Colonization and Education: Exploring the Legacy of Local Elites in Korea

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Abstract

While there continues to be much scholarly debate on whether colonization leads to modernization and development, an emerging literature focuses on the impact of pre-colonial development on the subsequent performance of the subjugated states. Taken together, the existing works suggest that one must understand both periods in history and factors before and during colonization in order to explain the observed socio-economic outcomes. Our study contributes to the literature by focusing on the educational effects of the educated upper class from the historical Korean kingdom known as Joseon, first monarchial state to be colonized by Japan in 1910. In particular, we investigate how pre-existing scholarly traditions and colonial public school provision influenced the overall rate of literacy in Korea. We introduce novel data from Joseon’s historical court exam archives, colonial education data, and census data going back to 1930. Our findings suggest that the spread of Korean literacy during the early colonial period can be explained by the historical presence of an educated upper class from the Joseon dynasty known as yangban. Regions with a stronger yangban presence benefited from a higher number of Korean teachers as well as more private schools established as alternatives to the colonial public schools.

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1 Introduction

Joseon, as Korea was known before 1910, was the first monarchial state in Asia to be colonized by Japan. As in other states that experienced similar transitions, the process of colonization had a significant impact on Joseon’s social and economic outcomes in subsequent decades. Studies of Joseon and other former Asian colonies thus contribute to a large literature on colonization and its effects, as they provide invaluable testing grounds for hypotheses that are typically examined within a mainly European context. However, much of that research has been limited by a lack of historical data. Studies of pre-colonial factors and their role in shaping colonial institutions in Asia have similarly been scarce. From the existing literature focusing on other geographic regions, we find little consensus on the lasting impact of pre-colonial development on colonization processes. In this paper we aim to investigate how Joseon’s pre-colonial factors influenced its developmental during the colonial period. Specifically, we look at the effect of pre-colonial elite presence on Korea’s literacy rate, while Japan established public schools in a systematic effort to assimilate its colonial subjects.

Debate persists among historians and economists regarding how Japanese colonization at the turn of the 20th century affected Korea’s development. On the one hand, this act of aggression may have served as a catalyst for modernization by exposing the subjugated state to new frontiers of technology and development. On the other hand, the imperialists used extractive measures that ultimately undermined the natural trajectories of states in the region toward modernization, which likely would have taken place even without the intervention of external force. Our study contributes to the debate by focusing on the educational effects of the educated upper class from the Joseon dynasty, known as yangban, which ceased to exist after the abolition of the court exam system and the status system in 1894, and the subsequent Japanese colonization in 1910. As a result of the dismantling of that system, the

1Widespread scholarly interest in the rise of the West and the advent of the Industrial Revolution has led to a large body of research explaining, among other things, the role of colonial institutions in the economic development of the West, and why the Revolution happened specifically in Western Europe. Building on this literature, numerous studies have also considered institutional and modernization outcomes in European colonies as legacies of colonization and settlement.

2For example, argues that most prosperous pre-colonial areas in West Africa lost their advantage because they were hostile to the colonizers. The author suggests that this causes a “reversal of fortune.” On the other hand, find that pre-colonial centralization in African countries improved current public goods provision in rural areas.
elites from the pre-colonial era sought to integrate themselves into the new society through various means. Many sought employment in new institutions, one of which was the public school system. The incipient growth and effectiveness of public schools of the time depended on these former elites, who were highly educated and yet who found themselves unemployed after the former regime ended.

A number of studies specifically related to the Korean context have used literacy improvement during the colonial period to support the modernization theory (??). ?, pp.1276-1277, for example, claims that Japanese colonial rule contributed to subsequent economic development in South Korea by endowing “a relatively literate labor force.” ?, p.877, on the other hand, rebut this claim, arguing that the main driver behind economic growth in Korea was not Japanese colonialism but the Joseon dynasty, which made educational attainment the “chief means to political and economic success.” In our paper, the process of early yangban involvement under colonial rule remains the focus, and we evaluate the spread of literacy as an outcome of yangban presence and the expansion of the public school system. This study is, to our knowledge, the first empirical study of how the pre-colonial elite class in Korea influenced the literacy rate, one of the key indicators for human capital accumulation and economic growth (?????). It is also one of the few studies that investigate the level of Korea’s modernization before the country’s divide and the Korean War.

To conduct this investigation, we introduce novel data from Joseon’s historical court exam archives, colonial education data, and census data going back to 1930. From within the period of colonization between 1910 and 1945, 1930 marks roughly a midpoint during which there was an especially rapid expansion of public primary schools in order to influence the colonial subjects. It is also noteworthy that Japanese rule in Korea was relatively stable by 1930, indicating that Japanese policies were not closely linked to outside pressures, such as the imperial wars that marked Korean history before 1910 and after 1937. Furthermore, 1930 is also the first and only year in which a public census was carried out on literacy in K

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3Similar to Korea, the late Qing period in China experienced the abolition of its imperial exam system. ? shows that this event redirected those who would have studied Confucian classics instead to modern science and technology. The abolition also meant that the prospect of upward mobility for a large group of commoners in society was no longer feasible; the ones most affected by the change were more likely to be participants of the uprisings in 1911, which in turn led to the end of imperial rule by Qing (?).

4Starting in the 1920s and through the 1930s the number of public schools increased almost fourfold (?).
Korea as a colony; the next census on literacy came in 1960, after the country’s independence in 1945.

Our main findings suggest that variation in the Korean literacy rate by 1930 can be explained by the historical presence of *yangban*. While higher literacy rates in regions of pre-colonial elites may reflect a concentration of *yangban* descendants who benefitted from scholarly family upbringing, we also find that regions with a stronger *yangban* presence benefited from a higher number of Korean teachers as well as more private schools established as alternatives to the colonial public schools. Our analysis shows that the effect of pre-colonial elites remains robust to inclusion of various historical factors that might have affected both the *yangban* presence and the long-term literacy rate.

The remainder of the article is structured as follows. The next section presents a brief background of the class system in Joseon and a timeline of the country’s transition from the Joseon dynasty to a colony of Japan. Section three describes the historical exam data construction and the 1930 census data. Section four discusses various empirical strategies and presents the main findings. Section five provides further discussion of the role of *yangban* in improving literacy rates, and section six concludes.

## 2 Background

The status of nobility in Korea during the Joseon Dynasty between the 15th and 19th centuries was determined largely by scholarship, and the educated upper class qualified for their status by passing court exams. This class was referred to as *yangban*; *yangban* literally means “two groups,” consisting of civilian officials (*munban* or *munguan*) and military officials (*muban* or *muguan*). Before the end of the Joseon Dynasty and the abolishment of

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5. The human capital accumulation found in *yangban* can be attributed to the generational transmission of norms emphasizing education attainment. There is a growing literature tracing the importance of ancestry in transmitting wealth and capital, and their impact on socio-economic outcomes. ?, for example, discuss the lasting impact of wealth transfer in the context of England, while ? document the importance father’s human capital on the income levels of sons. ? show that parents’ educational attainment and ancestral experience with officialdom (“cultural capital”) both contribute to the exam success of descendants. In the case of Korea, ? finds that regions with a higher concentration of elite ancestry also have a higher percentage of college attendance, likely due to the transmission of ancestral norms in *yangban* families that emphasize the virtues of education.

6. From an early study by ?, scholars agree that *yangban* was an aristocratic elite group in Joseon until the early 20th century.
the official court examination (guageo) system in 1894, those who became civilian or military court officials did so only by first passing these difficult exams. Passing exams was the first step toward obtaining high social status and exerting significant influence in Joseon’s court politics. There were different types of exams for official court positions. In civil service, there were two preliminary “small” exams (sogua) and one “big” exam (daegua), which combined were called mungua. Sogua consisted of two exams, saengwon-si and jinsa-si. Saengwon-si involved the study of the Confucian classics (saseo-samkyung), while jinsa-si involved essay writing. In order to prepare for daegua, scholars would attend Sungkyunkwan, a higher educational institution that prepared students. The first mungua exams were held in 1399, and over the course of five centuries during the Joseon dynasty, between 1393 and 1894, there were in total 230 saengwon-si, 212 jinsa-si and 804 daegua exams held. Passing daegua appears to have been extremely difficult; the average age of successful applicants who completed all three exams was 34.3, and exam preparation time took 10 to 15 years. Given that kings of the period lived for 46.3 years on average and the mean life expectancy was estimated at around 40, studying for these exams would likely have been an option available only for elite families with substantial resources (Paik 2014).

