

Foreign Education, Ideology, and the Fall of Imperial China*

James Kai-sing KUNG[†] Alina Yue WANG[‡]

Abstract

It has long been accepted that education is an important determinant of economic growth. What is less often observed is that, through indoctrination, education can also shape preferences and ideology. Using the 1911 Chinese Revolution as example, we demonstrate how the Qing government's intention to acquire knowledge useful for state building by sending students to study in Japan led to unexpected political consequences. By using the number of Chinese students in Japan as a proxy for the effects of foreign education, we show that counties with a higher density of overseas students had significantly higher participation in political parties, greater representation in electoral politics, and were more likely to declare independence from the Qing government. The content of education also mattered; political activism was significantly stronger in counties where more students studied arts and social sciences subjects. Schools and newspapers were the channels through which the ideology of nationalism was diffused.

JEL Classification Nos.: N45, O15, O53, P48

Keywords: Foreign Education, Ideology, Nationalism, Political Transformation, Content of Education, Human Capital, Imperial China.

*We thank Robert Allen, Sascha Becker, Felipe Valencia-Caicedo, Zhiwu Chen, Paola Giuliano, Yanfeng Gu, Bishnupriya Gupta, Bingjing Li, Kevin O'Rourke, Christopher Paik, Debraj Ray, Hans-Joachim Voth, Saumitra Jha, Ruixue Jia, Jin Li, Wing Suen, Noam Yuchtman, and participants at the CEPR-NYUAD Economic History Conference and other seminars held at the University of Hong Kong, National University of Singapore, Singapore Management University, and the University of British Columbia for helpful comments and suggestions. The remaining errors are ours.

[†]James Kai-sing KUNG, Faculty of Business and Economics, The University of Hong Kong, Pokfulam Road, Hong Kong. Email: jameskung@hku.hk

[‡]Alina Yue WANG, Faculty of Business and Economics, The University of Hong Kong, Pokfulam Road, Hong Kong. Email: yuew@connect.hku.hk

1 Introduction

Through indoctrination, education has long been used by rulers in nation building to shape the preferences and ideology of their citizens (Alesina, Giuliano and Reich, 2019; Clots-Figueras and Masella, 2013; Friedman et al., 2016; Fuchs-Schündeln and Masella, 2016).¹ For example, the compulsory schooling laws introduced in mid-19th-century America were aimed specifically at inculcating American civic values into the European migrants (Bandiera et al., 2019). Similarly, by using a natural experiment, Cantoni et al. (2017, p. 338) show that the textbook (curriculum) reform in China has successfully led to the subjects' "more positive views of China's governance, changed views on democracy, and increased skepticism toward free market reforms".

Precisely because of its powerful effect, many governments have used it to influence not just their own people but also those in foreign countries, leading, in some instances, to monumental political changes in these countries.² Using a cross-country panel data set, Spilimbergo (2009) finds a significant positive relationship between foreign-educated individuals in democratic countries and measures of democracy in their home country. Education is thus a double-edged sword; while it can be applied to fuel economic growth when the knowledge acquired is "useful" (Bandiera et al., 2019; Barro, 1999, 2015; Campante and Chor, 2012a,b; Easterlin, 1981; Friedman et al., 2016; Glaeser et al., 2004; Lipset, 1959; Mankiw, Romer and Weil, 1992; Papaioannou and Siourounis, 2008), it can also lead to social and political instability, when the new set of values learnt overseas becomes incongruent with those internalized in early life.

Late Qing China provides an ideal historical context for examining the causal effect of foreign education on political transformation. After two millennia of imperial rule, the Qing Dynasty was finally brought to an end in 1911 by a revolution staged by overseas students who returned from Japan, many of whom represented the best talent, sent by the Qing government to acquire knowledge in a variety of modern academic disciplines deemed necessary for state building. What the

¹History is replete with examples of the nation-building motives behind the development of compulsory state education in Europe and America (see Tilly, 1975; Weber, 1979, cited in Alesina, Giuliano and Reich, 2019).

²Recent attempts to introduce democracy to Iraq and Afghanistan have similarly been heavily dependent on foreign-educated leaders who were initially sent overseas by their governments (Bu, 2003). The same applies to colonial education. In colonial Benin, students who attended the first regional schools were found to have been more politically active (Wantchekon, Klačnja and Novta, 2015).

Qing government failed to anticipate was that the experience of studying in Japan unwittingly heightened the students' national consciousness. In a context where the Qing government was seen as incapable of fending off the intrusions of the Western powers, the growing sense of nationalism led to enormous political consequences. In furthering their political cause, many students had already joined the emerging political parties as well as running newspapers (printed in Japan and shipped to China) and translating modern Western thought, etc. while still in Japan, with the aim of spreading revolutionary ideas to the Chinese people. These activities increased upon their return to China. To increase the influence of newspapers, colloquial dialects were used instead of formal classical Chinese, and newspaper reading and recitation rooms were set up to alleviate the financial and literacy constraints of the common people. As part of their obligations, many students were assigned to teach in modern schools established to replace Confucian academies on their return to China. Irrespective of their level, these modern schools became the primary venue where the returned overseas students spread revolutionary stories and ideas by adopting a number of new disciplines such as literature, geography and history. The more ambitious ones participated in electoral politics, and some even obtained seats in the provincial assembly (Harrell, 1992; Jansen, 1980; Reynolds, 1993; Zhang, 1969). Consequently, as political tensions continued to mount, a series of upheavals inevitably erupted; the inevitable series of upheavals eventually culminated in the 1911 Revolution.

To empirically test the hypothesized effect of foreign education and its underlying ideology of nationalism on political transformation, we constructed a unique data set for overseas Chinese students in Japan during the period 1896-1911 from various historical sources, including archival materials kept by the Japanese Government's Education Bureau, the Qing Ministry of Supervision based in Tokyo, and also those collected by Academic Historica of the Republican Government. To our knowledge, this data set represents the most comprehensive record of Chinese overseas students who attained the senior high school qualification or above in Japan during 1896-1911.³ To measure political transformation, we employed membership of political parties and the extent to which a county was represented in the provincial assembly in 1909 – the first time imperial China implemented a representative democracy. Finally, to measure the effect of foreign education on revolution we enumerated the counties that declared independence from the Qing

³1896 is chosen because it was the year immediately after the end of the First Sino-Japanese War.

government during the 1911 Revolution.

To examine the causal relationship, we employed an empirical design that is essentially a difference-in-differences (DID) approach. As no counties in our sample ever experienced this kind of political transformation before the overseas students in Japan returned to China, our main task is to ensure that no counties were more predisposed to be selected for “treatment” than others. To meet that challenge, we confined our baseline specification to a group of 143 counties located along the lower Yangtze River Delta, which in Qing China and at other times represented the most uniformly prosperous region of China (Figure 1).⁴ Further, to minimize unobserved differences due to geography, we control for a county’s shortest distance from the Yangtze River (measured from its centroid), as well as latitude and longitude. In terms of observables, we find that these counties were strikingly similar to each other in terms of initial economic conditions, human capital endowment, and Western economic influences, to the extent that the resulting estimates can be taken as the best approximation of the true outcomes of the quasi-random assignment of returned overseas students on Qing’s political transformation. To ensure that doing so does not compromise the external validity, we extend our sample to include the middle and also the entire Yangtze region and increase our sample to 405 and 540 counties, respectively, before we employ the entire national sample of 1,528 counties for analysis. Irrespective of sample choice, we obtain similar results.

[Figure 1 about here]

Our analysis yields three key findings. The first is that political transformation as measured by our three dependent variables is significantly stronger in counties with more students returning from Japan. In terms of magnitude, a county with an additional senior high school graduate in every 10,000 people is associated with nearly 12 more people in that county participating in political parties, had fully one more elected member representing in the provincial assembly, and 1.6 times more likely to declare independence from the Qing government. We interpret these results as a consequence of the overseas students’ distinctly greater involvement in persuading the people in their own counties of the virtues of political change.

Our second and third findings concern the possibly additional effects of foreign

⁴The Yangtze River is the longest river in Asia and also in the world to flow entirely within a single country. According to economic historians, the living standard in this particular region of China was comparable to the most advanced regions in Western Europe, in particular England (Pomeranz, 2000; Li and Van Zanden, 2012).

education, which we find systematically follow the pattern of academic specialization and educational attainment. The content of education affected political participation (Cantoni and Yuchtman, 2013). Indeed, perhaps arts and social science students held stronger democratic values and ideals, they were engaged in politics significantly more actively than their peers in the science, engineering, and medicine (*SEM*) disciplines in terms of all three outcome measures. To allay the concern that students with a stronger radical disposition might have deliberately chosen to study the arts and social science subjects, we examine only a subsample of students carefully selected and sponsored by the government to enroll in a program chosen by the government, as these students were not allowed to choose or switch their major freely. Doing so confirms that there is no significant difference between these students and those of the full sample.⁵ But the same cannot be said of human capital. Unlike the content of education, counties with more returning students who had earned a university degree or above are not significantly associated with more people in that county being members of political parties, although these counties were better represented in the provincial assembly as well as being more likely to have declared independence.⁶

Although we have designed our empirical strategy with great methodical care to minimize potential selection bias, there may still be remaining concerns. The first is that students with a penchant for democratization might be more likely to go abroad (“selection out”). Expanding on the above strategy, we not only address this concern by employing the subsample of government-sponsored students; we also examine the small number of military students who were chosen with even *greater* care by the Qing government. The results of both these checks suggest that this particular selection issue is not a major concern. A second concern is that students who were more enthused with staging a revolution may have chosen to go to places that were more prone to revolution upon their return (“selection in”). In the absence of information on the returnees’ workplaces, we assign them randomly to counties other than their birthplace and find the results insignificant in the overwhelming majority (90%) of these trials.

