered to.

⁸The practice of the emperor presiding over PLEs is extensively documented by Chinese historians. For a sample, see Ma (2011); Li (2004). The PLE was not anonymized and calligraphy was also taken into account during the PLE evaluations to give the King more flexibility of controlling the final outcome (Elman, 2013). Also, the number of PLE examinees was much smaller, an average of 400 persons during the Ming dynasty compared with thousands or tens of thousands during the previous two rounds of the CSE.

the old system.”⁹

The PLE was not anonymized and, unlike the ME, the PLE did not eliminate any of the examinees. It conferred the highest imperial academic honor, called the *Jinshi* (i.e., PLE degree-holders or distinguished scholars), on all the PLE candidates. Each PLE candidate was ranked according to his exam performance and in addition to the numerical exam rankings, the PLE candidates were also awarded three classes of honors, similar to Summa, Magna, Cum Laude at some American universities today.

By the 10th century, CSE had emerged as the most important path to political power. During the Song Dynasty, about 90% of ministers were selected by the CSE (Zhang, 2015). During the Ming dynasty, it produced about 50% to 70% of government officials depending on the year (Ho, 1962). The composition of CSE candidates accurately represented the composition of political elites during Imperial China.

4.2 CSE and political control: hypotheses

The purpose of our paper is to show how CSE performed the political functions of diluting and marginalizing the power of the wealth holders (such as aristocracy). CSE did so by “democratizing” access to political power, broadening the pipeline to bureaucracy to the commoners, and diluting the aristocratic access to political power in the process. In addition, CSE imposed procedures that further limited access to the highest echelons of power on the part of wealth-holding class. These two functions together, the access and control functions, might have contributed to the aforementioned long and rising duration of rulers and to the stability of the imperial system as a whole.

CSE lower the entry barrier through meritocracy. Chinese imperial regimes were able to recruit human capital into its bureaucracy with less regard to lineage, family background, and economic status of individuals, all of which were heavily hereditary in pre-modern Europe. This famous, if sometimes exaggerated, meritocratic function earned CSE admiration from many European enlightenment thinkers such as Montesquieu and Rousseau. Our claim is that this meritocracy also performed a political function.

One way to conceptualize CSE’s political function is to view it in light of the selectorate theory developed by De Mesquita et al. (2005). According to the theory, a rational autocrat is motivated to increase the size of the nominal selectorate—defined as those who are potentially eligible to join

⁹This is translated from classical Chinese. The original Chinese is here: “向者登科名级，多为世家所取，致塞孤寒之路，甚无谓也。今朕躬亲临试，以可否进退，尽革除昔之弊矣。” Quoted from Li (2004).

the political establishment. In our setting, CSE enlarged the nominal selectorate from the aristocratic class to the general male population, which in turn increased the cost of defection for the incumbent elites. In economics terminology, lower entry barriers to the bureaucracy lead to perfect competition among bureaucrats and make each bureaucrat perfectly substitutable. Another channel CSE could have contributed to the enhanced stability is by introducing newcomers to the system who have interests different from the aristocrats, and hence makes collective actions against the crown more difficult.¹⁰ Either way, the result is enhanced loyalty to the ruler and increased stability.

CSE “democratized” access to bureaucratic recruitment, and hence, strengthened political control on the members of the bureaucracy. The access function of CSE not only altered the incentives of the masses away from resorting to violence as shown by Bai and Jia (2016), but also altered the incentives of the political elites away from challenging and defecting from the emperor. The political incentive effect modelled by us and the social mobility effects modelled by other scholars reinforced one another.

5 Data and Variables

We used a comprehensive dataset on individual CSE performances from the Ming dynasty. In this section, we provide details on this dataset and explain our variable construction.

5.1 Data

The bulk of our data come from the China Biographical Database (CBDB) maintained at Harvard University. The CBDB dataset covers biographical information on historical individuals in China. Specifically, for the Ming dynasty period, it has information on the names of the CSE examinees, their birth years, their birth places, their examination years, and their rankings during the three stages of the CSE (i.e., the PREs, MEs, and PLEs). The dataset also contains relatively complete information on the families of the CSE examinees, such as the names of their fathers and ancestors, whether the father was an official, and the names of the candidates’ wives.¹¹ These information was compiled from official archives of the Ming dynasty.

We have information on 14,116 CSE examinees and on 51 rounds of the CSE. However, five of the rounds of the CSE are missing important

¹⁰We thank an anonymous reviewer for pointing out this channel.

¹¹The dataset provides the surnames of the wives from which the number of wives can be calculated.

information, such as the age, home provinces, or CSE rankings of the exam candidates. Hence, we removed these five CSE rounds from the dataset, leaving us with 46 CSE rounds and 12,752 CSE examinees. These CSE rounds took place from 1400 to 1580.

We supplemented the CBDB dataset with a variety of other sources to capture the characteristics of the candidates' hometowns, including county-level tax revenue around 1460 during the reign of Emperor Tianshun of the Ming dynasty, and prefecture-level number of households around 1565 during the reign of Emperor Jiajing of the Ming Dynasty. The data are from Liang (1980).

5.2 Variable explanation

Dependent variable: Our dependent variable is a numeric performance ranking of the CSE candidates on either one of the three CSE rounds. We reversed the original order in the CBDB so that higher values of *Ranking* represent superior CSE performance.

Wealth variable: A difficult challenge in any quantitative analysis of a pre-modern economy is the lack of data on important economic variables, such as income or wealth. We developed a proxy variable for household wealth. We used one variable in the CBDB—a variable indicated by the Harvard researchers as representing “multiple wives”—as the basis to construct a wealth proxy. We interpret this variable as representing the widely-practiced tradition among wealthy Chinese families of keeping concubines.¹² On the basis of the historical research, we judged that concubinage is a reasonable proxy for wealth. Our variable, *Wealth*, is a count of the number of wives recorded in the CBDB database. For robustness checks, we also created an alternative proxy, *Wealth1*, a dummy variable whether a candidate keeps concubines or not.

We should note and emphasize that the information on multiple wives was recorded at the time when a candidate took the CSE. It is not a life-long attribute of a candidate. This detail is important because our wealth proxy is unlikely to be subject to a potential endogeneity bias in which a candidate succeeded at a CSE and acquired wealth subsequently on account of his bureaucratic position. It is thus unlikely that this variable is influenced by corruption and rent flows to official positions.¹³

Family political background: In the Ming dynasty, the imperial bureaucracy had nine tiers. The top three tiers were the most senior bureaucrats. They could, for example, communicate directly with the emperor

¹²Other researchers also used similar approaches, such as Jiang and Kung (2015); Zheng et al. (2017). For more details on the historical research on the subject of concubinage, see the Online Appendix.

¹³We thank a reviewer for raising this question.

(Hucker, 1958). Based on the information provided in CBDB (the candidates' fathers' positions), we constructed a household political background variable, *Father_Rank*. We assigned a value of 5 to the top officials (Tiers 1–3), a value of 4 to the mid-level officials between Tiers 4 and 7, and a value of 3 to those between Tiers 8 and 9. We assigned a value of 2 to those officials deemed “minor,” i.e., officials without a tier, and we assigned a value of 1 to commoners and other non-governmental categories.