The military exam, or mugua, involved both military training and study of the Confucian classics, also known as Four Books and Three Classics or the Seven Chinese Classics, along with Theory of Legislation (Gyeongguk Daejeon). 801 mugua were held from 1402 to 1894. In addition to military and civilian exams, japgua was reserved for the middle class (jungin) in lower ranking official positions in the fields of medicine, law, astrology and physics, and translation and foreign diplomacy. There were also a subset of official positions that were either bought off or reserved for merit subjects who could avoid the exam requirement (eumguan).

While the elite class formally included families of both military and civil officials, the status of those with only military lineage was often undermined. In general, scholars agree that civilian officials regularly discriminated against military officials, especially during the late Joseon period. A number of factors appear to have contributed to this outcome. First, Paik (2014) provides a detailed summary of the different types of exams and the qualifications involved in taking these exams.
more applicants for the military exams typically came from lower social classes, which would have further contributed to the class division within the yangban class. During wartime (the Japanese invasion of Korea from 1592 to 1598 and the Manchu invasion of Korea from 1636 to 1637), more commoners were recruited and promoted to military ranks. Furthermore, studying for military exams entailed less emphasis on literary knowledge and instead mandated a set of physical and military skills. Given munguan’s social status during the Joseon period as well as the nature of its scholarly pursuit and exclusivity, this paper uses the number of daegua passers during the period under study in each district or province as a proxy for the presence of an educated upper elite class.

After violent confrontations at Ganghwa Island in 1875-76, Japan forced the Joseon Dynasty to establish modern diplomatic relationships and to allow foreign trade. From that point on, the Joseon government struggled between traditional governance and modern reform, with frequent political interventions from neighboring countries including China, Japan, and Russia. After defeating competitors by winning two consecutive wars (the First Sino-Japan War in 1894-95 and the Russo-Japanese War from 1904 to 1905), Japan made Korea a protectorate in 1905 and finally colonized it under the Japan-Korea Annexation Treaty of 1910.

It is worth noting that Joseon’s tributary relationship with China was fundamentally different from its colonial status under Japan. For a long period, kingdoms founded on the Korean peninsula maintained a hierarchical relationship with Chinese dynasties. Although this tributary system was based on the idea of strict superiority of the Chinese empire, it was clearly distinct from the modern colonial system. The main purpose of the tributary system was to set up an orderly foreign relationship confirming the hierarchy, not to conquer the tributary states. Regular exchanges of envoys and tributes reflected the nature of the system, and the internal politics of Joseon remained largely independent.

Over the course of colonization, the Japanese government set out to change the underpinnings of Joseon’s pre-existing institutions. The colonial government quickly realized that the

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8See ?? on military exams and ? on the middle class.
9Although the length of the tributary relationship is a topic of much debate among scholars, most agree that the incipient relationship between the kingdoms on the Korean peninsula and Chinese dynasties began around the fourth century.
education system in Joseon had to differ from that of other colonies because of the relatively advanced culture and education within Joseon (\(^{[10]}\), p.19). This led to the adoption and expansion of a schooling system in 1911 that Joseon had already established before the colonial occupation in 1910, while at the same time expanding the use of the Japanese language in these schools. In fact, the Education Decree in Joseon issued in 1911 stated that the main purpose of elementary education was the propagation of the Japanese language. Whether or not to teach Korean in primary schools was debated within the Japanese government and the Japanese Government General of Korea (\(^{[11]}\), pp.41-42). In the end, Korean language classes and the use of Chinese characters became part of the regular teaching curriculum; the Japanese government needed to include the Korean language in the curriculum not only as means to teach Japanese but also to attract Korean students to public schools in competition with private schools and traditional schools called seodang (\(^{[12]}\), p.43). As colonial institutions settled, however, the hours of Korean language classes taught decreased over time. Records indicate that the Korean language was taught in public primary schools for five to six hours per week from 1911 to 1921, but that number declined to three to four hours in 1922. Korean language classes became optional in 1938 and were finally abolished by 1943 (\(^{[13]}\)).

3 Data

In order to examine the variation in literacy rates during the colonial period, we rely on the colonial census data from 1930 and exam records at both the district and provincial levels. Data on district-level literacy during the colonial period are collected from the 1930 census taken by the Japanese Government General of Korea. The census covers Korean and Japanese residents and includes data on those literate in Korean, Japanese, both languages, and neither language. In this study, we focus on the literacy of the Korean population.

Korean literacy indicates the ability to read and write in Hangul, the Korean alphabet, and a set of traditional Chinese characters (\(^{[14]}\), pp.75-77). Until recent years both Chinese characters and the Korean alphabet were used in the written script. The Korean alphabet

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\(^{[10]}\) After 1894 certain members of the Joseon court attempted various reforms in governance and policies. One of these initiatives included establishing public schools in Seoul (also known during this period as Hanyang or Gyeongseong) and numerous private schools by both the reformists and missionaries.
was invented by King Sejong during the Joseon Dynasty in 1443 to avail the common people of a written language. *Yangban* who had communicated in Chinese characters until then were resistant to the use of Hangul during the Joseon Dynasty. As a result, for centuries both Hangul and Chinese characters coexisted in the Korean language system until 1970, when the South Korean government adopted the Exclusive Usage of Hangul Act.

In 1930, after 20 years of colonial occupation, 22 percent of Koreans were literate in either Korean or Japanese, compared with 80 percent of Japanese. For our analysis, the Korean population is classified into two groups, one literate in the Korean language and another literate in the Japanese language. We calculate the literacy rate in Japanese by combining the number of people who are literate in Japanese and those literate in both languages. Likewise, Korean literacy rate is calculated by combining the number of residents literate in Korean and those literate in both languages.

For the number of public primary schools and teachers in each district in 1929, we gather the data from *Japan’s Colonial Education Policy Document Collection: Joseon* (7). The number of public schools is our measure of the extent of colonial influence on literacy. The level of school provision in each district was mainly determined by the colonial government with some influence from the elite class or the local population. Given that district-level literacy data are available only for the 1930 census, we also use provincial-level data on annual population and on schools and teachers of different kinds (traditional and private primary schools, as well as public schools) from 1911 to 1930, available from Statistics Korea. Throughout the analysis we re-scale the numbers of *yangban*, schools, and teachers by the corresponding population.

As described above, the most stringent classification of the elite class is used for our study. Based on the effort that families would have needed to devote in order for a family member to study for the civil court exams and the status that *munguan* enjoyed, this paper looks at how many people passed the big civil exam (*daegua*) as an indicator of the level of pre-

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11 Between 1920 and 1930 some local elites became involved in the spread of public schools by petitioning for more schools and classes in the “one school for every three townships” (*myun*) movement (*sam myun il gyo undong*) in the 1920s and the “one school for every township” movement in the 1930s (*il myun il gyo undong*) (??).