We also perform a number of checks to rule out the concern for alternative

⁵As Cantoni and Yuchtman (2013) point out, differences in content may reflect governments’ explicit policy aims, which in turn are constrained by political concerns. For example, in the context of the late Qing, the government may have preferred to sponsor a student to study law because of the perceived need to establish a constitutional monarchy.

⁶The only exception for declaration of independence is the lower Yangtze, presumably because human capital was distinctly higher among the counties there, inducing greater competition for a seat in the assembly.

stories. For instance, we show that the causal effect in question is not because Japan provided a convenient place for rebels to connect, and that the effect of foreign education is indeed driven by a nationalist ideology.

Finally, we provide suggestive evidence to show that schools and newspapers were the two primary channels through which the ideology of nationalism affected political participation both at the broad level of mass participation and electoral politics, as well as the declaration of independence irrespective of whether a county had experienced upheavals.

Our work is related to several bodies of literature in economics. First, by showing the causal effect of foreign education on political engagement and transformation, we add to, but also enrich the voluminous literature that relates levels of development in general, and schooling in particular, to democratization (e.g. [Bandiera et al., 2019](#); [Barro, 1999, 2015](#); [Campante and Chor, 2012a,b](#); [Easterlin, 1981](#); [Friedman et al., 2016](#); [Glaeser et al., 2004](#); [Lipset, 1959](#); [Papaioannou and Siourounis, 2008](#), among others). More specifically, by showing that foreign education has a causal effect on political transformation, our paper goes beyond [Spilimbergo's \(2009\)](#) fascinating cross-sectional evidence of the relationship between foreign education and democracy, to provide policy implications for both countries sending talents overseas for nation building, and countries financing foreign education with the aim of fostering a particular system of values.

Second, our discovery of the unexpected role of foreign education in toppling a sizeable but ancient nation also contributes to an emerging literature that examines the link between education and nation building ([Alesina, Giuliano and Reich, 2019](#)) – be it by means of shaping ideology and preferences through curriculum design ([Cantoni et al., 2017](#)) or by homogenization through a common language ([Clots-Figueras and Masella, 2013](#)). In relation to the idea that curriculum has had the powerful effect of shaping ideology, our finding that academic specialization significantly affected political transformation lends empirical support to the premise that the content of education or specific types of human capital matters for ideological indoctrination ([Cantoni and Yuchtman, 2013](#)). It is from this vantage point that the Mokyrian sense of “useful knowledge” has implications that go beyond economic development.

Third, our story of foreign education having a significant effect on political change also goes a long way towards addressing the important question of why the right to vote failed to be extended in many circumstances and why revolutions

occurred as a result; particularly when people are strongly committed to an ideological cause, or when rulers are not sufficiently “forward-looking” and thus fail to act proactively to mitigate the threat to democracy (Acemoglu and Robinson, 2000, 2001; Aidt and Franck, 2015; Besley, Persson and Reynal-Querol, 2016).⁷ In the context of China, we provide a complementary explanation to account for the eventual fall of imperial China. While Bai and Jia (2016) identify the effect of the sudden blocking of social mobility in motivating some individuals to study in Japan, we study what students brought back from Japan.⁸ The two explanations are therefore highly complementary; just as the pure ideological stimulus of foreign education would unlikely be effective in the absence of mobility and other concerns, reduced social mobility alone may require more time to yield collective action.

The rest of the paper is organized as follows. In Section 2 we provide the necessary historical context to facilitate understanding of the exogenous shocks faced by the ruling elites in late Qing China and their corresponding responses. Section 3 introduces the variables of interest and various data sources, as well as explaining our empirical strategy. Section 4 reports and discusses the empirical results, including a number of checks on robustness. In Section 5 we examine the additional effect of academic specialization and educational attainment on political transformation. Section 6 examines the channels underlying the diffusion of the nationalist ideology through schools and newspapers. Section 7 concludes.

2 Background

For centuries, Japan had been considered a small neighboring country and a humble student of Chinese culture, technology, and political system. But the shocking defeat by the Japanese during the First Sino-Japanese War (c. 1894-1895) swiftly reversed the status quo and confirmed that Japan had now clearly surpassed China as a political and military powerhouse, thanks to the *Meiji* Reforms. More specifically, it brought the Chinese to the realization that the mere adoption of foreign

⁷According to Acemoglu and Robinson (2000, 2001), democratization represents a rational response from autocrats to a temporary threat of revolution, to the extent that revolution requires collective action that cannot always be organized. This theory finds empirical support in the context of the Great Reform Act of 1832 (Aidt and Franck, 2015). However, democratization in this instance did not necessitate an institutional change – parliament was already well established in England.

⁸Bai (2019) also studies what was brought back from Japan. Specifically, he finds that the students who returned from Japan brought economic prosperity to their home prefectures by establishing more modern firms.

technologies was insufficient to forge a strong empire.⁹ To strengthen itself, China would need to undertake a similar reform.

A series of sweeping reforms were thus carried out in earnest in the early 1900s in various key sectors such as education, the military, and so forth with the aim of state building, only to discover that they woefully lacked the kind of knowledge required to implement the new programs – be it in schools, business organizations, the courts or the military. This was because, for well over a millennium, China’s education was heavily steeped in the ethos of the Confucius classics (specifically the *Four Books* and the *Five Classics*), a corpus of knowledge that essentially lays heavy emphasis on subordination to authority and social harmony. While this emphasis may help to reduce conflict in a society, it fails to facilitate economic development because of its lack of practicality (Mokyr, 2002; Needham, 1969).¹⁰ It was against this painful awakening that the Qing government dispatched the country’s best talents to study abroad,¹¹ resulting in what was the largest wave of overseas study in Chinese history (Jansen, 1980; Spence, 1990). Figure 2 displays the trend of overseas studies in Japan, which shows that the number of overseas students increased dramatically in 1905 following the abolition of the civil exam system, many of whom were self-sponsored, but fell significantly after 1906 after the Japanese government cracked down on many poor quality so-called “cram programs”.

[Figure 2 about here]

To the Qing government, Japan was an obvious choice for several reasons. At the broadest level, Japan had once faced challenges strikingly similar to those

⁹Initially, defeat by the British during the two Opium Wars (c. 1839-1842 and 1856-1860) alerted the Middle Kingdom to its own weakness on the military and technological fronts, a weakness that could be remedied easily by importing modern technologies. Under the rubric of a “self-strengthening movement”, Qing China imported many of the technologies required to establishing shipyards and arsenals and naval and military academies, and developed industry ranging from coal mines and cotton mills to iron and steel complexes, as well as basic infrastructure such as railways and the telegraph to facilitate development (see, e.g., Kuo and Liu, 1978; Spence, 1990).

¹⁰Using a sample of employee records from the *Tianjin-Pukou (JinPu)* Railroad, Yuchtman (2017) shows that there were enormous premiums associated with modern university education in general, and engineering in particular. Moreover, employees trained in the modern education system were typically employed as managers, whereas those educated under the traditional system were disproportionately hired as clerical workers.

¹¹The importance of going abroad was emphasized by the viceroy of the provinces of *Hunan* and *Hubei*, *Zhang Zhidong*, who remarked that “(t)o study in the West for one year is better than reading Western books for five years...” (cited in Jansen, 1980, p. 349). In a similar vein, *Lu Xun*, an eminent literary critic and novelist at the time, commented that to acquire new knowledge and to learn new ways of doing things, “going abroad was the only remaining course”.

confronting the Chinese at the time and had successfully overcome them. Like China, Japan was forced by several Western powers to open up for trade and other purposes after centuries of nearly complete isolation. But perhaps most important of all is that Japan managed to build a modern nation-state by learning from Britain and Germany and grafting a constitutional structure onto the existing imperial system without overthrowing imperial rule, an outcome the Qing government found especially appealing given its concern for its own survival. Furthermore, the perception that Japan's rise owed much to its strategy of sending talented students to study in the West must also have convinced the Qing's political elites that sending students to study abroad was the right thing to do. Finally, it was much cheaper to study in Japan than in either Europe or the U.S., while the cultural affinity between the two countries in terms of language and philosophical underpinning (Confucianism) also made Japan a preferred choice.