Other control variables: we include a number of controls in our regressions. For individual characteristics, we control for the candidates' age at the time of the examination and the level of their preparatory schools (imperial academy, prefecture school, or county school). We control for four categories of their household registration status: officials, military, artisan, and commoner.¹⁴ These are the professional status classifications the Ming court assigned to households for tax collection purpose and for the enlistment of corvée labor. We also control for the CSE subject domains. These subject domains were drawn from different texts of the Confucian classics. To the extent that these subject domains may vary in difficulty and to the extent that there might be some self-selection biases, we include dummy variables for these domain subjects in all regressions. We also include county-level tax revenue (in *shi* of wheat or rice) or the number of households in the prefecture to control for the levels of regional development. To account for other regional factors, we include county fixed effects in all regressions, unless noted otherwise.

We present summary statistics on the variables in the Online Appendix. We have a total of 11,706 individuals from 1,622 counties who took the CSE during the period between 1400 and 1580. The average age of the candidates is 33 and the father's average ranking is 1.8, equivalent to a low-level government official.

6 Results

As discussed in the earlier section, the CSE consisted of three stages of the examinations. Examination performance during the first two stages, the PRE and the ME, determines entrance into the bureaucracy, whereas the ranking in the third stage, the PLE, determines the political and bureaucratic assignments at the highest level of the imperial system. These assignments reflect the revealed or explicit preferences of the emperor.

¹⁴The CBDB contains more detailed information than these categories of household status. For example, commoners can be further divided into physician or fisherman, and artisans can be further divided into cook, tailor, armorer, or stonemason. We aggregated these subcategories into four major categories.

Our empirical strategy exploits this institutional setting. We hypothesize that the CSE advances two goals of the imperial system. One is to recruit talent into the bureaucracy regardless of the socioeconomic and political backgrounds of the CSE candidates. We examine this hypothesis using the following regression model:

$$Ranking_Y_{it} = \theta_1 Wealth_{it} + \theta_2 Father_Rank_{it} + \theta_3 X_{it} + \alpha_t + \omega_j + \epsilon_{it} \quad (1)$$

where i indicates the individual, t indicates the examination year, j indicates the province or county that the individual came from, and Y indicates the examination stage, $Y \in \{PRE, ME\}$. X_{it} includes a number of controls.

The other half of our hypothesis is that CSE restricted the potential of power-sharing. We argue that during the non-anonymized PLE, the final stage of the CSE that determined the assignments at the pyramid of the imperial system, the emperor was motivated to keep wealth holders at some arm's length from the throne. Thus, the PLE rankings should correlate negatively with the household wealth of the CSE candidates (all else held constant). This is the political control goal of the CSE. We examine this political control goal using the following regression:

$$Ranking_PLE_{it} = \gamma_1 Wealth_{it} + \gamma_2 Father_Rank_{it} + \alpha_t + \omega_j + \epsilon_{it} \quad (2)$$

Where, similarly, i indicates the individual, t indicates the exam year, j indicates the county that the individual came from, and PLE indicates that this is the ranking in the final stage.

Table 1 presents the regression results for Equation (1) on the first two stages of the examinations, with *Ranking_PRE* and *Ranking_ME* as the dependent variables. Throughout the various specifications, none of the coefficients on *Wealth* variable are statistically significant. The effect of *Father_Rank* is somewhat mixed. It is positive and statistically significant in the first PRE stage but not in the second ME stage of the CSE. Overall, the effect of *Father_Rank* on the PRE rankings is at best modest. *Father_Rank* is an ordinal scale, from 1 to 5. As shown in Columns (1) and (2), a one-level increase in the father's rank out of five potential levels only leads to a one-unit increase in the candidate's ranking out of nearly 300 candidates. Keep in mind that an appropriate benchmarked institution for comparison here should be the feudal rule of strict inheritance practiced in many parts of the world at the time. As a whole, the regressions in Table 1 show that during the anonymized entrance-level of the CSE stages, the socioeconomic and political backgrounds of the candidates had limited impact on the CSE rankings.

[Table 1 about here.]

Table 2 presents the regression results for Equation (2), and the dependent variable here is ranking during the third stage palace examination, *Ranking_PLE*. There are two noteworthy changes from Table 1 to Table 2. First, as shown in Columns (1) to (3), variable *Wealth* is consistently negative and statistically significant. Secondly, the variable *Father_Rank* is consistently positive and statistically significant. Column (3) shows the results for our preferred specification. On average, every one-level increase (out of five levels) in the father's rank is associated with an increase by 5.1 positions in the candidate's exam ranking (usually out of 300 to 400 candidates), whereas a one-unit increase in the number of wives, our wealth measure, is associated with a decrease by 6.2 positions in the candidate's exam ranking on the PLE. The socioeconomic and political backgrounds of the candidates are shown to have a material impact on their rankings on the PLE.

[Table 2 about here.]

The negative effect of *Wealth* stands out as counter-intuitive and warrants some further discussions. There is a large literature documenting a positive effect of family wealth on educational attainment and examination performance in various settings and countries (see, e.g., Björklund and Salvanes 2011, for a survey). Furthermore, preparing for the CSE was a life-long affair and was costly in terms of time, attention, and in terms of both expended and foregone financial resources. All else being equal, wealthy families should command an advantage on the CSE. But as shown in Table 2, our *Wealth* variable operates in the opposite direction from the normal economic effect of wealth in the literature. Thus, the political countervailing effect of wealth has to be large enough to more than offset the economic effect of wealth on individual capabilities and preparations. If anything, our *Wealth* coefficient is an underestimate of the political effect of wealth.

We next look at the interactions between the replication effect through *Father_Rank* and the wealth effect through *Wealth*. The usual assumption is that power and wealth should reinforce each other. Wealth begets power and power begets wealth. This logic predicts that wealthy political insiders (i.e., those with high values of *Father_Rank*) should command an advantage over those less well-off candidates but endowed with a similar status as political insiders. The regression results invalidate this prior. The interaction term between *Father_Rank* and *Wealth* in Column (4) and (5) in Table 2 is negative and statistically significant. *Father_Rank* itself retains its statistical significance. *Wealth* is no longer significant. What these results suggest, collectively, is that the CSE was especially biased against

candidates endowed with both a political-insider status and wealth. (Further discussion about the results can be found in the Online Appendix.)

One possible explanation is that the CSE was designed to disadvantage candidates from wealthy regions rather than candidates from wealthy households.¹⁵ Although potential concern about over-representation from the wealthier south is not inconsistent with our hypothesis, it is still meaningful to distinguish between an anti-wealth effect at the regional level and an anti-wealth effect at the household level.

We utilized historical data on prefecture-level tax revenue and county-level number of households as a proxy measure of regional wealth. There is evidence in Table 1 Column (1) and (3) that the PRE rankings show an advantage on the part of wealthy prefectures. We repeat these variables in some of the specifications in Table 2 (Column 1, 4, and 5). Regional wealth also favors those candidates in the PLE rankings, in striking contrast to the estimates we generated for *Wealth*, i.e., our wealth proxy at the household level. Most importantly, the negative coefficients for *Wealth* remain stable throughout various permutations. Controlling for regional wealth or county fixed effects does not change the sign of the coefficient nor the level of its statistical significance.

In summary, a battery of household socioeconomic and political variables (such as *Wealth* and *Father_Rank*) was shown to have limited impact on the rankings during the PRE and the ME, the two anonymized, entrance stages of the CSE. This lends support to the widely-held idea that the CSE promoted social mobility compared to strict inheritance and was effective in recruiting talent into the imperial bureaucracy. However, these household variables are found to have a statistically significant effect on the rankings during the PLE, the non-anonymized and assignment stage of the CSE. *Father_Rank* has a positive effect, and, most interestingly, *Wealth* is found to have a negative effect on a candidate's ranking on the PLE. This supports our hypothesis that CSE, especially the final stage palace examination, limited power-sharing with the wealthy families.