12 For district-level analysis, we divide the number of schools and teachers by the 1930 population. For province-level time-series analysis, we use the corresponding year’s population to normalize our school and teacher variables.
colonial elite accumulation. The examination records during the Joseon Dynasty are obtained from the Academy of Korean Studies’ Historical Figures Comprehensive Information System (http://people.aks.ac.kr). According to the database, 15,150 people passed mungua in total. In order to create a measure for pre-colonial elite presence in each region, we first identified the district from which each daegua passer came. Matching records indicate that out of 15,150 passers, 6,193 had residential information. Then we matched each location of residence to the 1930 census administrative units, from which we successfully matched 6,178 out of 6,193 passers. Next we tabulated the number of all the daegua passers located in each district. Finally, we re-scale the mungua passer measure for each area by dividing it by population in thousands for each year available in the data. While one way to measure relative elite presence would be to divide the number of exam passers by the historical elite population, census data of yangban during the Joseon period at the district level, to our knowledge, do not exist. This means that we are not able to scale the number of exam passers by the size of the elite population. Instead, we interpret our measure as the level of pre-colonial elite presence in the region. In this sense, the quality of scholarly talent and its legacy effect, rather than the number of the yangban population, is paramount in capturing the yangban’s influence on the region. Based on the earliest available census data, we then normalize the presence variable by the population in the region. In taking this step, we avoid using the variable simply to capture the effect of regional population on the literacy rate.

One key issue to address in our study is the endogeneity of the distribution of mungua passers. As shown in Figure 1, the distribution of the elite population is not random: some districts, including developed cities such as Busan and Mokpo, have zero passers, while districts like Jeongju and Andong have many more passers. Seoul, with more than two thousand passers, is a clear outlier; as the capital of both Joseon and colonial Korea, it far outweighs other districts in terms of its level of elite accumulation, economic development, and literacy rate. Therefore, we cannot treat the presence of historical elites as if they are

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13 It is important to note that missing residence data do not bias our results. Residence information was rarely recorded in the early Joseon period, and only from the 18th century and on was residential information systemically recorded for all daegua passers.

14 Mungua passers are normalized by the 1925 population in the district-level analysis, as the 1925 census constituted the first in which district level population data were available. In the following provincial analysis, we use the 1911 population, which represents the year just after colonization and also the first year that the provincial population figures are available.
exogenous to numerous factors that may also affect the long-term spread of literacy. One obvious confounder would be the level of industrialization of each district.

From the population census we also distinguish the level of development in different regions, using the concentration of non-agricultural occupations and population density. The concentration of non-agricultural occupations is calculated as the share of the population working in manufacturing, commerce, transportation, public or freelance sectors, while population density is measured by the district’s population per 1,000 people divided by the total area.\(^{15}\)

We pay particular attention to districts that may have differed from the rest, in terms of clear distinctions in the accumulation of an elite population and in their literacy rates in the colonial period. In a series of regressions based on a restricted data sample, we confine our data to a more homogeneous subset of districts and test whether our findings hold. First, we exclude urban centers in 1930 from the sample. We identify 14 cities as urban centers by 1930, including Seoul, Incheon, Gaesung, Gunsan, Mokpo, Daegu, Busan, Masan, Pyongyang, Jinnampo, Shineuiju, Wonsan, Chongjin, and Hamheung.\(^{16}\) The industrialized districts by 1930 likely required more literate labor than rural ones, and some of them were historically wealthy with a relatively high concentration of yangban. The exclusion of these cities therefore controls for the possibility that the location of elites coincided with towns that developed into business, trade and industrial centers, attracting a highly literate population in 1930.

Next, we collect new data on pre-1930 factors that may have affected the distribution of mungua passers and the subsequent spread of literacy. In particular, we find three factors that potentially explain historical differences in the number of mungua passers across districts. The first source of potential bias is a set of historical administrative districts. Those administrative districts typically served as the political center of each province, and also the place where mungua passers resided to work. Given the strong hereditary pattern of

\(^{15}\)At the provincial level, accurate area data are available annually in square li (\(\approx 16 \text{ km}^2\)) from the Japanese Government-General of Korea Statistics. We convert them into \(\text{km}^2\) for interpretation. At the district level, data on the exact area are not available, so we use a proxy based on the product of horizontal and vertical distances of each district in 1910, available from the Land Survey Project (1910-1918). Both horizontal and vertical distances are originally in miles, which we convert to kilometers.

\(^{16}\)The districts that were identified as cities were called \(bu\), while others were called \(gun\).
elite education in the Joseon dynasty, these administrative districts were likely the places where the residences of descendants of mungua passers were located. In order to address the effect of historical administrative centers, we conduct sub-sample analyses that exclude the 18 historical administrative centers from the data. The 18 centers consist of an overlap of the 15 districts from which the names of the eight Korean provinces originated (Seoul, Chungju, Cheongju, Jeonju, Naju, Gyeongju, Sangju, Gangreung, Wonju, Hwangju, Haeju, Pyongyang, Anju, Hamheung, and Gyeongseong) and the 11 districts where provincial governments (gamyeong) were located in the Joseon dynasty (Seoul, Chungju, Gongju, Jeonju, Sangju, Daegu, Wonju, Hamheung, Yeongheung, Pyongyang, and Haeju).

Another factor that may have influenced the spatial distribution of historical elites is the development of commerce before the period of colonization. Although limited, the Korean merchant class was slowly emerging and growing in influence in Confucianism-centered Joseon, especially after 1800. Development of commerce could affect the number of mungua passers as well as the local education system in the long run. For instance, given the low standing of the merchant class, elites may have avoided residing in commercial centers, which explains why large ports such as Busan and Mokpo report no mungua passers the historical period under study. In our sub-sample regressions, we exclude 19 historical commercial centers (?), out of which seven districts served as cores of Joseon’s trade by either being designated as trading centers with China or Japan, or by having substantially large merchant guilds. These districts include Uiju, Hoiryeong, Gyeongwon, Pyongyang, Gaeseong, Seoul, and Dongrae (Busan). The other 12 districts also had large markets which operated on a regular basis; these include Bakcheon, Hwangju, Tosan, Deokwon, Gwangju (in Gyeonggi province), Pyeongchang, Anseong, Eunjin, Jeonju, Namwon, Changwon, and Daegu.

Finally, we exclude districts that may have functioned as scholarly centers of Confucian studies. Confucianism developed through philosophical debates on how to understand the universe and how people should behave properly in various social relationships. Prominent scholars formed their own schools to teach their philosophy and theories to disciples. Among them, a small number were named as “virtuous scholars” by descendent Confucian scholars.

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17Traditional Confucianism positions merchants as the lowest class, following scholars, farmers and manufacturers.
and were canonized in the national Confucian shrine. Depending on the criteria and historical importance, there are either five or 18 virtuous Confucian scholars in Korea, who are called *Dongguk O-Hyun* and *Dongguk Sipal-Hyun*, respectively. We coded the scholars’ birthplaces to control for the historical influence of these virtuous scholars on promoting *mungua* passers in their respective home districts. We use the birthplace locations, because long-standing traditional norms in Korea dictate that people should not be detached from their place of origin. The virtues of having permanent ties to one’s birthplace meant that it was only natural for people to return to their birthplaces after retirement. Many esteemed Confucian scholars of Joseon followed suit by going back to their birthplaces to teach students and interact with local scholars, fulfilling their roles in what was the most prestigious profession in Confucian society. Figures A.1 to A.4 in the appendix illustrate the location of these historical districts and urban centers in 1930.

### 3.1 Descriptive Statistics

In 1930, the Japanese colonial census recorded detailed information on the literacy rate in Joseon at the district (*bu* and *gun*) level. For all 234 districts which are classified as rural or urban centers, we matched the number of schools and teachers from another source (*Japan’s Colonial Education Policy Document Collection: Joseon*) to each district, as well as the number of *mungua* passers from the Academy of Korean Studies. Table A.1 in the appendix presents detailed statistics on the number of *mungua* passers for all the provinces and urban centers. The mean number of passers in the urban centers is 193 including Seoul and 16 excluding Seoul, indicating a high concentration of educated residents in the capital. In the 14 cities identified as urban centers in 1930, we see large variation in terms of the number of *mungua* passers. Historical urban centers such as Seoul, Gaesung, Daegu, Pyongyang, and Hamheung show large numbers of passers, while commercial centers including Incheon, Busan, Mokpo, Sineuiju, and Wonsan report almost no passers. In comparison, the

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**18** The birthplaces of the five virtuous scholars are Andong, Yongin, Gyeongju, Hamyang and Seoul, and those of the 18 scholars include Gyeongju, Sunheung, Youngil, Hamyang, Seoul, Yongin, Jangseong, Andong, Gangryeung, Gimpo and Okcheon.