To understand why the experience of studying in Japan strengthened the national consciousness of the Chinese students, we begin by examining the unique features of the modern Japanese education system. While the Japanese had adopted a thoroughly Westernized system of education with an emphasis on the values of individual dignity and human rights,¹² the *Meiji* emperor insisted that students must be inculcated with a strong sense of moral duty and responsibility toward the nation (nationalism or *shuushin*) from an early age, to the extent that they would be willing to sacrifice themselves for the country in the event of foreign invasion (Jansen, 1980; Karasawa, 2002; Khan, 1997; Yoshino, 1992). Emperor *Meiji* could not be clearer on his stance: “*The education for civilization and enlightenment so far has put such a great stress on the Western thought, and it has neglected the aspect of morality, which should constitute the basis of education*” (Munakata, 1966, p. 550).¹³ To implement his vision, the government thus introduced “moral education” with a distinct emphasis on nationalism at all levels of the school curriculum. To reinforce the rigor of this ideological indoctrination, nationalism was to be emphasized on occasions of all kinds but especially at school ceremonies where

¹²For instance, the Japanese education system was modelled after the French in terms of structure, the Americans in terms of curricula and pedagogy, and the Germans in military training (Munakata, 1966).

¹³For example, in the lesson on The Nation, it was stated that: “*the state exists independently forever, but the individual for only a time. Compared with the state, a person's life is very brief. It is only natural that the people must conform to the purpose of the eternal state and give no heed to personal interests.*” The intended goal of education was to nurture students to become “*men of Japanese Spirit and Western learning*”. The fact that elementary school enrollment reached 90% of the school-age population in merely a decade's time (1900) may have helped the emperor to achieve this important educational goal (Keenleyside and Thomas, 1937).

school principals had to read out the “Imperial Rescript on Education” solemnly – an edict that basically emphasized the singular importance of nationalism. Given that a good majority (60%) of the Chinese students were attending senior high school at the time, the importance of national consciousness was obvious to them.

Outside of schools, the social circumstances in Japan were also conducive to strengthening the Chinese students’ national consciousness through “condescension and discrimination” (Jansen, 1980, p. 354). By the time the Chinese students arrived in Japan, patriotism had developed to extremes “that had never been known before” as a result of the victory over China (Kotoku Shusui, cited in Jansen, 1980, p. 354). The Chinese students thus became obvious targets for treatment with “a great deal of derision and contempt” (Jansen, 1980, p. 354). Meanwhile, back in China, the Qing government found itself frequently pressurized by the growing concessions of various Western powers; worse, instead of acknowledging the students’ patriotism when they protested against these imperial intrusions with which the Qing government was unable to cope, it suppressed them untowardly.¹⁴ To many, the inescapable conclusion was that there was no alternative to the hope for a strong China but revolution.

Perhaps with this agenda in mind, upon returning to China many overseas students took on the role of political agitator and began to orchestrate myriad activities with potentially larger consequences. To spread revolutionary thoughts and to recruit members, they infiltrated schools and published newspapers, magazines and in some instances even pamphlets. In the case of schools, the switchover to a modern curriculum had unwittingly created a niche for returned overseas students to take an active part in the modern schools because they were the ones equipped with the knowledge required by the new curriculum.¹⁵ Famous examples included the national heroine *Qiu Jin*, the number two leader of *Tongmenghui* *Huang Xing*, and the famous educator *Cai Yuanpei*, among many others (see Section 6.1 for further details). In the case of the newspapers, the establishment of a national postal service in 1897 had given rise to their popularity, as was manifested

¹⁴A notable example was the 1903 *Resist-Russia Volunteer Corps* in Tokyo, which aimed to protest Russia’s continuing occupation of Manchuria. About 150 of the 800 Chinese students in Tokyo at the time actively participated in this anti-Russia effort (May 18, *Su Pao*). Harrell (1992) contains other examples of anti-imperialist movements organized by overseas students in Japan.

¹⁵The city of *Changsha* (the capital of *Hunan* Province in southcentral China) provides a telling example. In the 57 schools in this capital city with an enrollment of approximately 3,000 students, as many as 200 teachers were returnees from Japan. Consequently, many students were recruited by their teachers into various revolutionary societies (Li, 1987).

in both their rich variety (e.g., newspapers ran by the reformers and revolutionaries coexisted with commercial newspapers) and the concomitant rise in the popularity of newspaper reading and recitation rooms established to overcome the budget and literacy constraints of the common people. Further contributing to the popularity of newspapers was the conscious decision of many publishers to publish in colloquial language, as only a tiny fraction of the male population were trained in classical Chinese for the civil exam. As we will show in Section 6.2, newspapers, magazines, pamphlets and translated texts¹⁶ had all become important means of propaganda skillfully deployed by both revolutionaries and reformers alike to diffuse the nationalist ideology.

With overseas students actively serving as an agent of social change, Qing society began to experience monumental political transformation in the last decade of its existence. For the first time in the long history of China, political parties finally came of age. While these parties differed in their objective and strategy to transform the ailing Qing regime, their broad goal was to advance the national development of China by confronting imperialism.¹⁷ Between the two broad alliances (revolutionaries versus reformers), the former – especially the variant known as *Tongmenghui* – had greater appeal to the Chinese students in Japan.¹⁸ Another important political development was the establishment of provincial assemblies in 1909. In this respect, an estimated 1.7 million men, or 0.42 percent of a population of 410 million, were eligible to register as voters during the 1909 provincial assembly election, at a time when suffrage was still far from universal.¹⁹ For our purpose, the key point is that more than half of the assemblymen (52%) elected that year had studied in Japan, with the percentage becoming even higher in 1912 (Zhang, 1969).²⁰ Whether they were actively engaged in revolutionary change or

¹⁶As many as 533 foreign titles were already translated between 1902 and 1904, with more than half of them (some 60%) being retranslated from Japanese. In 1903 alone, 187 titles were translated, exceeding the number the *Jiangnan* Arsenal's Translation Bureau had accomplished in 30 years.

¹⁷There were by and large two major political alliances of radically different ideological persuasions. Whereas one believed outright in taking down the Qing regime (the Revolutionaries or *Geming pai*), the other one subscribes to peaceful negotiations with the Qing authorities with respect to political and other reforms (the Constitutionalists or *Lixian pai*).

¹⁸*Tongmenghui* was a united revolutionary alliance founded by *Sun Yat-sen* during his visit to Japan in 1905.

¹⁹According to “Regulations for Provincial Assembly Elections”, a candidate must at least be a *shengyuan* or licentiate under the civil exam system or, a middle school graduate under the modern education system or, owning a property no less than 5,000 *guan* or, having three years of experience as a civil servant/school administrator above the seventh rank (out of nine) or above the fifth rank of the military.

²⁰A major newspaper, *Shi Pao*, regarded the election as the most important episode in the

participated in electoral politics, the overseas students were undoubtedly stamping a profound political mark on this last episode of China’s dynastic decline.

In its last decade of dynastic rule, the Qing government found itself not only confronted by political tensions associated with intrusions by the Western powers, but also troubled by the mounting fiscal difficulties arising from the Late Qing Reforms (education, military, etc.) that it had committed to. In the face of massively growing fiscal deficits, the Qing government was forced to raise taxes on agriculture and other land-related activities, and to impose new duties on a wide range of commodities (tea, wine, salt, etc.), fanning the anger of the common people. Subject to ever sharper criticism, the Qing government was considered unfit to govern China (Spence, 2013). On October 10, 1911 the *Wuchang* Uprising was finally staged, leading many localities – counties and prefectures – to declare independence from the Qing government. The curtain was finally drawn on a 2,000-year-long dynastic rule.

3 Empirical Strategy

3.1 Variables Definition and Data Sources

3.1.1 Independent Variable

We employ the number of overseas Chinese students in Japan during 1896-1911 as our independent variable to measure the effect of foreign education on political transformation. We cannot enumerate everyone who went to Japan because the great majority of these students went to Japan very briefly (mostly one to two months, with some even less than a month), enrolling in so-called *sokuseihan* or “cram schools” catering especially to Chinese students – programs not officially recognized by either the Japanese or Chinese government (Harrell, 1992; Shu, 1929; Futami and Sato, 1978).²¹ We thus enumerate only those who graduated from senior high school and above. Our choice of this particular cut-off point is not arbitrary. In 1904, the Qing government passed a regulation, *Regulations Governing Awards Conversion for Graduates Studying Abroad*, which allowed a

development of democracy in China (“the first day in Chinese history on which the people can elect their own representative”).

²¹Indeed, according to the Chinese Ministry of Education (1907), of some 7,000 Chinese students in Japan at that time, only 3-4% studied at senior high school or specialized school (whose qualification was commensurate with an associated bachelor’s degree), with slightly over 1% attending university. The remainder went there to gain a fast qualification after the civil exam was abolished in 1905.

certified senior high school qualification from Japan to be converted to a *juren* qualification – one level above a *shengyuan*, with guaranteed employment in the government (see Table I in the Appendix on *Meiji* Japan’s education system).