6.1 Robustness checks

We also performed robustness checks on 1) an alternative specification of the wealth variable which distinguishes the impact of marriage from that of concubinage, 2) the possibility of non-linear impact of family background variables, 3) a logarithm regression, and 4) a rank-ordered logistic regres-

¹⁵The founding emperor of the Ming dynasty, Zhu Yuanzhang, famously executed the head examiner of the CSE when an overwhelming number of successful PLE candidates was selected from the wealthy southern provinces of China. He ordered another ME with more candidates from the north. This episode is known as the "South-North List" event in Chinese history.

sion. The results are described in the Online Appendix. None of these checks affected our main results.

Additionally, we further test our proposed mechanism by examining the interaction effect of our wealth variable with indicators of internal and external threats. We use the age of the emperor and other indicators as proxies for the emperor's political experience and capability, and the annual number of wars with foreign entities as a proxy for external threat. Results show that our hypothesized control function of the CSE strengthened when an emperor is more experienced and when foreign threat is more urgent, consistent with the prediction of our hypothesis. Details about the interaction results are provided in the Online Appendix.

7 Conclusion

The meritocracy of China's imperial system was widely celebrated by some of the most luminous Western enlightenment thinkers such as Montesquieu, Rousseau, and others for its purported effect of curbing the power of the crown. Our findings cast substantial doubt on this view on CSE. The CSE is shown to strengthen the power of the emperor, not to constrain him. In this paper, we also provide a mechanism-based account of how CSE could have contributed to the longevity of Chinese absolutism. Our paper unpacks the black box of the Chinese imperial system and delves into the mechanisms of the CSE to a far deeper extent than previous research.

CSE contributed to Chinese imperial longevity by performing two political functions—the access function that diluted the power of wealth holders and the control function that restricted power sharing. Our paper goes some way toward both resolving the Chinese anomaly and highlighting the European exceptionalism. Our results are potentially explanatory of a well-documented conjunction of long ruler duration and institutional stasis of China and of why power-sharing—so instrumental to political development in Europe—failed to emerge in China.

We do not claim CSE to be the sole mechanism at work. The political development of China over the past two millennia was subject to numerous factors, including geography, culture, and external shocks, etc. Our findings should be interpreted as demonstrating the effect of CSE on top of and/or in addition to many other variables. Our focus on bureaucracy as a focal force in political development joins others (Fukuyama, 2011, 2014) in identifying a fundamental difference in political development between pre-modern China and pre-modern Europe that has received less empirical and theoretical attentions in the political science literature. And that difference is the role of bureaucracy in political development.¹⁶

¹⁶There is an extensive literature examining the relationship between bureaucratic orga-

The mainstream political development literature is heavily anchored on the experiences of Western Europe and it is not surprising that much of the empirical treatments focuses on power sharing and rule of law as the canonical features of political development. Among others, Fukuyama pointed out that it was China that invented “political modernity” defined as Weberian impersonalization and meritocracy almost a millennium ahead of Europe (Fukuyama, 2011, 2014).

Our paper—together with others—shows that CSE had an important effect on China’s political development, possibly in a sharp contrast of a lack of similar effect of bureaucracy in Europe. Two lags might have explained this difference. One is the timing issue. Europe imported the idea of civil service exam from China in the 18th century, more than 1,000 years after China had invented it (Teng, 1943; Creel, 1974). More importantly, there was an institutional lag. CSE was implemented in China prior to the materialization of Chinese autocracy whereas bureaucracy was introduced to Europe at a time when Europe was already well on its way toward democratic consolidation.¹⁷ In Figure A3 in the online appendix, we show that European parliaments began to convene regular meetings long before civil service exam was first introduced to Europe (in Prussia in 1693) (Creel, 1974). Bureaucracy in Europe became a technocratic, domain-specific instrument operating in an entrenched system already endowed with features associated with democracy. Our conjecture, although much beyond the scope of the present paper, is that the so-called “Great Divergence” between pre-modern China and pre-modern Europe might have been rooted in this path-dependent dynamics.¹⁸

nization and political development. Edward Weidner, a pioneer in the field of comparative administrations, once argued that “the outstanding priority for research from a policy point of view is to discover relationships between various aspects of the administrative process and the acceleration of national development.... There is an urgent policy need to focus on how national development can be accelerated by administrative means” (Savage, 1964). Today, the field of political science has yet to come to an agreement on the development implications of bureaucracies. Some scholars believe that effective bureaucracies are important for state development, particularly when political elites are short-sighted and even irrational (Amsden, 1992; Evans, 2012). While others believe that bureaucratic organization can be self-interested. Particularly in developing countries, when political organs and institutions are weak, bureaucrats have the opportunities to hijack and exploit the system (Riggs, 1961; Huber and Shipan, 2002).

¹⁷An interesting exception to this European pattern is Prussia. The Great Elector Frederick William (1620-1688) was a huge fan of Chinese system and he implemented bureaucracy first in Europe and before democracy took roots. The effect, according to Fukuyama (2014), was quite similar in Prussia as we showed in Imperial China. The great estates were stripped of power.

¹⁸One might ask a further question, “Why did Europe develop bureaucracy later than China?” Fukuyama believes that it was because of differences in war intensities. Wittfogel (1957) argues it was the difference in ecology. A further discussion on this issue is beyond the scope of our paper.

We hope our research, by contributing to historical research on China and to theoretical and empirical studies of bureaucracy, regime stability and duration, and long-run political development, may open up a promising future research agenda.

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Figures

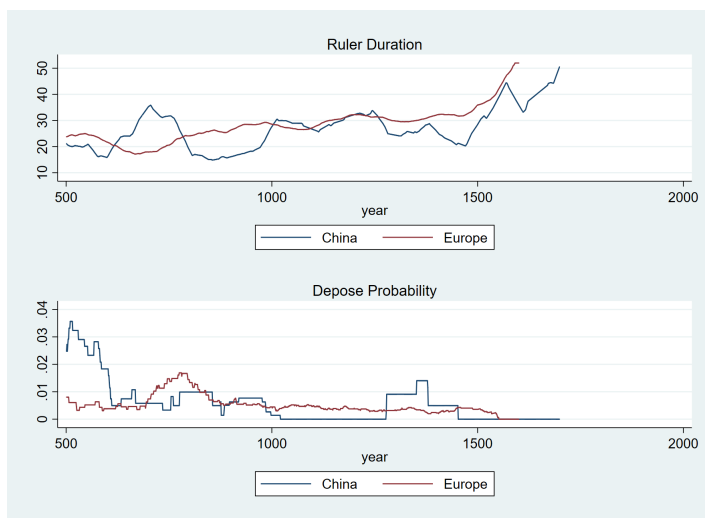


FIGURE 1: Political Stability of China vs. Europe

Note: The above picture shows the 100-year moving average of ruler duration and annual probability of ruler being deposed. The series for imperial China is colored in blue, and the series for Europe is colored in red. The data on European monarchs is from Blaydes and Chaney (2013), and the data on Chinese rulers is collected by the author based on *Chronologies of Chinese Emperors and Their Families* edited by Du (1995) and other supporting sources.