**19** Korean family names for example come with lineage information derived from the location of place of origin (*bonguan*), and this allows classification of different family clans within the same family name (*seongssi*): for a detailed description of the family names in Korea see ?.
mean number of mungua passers in rural districts is 16. There were 15,150 people in total who passed mungua, and residence information exists for 6,178 of them; the district with the highest number of passers, with 2,498, is of course Seoul (Gyeongseong-bu), located in Gyeonggi province. The standard deviation in the number of mungua passers is 164 while the mean is 26.4, and the number of districts with zero mungua passers was 36, suggesting a highly skewed distribution. About 85 percent of the districts had at least one mungua passer. Figures 1 and 2 show the spread of our measure of pre-colonial elite presence and literacy rates by 1930, respectively. Across the two maps we see a consistent pattern in which both Pyongyang and Seoul have many mungua passers as well as high overall literacy rates in 1930. Other cities with the same pattern include Jeungju and Gaesung in the north, and Daegu in the south. The maps also show that numerous districts in the north had no exam passers, and that those in the interior regions tended to have fewer exam passers and lower literacy rates.

The distribution of public schools and literacy levels are also noteworthy. Table A.2 presents statistics on the number of schools and literacy rates by province. We see that the provinces in the north (Huanghae, Pyeongbuk, Pyeongnam, Hambuk and Hamnam) dominate the southern provinces in terms of both Korean and Japanese literacy rates, despite having a smaller number of public schools. The Korean literacy rate in Pyeongnam province, for example, is 30 percent, compared to 17 percent in Gyeongbuk and Gyeongnam provinces. Both Pyeongnam and Pyeongbuk provinces have exceptionally high literacy rates in Japanese, as well (9.3 and 9.8 percent, respectively), suggesting that province-specific mechanisms are at work. These relatively high literacy rates are also evident in the northern provinces when the number of mungua passers, schools and teachers are normalized by provincial population in Figure 3. Figure 3 illustrates the provincial-level distribution of Korean literacy rates in 1930, mungua passers, and public schools and teachers in 1929, all normalized by corresponding population.

The high literacy rates in these provinces, as well as in Gyeonggi, Huanghae, Hambuk and Hamnam relative to the rest, can be attributed to the movement aimed at “educating and saving the country” (Gyoyuk Guguk Undong). This movement between 1905 and 1910 was particularly active in the northern regions (?) and arguably remained influential for
subsequent decades. Among a number of organizations involved in the patriotic enlighten-
ment movement, the New Citizens Society (*Sinminhoe*) was the most active in the northern
provinces. The society was founded in 1907 by intellectuals from the northern provinces
(Pyeongan, Huanghae, and Hamgyeong provinces) and prospered under the guidance of po-
litical activists such as An Changho, Yang Gitak, and Shin Chaeho, establishing branches
in six provinces - Gyeonggi, Huanghae, Pyeongbuk, Pyeongnam, Hambuk, and Hamnam. It
was especially involved in the building of private schools in the Pyeongan area.

Table 1 presents district- and province- level summary statistics normalized by population.
In 1930, the mean Japanese literacy rate in Korea was only 8.5 percent, while the mean
Korean literacy rate was 22 percent. The national records show that 80 percent of Japanese
living in Korea were literate in Japanese, and 6.2 percent of them were literate in Korean, as
well. By comparison, only seven percent of Koreans were literate in Japanese, and 22 percent
were literate in Korean. The mean number of public schools per 1,000 people by 1929 was
0.074, while the number of teachers was 0.304; the mean population density (in thousands of
people per square kilometer) at the district level in 1930 was 0.554.

Among the country’s total population, 4.3 million people were within the primary edu-
cation age range of 6 to 14 in 1930. On the other hand, the number of public schools was
1,620 (8,259 classes), which educated only 422,820 students comprising less than 10 percent
of the given age group in 1929. In Seoul, there were only 18 public primary schools, enrolling
just 14,758 students out of the 49,768 6 to 14-year-olds. At the provincial level, the data
are available for 20 years (1911 to 1930) for the 13 provinces (five in North Korea and eight
in South Korea). The mean number of *mungua* passers per 1,000 people is 0.398; Gyeonggi
province had the highest number of *mungua* passers with 2.115 per 1,000 residents, while
Hwanghae province had the lowest number with 0.109. There also appears to be a time
trend; in the 1920s we see dramatic changes in the number of *seodang* per capita: the figure
increases over the years 1911 and 1921 from 1.214 to 1.458, but it decreases thereafter to
0.537 in 1930. One can attribute this result to the colonial policy on *seodang* enacted in 1918.

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20In our district-level analysis, we calculate the literacy rate based on all the residents living in Korea. While
population census data by nationality was only made available at the provincial level, the Japanese residents
in Korea lived predominantly in urban centers and constituted only 2.5 percent of the total population in
1930. The district-level rate, therefore represents the colonial subject’s level of literacy, especially in rural
districts.
which mandated that each institution seek the Japanese Government General’s permission for its establishment and for the qualification of teachers. Meanwhile, the number of public schools per 1,000 people gradually expanded from 0.025 in 1914 to 0.088 by 1930. Yearly increases in the number of schools per 1,000 people are apparent across all provinces.

4 Empirical Analysis

4.1 Empirical Specifications

In order to assess the average effects of a pre-colonial elite class and public school prevalence on literacy rate in colonial Korea, we first present a reduced-form equation of the following form at the district level:

\[ \text{LitRate}_i = \alpha + \beta_1 \text{Mungua}_i + \beta_2 \text{PublicSchool}_i + \beta_3 \text{Development}_i + \beta_4 \text{PopDen}_i + \sum I_{prov} + \varepsilon_i. \]  

In the equation, \( i \) indexes the district in Joseon. \( \text{LitRate}_i \) is the literacy rate in 1930 and \( \text{Mungua}_i \) is the number of \textit{mungua} passers per population in thousands in each district. \( \text{PublicSchool}_i \) is the number of public schools per 1,000 people in 1929 in district \( i \). A set of controls in 1930 include \( \text{Development}_i \), which is the share of population employed in non-agricultural sectors, and \( \text{PopDen}_i \), the population density. Finally, \( \sum I_{prov} \) captures provincial fixed effects.\(^{21}\)

A positive \( \beta_1 \) value may capture a descendant effect, as more educated descendants were likely to be found in regions with many \textit{mungua} passers prior to colonization. Such an effect would not be present if systematic migration of elites over the period of colonization weakened

\(^{21}\)In the empirical analysis, we consider the literacy rates in Korean and in Japanese separately. We include all age groups to calculate these literacy rates, since there was no official restriction or rule on the age in regard to primary education or traditional education during this period. We find anecdotal evidence highlighting cases of diverse age groups within the same grade. Furthermore, literacy improvement was also possible through various channels other than official education. For instance, a self-motivated community gathering called “night study group (yahak)” thrived throughout the colonization period and served as an unofficial source of literacy improvement, especially for adults.
the link between exam records and the concentration of elites in the region. However, we find no evidence of such migration except for an urbanization trend, in which both non-elites and elites alike moved to cities; in the next section we present both subsample results with and without the urban centers. More likely, the elite class influenced the public through indirect channels. For example, in spite of the fact that the elite class had little influence over the establishment of public schools, they were instrumental in how these schools, once established, operated. In addition, they could also build private and traditional schools (seodang) which also served to raise literacy rates. Given the information on various types of schools and the number of Korean teachers hired, we explore these likely channels through which the elite class influenced the literacy rate. In the following equation, we test whether yangban influenced the number of public schools and the number of Korean teachers when a district has more mungua passers:

\[
PublicEdu_i = \alpha + \beta_1 Mungua_i + \beta_2 Development_i + \beta_3 PopDen_i + \sum I_{prov} + \varepsilon_i \quad (2)
\]

In equation (2) PublicEdu\_i is either the number of public schools or the number of Korean teachers per 1,000 people. A positive \( \beta_1 \) therefore captures the yangban effect in increasing public education; regions with more mungua passers would be more likely to provide public schools and Korean instructors.