To be sure, overseas Chinese students in Japan have been the subject of many historians (e.g. Harrell, 1992; Jansen, 1980; Li, 1987; Reynolds, 1993; Saneto, 1960; Shu, 1929, among others). But none of these studies enumerated the personal particulars of these students at the individual level with information such as the student’s name, birthplace, major, and year of graduation. To construct this data set, we merged together the following data sources, which represent the most detailed and systematic data set for Chinese overseas students in Japan. The first major data source is *Nihon ryugaku Chuka Minkoku jinmeishira, dai 1,2,3-kan* (A Survey Report of Chinese Overseas Students in Japan), which was compiled by the Japanese Government’s Education Bureau. This source contains information on all Chinese students who ever graduated from universities, specialized schools or senior high schools certified by the Japanese government between 1898 and 1937. However, of the 4,712 graduates it enumerates, detailed personal information is available for only 2,992. To remedy this deficiency, we supplemented the missing information with two other sources. *Qingguo liuxue sheng huiguan baogao, Vol. 1-5* (Administrative Report on Qing Overseas Students in Japan) is one of them. This particular source was compiled by the Qing Ministry of Supervision based in Tokyo, who enumerated every registered student on their arrival in Japan and enrolled in any Japanese school during the 1898-1905 period regardless of the program’s duration. A total of 5,312 overseas students who enrolled in any Japanese school during this period were enumerated, with detailed information for the student’s name, birthplace, year of registration, sponsorship, and the registered school/program. Our second supplementary data source comes from *Kaoyan chuyang biyesheng zhangcheng* (Records of Overseas Students in Japan), which is stored in the archival office of Academia Historica (*Guoshi guan*) in Taiwan. Unlike the other two sources, this was ‘customs statistics’ collected by each provincial government during the short period of 1907-1911. This particular source provides the personal particulars of up to 3,911 overseas students who returned to China from Japan during this period, including their names, birthplaces, year(s) of registration, and the corresponding major(s) in all the schools which they had attended. Together, these two supplementary sources increase the number of observations from the main data source from 2,992 to 4,191 qualified overseas Chinese students in Japan for our period of interest in respect of their

name, gender, birthplace (county), year of registration and graduation (for every school attended), nature of sponsorship, area of specialization, and highest degree attained. Figure I in the Appendix provides an example of our data sources, and Figure II shows the geographic distribution of these students by birthplace at the county level.

Table 1 provides a detailed breakdown of these students by geographic origin, nature of sponsorship, whether a student had obtained traditional civil exam qualifications before leaving for Japan, majors pursued, and the level of qualifications attained. Nearly two-thirds of the overseas students, 65%, returned to the Yangtze River Delta region, and more than a third, 36%, were accounted for by the lower Yangtze. Of the overseas students who had senior high school qualification or above, more than one third, 37%, were sponsored by the Qing government, and about 40% had already earned a traditional civil exam qualification before going abroad. The subjects that the overseas students studied in Japan were diverse, ranging from arts and social sciences (law, politics, education, and economics) to physical sciences (math, physics, chemistry, and agriculture), engineering, medicine, and military. But to meet the urgent demand for skills in law and economic reforms at that time, an overwhelming majority, 74%, studied arts and social sciences including law, business and economics. And about half of these students, 60%, earned a qualification equivalent to senior high school, and 40% earned a university degree or higher (master's or doctoral).

[Table 1 about here]

3.1.2 Dependent Variables

We identify three outcome variables to measure political transformation. The first is political participation – a hallmark of democratic politics. This measure takes on additional importance, because it was in the late Qing that political parties emerged for the first time. To measure participation, we enumerated party membership at the county level (normalized by a county's population) irrespective of party choice, on the grounds that both parties aimed to advance national development in China. The list of party membership was obtained from *Zhongguo jindaishi ziliao congkan* (Collection of Materials on Modern Chinese History, 1957). Figure III in the Appendix shows the geographic distribution of political participation.

Another hallmark of democracy is electoral politics or in the specific Chinese context representation at the provincial assembly, which in the 1909 election at-

tracted participation from over 300 civic groups, and was the first and only popular election to ever occur in Chinese history. This was surely another arena in which the returned overseas students contributed, as evidenced by the fact that more than half (52%) of the elected assemblymen had studied in Japan (Zhang, 1969). As with political participation, this variable enumerates the number of elected assemblymen with a particular county of origin. We obtained the list of provincial assemblymen from Zhang’s (2008) *Zhongguo mingzhu zhengzhi de kunjing, 1909-1949* (The Predicament of Democracy in China, 1909-1949). Figure IV in the Appendix shows their geographic distribution by birthplace.

Our third variable is a direct measure of revolutionary outcome or regime change, which we estimated by enumerating counties that declared independence during the 1911 Revolution. Altogether 14 out of 18 provinces had declared independence. While violent confrontations occurred in many areas, others went through the process in a largely peaceful manner. Given that many returned overseas students from Japan had contributed immensely to staging uprisings in the 1911 Revolution,²² to ensure that our estimates are not biased, we also employed only those counties where violent confrontations between the revolutionaries and the Qing army had taken place as an alternative measure, and obtain similar results. Figure V in the Appendix shows the data on whether a county experienced riots or peaceful transition as digitized from *Xinhai geming ditu* (The History of the 1911 Revolution in Maps).

Before introducing our control variables, we undertook a preliminary analysis to confirm the overall effect of foreign education on political transformation between the treated group – namely the counties with returned overseas students, and the control group – counties without returned overseas students, using the *t*-statistic. Table 2 shows that counties with returned overseas students differ significantly from those without in all three outcome variables of political transformation, and regardless of sample choice.

[Table 2 about here]

3.1.3 Control Variables

In addition, we also take into account a number of regional characteristics such as initial economic conditions, human capital endowment, and Western economic

²²These students mobilized the masses, coordinated with the secret societies and/or military officers in the New Army, and provided necessary resources.

influences, all of which could possibly affect our outcome variables of interest.

Initial Economic Conditions

Proponents of “modernization theory” have long maintained that the level of development or economic prosperity is likely to have an effect on democratization (Lipset, 1959). We control for its possible effect using such conventional proxies as agricultural (caloric) suitability, population density, and urbanization rate. The caloric suitability index is constructed by calculating the difference between adjacent cell grids (5km*5km) in ArcGIS based on Galor and Özak (2016),²³ where the average population density and urbanization rate during 1880-1910 were obtained from Cao (2006).

Human Capital Endowment

The trend to study overseas is probably affected by the prevailing level of human capital endowment; other things being constant, a county better endowed in human capital would be likely to send more students overseas and for that reason attract more returnees. We use two measures as proxies for human capital endowment in late Qing China. First, we employ *jìnshì* density (the highest level of attainment in the civil exam system) to measure traditional upper-tail human capital endowment (Chen, Kung and Ma, 2020), which is calculated by the number of *jìnshì* in a prefecture normalized by its population.²⁴ We also control for the *shengyuan* quota (the licentiate – the entry level of the traditional civil exam system) apportioned to each county and normalized by its population, given its potential effect on social mobility (Bai and Jia, 2016).

Western Economic Influence

Since the 1840s, China had been exposed to multiple influences from the West, ranging from the development of modern business institutions to the diffusion of Christianity. *Ceteris paribus*, we thus expect counties that were more thoroughly exposed to Western thought and practices to be more heavily influenced by their associated ideologies, especially democratic ideals and national consciousness. To measure these influences we controlled for treaty ports (using the cumulative number of treaty ports as a proxy), foreign firms and banks (using their cumulative number including their branches as a proxy), the number of universities per 10,000 people (university density), and missionary density (using the number of commu-

²³Obtained from <https://ozak.github.io/Caloric-Suitability-Index/>.

²⁴Data limitations preclude us from using the county as the level of analysis for this variable, however. See Chen, Kung and Ma (2020) for details on the sources.

nicants per 10,000 people as a proxy). The data on treaty ports are obtained from [Zhang \(1993\)](#), foreign firms and banks from [Huang and Yu \(1995\)](#) and the Yearbook of National Banks (1934), respectively, the universities from *Diyici jiaoyu tongji tubiao: Guangxu sanshisan nian fen* (The First Education Statistical Yearbook of China, 1907), and [Stauffer, Wong and Tewksbury \(1922\)](#) for data on missionaries.

3.2 Identification Strategy

Our key challenge is to identify the causal role of foreign education on political transformation. To do this, we employed an empirical design that in essence resembles a difference-in-differences (DID) analysis. As no counties in Qing China had ever experienced this kind of political transformation before the overseas students in Japan returned to China, the latter’s effect is estimated at the specific time-point where the corresponding outcome variable becomes “switched on”, which in our historical context are: 1906 (for political participation), 1909 (for election of provincial assemblymen) and 1911 (for declaration of independence), respectively (Figure VI in the Appendix). Given that the issue of “parallel trend” does not concern us here, our main task is to ensure that our estimation does not suffer from selection bias, i.e., that no counties were more predisposed than others for selection into treatment, so that the resulting estimates represent the true outcome of a quasi-random assignment of the returned overseas students.