Tables

TABLE 1
Examination Rankings on the Provincial and Metropolitan Examinations

VARIABLES	Stage 1: Provincial Exam		Stage 2: Metropolitan Exam	
	(1) Ranking_PRE	(2) Ranking_PRE	(3) Ranking_ME	(4) Ranking_ME
Family economic background				
Wealth	0.0911 (0.956)	0.334 (0.765)	-3.333 (2.451)	0.234 (3.081)
Family political background				
Father_Rank	1.092** (0.363)	0.943*** (0.280)	1.632 (0.974)	1.493 (1.053)
Regional Controls				
Tax_1460	1.099*** (0.351)		1.292 (1.066)	
Household_1565	0.921 (0.701)		-0.640 (1.889)	
Other Controls	Y	Y	Y	Y
Fixed Effect	Prov-Yr	County-Yr	Prov-Yr	County-Yr
Error term	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	7,335	9,534	7,381	9,604
R-squared	0.592	0.627	0.167	0.249

Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. Other controls include: age, family registration type (official, military, artisan, or commoner), dummy for imperial academy, dummy for prefecture school, and four exam subjects (Rites, Poetry, Book of Documents, and Book of Changes). For the full regression table, see the online Appendix.

TABLE 2
Examination Rankings on the Palace Examination

VARIABLES	Stage 3: <i>Palace Examination</i>				
	(1) Ranking	(2) Ranking	(3) Ranking	(4) Ranking	(5) Ranking_Class
Family economic background					
Wealth (Num_Wife)	-5.862* (3.253)	-6.002** (2.445)	-6.213** (2.464)	-1.524 (3.129)	0.00117 -0.0223
Family political background					
Father_Rank			5.099*** (1.017)	7.453*** (2.250)	0.0450*** -0.00984
Interactions					
Father_Rank * Wealth				-2.428* (1.296)	-0.0177** -0.0061
Regional Controls					
Tax_1460	8.54e-06*** (2.33e-06)			2.371 (1.610)	0.0109 (0.00656)
Household_1565	4.37e-05 (4.18e-05)			2.140 (1.637)	0.0137** (0.00596)
Other Controls	Y	Y	Y	Y	Y
Fixed Effect	Prov-Yr	County-Yr	County-Yr	Prov-Yr	Prov-Yr
Error term	Clu Prov	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	7,440	9,676	9,676	7,440	7,440
R-squared	0.168	0.246	0.250	0.171	0.057

Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The list of controls includes: candidate age, family registration type (official, military, artisan, or commoner), dummy for imperial academy, dummy for prefecture school, and four exam subjects (Rites, Poetry, Book of Documents, and Book of Changes). For the full regression table, see the online Appendix.

Online Appendix

1. *Political Stability in China*

We further investigate the cause of the improvement in political stability by looking into the trigger of the rulers' exit events. There are several ways a ruler or an emperor may be deposed. A ruler or an emperor can be deposed due to court power struggles, or coup d'état by military generals. Here we classify all these cases as intra-elite conflicts as long as the opposing party involving members of the ruling elite, be it aristocrats, government officials, or military generals. Other forms of deposed exits include peasant uprisings and foreign invasions.

In Figure A1 we show two lines. The solid line plots the percentage of rulers deposed due to any forms of forced exits, including intra-elite conflicts, peasant uprisings, or foreign invasions. The dashed line, in contrast, plots the percentage of rulers being deposed only due to intra-elite conflicts (coup d'état). The closeness of the solid and dashed lines in Figure A1 shows that the decline in political instability in Imperial China was mainly due to a decline in the occurrence of intra-elite conflicts.

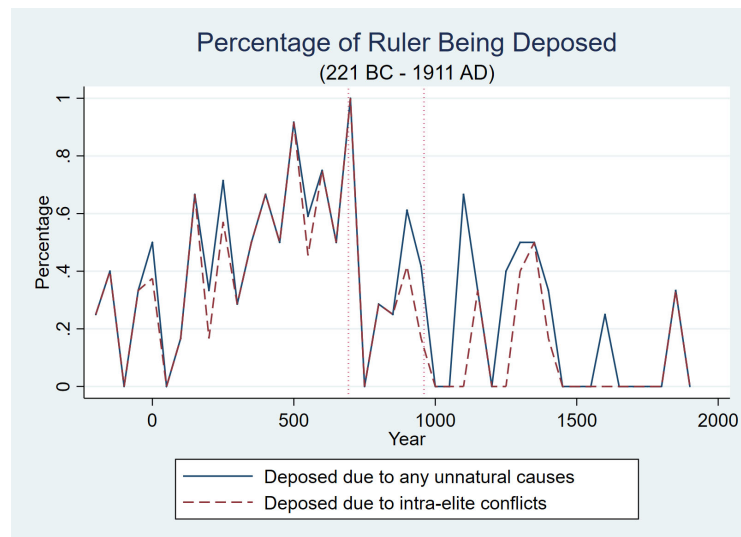


Figure A1: Depose Probability - Elite Conflict vs. Other

2. CSE History and Political Stability

In this section, we investigate the correlation between CSE and political stability on the macro level. According to historians, Empress Wu considerably scaled up the CSE. She elevated the visibility and the prestige of the CSE by becoming an examiner herself. The practice of an emperor acting as a chief examiner began under the Tang, but prior to Wu Zetian, its occurrences were sporadic. Empress Wu made it a regular practice to preside over the CSE and by conferring her imperial imprimatur on the examination, the CSE attracted tens of thousands of examinees, as compared with the previous rounds numbering about 2,000 examinees under the Tang. This is the origin of the Palace Examination.¹

In the following Table A4, we provide results showing that the scale of CSE – measured by annual number of Jinshi – is indeed positively associated with ruler duration, and negatively associated with the probability of ruler being deposed, the number of elite wars, and the ratio of warfare due to elite conflicts. In other words, the scale of CSE is significantly associated with improved stability and decreased conflicts between the nobility and the Emperor. The data on wars is hand collected by the authors based on the *Chronology of Warfare in Historical China* (2003) compiled by the Editorial Committee of China's Military History.

[Table A4 about here.]

¹ Empress Wu also elevated one type of examination (known as the *Jinshi*) over another type of examination (known as the *Mingjing*). At the time of the Tang dynasty, the *Jinshi* examination focused heavily on essay compositions and poetry writing. The *Mingjing* examination focused heavily on memorizing classical texts. Thus, these two categories of examinations sorted on different types of capabilities. The *Jinshi* examination—not to be confused with its rote memorization namesake during the Ming dynasty—selected on the basis of innate talent and creativity. The *Mingjing* examination was biased in favor of sheer memorization. By elevating the *Jinshi* examination, Empress Wu was biasing the selection in favor of creative talent. This sorting mechanism led to another difference, a difference in the socioeconomic nature of examinees. The *Mingjing* examinations implicitly favored those households endowed with assets, such as those rich, privileged incumbent aristocratic households possessing books and classical texts. By downplaying the *Mingjing* examinations, Empress Wu broadened participation by drawing candidates from the lower socioeconomic commoner classes (Paludan, 1998).

3. The Development of Bureaucracy in Europe

In this section, we plot the timeline of the development of the bureaucracy in Europe. According to Teng (1943) and Creel (1974), Europe imported the idea of civil service exam from China in the 18th century, more than 1,000 years after China had invented it. More importantly, there was an institutional lag. CSE was implemented in China prior to the materialization of Chinese autocracy whereas bureaucracy was introduced to Europe at a time when Europe was already well on its way toward democratic consolidation. In the following Figure A3, we show that European parliaments began to convene regular meetings long before civil service exam was first introduced to Europe (in Prussia in 1693).