At the provincial level, additional records are available on different types of schools in operation from 1911 to 1930. These include the traditional schools (seodang) which taught basic Chinese classics and Confucian studies, and private schools set up by missionaries and Korean donors. We can infer the impact of the pre-colonial elite class on these institutions by evaluating their influence on the number of schools and teachers hired at each institution type. We present the following equations for comparison:

\[
Education^{z}_{p,t} = \alpha + \beta_1 Mungua_p + \beta_2 Development_{p,t} + \beta_3 PopDen_{p,t} + \sum I_t + \varepsilon_{p,t} \quad (3)
\]

where Education\(^z\)\(_{p,t}\) is the number of schools and teachers across types \( z \) (seodang, public
school, or private school) in province $p$ in year $t$. The population density and development indicators are employed as proxies for the relative economic development of each province in each year. The development variable is the share of non-agricultural workers, and $I_t$ denotes year fixed effects $^{22}$

4.2 Findings

In the first two columns of Table 2, we first estimate the average effect of the pre-colonial elite class on literacy in 1930 as described in Equation (1). The results demonstrate that pre-colonial elite accumulation measured by the number of successful candidates in the mungua examination has a positive and statistically significant effect on the overall literacy rate at the district level. When a set of 1930 controls and provincial fixed effects are included, having one more mungua passer per 1,000 people increases the Korean-language literacy rate in 1930 by approximately 0.7 percentage points (Column (2)). We also find that mungua passers remain positively correlated with Japanese literacy: having one more mungua passer per 1,000 people increases the Japanese literacy rate by approximately 1.4 percentage points in the full sample (Column (1)). We then investigate whether colonial public schools have an impact on the Japanese or Korean literacy rate. Columns (3) and (4) in Table 2 present the average effect of colonial public schools built since the Japanese colonial occupation from 1910 to 1929 (a year before the 1930 census) on the literacy rate at the district level. Both regressions in Column (3) and Column (4) include provincial fixed effects. The results show that the presence of public schools has a positive effect on Korean literacy in the full sample.

When considered with the presence of schools, the results in Columns (5) and (6) suggest that the direct impact of yangban is still significant. That is, controlling for the effects of public schools, the pre-colonial human capital accumulation explained by the number of mungua passers appears to remain positive and significant. This finding is robust to the inclusion of provincial fixed effects and 1930 controls. Controlling for the number of schools where Japanese was intensively taught and where most regular courses were taught in Japanese, the elite presence has a significantly positive and direct impact on Korean literacy.

$^{22}$We omit additional sets of 1930 urban centers and historical controls, since in aggregation up to the province level we find essentially no variation for these controls across provinces.
According to Column (6), for example, a one-unit change in the *mungua* variable explains an increase of Korean literacy of 0.6 percentage points. Given that the average literacy rate was only 22 percent during this time period, this represents about a three percent increase relative to the mean.

Despite the positive impact found in the full sample analysis, the subsequent analyses presented in Table 2 indicate a more limited impact of colonial public schools in rural districts. Columns (7) and (8), for example, present the findings with the restricted sample data excluding Seoul. As noted before, Seoul has unique status as the historical capital city and its urban draw was the strongest among all districts at the time. With the exclusion of Seoul, we observe that the effect of *mungua* passers on Korean literacy increases drastically from 0.6 percent to 2.6 percent.

A further restriction on the data leads to similar results in terms of the *yangban* effect. Columns (9) and (10) employ a sample excluding all 14 urban centers in colonial Korea. Regression results from the more homogeneous, rural 216 districts indicate that the number of *mungua* passers in the past has a significant positive impact on Korean literacy. In short, results in Columns (7) to (10) indicate that the positive effect of *yangban* on Korean literacy improvement is the strongest in districts outside of Seoul, and it remains significant in non-urban districts. It is also noteworthy that the *yangban* effect on Japanese literacy decreases when we exclude urban centers. Importantly, public schools become statistically insignificant with the exclusion of urban centers, both for Japanese and Korean literacy levels. This indicates that the positive impact of public schools on literacy improvement for Korean colonial subjects is generally concentrated in urban districts, where the demand for a literate population is high. On the other hand, rural districts, which made up the absolute majority of all districts and population at that time, did not benefit substantially from the new educational institutions by 1930. Finally, in all specifications we observe that districts with higher industrial development (those with higher concentrations of a non-agricultural occupation labor force, and to some extent higher population density) also have more literate populations.

A major potential concern with our main variable of interest is that the distribution of *mungua* passers is likely not randomly determined. We therefore include aforementioned
factors that likely affected the distribution of *yangban* and the literacy outcome in the following analysis. Specifically, we incorporate historical, district-level information on the locations of administrative, commercial and scholarly (Confucian) centers. Table 3 presents results based on different subsamples excluding these historical districts. Columns (1) and (2) in Table 3 employ a subsample excluding the 18 districts that served as administrative centers during the Joseon dynasty. Columns (3) and (4) exclude the 19 commercial centers in Joseon, while the subsequent two columns (Columns (5) and (6)) exclude the 11 districts that were Confucian centers. Finally, the last two columns use a most restrictive sample that excludes districts of all three categories, leaving 191 districts for analysis. We find that the value of the *mungua* coefficient remains in the range between 2.3 and 2.6 depending on the specification, and the positive effect remains statistically significant at the five percent level or below. All analyses indicate that accounting for historical confounders actually increases the magnitude of the *mungua* effect on Korean literacy in 1930, suggesting that the results are not driven by some historical factors that affect both elite concentration in certain districts and literacy improvement during the colonial period. These results instead indicate that the *yangban* effect is not biased or entirely explained by these historical factors associated with the distribution of *yangban* and literacy. Although the magnitude is smaller, we also find a similar effect of *mungua* on the Japanese literacy rate.

In Table 2 and 3, we find that the number of schools has a positive and sizeable effect on both Korean and Japanese literacy rates, but the coefficient values are not consistently significant. More importantly, Table A. 3 in the Appendix with a further restricted sample confirms that the effects of public schools are almost entirely driven by 14 urban centers in 1930. With the exclusion of the 14 districts in addition to the historical districts, most of the positive effects of public schools disappear. In particular, the effect on the Korean literacy rate completely vanishes, as shown in Table A.3. This does not mean, however, that public schools themselves had no influence on literacy over the course of colonization. Once set in place, the colonial system continued on from 1930 to provide education for the people after Korea’s liberalization from Japan in 1945, while the traditional schools (*seodang*) declined in their numbers under repressive measures by the Japanese Government-General and are now rarely found. In many respects, the current Korean school system continues to closely follow
the institutional structure (in grade system, curriculum, class times and teacher-student relations) introduced during the colonial period. The colonial institutions would also have affected the literacy rate among Korean subjects, although the extent of their influence from 1930 until the end of the colonial period cannot be estimated given our data.

Next, Tables 4 and 5 investigate two major potential channels through which the pre-colonial elite class could influence the literacy rate: building public schools and supplying public schools with teachers. First, Table 4 presents the effects of the elite class on the number of public primary schools and the number of Korean teachers in these schools at the district level. We find that under various sub-sample analyses, the presence of a strong elite class increases the number of teachers but has no impact on the number of schools. The magnitude of effect on the number of teachers is significant; the coefficient values for mungua passers in Table 5, for example, suggests that having one more mungua passer per 1,000 people leads to an increase of between 0.07 and 0.12 more teachers, with the effect again stronger in districts outside of Seoul, and again with significance in non-urban districts. Results in Table A.4 in the Appendix, with further restricted subsamples that exclude historical centers and 1930 urban centers, show consistent findings. Considering that the average number of teachers per 1,000 people was 0.304, the effect corresponds to a significant increase in the number of teachers hired. As there was always a short supply of teachers during the colonization period (?, p.104) and at the same time active grassroots movements among Koreans for more schools and classes, regions with a stronger yangban presence certainly would have benefitted from the availability of Korean teachers.