The selection issue is important because intuition suggests that counties endowed with higher human capital or influenced more heavily by Western economic forces and ideas might be more inclined to send students to acquire modern knowledge in Japan. Likewise, there might be a similar concern that overseas students might be more inclined to return to the economically more prosperous counties for better employment prospects or counties more prone to spark upheavals if they were more inclined to be engaged in politics. To address this concern, we begin our baseline estimates using a group of 143 counties located in the lower Yangtze River Delta (Figure 1), based on the reasoning that counties in this region were uniformly prosperous. To further minimize unobserved confounding differences between them caused by geography, we include the linear effects of latitude, longitude, and a county’s shortest distance to the Yangtze River (measured using the centroid) as controls. In terms of what we can observe, we compare the counties in this region along three key dimensions: the initial economic conditions (using

population density and urbanization rate as proxies), human capital endowment (using *jins* density, share of *shengyuan* quota, and university density as proxies), and Western economic influences (using treaty ports, missionary communicants, and foreign firms and banks as proxies), and find them to differ insignificantly from one another (Table 3).²⁵ To check for robustness, we also employ propensity score matching (with full recognition of its limitations), and obtain similarly significant but larger coefficients for all three outcome variables of interest.²⁶

[Table 3 about here]

While the lower Yangtze sample provides a good match to our empirical strategy, it raises concerns about external validity. To alleviate that concern, we extend our geographic coverage to include the middle Yangtze region also (colored blue in Figure 1); doing so increases our sample size to 405 counties. We then further extend it to the entire Yangtze region consisting of 540 counties.²⁷ Once again the checks in Table 3 reveal that the counties in these two larger samples do not exhibit any significant differences in terms of the same set of control variables.²⁸ Finally, we employ the entire national sample of 1,528 Chinese counties to check external validity further.

The equation for estimations can now be specified as follows:

$$y_{c,p}^j = \beta_0 + \beta_1 OverseasStd_{c,p} \cdot I_j^{Post} + \gamma X_c + f(Geolocation_c) + I_p + I_{yangtze} + \epsilon_{c,p}$$

Where $y_{c,p}^j$ denotes the outcome variable of interest j in county c of province p . $OverseasStd_{c,p}$ is the density of returned overseas students in county c of province

²⁵The only minor exception is population density, which is marginally significant at the 10% level.

²⁶A key shortcoming of propensity score matching is that it can only account for observed (and observable) covariates. Factors that affect the assignment to the treatment and outcome but which cannot be observed, are unaccounted for in the matching procedure, so that any hidden bias caused by latent variables may still remain after the matching (Pearl, 2009). Another concern is that this approach requires large samples, with substantial overlap between the treatment and control groups (Abadie and Imbens, 2016). The size of our sample is ill qualified to satisfy this particular requirement.

²⁷The classification of counties into different regions of the Yangtze is based on Skinner, Henderson and Yue (2007), <https://doi.org/10.7910/DVN/4BEKXX>, Harvard Dataverse, V1. Instead of using provincial boundaries, Skinner et al. use the watersheds of major rivers and population density as two of four criteria for spatially organizing what he calls “macro-regions” in China. Out of the nine regions thus constructed, the Yangtze River Delta is divided precisely into the lower, middle, and upper regions.

²⁸There is, once again, a minor exception. In the overall Yangtze region sample, the variable treaty ports is significant at the 10% level (column (3) of Table 3).

p , which is calculated by dividing the total number of returned overseas students who attained senior high school qualification or above from Japan during 1896-1911, by population (per 10,000). I_j^{Post} is an indicator variable equal to one for the years after the corresponding outcome variable j has been “switched on”. For example, the specific year for political participation is 1906 and for county representation is 1909, respectively. The vector X_c consists of a list of the county-specific characteristics outlined in Section 3.1.2. To further control for the possible effect of geography, we include both a county’s shortest distance to the Yangtze River (measured from its centroid) and location ($f(Geolocation_c)$) in the specification, in which $f(Geolocation_c)$ is a linear and two-dimensional specification in latitude and longitude. Last, we control for province and Yangtze fixed effects, I_p and $I_{yangtze}$, and cluster the standard errors at the province level.

4 Role of Foreign Education

4.1 Baseline Estimates

Table 4 reports the results of the effect of foreign education on a county’s political transformation. We do not take the natural logarithm so that the result can be interpreted simply as the “level” effect of having an additional overseas student per 10,000 people from county c on the outcome variables for that county. The results show that all three outcome variables are highly significant across the four samples. Column (1) reports our baseline result for the lower Yangtze sample. Specifically, a county with an additional overseas student (in every 10,000 people) in Japan with a senior high school qualification or above had higher participation in political parties (0.967), greater representation in the provincial assembly (0.969), and not least a higher incidence of declaring independence (0.255). The magnitudes of these coefficients are economically meaningful. For example, for the same two counties but one in which there is an additional overseas student per 10,000 people, the difference amounts to 12 more people participating in a political party in that county.²⁹ The corresponding magnitude for representation in provincial assembly is 132%, which means at least a full additional electoral seat; and for a county that had declared independence, the difference due to an additional overseas student is

²⁹This is obtained by dividing the coefficient of democratic party membership in the lower Yangtze by the mean of the control group multiplied by 100%: $(0.967/0.0789 * 100\% = 1226\%$ or 12 individuals).

161% or 1.6 times more likely.³⁰ Taken together, the effect of foreign education on all three measurable outcomes is unambiguously large and significant. As there are few counties in the lower Yangtze (only 143), we include also the middle Yangtze, then the entire Yangtze region, before using the full national sample of 1,528 counties. As reported in columns (2) - (4), the three outcome variables are all significant at the 1% level, albeit with slightly smaller magnitudes.

[Table 4 about here]

In an analysis of this nature, spatial correlation is always a concern. We thus calculated Conley (1999) standard errors to correct for possible spatial autocorrelation. The results are virtually identical to the clustered standard errors reported in Table 4 (and hence not separately reported).

4.2 Robustness Checks

“Outward Selection”

Although we have designed our empirical strategy carefully, there might be remaining concerns for selection bias. We address them by conducting a number of robustness checks.

In the case of going abroad, an obvious concern is that students who went to Japan may have already had a predilection for democratization. While this might well be the case for self-sponsored students, it was rather unlikely for those sponsored by the government, as the Qing government was highly vigilant in making sure that students chosen for sponsorship did not possess the slightest political or revolutionary inclination (Qing Board of Education, 1900, 1906). For this reason, we use the subsample of government-sponsored students to check for robustness. As reported in Table II in the Appendix, all three measurable outcomes of political transformation remain significant across all four samples.

What if some of the government-sponsored students had successfully hidden their ideological inclination and won sponsorship? To allay this concern, we used military students to further check robustness, as the Qing government exercised extreme caution in selecting their military personnel. In particular, alarmed by

³⁰Similarly, these percentages are calculated by comparing the pertinent coefficients to the corresponding mean of the control group: $0.969/0.736 * 100\% = 132\%$ and $0.255/0.158 * 100\% = 161\%$.

the 1902 *Sejio* Incident where two students suspected of having revolutionary tendencies had tried to enroll themselves in a military academy, the Qing government immediately stopped all self-sponsored students from pursuing a program in the military in Japan before studying abroad became popular (Harrell, 1992, e.g.). After 1904, the Qing government further limited the quota of government-sponsored military overseas students to just 100 per year for the entire country, and set an exceptionally high bar for selection that began in primary education (Shu, 1929). Given the Qing government’s extreme caution in selecting military personnel, self-selection should be even more unlikely for this highly selected group of military students. With this in mind, we regress the three outcome variables of political transformation on these students. Reporting the results in Table III in the Appendix, we find that this group of highly selected students were similarly affected by foreign education in terms of all three outcome variables.

“Returnee Selection”

As with the possible bias of outward selection, there is a similar concern that overseas students might not have returned to the county where they were born, but went to places more prone to revolution. As systematic data for their place of work are lacking, we performed a placebo test by randomly assigning these students to counties other than their recorded birthplace. Specifically, we can estimate a “treatment” based on randomly assigned returned overseas students over a large number of trials (e.g., $n = 1,000$). Figure VII in the Appendix, which reports the distribution of the t value of each of these regressions, shows that the result of these random assignments is insignificant in the overwhelming majority of cases (90%) in all three panels of our dependent variables, suggesting that our use of birthplace as a proxy for overseas students’ workplace is valid and reliable.