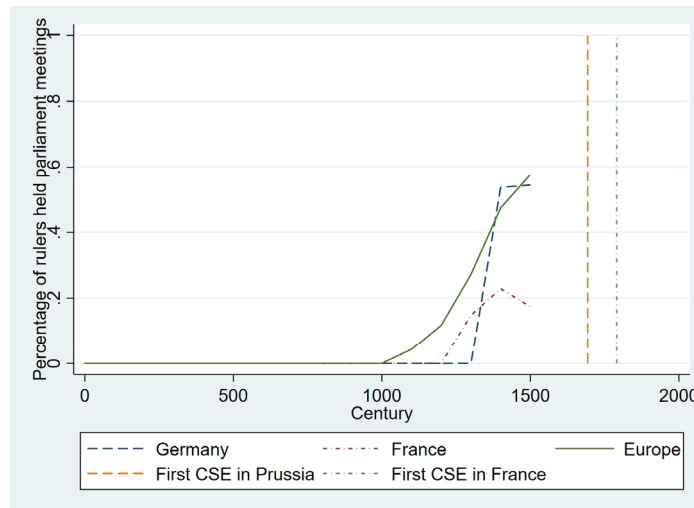


Figure A3: Comparison of the Development of Parliamentary Representation and Bureaucracy in Europe

Note: The above figure plots the percentage of European rulers in every century that held at least one parliamentary meetings during their reign. The two vertical lines indicate the time for the first two meritocracy-based bureaucracy examinations in Europe: the first was held in Prussia in 1693 under Frederick I of Prussia (Creel, 1974) and the second in France in 1791 (Brown, 1995). The data on parliamentary meetings is from Blaydes and Chaney (2013). Unfortunately, the dataset does not include information on Prussia, since Prussia was not an independent Kingdom during the sample period. To facilitate international comparison, we codified historical dynasties roughly based on their geographic locations in relation to modern country boundaries, and thus got indices of parliamentary meetings for Germany and France.

4. *Wealth Variable Explanation: Number of Wives*

Historians have long agreed that concubines are indicative of wealth. The best research on this topic is by Patricia Ebrey. Her book, *Women and the Family in Chinese History* (2003) documents and details the legal, social, and economic dimensions of family issues in Imperial China. Ebrey's book primarily is about the Song Dynasty (960-1279) and is the most detailed treatment of the subject matter. Other scholars (Brook 2005 and Quartz 2015) have also written about the extensive practice of polygamy and the transactional nature of the acquiring concubines during the Ming dynasty.

A fundamental insight provided by Ebrey is based on a distinction between polygyny—a marriage with multiple but equal-status wives—and polycoity—a marriage involving multiple women of unequal status. It is this insight that allows us to construct a proxy measure for wealth based on information on concubines.

These legal and social distinctions between a wife and a concubine are of vital importance for our purpose. The reason is that a marriage between a man and a woman as social equals obligated the family of the wife to provide a dowry. There was “an exchange of gifts” between the family of the man and the family of the woman. Thus, marriage status itself provides no meaningful information on the wealth of a man's household. Concubinage was a completely different situation. Ebrey's observation that acquiring concubines was a function of affordability suggests that the resource transfer was unidirectional. Ebrey observes:

In most cases the families of the husband and wife were social equals.

By contrast, concubines entered families through a market for female labor, one that seems to bear many similarities to the market in existence in China during the past century. Reflecting the ambiguity of their social and familial position, the acquisition of concubines was referred to as “taking them in marriage” (*qu*), “taking them in” (*na*), and, most commonly, as “buying” them (*mai*). Usually these arrangements were for an indefinite term (lifetime), but sometimes only for specified periods of a few years.

Ebrey also cites evidence that concubinage was sometimes used as a way for the family of a concubine to accumulate a particular form of assets, a dowry, so that the woman could be married as a legitimate wife to another man. This may explain the practice of putting a concubine on a fixed-term contract to facilitate resource transfers from a wealthy man's household to a poor woman's household. Another piece of evidence is a Chinese version of Veblenian conspicuous consumption—acquiring concubines to showcase a man's wealth. Ebrey states:

Affines could be of great value in political careers, and men with wealth were willing to use some of it to build up useful networks. At the same time, the increase in the circulation of money, the growing prosperity of merchants, and the growth in the size of the *shidafu* stratum all seem to have led to an increase in the demand for luxury items, prominent among which were the sorts of women who could be bought (courtesans, concubines, maids).

Ebrey's research shows that concubinage was likely to be correlated with a measure that unambiguously denotes wealth—the number of maids in a household. Ebrey describes some of the similarities and differences between concubines and maids. Both were acquired through commercial channels and both had a similar social status in the household. The male master often renamed his concubines and maids, but never his wife. Records of the names of concubines often show that their names contained “*nu*,” i.e., slave. “This is indicative of the proprietary power of the master,” Ebrey concludes.²

The CBDB dataset contains information on the marital status of the CSE examinees. One variable is denoted as the “name (family name) of the wife” (*qi*), while a second variable is denoted as “the name(s) of any additional wife” (*xu-qi*). In this paper, we use these two variables to construct a count of the “number of wives.” We then construct two wealth proxy variables based on the *Num_Wife* measure. For the main

² The difference between a concubine and a maid, of course, has to do with the presence or the absence of a sexual relationship between the male master and the woman.

section, we use “the number of wives or concubines” as a measure of family wealth (variable *Wealth*). This is likely to underestimate the magnitude of family impact, since the wealth level of an unmarried candidate may not be significantly different from that of a candidate with one wife. In the robustness checks, to further distinguish the difference between the effect of marital status and the effect of wealth (as proxied by the number of concubines), we segmented all the CSE candidates into three groups: 1) Single (zero count in the CBDB), 2) Married (a count of one in the CBDB), and 3) Multiple partners (a count of multiple wives in the CBDB). The wealth differential is the sharpest between Group (1) and Group (2).

5. *Results Discussion*

The effects of *Wealth* and *Father_Rank* warrant some further discussions. The negative effect of *Wealth* is counter-intuitive. A consensus in the literature on education is that on average children from richer families attain better educational outcomes than those from less well-off families. One would expect this positive wealth effect to hold especially in the CSE setting. Preparing for the CSE was a life-long affair and was costly in terms of time, attention, and in terms of both expended and foregone financial resources. All else being equal, wealthy families should command an advantage on the CSE. The fact that the wealth effect found in our paper counteracted this well-documented boosting effect of wealth is unlikely to have occurred by accident. It would have to be by design.

Our argument is strengthened in light of the consensus finding on the effect of wealth on educational attainment in the literature on education. The negative effect of wealth on the PLE ranking is net of an effect of unobserved individual capabilities attributed to family wealth. Our coefficient of *Wealth* contains a negative political control effect and a positive attainment effect. The political countervailing effect has to be large enough to more than offset the attainment effect on individual capabilities. If anything, our *Wealth* coefficient is an underestimate of the political effect of wealth.

The results on *Father_Rank* are less consistent. They show up positive and statistically significant in the regressions for the PRE stage of CSE. One potential explanation for this result is, as some historians claim, that the PRE was not as strictly anonymized as the ME. One simple reason is that the scale of the PRE was massive and it is likely that the anonymization protocol was enforced less rigorously. The PRE was held in the provincial capitals, unlike the ME and PLE which were held in the national capital. It is conceivable that administration of the PRE was inconsistent across different locations.

Father_Rank shows up consistently in the regression results on *Ranking_PLE*. This is evidence of a replication effect, i.e., the Chinese imperial system replicated itself by recruiting heavily from the same genetic pool that populated the system earlier. But there can be a confounding factor. *Father_Rank* incorporates two effects. One can be described as political know-how—growing up in a political household probably enables one to acquire knowledge about politics, public affairs, and policy issues. That knowledge may lead to stronger CSE performance, especially during the PLE stage that might have put a premium on intangible knowhow. The other effect is political capital. Since a candidate with a history of service in the imperial system may be judged to be more trustworthy—in the sense of being unwilling to challenge the imperial throne—such a background should favor a candidate with high *Father_Rank* values. In our empirical implementation, we cannot distinguish between these two separate effects of *Father_Rank*. Thus our claim on the replication effect of *Father_Rank* is admittedly weaker than our claim on the political control effect associated with *Wealth*.