The results in Tables 4 and 5 overall demonstrate that the channel through which local elites affect literacy is the supply of teachers but not the number of colonial public schools. In order to understand the size of the direct effect of historical elites compared to the mediated effect through colonial institutions, we also present results from a Sobel-Goodman mediation analysis (? in Table 6. This test determines whether the presence of mungua passers has a direct impact on a district’s literacy rate in 1930 or if the effects are carried out through Korean teachers working in public schools. If mediated, the test also provides the relative

23See Figure 3 for example, where we see a dramatic upward trend in the number of schools in 1920s and 1930s.
size of the mediated effect to the direct effect, or the degree of direct elite effects on literacy rates relative to the effect mediated by colonial investments. The proportion of total effects (mungua passers on Korean literacy in 1930) that is mediated by Korean teachers is 0.396, indicating that approximately 40 percent of the effect of historical elites on literacy comes by increasing the number of Korean teachers working in local public schools.

In Table 7, we explore yet more potential channels through which the elite class influenced the literacy rate: building private and traditional schools. The analysis is at the provincial level, employing the numbers of schools and teachers from 1911 to 1930. As discussed earlier, there were three distinct types of primary education in the colonial period: seodang, public schools, and private schools. Columns (1) to (3) present the effects of elites on the number of schools by province. In Columns (4) to (6), we test the impact of mungua on the number of teachers by province. We find that the elite class has a positive influence on various types of primary education institutions. The presence of more mungua passers promotes establishment of private schools that focus more on Korean education. As shown in Columns (3) and (6), both the number of schools and the number of teachers in private schools are positively affected by the historical presence of local elites. The results in Columns (2) and (5) again show that the local elite class increases the number of Korean teachers working in public schools, but not the supply of schools. These results are also consistent with the district level analysis presented in Table 4 and 5.24 Finally, we also find some correlation between mungua passers and the number of seodang as well as the number of teachers, although the coefficient values do not reach statistical significance. This result can be attributed to the fact that the establishment of seodang required permission from the colonial government after 1918, and as such its proliferation until 1921 and the subsequent drastic decline was more an outcome of colonial policies rather than a function of the level of local elite presence.

To this point we have measured human capital accumulation of the elite class during the Joseon dynasty using all the mungua examination passers whose residential information

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24The impacts of different types of primary schools on literacy improvement in the colonial era are difficult to separate from one another. Throughout the colonial period, especially until the 1930s when the Japanese government’s assimilation policy was less intense, many students attended more than one type of school. Based on school registers, ?, p.221 shows that many incoming students had gone through traditional or private education before entering public primary schools. ?, p.117 also shows that approximately 30 percent of new students entering public schools in the early 1930s had attended seodang before.
was available in the historical records. While most of the residential information became available only after 1700, some records date from an earlier period. For instance, the earliest residential record is from 1414. Given our claim that the legacy of former elites persists for long periods in local communities, we need to check whether recent mungua passers had more direct and larger impacts on education during the colonial period. In addition, we are interested in whether the type of reign under which the exams took place matters. That is, we need to check whether the quality of the regime determined the legacy of elites. One may anticipate a correlation between the quality of regime and that of human resources developed under the regime, while others may believe that the quality of an elite group depends solely on the selective exams.

To check whether our results remain robust to these issues, we restrict our measure of elite accumulation to mungua passers after 1800 and re-run our analyses (see Appendix for the results). 1800 is the year when King Jeongjo suddenly died under mysterious circumstances; the era governed by King Yeongjo and Jeongjo (1724-1800) is largely considered as the renaissance period of the Joseon dynasty. Amid intense court politics and polarized officials, Yeongjo and Jeongjo pursued pragmatic policies that facilitated economic development and cultural prosperity in the 18th century. The general consensus among Korean historians is that the Joseon dynasty declined from its apex since King Jeongjo’s reign, after which political turmoil ensued in the 19th century and led ultimately to Japanese colonization.

The tables in the Appendix lend support to our story. Using the restricted sample of mungua passers since 1800, we find that the pre-colonial elite presence has a statistically significant effect on various measures of education during the colonial period. The results are consistent with our main results. Moreover, the coefficient values are larger in magnitude than the previous findings, indicating that more recent mungua passers and their direct descendants had a stronger impact on education during the colonial period. As the results show, we also find little evidence that the quality of regime affected the legacy of the elite group in influencing the literacy rate.
5 Discussions

The empirical findings above suggest that the presence of a pre-colonial elite class can explain the level of Korean literacy in a representative district. Regions with more mungua passers also had a higher number of Korean teachers in both public and private schools, and the establishment of more private schools, as well. However, one potential alternative explanation for our main empirical findings could be that the yangban effect simply reflects the concentration of educated descendants. The descendant effect could be the main explanation for our findings, especially if one considers the persistent, inter-generational effect of the lineage system, and the scholarly nature of munguan families. That is, if there are more elite families in districts with more munguan passers, then the finding may be evidence of a continuing social division. Given that the public school system did not help much with literacy improvement, one may simply conclude that descendants of elite families continue to be literate while others do not.

There are several issues with this interpretation. First, since we do not have elite population data for 1930, there is the possibility that the proportion of elite members out of the total population corresponds to the number of mungua passers. However one also cannot ignore the possibility that in certain districts most mungua passers came from a small number of exclusive elite families, and their relative share of total population was also very small. Furthermore, during the period of the largest number of mungua passers in the 18th Century, only 3,493 candidates passed the exam, while the average population of Joseon was approximately 7.3 million (?). Even when the number of passers was largest, that figure did not exceed 0.05 percent of the total population. It is therefore unlikely that the direct descendant effect of munguan families alone explains the strong correlation between our proxy for elite class presence and literacy rates in 1930.

More importantly, historical records over the colonial period describe concerted efforts by the elites to enlighten the illiterate class by establishing schools of different types including seodang, adult schools (yahak) and private schools. In the aftermath of a failed independence

25In a similar examination system in late imperial China, ? finds evidence of strong inter-generational effects. They find the ascendant’s ability, not wealth, significantly increases the probability of the descendant’s success in a civil exam. For long-lasting effects of lineage system and social mobility, see ?? and ?. For the direct descendant effect on education see ?.
movement (the March 1st Movement or *Sam-Il Undong* in 1919), the patriotic enlightenment movement (*Aeguk Gyemong Undong*) also involved active participation from some elite members to educate the public masses, and enhancing literacy was one of the major goals of this movement (?). The elite class also likely provided the necessary human capital needed to run the public schools, as each public school was headed by Japanese principals but staffed otherwise by local teachers. In fact, the literature suggests that local elites affected education during the colonial period in two ways. First, the elite class taught classes to local children through various channels. In many cases, they established *seodang* in their communities, set up smaller gatherings called *sasuk* or *yahak*, or even worked as independent teachers. Second, the majority of teachers in all public schools were Koreans. This was especially the case for most schools in rural areas. Large shares of Korean teachers likely affected the level of literacy positively. ? suggests, for example, that teachers from the same group are likely to induce better educational attainment through teachers’ efforts and parents’ demands. This further provides evidence that new educational institutions could successfully take root due to prior educational investment. Finally, some elites provided private education to local students who had limited access to public schools.

We do not intend to argue here that the pre-colonial elite group’s active engagement in primary education was driven solely by patriotic or altruistic motivation. Neither do we argue that *yangban* suddenly realized the importance of public education after having neglected it for much of the Joseon period. We focus instead on the role of the abolition of the traditional class system in 1894 and the options left for the former *yangban* class. Over 600 years of the Joseon Dynasty, the role and the social status of *yangban* had transformed, but the noble class mostly stayed away from productive activities. Either paid by the central or local governments, or having servants to cultivate in their inherited or acquired lands, the *yangban* on average sustained relatively stable economic lives while they did not actually involve...