It was the case that the government-sponsored students were obliged to return to their county or prefecture of birth to teach in a school for one to five years – a regulation that strongly underscores the above finding.³¹ Take the famous revolutionary leader, *Huang Xing* (who was second to only *Sun Yat-sen* of *Tongmenghui*), as an example. He worked as a teacher at *Mingde* School – the first private modern school in the provincial capital of *Hunan* in Qing China – upon his return from Japan. True, the remaining self-sponsored students were not constrained by this stipulation, but to the extent that social networks were im-

³¹In each county there were typically tens of school districts, from which talents were drawn by a concerted effort among governments at and above the county level (Qing Board of Education, 1906).

portant for orchestrating uprisings and that many of them came from the affluent provinces of *Zhili*, *Hubei*, *Hunan*, *Jiangsu*, *Zhejiang* and *Guangdong*, and were by and large representative of the classically educated, wealthy, and privileged elites, they would almost certainly have returned to their birthplace as Spence (1990, p. 262) has narrated: “(many of these students) had then returned to their home provinces to continue secret agitation against the state. Some had risen to be members of the new provincial assemblies, and others were soldiers or officers in New Army units”.

4.3 Was it Really Foreign Education?

Another key concern is the alternative story. The first pertains to whether counties staging riots during the 1911 Revolution were also those with significantly more upheavals in the past due to, for example, a “violent culture” (Rowe, 2007). Second, one may also argue that the significant difference found in our outcome variables may not be caused by foreign education, but by Japan providing a convenient place for the rebels to connect. Finally, we examine whether the underlying effect of foreign education really arose from nationalist ideology. We address these issues one by one.

4.3.1 Violence Tradition

In a fascinating account, Rowe (2007) uses the specific example of *Macheng* county in *Hubei* Province to show that deep-rooted inequalities and a myriad cultural factors (popular religion, folklore, collective memory, etc.) embedded in this county’s history were the reasons why this county was prone to protracted periods of unusual violence for as long as 700 years. Since many of these factors are difficult to observe at the local (county) level, it raises concern for an omitted variable bias. To ensure that our estimates do not suffer from this kind of bias, we control for conflicts that occurred in the run-up to the 1911 Revolution (c. 1898-1911). These were either general civil conflicts or targeted specifically at the Qing government (anti-Qing conflicts). Regardless, none of these variables have a significant effect on the declaration of independence (Table 5). Moreover, the negative coefficient in column (1)) further suggests that in the lower Yangtze region, the counties in which conflicts occurred in the run-up to the 1911 Revolution were different from those where independence from the Qing was declared.

[Table 5 about here]

4.3.2 Japan as a Convenient Place for the Rebels to Connect

Another possible alternative interpretation is that Japan provided a convenient place for the rebels to connect. Specifically, instead of being influenced by foreign education, students in Japan might have been influenced by *Sun Yat-sen*, who facilitated the establishment of the largest revolutionary alliance – the *Tongmenghui*. To find out, we divided our sample of overseas students into two groups – one arriving in Japan before and the other after 1905 – given that the *Tongmenghui* was established in Japan in late 1905 soon after Sun’s arrival, and assuming that those arriving in Japan before then would be less likely to be influenced by Sun.³² The coefficient using the pre-1905 sample (1.175, Table 6) is larger than that using the full sample of overseas students (e.g., 0.967, Table 4), suggesting that the earlier returnees had a stronger political impact on their fellow county folk, perhaps due to their longer stay in Japan.

[Table 6 about here]

These results are not so surprising, given that there already existed a number of activist associations founded by influential student leaders such as *Huang Xing* and *Wang Jiawei* before Sun’s suggestion of establishing an alliance. In fact, *Tongmenghui* was initially greeted with skepticism among many overseas students who gave it a lukewarm response; as it turned out, only 70 out of several thousands of students joined the *Tongmenghui* in the first two months of its recruitment.

4.3.3 Effectiveness of Nationalist Ideology

Earlier we claimed that the effectiveness of foreign education arose from the underlying ideology of nationalism. Given that it was the revolutionaries who identified themselves as “nationalists”, and who were “single-mindedly committed to the idea of a republican revolution” (Spence, 1990, p. 261), we can verify this hypothesis by examining whether counties with more overseas students returning from Japan had a larger membership in the revolutionary party and accordingly experienced more riots during the 1911 revolution. To find out, we decomposed our first dependent variable, participation in political parties, into the revolutionaries and reformers (constitutionalists). Going by the same logic, we subdivide our third dependent variable, 1911 independence, into those where riots had occurred and

³²As Harrell (1992) observes, many overseas Chinese students in Japan were already provoked by 1903.

those in which independence from the Qing government was achieved peacefully, given that the Constitutionalist were basically aiming for a peaceful transition. We report the results of this exercise in Table 7.1 and 7.2, and find that a county with an additional overseas student per 10,000 people not only had a larger membership in the revolutionary party (Table 7.1), but also experienced significantly more riots (Table 7.2). The results apply to all four samples.

[Table 7.1 and 7.2 about here]

5 Academic Specialization and Education Attainment

5.1 Academic Specialization

Unlike the civil exam, modern education emphasizes academic specialization. An inevitable question is whether the causal role of foreign education varies according to what the students studied. Specifically, might national consciousness and democratic values be cultivated more easily in the arts and social science subjects than in natural science and engineering, and, if so, are the differences sufficient that students majoring in these disciplines would become more politically engaged? To answer this question, we divided the various disciplines into two broad groups – one comprising arts and humanities (such as history and geography), education, politics, law, business, and economics, and the other consisting of science (including applied sciences), engineering, and medicine (*STEM*). Specifically, we construct a dummy variable, β_{Arts} , which takes the value of 1 for the counties with *numerically* more overseas students majoring in the arts and social sciences, and 0 for those with more *SEM* students.³³ We then examine the interaction of this indicator variable with our key explanatory variable to gauge the additional effect if any of academic specialization on political transformation. Reporting the results in Table 8, we find that arts and social science subjects do have a significant additional effect on all three measurable outcomes of political transformation beyond that of foreign education.³⁴

³³We do so because it is unlikely that a county will have students exclusively specialized in either arts and social sciences, or for that matter science, engineering, and medicine (*SEM*). We consider a county to be specializing in arts and social sciences if the county had more students majored in arts and social sciences, and vice versa.

³⁴To the extent that skill premium is higher in the *SEM* occupations, our finding is compatible with [Campante and Chor's \(2012a\)](#) that political engagement is less responsive in countries with a higher skill (occupational) premium.

[Table 8 about here]

A question of self-selection may arise in this context. That is, is it possible that those who majored in arts and social sciences already had a penchant for democratization and may thus have deliberately chosen these subjects? While this may apply to the self-sponsored students, it would be unlikely in the case of those sponsored by the government, as they had to accept whatever major was chosen for them by their sponsors as a funding condition.³⁵ Nor were they allowed to switch from a “useful” discipline (i.e., *SEM*) to an arts and social science subject, unless they were willing to give up their sponsorship. The eminently famous literary critic, *Lu Xun*, is a good case in point. Starting out as a Qing government-sponsored student in Japan studying medicine, *Lu Xun* quit after two years of study. While he continued to stay in Japan, and later became a famous writer, he no longer received any financial support from the government. For this reason, we employ government-sponsored students as a robustness check and report the results in Table IV in the Appendix. The results after dropping the self-sponsored students are broadly similar to those based on the full sample – political transformation is significantly higher in all three measurable outcomes for counties with more returned overseas students majoring in arts and social sciences.

5.2 Educational Attainment

Going by the tenets of “modernization theory”, economic growth in general, and schooling in particular, has had an alleged effect on democracy (Barro, 1999; Bandiera et al., 2019; Easterlin, 1981; Friedman et al., 2016; Glaeser et al., 2004; Lipset, 1959; Papaioannou and Siourounis, 2008). Similarly, sociologists and political scientists have long emphasized the important role played by elites in social and political transformations (Parsons, 1960; Valdés, 1995). On the basis of these premises, we examine whether educational attainment or human capital may have an additional effect on political transformation; the varying levels of academic achievements of the overseas students in Japan provide us with an excellent opportunity to test this hypothesis.

Although the great majority of overseas Chinese students were there to earn minimal credentials in the cram programs, others devoted significantly greater effort and earned a university degree, while still others even attained postgraduate

³⁵Typically, governments chose the majors for their sponsored students according to the perceived developmental needs of their provinces, prefectures, etc.

qualifications (albeit in the minority). To examine the additional effect of educational attainment, we follow the approach used for academic specialization by constructing an indicator variable, $\beta_{university}$, and assign the value of 1 to counties with numerically more returned overseas students having attained a university degree or above, and 0 to those with qualifications below it. We report the findings in Table 9. We find that possibly those with higher educational attainment – university and above – did not have stronger proclivities to join political parties (particularly the revolutionary party), that human capital has no significant additional effect on political participation. However, it does have an additional significant effect on electoral politics; counties with more overseas students who had earned a university degree and above were significantly better represented in the provincial assembly across all four samples, and, with the exception of the lower Yangtze also had a higher incidence of declaring independence in the 1911 Revolution.³⁶ Between the two, the additional effect of academic specialization dominates that of human capital.

[Table 9 about here]

6 Channels

In this section we provide suggestive evidence to show that schools and newspapers are the two underlying channels of the causal effect of foreign education on political transformation.