Our findings highlight the differential effects of wealth, conditional on the stages of bureaucratic recruitment—no effect during the entrance stage but a negative effect during the final assignment stage. Another complementary interpretation is that the effect of wealth depends on the mechanisms of the CSE. As noted, the PRE and the ME were anonymized, whereas the PLE was not. This difference in the anonymization procedures of the CSE dovetails well with the two hypothesized functions of the CSE. The anonymization was designed to advance meritocracy—recruiting talent regardless

of background. The non-anonymization was designed to function as a political screening tool—to suppress candidates who were wealth holders. Our findings on Wealth—and, to a lesser extent, Father_Rank—support our hypotheses about the anonymization and non-anonymization procedures of the CSE.

6. Robustness Checks

In this section, we explore a number of robustness checks of the main results.

First, unlike the previous rounds of the CSE, the Palace Examination did not disqualify any candidates. All the PLE candidates, regardless of performance, were awarded a title known as *Jinshi* (translated as “distinguished scholars”). There were three classes of *Jinshi*. The first class (*Yijia*) consisted of those candidates who ranked first, second, or third on PLE; second class (*Erjia*) usually from 4th to 100th, and third class (*Sanjia*), the rest of the PLE candidates.

We provide descriptive statistics for each of the three classes of the PLE candidates. As shown in Table A5, on average the first-class candidates had a father’s rank of 2.22, whereas the father’s rank of second-class candidates was only 1.89 and the father’s rank of the third-class candidates was 1.80. In other words, higher family political rankings are associated with better performance on the examination. As for family wealth, on average the first-class candidates had a wealth measure (*Num_Wife*) of 1.13, whereas the second-class candidates had a wealth measure of 1.14 and the third-class candidates had a wealth measure of 1.18. It does appear that the wealthier the family, the lower is the exam ranking. Both of these patterns are consistent with our regression results in the previous section.

[Table A5 about here.]

Second, instead of using the number of wives as a wealth proxy, we developed an alternative proxy for wealth based on marriage status information. Our *Wealth* variable does not differentiate between marriage status *per se* and concubinage status. It is conceivable that the marriage status itself conveyed information about the conditions of a CSE candidate that are different from what is conveyed by concubinage.

Controlling for age, marriage may alter efforts and the economics of a candidate preparing for the CSE, compared with an unmarried CSE candidate. Our *Wealth* variable, however, lumps together the effect of marriage and the effect of wealth.

To estimate separately the effect of marriage from the effect of wealth, we created two variables. *Marriage* takes on the value of one if the CBDB indicates a candidate is married and zero otherwise. The second variable, *Wealth1*, takes on the value of one if the multiple-wife variable in the CBDB is greater than one, and otherwise the value is zero.

Table A6 presents the regression estimates using the alternative wealth proxy, *Wealth1*, and the *Marriage* dummy. Controlling for the *Marriage* dummy does not change our results. Even among married individuals, *Wealth1* (having more than one wife) significantly decreased a candidate's performance on the third stage PLE, and it did so for PLE only. The *Wealth1* variable has no statistically significant impact on the first two stages of the examinations.

[Table A6 about here.]

Third, we investigate the interaction effect of our wealth variable with indicators of internal and external threats.³ The conjecture is that our hypothesized control function of the CSE should be weaker when an emperor is young and inexperienced. He might, for example, have to settle for more compromises with wealth holders than a politically stronger emperor. To test this conjecture, we use the age of the emperor and the number of reigning years up to the CSE event in question as proxies for his political experience and capability. We created interaction terms between the wealth variable and the two power/capability proxies.

Columns (1) and (2) in Table A7 provide the results for the interaction effect. When an emperor's age increases by one year, the wealth discrimination effect of CSE increases by 0.373 (compared to an average discrimination effect of 6.002). Similarly, when an emperor's experience increases by one more year in power, the wealth

³ We thank a reviewer for suggesting this line of inquiry.

discrimination effect increases by 0.268. These results are consistent with the conjecture that politically stronger emperors discriminate more against wealthy candidates.

We also investigate the effect of external threats, such as wars with a foreign country, on the control function of the CSE. Wars require finances and a war-fighting emperor may attenuate the control function of the CSE during a time of war in exchange for financial contributions from the wealth holders.⁴ However, an alternative hypothesis, rooted in the literature on wars and the power of the rulers, posits an opposite effect: The power of a ruler is typically at his peak when there is an external threat (Simmel 1955; Coser 1956; Gibler 2010).⁵ Thus it is an empirical issue how an external threat interacts with the hypothesized control function of the CSE.

We use the annual number of wars with foreign entities as well as the annual total number of wars (foreign and domestic) as proxies for external threat,⁶ and Columns (3) and (4) in Table A7 examine the interaction effects between wealth variable and external threats. Results show that a one-unit increase in the number of foreign wars would increase the wealth discrimination effect by a magnitude of 6.815 (compared with an average discrimination effect of 6.002). Similarly, a one-unit increase in the total number of wars increases the wealth discrimination effect by 2.578. Our results are more consistent with the established literature that wars tend to increase the power of rulers.

[Table A7 about here.]

Fourth, to address the concern that our results might be driven disproportionately by a few observations with extreme values, we did a regression of exam ranking on the

⁴ We thank a reviewer for suggesting this possibility.

⁵ For example, the diversionary theory has long argued that leaders could utilize conflict abroad to both divert the public's attention away from the discontent with their rule and bolster their popularity through a "rally around the flag" effect (Tir, 2010).

⁶ The data on wars is hand collected by the authors based on the Chronology of Warfare in Historical China (2003) compiled by the Editorial Committee of China's Military History.

logarithm values of number of wives (*Wealth2*). The results are presented in Table A8, with Column (1) and (2) showing results for Provincial Exams, Column (3) and (4) for Metropolitan Exams, and Column (5) and (6) Palace Exams. We have Column (1), (3), (5) controlling for provincial fixed effect, and (2), (4), (6) controlling for county fixed effects, in addition to the list of individual controls. Table A8 shows that changing our wealth variable to its logarithm form does not change the results.

[Table A8 about here.]

Fourth, to allow for the possibility of a non-linear impact that the father's rank or a candidate's age could have on a candidate's performance, we tried a modified regression model with a fixed effect of each level of the *Father_Rank* variable and the candidate's age. Table A9 shows that the coefficients of *Father_Rank* and *Wealth* remain largely unchanged for all three stages of the CSE.

[Table A9 about here.]

Fifth, we conducted a rank-ordered logistic regression, in which the ranking of candidates in the same year are treated as ranked alternatives in that year. Similar to the OLS model in the main section, we controlled for a list of individual and regional controls, including provincial or county fixed effects. The results in Table A10 shows that changing the model from OLS to rank-ordered logit does not change the results.

[Table A10 about here.]

Finally, we also tried including examination rankings in the previous stage as a control. The results are given in Table A11, and the coefficient on family political background (*Father_Rank*) and wealth (*Wealth*) are largely unchanged.

[Table A11 about here.]

7. Summary Statistics and Regression Tables

This section provides the summary statistics and full regression tables for tables in the results section.