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26 In 1929, the share of Korean teachers among all public school teachers in Korea was over 71 percent.
27 At the beginning of the colonial period, a central training institution trained all public school teachers. By the early 1920s, provincial-level training institutions were built in every province to train local elites as teachers (?).
28 ? finds that private schooling proliferated in Pakistan only in places where female teachers were available, as they were cheaper than the male counterparts. Furthermore, they show that only in areas where prior education availed female students of the opportunity to become literate did one find female teacher candidates.
29 Private institutions expanded in the 1920s. Many of them were later replaced by public schools as the number of public schools increased (?).
themselves in economic production (Lee 2001). Before 1894, the main task of yangban, regardless of whether they were rich or poor, was to focus on studying Confucian scripts and educating other yangban descendants. With the introduction of commerce and the gradual erosion of the rigid class system in the late Joseon dynasty, their material privileges, including local government payments and free house servants, became more scarce. As a result, some yangban accumulated large areas of land, while others became even poorer than the middle class (jungin). Facing economic hardship, historical records reveal that some yangban in the later Joseon period educated young children in their neighborhoods. Nonetheless, without an official public education system, these educational activities occurred mostly on an irregular basis. With the 1894 reform, the former yangban group was no longer entitled to any of its conventional privileges.

We claim that these changes led yangban to participate in productive work to earn a living. Given that the principal skills of yangban came from studying Confucian classics and writing essays, their comparative advantage certainly would have been in the areas of teaching the classical literature. For those who had never worked in agriculture or commerce, education would have been the most suitable sector. The Confucian culture, which considers scholars and teachers superior to other professions, must have played some role, as well. The delayed effect of the elites on literacy came only with colonization, as there was little incentive for yangban to empower the commoners through education during the Joseon dynasty. After the loss of political power to the Japanese, a significant part of the former yangban class remained resistant to Japanese rule, while others pursued enlightenment movements under the colonial regime. The new government allowed the former elites’ involvement in the education sector and in low-level administration, especially in the early period of occupation. According to ??, 68 percent of the Korean bureaucrats who served in 1909, a year prior to the annexation, kept working in the government under Japanese rule. Our data also show large-scale employment of Korean elites as teachers in primary schools. Out of 1,716 total teachers in primary schools in 1914, 1,207 (70.3 percent) were Korean teachers, and the share of Korean teachers remained at 71 percent in 1929.

30 According to Lee (2001), even with no official job, it was a convention that the local government provided necessary goods to yangban households in the area, which comprised most of the household income in yangban families.
6 Conclusion

In this paper we present evidence that the pre-colonial elite class in Korea had a significant influence on literacy rates during the early Japanese colonization period. By 1930 yangban not only impacted the number of private schools that were alternatives for public schools, but also provided the necessary human capital to run public and private schools. The literacy rate in 1930 was not simply a reflection of the concentration of elite descendants in certain areas, but was instead an outcome of the multiple channels through which the elites intended to and indeed succeeded in enlightening the public.

Since other Asian colonies had established political dynasties before colonization, our research inquiry can be extended to those with similar historical paths such as India, Vietnam, and Indonesia. The colonial experience can be considered an enforced rupture in history, but as this paper suggests, the legacy of pre-colonial socioeconomic structures remains influential even under such transitions. This appears to be especially the case when the pre-colonial state fosters advanced levels of capital and development, as was the case in Joseon. The Korean case provides a rare historical example in which at least part of the pre-colonial institution survived because of its strong foundation, and it continued to play a significant role during the colonial era. This contrasts to cases in Africa where weak levels of pre-colonial statehood played a critical role in institutional changes during the colonial period (???).

This study suggests several avenues for future research. First, in-depth studies of other former Japanese colonies are warranted and may be possible by obtaining available colonial records from Japan. Such studies from other former colonies will certainly enrich our understanding of historical institutionalism under the context of colonialism and forced regime changes. We would also encourage further studies on the degree to which varying qualities of pre-colonial institutions affected both colonial and post-colonial outcomes; the majority of existing studies focus only on states with weak institutions, which likely led to the demise of the state but not necessarily the persistence of pre-colonial institutions. Finally, we believe that the yangban effect has long term implications beyond improvements in literacy. The literature on determinants of voting behaviors in Korea, for example, may benefit from looking at historical factors such as the yangban influence, as regions with high yangban
concentration likely have had both ideological and income divergence from the rest of the country.
# Tables and figures

<table>
<thead>
<tr>
<th>Table 1: Summary statistics</th>
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<tr>
<td><strong>Category</strong></td>
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<td>Literacy rate</td>
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<tr>
<td>Local elite</td>
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<td>Public schools</td>
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<td>Controls</td>
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<td><strong>Province Level (1911-1930)</strong></td>
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<tr>
<td><strong>mungua</strong> (per 1000)</td>
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<td>public schools (per 1000)</td>
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<td>non-agricultural occupation (%)</td>
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**Notes:** Robust standard errors are in parentheses. Dependant variables are literacy rate defined as the proportion of population who can read and write in Korean or Japanese. Columns with odd numbers employ Japanese literacy rate, while columns with even numbers use Korean literacy rate. **Mungua** is the number of **mungua** passers per 1000 population based on 1925 census. Public schools are per 1000 population in 1930 census. Non-agricultural occupation is the share of population working in non-agricultural sectors. Population density is 1000 population divided by approximate area; approximate area is the product of horizontal and vertical distances (km) of each district investigated in 1910. Variables not shown are province fixed effects. Columns (1) to (6) employ all districts, while the rest columns use restricted sample: Seoul is excluded in columns (7) and (8) and 14 urban centers in 1930 in columns (9) and (10). * p < 0.1, ** p < 0.5, *** p < 0.01.
Table 3: Local elites, schools and literacy rate (district level, sub-sample analysis)