6.1 Education

In 1901 the Qing government reformed its educational system in earnest.³⁷ However, switching from the Confucian-based education system to a Western curriculum wholesale is not an easy task.³⁸ In particular, teachers and textbooks were

³⁶With his “constituency” in the lower Yangtze (*Jiangsu* Province), the famous Constitutionalist, *Zhang Jian*, hung on with his support of the Qing government until the very end. *Jiangsu* was indeed the last province in the country to declare independence.

³⁷While Chinese (consisting mainly of the Confucian Classics) was still taught, it now accounted for just 35% of the overall curriculum in 1904 and was to be further reduced to 20% in 1912, whereas Physical Education and Art were incorporated into the curriculum ([Shu, 1929](#)). The new curriculum as it was adopted in these modern schools followed closely the one introduced by the Protestant missionaries when they entered China after China opened up the treaty ports to the foreigners (see [Bai and Kung, 2015](#)).

³⁸According to the 1902 Education Law, with the gradual phasing out of the civil exam the Confucian academies were to be converted into “modern schools” (*Xingxi xuetang*) adopting a Western curriculum with a wide range of new subjects such as Math, Physics, Chemistry,

in acutely short supply. The difficulties cannot be better illustrated than by the industrialist-reformer-educator *Zhang Jian*, who lamented that “there was not a single person (in China) who knew anything about educational organization and pedagogy” (cited in [Reynolds, 1993](#), p. 90)). China thus turned to Japan for help, who offered to train modern teachers by tailoring short programs to suit Chinese needs. A number of “normal schools” or teaching colleges had also been set up in China, with many taught by the Japanese and subsequently by students who returned from their studies in Japan ([Borthwick, 1983](#)).

There are abundant examples of famous radical-minded overseas students who took up senior supervisory roles in schools upon their return from Japan. For example, the national heroine *Qiu Jin* eventually became head of a school whose ultimate goal was to train the revolutionaries in military skills under the façade of training sports teachers, whereas *Chen Duxiu*, the founder of the Chinese Communist Party, first took up a teaching job at a high school before he was transferred to a preparatory military school. *Huang Xing*, the second-in-command to *Sun Yat-sen* at *Tongmenghui*, and *Cai Yuanpei*, a famous school administrator (who later became the President of Peking University), shared a similar career trajectory as *Qiu* and *Chen*. Albeit not as flamboyant, a good many returnees were skilled orators to say the least, who were assigned teaching positions at either the modern schools or normal schools by their sponsors ([Harrell, 1992](#); [Shu, 1929](#); [Futami and Sato, 1978](#)), and addressed audiences who were “touched in one way or another by the new schools and new ideas, confident of their own mission to create a new world, and exerting an influence out of all proportions to their numbers” ([Wright, 1968](#), p. 26). It was in this context that schools represented an important channel through which a nationalist ideology was diffused among the students at large.

To verify this channel, we regressed the various levels of modern schools – senior primary (year four to six), middle, and university – on the number of foreign students. The data on schools are obtained from *Diyici Jiaoyu Tongji Tubiao* (The First Educational Statistical Compendium), which was a survey initiated by Emperor *Guangxu* in 1907. Reporting the results in columns (1) – (3) of Table 10, we find that the pertinent coefficient is significant at either the 1% (for primary and middle schools) or 5% (for the universities) level, confirming that education is indeed an important channel for the effective diffusion of a nationalist ideology. It is interesting to note that the coefficient is largest among the senior primary school children, suggesting that persuasion had the strongest effect on young minds, who

English, History, and Geography.

were more receptive to the ideals of nationalism.

[Table 10 about here]

6.2 Newspapers

Another presumably important channel through which a nationalistic ideology was effectively diffused was newspapers. With the establishment of a national postal system in 1897, not only had the commercial newspapers come of age, those run by the revolutionaries (*Min Pao*) and the reformists (*Shi Bao*) similarly found readers. With the establishment of newspaper reading rooms (designed for those who were literate but poor) and the newspaper recitation rooms (for the illiterate), the influence of newspapers on the diffusion of a revolutionary ideology went far farther than was indicated by their sales. By explaining to the audiences examples of countries that had experienced invasion and colonization by the Western powers, the returned overseas student orators were emphasizing to their fellow countrymen the similar plight of China.³⁹

To measure the influence of newspapers in fanning national consciousness, we enumerated the number of newspapers sold in each prefecture as our dependent variable. The data on newspapers was obtained from *Zhongguo Jindai Baokan Minglu* (A List of Newspapers and Magazines in Contemporary China), compiled by Shi, Yao and Ye (1991), and Ding's (1982-1987) *Xinhai Geming Shiqi Qikan Jieshao* (Vol. 1-5) (An Introduction to Periodicals Published during the Xinhai Revolution). The regression result is reported in column (4) of Table 10, which shows a significantly positive relationship between overseas students and the number of newspapers sold in a prefecture. As systematic data for newspapers sales and reading and recitation rooms are lacking, we make use of the data on the geographic networks of the national postal office as a robustness check of the overall influence of the newspapers. The data for national post office and their agencies was obtained from *Daqing Youzheng Yutu* (An Atlas of Postal Offices in the Great Qing Dynasty). Altogether there were 36 postal offices established at the level of prefecture (*fu*), with nearly 400 branches scattered across the whole of China at the county and in some cases even the township level, with about 1,500 postal agencies, many of which were converted from the formerly civil mail offices (*min*

³⁹Many traditional scholars allegedly lacked the oratory skills required for effective recitation. Some even spoke with a heavy accent associated with their dialect (Wang, 2020). Thanks to his great foresight, as early as 1901 *Cai Yuanpei* already began to train the students in Japan to practice speech and debating, which proved useful when they subsequently returned to China.

xing ju).⁴⁰ Consistent with our expectations, overseas students are significantly correlated with the two dependent variables (columns (5) and (6) of Table 10), lending credence to the idea that newspapers represent another plausible channel through which the effects of foreign education were diffused.

7 Conclusion

By inculcating a set of values in students, education has the power of shaping preferences and ideology. While historically it has been used for nation building (Alesina, Giuliano and Reich, 2019), it has also been used by democratic governments to bring down authoritarian regimes through sponsorship of overseas students (Spilimbergo, 2009). In this study we use the 1911 Chinese Revolution to demonstrate that, while the Qing government intended to send its best students to acquire the modern knowledge essential for state building, the “by-product” that these students internalized – national consciousness – had the inadvertent effect of bringing about the first democratic revolution in China, which brought the 2,000 year-long imperial rule of absolute monarchy to an end. With the aid of numerous robustness checks, we were able to show that a county with more overseas students who had a senior high school or higher qualification have significantly higher participation in political parties, greater representation in the provincial assembly, and greater likelihood of declaring independence from the Qing government in that county, attesting to the effect of foreign education on political transformation in the Middle Kingdom.

Furthermore, we found that academic specialization also had an effect beyond that of foreign education; perhaps those who studied arts and social sciences were more sympathetic to the values and ideals of democracy and nationalism, they were more actively engaged in political activism in the counties where there were more such students. To a lesser extent, the same applies to human capital. In counties where the returning overseas students were better educated (university and above), electoral representation in the provincial assemblies was stronger, and so was the likelihood of declaring independence from the Qing. Finally, we brought to bear the evidence that the heightened national consciousness of the

⁴⁰The civil mail office was a non-governmental postal agency first established during the Ming Dynasty, reaching its peak in the late Qing (c. 1860-1870). There were several thousands of these offices. The biggest difference between the two is that the civil mail bureau charged for its services based on weight instead of distance, and did not inspect the contents of letters and parcels (Wang, 2020).

overseas Chinese students was most likely diffused through the schools which they infiltrated, and the newspapers which they ran.