A1: Summary Statistics of Ming Dynasty CSE candidates

Variable	Var Explanation	Obs	Mean	Std. Dev.	Min	Max
Number of Individuals		11,706				
Number of Ming Dynasty Counties		1,622				
Examyyear	Year of the 3rd stage exam	11,706	1514.03	44.921	1400	1580
Ranking_PLE	Exam ranking in the 3rd stage	11,706	151.094	96.237	1	403
Ranking_ME	Exam ranking in the 2nd stage	11,605	152.649	96.817	1	400
Ranking_PRE	Exam ranking in the 1st stage	11,526	109.946	49.499	1	295
Age	Age of the candidate at the time of exam	11,658	32.9991	5.530	13	59
Father_Rank	Candidates' fathers' position ranking in the government. 1 if commoner	11,706	1.82915	1.240	1	5
Wealth (Num_Wife)	Number of wives or concubines that a candidate has	11,706	1.16786	0.425	0	5
Tax_1460s	Tax revenue for the county in year 1460 (wheat or rice, measured by <i>shi</i>)	11,706	372213	409216	0	1730950
Household_1565s	Number of households in the county around year 1565	9,007	27344	38043	220	189860
House_dense_1565	Number of households per km^2 in year 1565	9,007	30.15923	103.8649	.0476505	789.6252

A2: Full Table for Table 1

VARIABLES	(1) Ranking_ME	(2) Ranking_ME	(3) Ranking_PRE	(4) Ranking_PRE
Political Background				
Father_Rank	1.652 (0.986)	1.493 (1.053)	1.089** (0.366)	0.943*** (0.280)
Economic Background				
Wealth (Num_Wife)	-3.397 (2.447)	0.234 (3.081)	0.102 (0.974)	0.334 (0.765)
Regional Controls				
Tax_1460s	1.88e-06 (2.78e-06)		3.88e-06*** (7.44e-07)	
Household_1565s	-2.78e-05 (4.81e-05)		2.34e-05 (1.40e-05)	
Family Registration Type				
Official	7.576 (6.299)	-4.064 (6.079)	3.742 (2.549)	2.186 (3.190)
Military	2.931 (2.506)	0.547 (2.629)	0.131 (0.940)	0.221 (1.019)
Artisan	7.895 (8.606)	7.841** (3.317)	3.915*** (1.252)	0.364 (1.595)
Other Controls				
Age	-0.987*** (0.200)	-0.943*** (0.154)	-0.0893 (0.0923)	-0.0717 (0.0816)
D.Imperial Academy	8.375*** (1.603)	3.814 (2.167)	-1.533 (0.872)	-1.734 (1.167)
D.Prefectural School	-0.382 (2.303)	-3.037 (2.624)	2.044 (1.200)	2.123* (1.164)
Exam Subjects				
D.Rites	3.040 (5.444)	-0.309 (3.266)	2.251* (1.230)	3.317*** (1.030)
D.Poetry	2.979 (3.957)	2.213 (3.853)	-4.912*** (0.974)	-4.733*** (1.032)
D.Document	6.337 (4.067)	5.384 (4.095)	-2.633** (1.149)	-2.084* (1.129)
D.Change	0.348 (3.791)	-1.826 (3.824)	-4.372*** (1.276)	-3.173*** (0.702)
Constant	82.97*** (7.136)	28.25*** (7.579)	211.0*** (6.170)	198.9*** (5.080)
FE	Prov-Yr	County-Yr	Prov-Yr	County-Yr
Error	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	7,400	9,604	7,354	9,534
R-squared	0.168	0.249	0.591	0.627

A3: Full Table for Table 2

VARIABLES	(1) Ranking_PLE	(2) Ranking_PLE	(3) Ranking_PLE	(4) Ranking_PLE	(5) Ranking_PLE
Political Background					
Father_Rank	4.629*** (1.132)	7.553*** (2.238)	5.099*** (1.017)	FE	FE
Economic Background					
Wealth (Num_Wife)	-6.108* (3.198)	-1.376 (3.120)	-6.213** (2.464)	-6.418** (2.256)	-6.247** (2.494)
Interactions					
Father_Rank * Wealth		-2.459* (1.318)			
Regional Controls					
Tax_1460s	8.80e-06*** (2.34e-06)	8.80e-06*** (2.34e-06)			
Household_1565s	4.15e-05 (4.03e-05)	4.26e-05 (4.03e-05)			
Family Registration Type					
Official	4.245 (6.347)	4.295 (6.330)	-2.873 (6.151)	1.951 (6.103)	-3.183 (5.978)
Military	1.067 (1.835)	1.071 (1.812)	-1.060 (2.160)	0.0518 (1.696)	-1.065 (2.191)
Artisan	6.916 (5.871)	6.951 (5.931)	-2.111 (3.620)	4.121 (4.910)	-2.028 (3.671)
Other Controls					
Age	-0.945*** (0.234)	-0.939*** (0.234)	-0.961*** (0.229)	-0.940*** (0.164)	-0.959*** (0.230)
D.Imperial Academy	8.448*** (2.242)	8.423*** (2.247)	6.337** (2.506)	8.793*** (2.462)	6.279** (2.490)
D.Prefectural School	4.191 (4.221)	4.127 (4.214)	1.289 (4.612)	4.703 (3.707)	1.299 (4.617)
Exam Subjects					
D.Rites	1.419 (6.623)	1.513 (6.673)	-6.094 (4.324)	-1.407 (5.254)	-6.096 (4.302)
D.Poetry	-0.221 (4.349)	-0.229 (4.357)	-3.908 (5.111)	-0.246 (3.706)	-3.755 (5.110)
D.Document	5.441 (4.776)	5.450 (4.809)	2.539 (4.431)	5.470 (4.226)	2.650 (4.387)
D.Change	-1.326 (5.145)	-1.406 (5.157)	-6.024 (5.093)	-1.139 (4.483)	-5.753 (5.125)
Father's Rank FE					
Father_Rank=2				5.729*** (1.571)	8.758*** (1.742)
Father_Rank=3				12.34*** (3.216)	13.91*** (3.123)
Father_Rank=4				12.27*** (3.067)	12.12*** (3.352)
Father_Rank=5				29.77*** (6.166)	28.03*** (5.206)
Constant	77.25*** (8.810)	72.18*** (8.949)	105.5*** (8.654)	84.31*** (8.601)	110.6*** (8.654)
FE	Prov-Yr	Prov-Yr	County-Yr	Prov-Yr	County-Yr
Error	Clu Prov	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	7,459	7,459	9,676	9,676	9,676
R-squared	0.171	0.172	0.250	0.170	0.250

Table A4: CSE and Political Stability in China

VARIABLES	(1) Ruler Duration	(2) Depose Probability	(1) Ratio of Elite Wars	(4) Number of Elite Wars
Num_Jinshi	0.0170*** (0.00260)	-4.24e-05*** (1.60e-05)	-0.000595*** (8.67e-05)	-0.000671*** (0.000133)
Constant	25.96*** (0.331)	0.0175*** (0.00204)	0.253*** (0.0113)	0.307*** (0.0169)
Unit of Obs	year	year	year	year
Observations	2,127	2,127	1,337	2,127
R-squared	0.020	0.003	0.034	0.012

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The data on wars is hand collected by the authors based on the *Chronology of Warfare in Historical China* (2003) compiled by the Editorial Committee of China's Military History.