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<td>1.358**</td>
<td>2.608***</td>
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<td>212</td>
<td>212</td>
<td>212</td>
<td>212</td>
<td>219</td>
<td>219</td>
<td>191</td>
<td>191</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors are in parentheses. Dependant variables are literacy rate defined as the proportion of population who can read and write in Korean or Japanese. Columns (1), (3), (5) and (7) employ Japanese literacy rate, while columns (2), (4), (6) and (8) use Korean literacy rate. Mungua is the number of mungua passers per 1000 population based on 1925 census. Public schools are per 1000 population in 1930 census. Non-agricultural occupation is the share of population working in non-agricultural sectors. Population density is 1000 population divided by approximate area; approximate area is the product of horizontal and vertical distances (km) of each district measured in 1910. Variables not shown are province fixed effects. In columns (1) and (2), we exclude 18 historical administrative centers from the sample. In columns (3) and (4), 19 commercial districts are excluded. In columns (5) and (6), 11 historical Confucian districts, birthplaces of 18 virtuous Confucian scholars, are excluded. Finally, all historical district are excluded in analyses of columns (7) and (8). * p < 0.1, ** p < 0.5, *** p < 0.01.
Table 4: Local elites and Korean teachers in public primary schools for Korean (district level)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
</tr>
<tr>
<td>mungua (per 1000)</td>
<td>0.003** (0.001)</td>
<td>0.017 (0.011)</td>
<td>0.005 (0.006)</td>
<td>0.100*** (0.037)</td>
<td>-0.003 (0.004)</td>
<td>0.070*** (0.019)</td>
</tr>
<tr>
<td>non-agricultural occupation (%)</td>
<td>-0.000 (0.001)</td>
<td>0.011*** (0.004)</td>
<td>-0.000 (0.001)</td>
<td>0.011*** (0.004)</td>
<td>-0.000 (0.000)</td>
<td>0.002 (0.002)</td>
</tr>
<tr>
<td>population density (1000 people/km²)</td>
<td>-0.015*** (0.004)</td>
<td>-0.051*** (0.017)</td>
<td>-0.015*** (0.004)</td>
<td>-0.043*** (0.015)</td>
<td>-0.014*** (0.002)</td>
<td>-0.016 (0.010)</td>
</tr>
<tr>
<td>province fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sample</td>
<td>all districts</td>
<td>Seoul excluded</td>
<td>1930 urban centers excluded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>230</td>
<td>230</td>
<td>229</td>
<td>229</td>
<td>216</td>
<td>216</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors are in parentheses. Dependant variable is the number of public schools per 1000 population based on 1930 census in columns (1), (3) and (5), and the number of Korean teachers per 1000 residents from 1930 census in columns (2), (4) and (6). Mungua is the number of mungua passers per 1000 population based on 1925 census. Non-agricultural occupation is the share of population working in non-agricultural sectors. Population density is 1000 population divided by approximate area; approximate area is the product of horizontal and vertical distances (km) of each district measured in 1910. Variables not shown are province fixed effects. Columns (1) and (2) employ full sample, columns (3) and (4) exclude Seoul, and columns (5) and (6) exclude 14 urban centers in 1930. * $p < 0.1$, ** $p < 0.5$, *** $p < 0.01$. 
Table 5: Local elites and Korean teachers in public primary schools for Korean (district level, sub-sample analysis)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
<td>public schools per 1000</td>
<td>Korean teachers per 1000</td>
</tr>
<tr>
<td>mungua (per 1000)</td>
<td>-0.000</td>
<td>0.067***</td>
<td>0.004</td>
<td>0.114**</td>
<td>0.007</td>
<td>0.120***</td>
<td>0.002</td>
<td>0.090***</td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.022)</td>
<td>(0.008)</td>
<td>(0.049)</td>
<td>(0.007)</td>
<td>(0.042)</td>
<td>(0.005)</td>
<td>(0.024)</td>
<td></td>
</tr>
<tr>
<td>non-agricultural occupation (%)</td>
<td>-0.001**</td>
<td>0.007***</td>
<td>-0.001</td>
<td>0.011**</td>
<td>-0.000</td>
<td>0.011***</td>
<td>-0.001***</td>
<td>0.006***</td>
</tr>
<tr>
<td>(0.000)</td>
<td>(0.002)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.000)</td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>population density (1000 people/km²)</td>
<td>-0.014***</td>
<td>-0.034**</td>
<td>-0.013***</td>
<td>-0.031**</td>
<td>-0.015***</td>
<td>-0.044***</td>
<td>-0.013***</td>
<td>-0.023**</td>
</tr>
<tr>
<td>(0.004)</td>
<td>(0.014)</td>
<td>(0.003)</td>
<td>(0.012)</td>
<td>(0.004)</td>
<td>(0.016)</td>
<td>(0.003)</td>
<td>(0.010)</td>
<td></td>
</tr>
</tbody>
</table>

province FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
Sample excluding historical administrative districts | 212 | 212 | 212 | 212 | 219 | 219 | 191 | 191 |

Notes: Robust standard errors are in parentheses. Dependant variable is the number of public schools per 1000 population based on 1930 census in columns (1) and (2), and the number of Korean teachers per 1000 residents from 1930 census in columns (3) and (4). Mungua is the number of mungua passers per 1000 population based on 1925 census. Non-agricultural occupation is the share of population working in non-agricultural sectors. Population density is 1000 population divided by approximate area; approximate area is the product of horizontal and vertical distances (km) of each district measured in 1910. Variables not shown include province fixed effects. In columns (1) and (2), we further exclude 18 historical administrative centers from the sample. In columns (3) and (4), 19 commercial districts are excluded. In columns (5) and (6), 11 historical Confucian districts, birthplaces of 18 virtuous Confucian scholars, are excluded. Finally, all historical district are excluded in analyses of columns (7) and (8). * p < 0.1, ** p < 0.5, *** p < 0.01.
Table 6: Sobel-Goodman mediation test for *mungua* passers, Korean teachers in public schools and Korean literacy rate

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean literacy rate</td>
<td>2.76**</td>
<td>.099***</td>
<td>1.67</td>
</tr>
<tr>
<td>(per 1000)</td>
<td>(1.29)</td>
<td>(.023)</td>
<td>(1.33)</td>
</tr>
<tr>
<td>Korean teachers in public schools</td>
<td>11.06***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(in 1929)</td>
<td>(3.80)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proportion of total effect that is mediated: 0.396

Ratio of indirect to direct effect: 0.657

Ratio of total to direct effect: 1.657

*Notes:* *Mungua* is the number of *mungua* passers per 1000 population based on 1925 census. Korean teachers is the number of Korean teachers working in public schools per 1000 population in 1930 census. Variables not shown include non-agricultural occupation and population density. Non-agricultural occupation is the share of population working in non-agricultural sectors. Population density is 1000 population divided by approximate area; approximate area is the product of horizontal and vertical distances of each district investigated in 1910. We exclude urban centers in 1930 from the sample.
### Table 7: The effects of historical elites on schools and teachers (province level)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>seodang</td>
<td>public schools</td>
<td>private schools</td>
<td>seodang</td>
<td>public schools</td>
<td>private schools</td>
</tr>
<tr>
<td>mungua (per 1000)</td>
<td>0.011</td>
<td>0.0004</td>
<td>0.003**</td>
<td>0.022</td>
<td>0.036***</td>
<td>0.014***</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.003)</td>
<td>(0.001)</td>
<td>(0.105)</td>
<td>(0.010)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>non-agricultural area (%)</td>
<td>-0.005</td>
<td>0.0003</td>
<td>-0.0001</td>
<td>-0.005</td>
<td>-0.0004</td>
<td>-0.0001</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.001)</td>
<td>(0.0002)</td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.0004)</td>
</tr>
<tr>
<td>population density (1000 people/km²)</td>
<td>-0.034</td>
<td>0.002***</td>
<td>-0.001*</td>
<td>-0.038</td>
<td>0.0004</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.001)</td>
<td>(0.0004)</td>
<td>(0.027)</td>
<td>(0.004)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>year fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>260</td>
<td>221</td>
<td>221</td>
<td>260</td>
<td>221</td>
<td>221</td>
</tr>
</tbody>
</table>

**Notes:** Standard errors clustered at the province level are in parentheses. Dependant variables are the number of schools per 1000 population of corresponding year (columns (1) to (3)) or the number of Korean teachers per 1000 population of corresponding year (columns (4) to (6)). Column (1) and column (4) employ the number of seodang and the number of teachers in seodang, respectively, as dependant variable. Columns (2) and (5) use the number of public schools and the number of Korean teachers serving in public schools, respectively, as dependent variable. Columns (3) and (6) employ the number of private schools and the number of teachers in private schools, respectively, as dependent variable. Mungua is the number of mungua passers per 1000 population in 1911. Non-agricultural area is the proportion of non-cultivated area. Population density is 1000 population divided by area (km²). Variables not shown include year fixed effects. * $p < 0.1$, ** $p < 0.5$, *** $p < 0.01$. 
Figure 1: Number of Mungua Passers (per 1000) by District
Figure 2: Literacy Rate Spread in 1930
Figure 3: *Mungua* passers, schools, teachers and literacy in 1930 by province

Notes: Abbreviated name of 13 provinces are listed on x-axis. GG = Gyeonggi, GW = Gangwon, CB = Chungbuk, CN = Chungnam, JB = Jeonbuk, JN = Jeonnam, GB = Gyeongbuk, GN = Gyeongnam, HH = Hwanghae, PB = Pyeongbuk, PN = Pyoengnam, HB = Hambuk, HN = Hamnam. Dashed horizontal line indicates the share of Korean literate population in 1930.
Figure 4: The Number of Public Schools during Japanese colonization (1914-1943)

Notes: Data source is Oh (2000, p.123). Dashed vertical line indicates 1930 when census surveyed the literacy rate.