Table A5: Robustness: Summary Statistics of Three Classes of the CSE

Ranking (<i>Jia</i>)	Father's rank	Wealth (Number of wives)	Hometown tax revenue in 1460 *	#obs
First-Class	2.2222222 (1.4934958)	1.1296296 (0.33746146)	429925.76 (474896.77)	108
Second-Class	1.8870305 (1.3008663)	1.1440728 (0.40768242)	402154.47 (447842.48)	3,408
Third-Class	1.7998779 (1.2086613)	1.1782662 (0.4324898)	358992.86 (390352.14)	8,190

Note: Hometown county tax revenue was measured in rice or wheat (*shi*).

Table A6: Robustness Check: Controlling for Marital Status

	Stage 1: Provincial Examination	Stage 2: Metropolitan Examination	Stage 3: Palace Examination
	(1)	(2)	(3)
VARIABLES	Ranking_PRE	Ranking_ME	Ranking_PLE
Wealth1 (Num_Wife>1)	0.542 (0.893)	-0.0188 (3.682)	-8.752*** (2.801)
Marriage (Num_Wife>0)	0.570 (5.452)	20.64** (9.350)	6.431 (9.684)
Father_Rank	0.942*** (0.280)	1.491 (1.052)	5.095*** (1.021)
Other Controls	Y	Y	Y
FE	County-Yr	County-Yr	County-Yr
Error	Clu Prov	Clu Prov	Clu Prov
Observations	9,534	9,604	9,676
R-squared	0.627	0.249	0.250

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects.

**Table A7: Robustness Check: Interaction between Wealth Effect and
Inherent Ruler Security**

VARIABLES	(1) Ranking_PLA	(2) Ranking_PLA	(3) Ranking_PLA	(4) Ranking_PLA
Wealth	5.837 (6.445)	-1.965 (4.457)	-0.384 (3.621)	-0.517 (4.017)
Father's Rank	4.630*** (1.128)	4.638*** (1.133)	4.660*** (1.130)	4.646*** (1.126)
Wealth*Emperor_Age	-0.373** (0.158)			
Wealth*Emperor_Experience		-0.268* (0.144)		
Wealth*ForeignWar			-6.815** (2.315)	
Wealth*War				-2.578*** (0.846)
Controls	Y	Y	Y	Y
FE	Prov-Year	Prov-Year	Prov-Year	Prov-Year
Error	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	7,459	7,459	7,459	7,459
R-squared	0.172	0.172	0.172	0.172

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects. The variable *Emperor_Age* is the age of the emperor during the exam year, *Emperor_Experience* is the number of years that the current emperor had reigned up till the exam year. Both these two variables measure the capability of the ruler. The variable *ForeignWar* is the number of wars fought with a foreign entity during the exam year, and *War* is the number of wars (domestic or foreign) fought during the exam years. Both these two variables measure external threats to the monarchy.

Table A8: Robustness Check: Logarithm of Number of Wives

	Stage 1: Provincial Examination		Stage 2: Metropolitan Examination		Stage 3: Palace Examination	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Ranking_PRE	Ranking_PRE	Ranking_ME	Ranking_ME	Ranking_PLE	Ranking_PLE
Wealth2 (log Num_Wife)	0.550 (1.454)	0.590 (1.309)	-5.283 (4.075)	-0.299 (5.010)	-9.981* (5.109)	-10.80** (3.798)
Father_Rank	1.106** (0.373)	0.947*** (0.280)	1.718* (0.968)	1.493 (1.051)	4.669*** (1.143)	5.101*** (1.019)
<i>Regional Controls</i>						
Tax_1460s	3.85e-06*** (7.13e-07)		1.68e-06 (2.83e-06)		8.82e-06*** (2.36e-06)	
Household_1565s	2.40e-05 (1.39e-05)		-2.90e-05 (4.78e-05)		4.06e-05 (4.07e-05)	
Other Controls	Y	Y	Y	Y	Y	Y
FE	Prov-Yr	County-Yr	Prov-Yr	County-Yr	Prov-Yr	County-Yr
Error	Cluster Prov	Cluster Prov	Cluster Prov	Cluster Prov	Cluster Prov	Cluster Prov
Observations	7,328	9,493	7,375	9,564	7,432	9,633
R-squared	0.589	0.626	0.167	0.248	0.171	0.249

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects.

Table A9: Robustness Check: Nonlinearity of Age and Father's Rank

	Stage 1: Provincial Examination		Stage 2: Metropolitan Examination		Stage 3: Palace Examination	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Ranking_PRE	Ranking_PRE	Ranking_ME	Ranking_ME	Ranking_PLE	Ranking_PLE
Wealth (Num_Wife)	0.325 (0.773)	0.385 (0.717)	0.278 (3.065)	0.499 (3.020)	-6.247** (2.494)	-5.985** (2.389)
Father_Rank	FE	0.904*** (0.266)	FE	1.568 (1.031)	FE	5.096*** (1.086)
Age	-0.0625 (0.0801)	FE	-0.927*** (0.156)	FE	-0.959*** (0.230)	FE
<i>Fixed Effect of Father's Rank</i>						
Father_Rank=2	2.554* (1.266)		3.700 (2.348)		8.758*** (1.742)	
Father_Rank=3	-0.566 (1.064)		-2.429 (3.678)		13.91*** (3.123)	
Father_Rank=4	2.859*** (0.741)		6.864** (3.019)		12.12*** (3.352)	
Father_Rank=5	5.465** (2.298)		1.878 (8.110)		28.03*** (5.206)	
Controls	Y	Y	Y	Y	Y	Y
FE	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr
Error	Clu Prov	Clu Prov	Clu Prov	Clu Prov	Clu Prov	Clu Prov
Observations	9,534	9,534	9,604	9,604	9,676	9,676
R-squared	0.627	0.630	0.249	0.252	0.250	0.253

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects.

Table A10: Robustness Check: Rank-Ordered Logistic Regression

	Stage 1: Provincial Examination	Stage 2: Metropolitan Examination	Stage 3: Palace Examination
	(1)	(2)	(3)
VARIABLES	Ranking_PRE	Ranking_ME	Ranking_PLE
Wealth (Num_Wife)	-0.00428 (0.0290)	-0.0303 (0.0287)	-0.0677** (0.0288)
Father_Rank	0.0328*** (0.0102)	0.00918 (0.0101)	0.0361*** (0.0100)
<i>Regional Controls</i>			
Tax_1460s	8.92e-08** (3.65e-08)	2.86e-08 (3.63e-08)	6.18e-08* (3.61e-08)
Household_1565s	6.31e-07 (3.87e-07)	-3.00e-07 (3.83e-07)	7.44e-07* (3.85e-07)
Other Controls	Y	Y	Y
FE	Prov-Yr	Prov-Yr	Prov-Yr
Observations	7,328	7,375	7,432
R-squared	0.589	0.167	0.171

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects.

Table A11: Robustness Check: Controlling for the Rankings of Previous CSE Rounds

	Stage 2: Metropolitan Examination	Stage 3: Palace Examination
	(1)	(2)
VARIABLES	Ranking_ME	Ranking_PLE
Wealth (Num_Wife)	0.179 (3.128)	-6.537** (2.183)
Father_Rank	1.410 (1.070)	4.887*** (0.981)
Ranking_PRE	0.246*** (0.0278)	
Ranking_ME		0.113*** (0.00703)
Other Controls	Y	Y
FE	County-Yr	County-Yr
Error	Clu Prov	Clu Prov
Observations	9,676	9,604
R-squared	0.250	0.249

Note: Robust standard errors in parentheses. *** indicates $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$. The above regressions include the full set of controls as shown in Tables 1 and 2, including candidate's age, family registration type, educational background, and exam subjects.