References

- Abadie, A. and Imbens, G.W., 2016. Matching on the estimated propensity score. *Econometrica*, 84(2), pp.781–807.
- Acemoglu, D. and Robinson, J.A., 2000. Why did the west extend the franchise? democracy, inequality, and growth in historical perspective. *The quarterly journal of economics*, 115(4), pp.1167–1199.
- Acemoglu, D. and Robinson, J.A., 2001. A theory of political transitions. *American economic review*, 91(4), pp.938–963.
- Aidt, T.S. and Franck, R., 2015. Democratization under the threat of revolution: Evidence from the great reform act of 1832. *Econometrica*, 83(2), pp.505–547.
- Alesina, A., Giuliano, P. and Reich, B., 2019. *Nation-building and education*. (Working Paper Series Working paper 18839). National Bureau of Economic Research.
- Bai, Y., 2019. Farewell to confucianism: The modernizing effect of dismantling china’s imperial examination system. *Journal of development economics*, 141, pp.102–382.
- Bai, Y. and Jia, R., 2016. Elite recruitment and political stability: the impact of the abolition of china’s civil service exam. *Econometrica*, 84(2), pp.677–733.
- Bai, Y. and Kung, J.K.S., 2015. Diffusing knowledge while spreading god’s message: Protestantism and economic prosperity in china, 1840–1920. *Journal of the european economic association*, 13(4), pp.669–698.
- Bandiera, O., Mohnen, M., Rasul, I. and Viarengo, M., 2019. Nation-building through compulsory schooling during the age of mass migration. *The economic journal*, 129(617), pp.62–109.
- Barro, R.J., 1999. Determinants of democracy. *Journal of political economy*, 107(S6), pp.S158–S183.
- Barro, R.J., 2015. Convergence and modernisation. *The economic journal*, 125(585), pp.911–942.
- Besley, T., Persson, T. and Reynal-Querol, M., 2016. Resilient leaders and institutional reform: Theory and evidence. *Economica*, 83(332), pp.584–623.
- Borthwick, S., 1983. *Education and social change in china: The beginnings of the modern era*. Stanford University: Hoover Institution Press.
- Bu, L., 2003. *Making the world like us: Education, cultural expansion, and the american century*. Praeger Publishers Westport, CT.
- Campante, F.R. and Chor, D., 2012a. Schooling, political participation, and the economy. *Review of economics and statistics*, 94(4), pp.841–859.
- Campante, F.R. and Chor, D., 2012b. Why was the arab world poised for revolution? schooling, economic opportunities, and the arab spring. *Journal of economic perspectives*, 26(2), pp.167–88.
- Cantoni, D., Chen, Y., Yang, D.Y., Yuchtman, N. and Zhang, Y.J., 2017. Curriculum and ideology. *Journal of political economy*, 125(2), pp.338–392.
- Cantoni, D. and Yuchtman, N., 2013. The political economy of educational content and development: Lessons from history. *Journal of development economics*, 104, pp.233–244.
- Cao, S., 2006. *Zhongguo renkou shi di wu juan (the history of population in china)*. Shanghai: Fudan University Publishing House.
- Chen, T., Kung, J.K.s. and Ma, C., 2020. Long Live Keju! The Persistent Effects of China’s Civil Examination System. *The economic journal*, 130(631), pp.2030–2064.
- Clots-Figueras, I. and Masella, P., 2013. Education, language and identity. *The economic journal*, 123(570), pp.F332–F357.
- Conley, T.G., 1999. Gmm estimation with cross sectional dependence. *Journal of econometrics*, 92(1), pp.1–45.
- Ding, S., ed., 1982-1987. *Xinhai geming shiqi qikan jieshao (an introduction to periodicals published during the xinhai revolution)*. Beijing: Renmin Renmin Chubanshe.
- Easterlin, R.A., 1981. Why isn’t the whole world developed? *The journal of economic history*, 41(1), pp.1–17.
- Friedman, W., Kremer, M., Miguel, E. and Thornton, R., 2016. Education as liberation? *Economica*, 83(329), pp.1–30.

- Fuchs-Schündeln, N. and Masella, P., 2016. Long-lasting effects of socialist education. *Review of economics and statistics*, 98(3), pp.428–441.
- Futami, T. and Sato, H., 1978. Chugokujin nihon ryugakushi kankei tokei (statistics relating to the history of chinese students in japan). *Kokuritsu kyoiku kenkyujo kiyō*, 3(94), pp.99–105.
- Galor, O. and Özak, Ö., 2016. The agricultural origins of time preference. *American economic review*, 106(10), pp.3064–3103.
- Glaeser, E.L., La Porta, R., Silanes, F. Lopez-de and Shleifer, A., 2004. Do institutions cause growth? *Journal of economic growth*, 9(3), pp.271–303.
- Harrell, P., 1992. *Sowing the seeds of change: Chinese students, japanese teachers, 1895–1905*. Stanford University Press.
- Huang, Q., 1975. *Qingmo liuri xuesheng (chinese students in japan during the late qing)*. Taipei: Academia Sinica.
- Huang, Y. and Yu, B., eds, 1995. *Beiyang zhengfu shiqi jingji (the chinese economy during the northern warlord period)*. Shanghai: Shanghai Academy of Social Sciences.
- Jansen, M., 1980. *Japan and the chinese revolution of 1911*, Cambridge University Press, *The Cambridge History of China*, vol. 11, pp.339–374.
- Karasawa, M., 2002. Patriotism, nationalism, and internationalism among japanese citizens: An etic-emic approach. *Political psychology*, 23(4), pp.645–666.
- Keenleyside, H.L. and Thomas, A.F., 1937. History of japanese education and present educational system.
- Khan, Y., 1997. *Japanese moral education past and present*. Fairleigh Dickinson Univ Press.
- Kuo, T.y. and Liu, K.c., 1978. Self-strengthening: the pursuit of western technology. *The cambridge history of china*, 10(part 1), pp.491–542.
- Li, B. and Van Zanden, J.L., 2012. Before the great divergence? comparing the yangzi delta and the netherlands at the beginning of the nineteenth century. *The journal of economic history*, pp.956–989.
- Li, X., 1987. *Jindai zhongguo de liuxuesheng (foreign trained students in the history of modern china)*. Beijing: Remmin Renmin Chubanshe.
- Lipset, S.M., 1959. Some social requisites of democracy: Economic development and political legitimacy. *American political science review*, 53(1), pp.69–105.
- Mankiw, N.G., Romer, D. and Weil, D.N., 1992. A contribution to the empirics of economic growth. *The quarterly journal of economics*, 107(2), pp.407–437.
- Mokyr, J., 2002. *The gifts of athena: Historical origins of the knowledge economy*. Princeton University Press.
- Munakata, S., 1966. *The course and problems of national education – from the meiji period to the present day*, Tokyo Institute of Asian Economic Affairs, *The modernization of Japan*, vol. 1, pp.209–228.
- Needham, J., 1969. *The grand titration: Science and society in east and west*. Allen and Unwin, London.
- Papaioannou, E. and Siourounis, G., 2008. Democratisation and growth. *The economic journal*, 118(532), pp.1520–1551.
- Parsons, T., 1960. *Structure and process in modern societies*. Free Publisher.
- Pearl, J., 2009. *Causality*. Cambridge university press.
- Pomeranz, K., 2000. *The great divergence: China, europe, and the making of the modern world economy*. Princeton University Press.
- Reynolds, D.R., 1993. *China, 1898-1912 : the Xinzheng revolution and japan*, Harvard East Asian monographs 160. Council on East Asian Studies, Harvard University, Distributed by Harvard University Press.
- Rowe, W.T., 2007. *Crimson rain: Seven centuries of violence in a chinese county*. Stanford University Press.
- Saneto, K., 1960. *Chugokujin nibon ryugaku shi (history of chinese students in japan)*. Tokyo: Kuroshio Shuppan.
- Shi, H., Yao, F. and Ye, C., eds, 1991. *Zhongguo jindai baokan minglu (a list of newspapers and magazines in contemporary china)*. Fujian: Remmin Renmin Chubanshe.
- Shu, X., 1929. *Jindai zhongguo liuxuesheng shi (modern chinese overseas studies)*. Shanghai:

- Zhonghua Bookstore.
- Skinner, G.W., Henderson, M. and Yue, Z., 2007. Physiographic macroregions of china. *China historical gis project, harvard and fudan universities*.
- Spence, J.D., 1990. *The search for modern china*. WW Norton & Company.
- Spilimbergo, A., 2009. Democracy and foreign education. *American economic review*, 99(1), pp.528–43.
- Stauffer, M.T., Wong, T.C. and Tewksbury, M.G., 1922. *The christian occupation of china: A general survey of the numerical strength and geographical distribution of the christian forces in china made by the special committee on survey and occupation china continuation committee 1918-1921*. Shanghai: China Continuation Committee.
- Valdés, J.G., 1995. *Pinochet's economists: The chicago school of economics in chile*. Cambridge University Press.
- Wantchekon, L., Klašnja, M. and Novta, N., 2015. Education and human capital externalities: evidence from colonial benin. *The quarterly journal of economics*, 130(2), pp.703–757.
- Wright, M.C., 1968. *Introduction: The rising tide of change*, Yale University Press, pp.1–63.
- Yoshino, K., 1992. *Cultural nationalism in contemporary japan: A sociological enquiry*. Psychology Press.
- Yuchtman, N., 2017. Teaching to the tests: An economic analysis of traditional and modern education in late imperial and republican china. *Explorations in economic history*, 63, pp.70–90.
- Zhang, H., 1993. *Jindai Zhongguo tongshang kou'an yu zujie (treaty ports and foreign concessions in modern china)*. Tianjing: Remin Publishing House.
- Zhang, P.Y., 1969. *Lixian pai yu xinhai geming (the constitutionalists and the revolution of 1911)*. Taipei: The Commercial Press.
- Zhang, P.Y., 2008. *Zhongguo mingzhu zhengzhi de kunjing, 1909-1949 (the predicament of democracy in china, 1909-1949)*. Jilin: Jilin Publishing Group.

Figure 1. Difference-in-Differences (DD) Analysis of the Yangtze Region

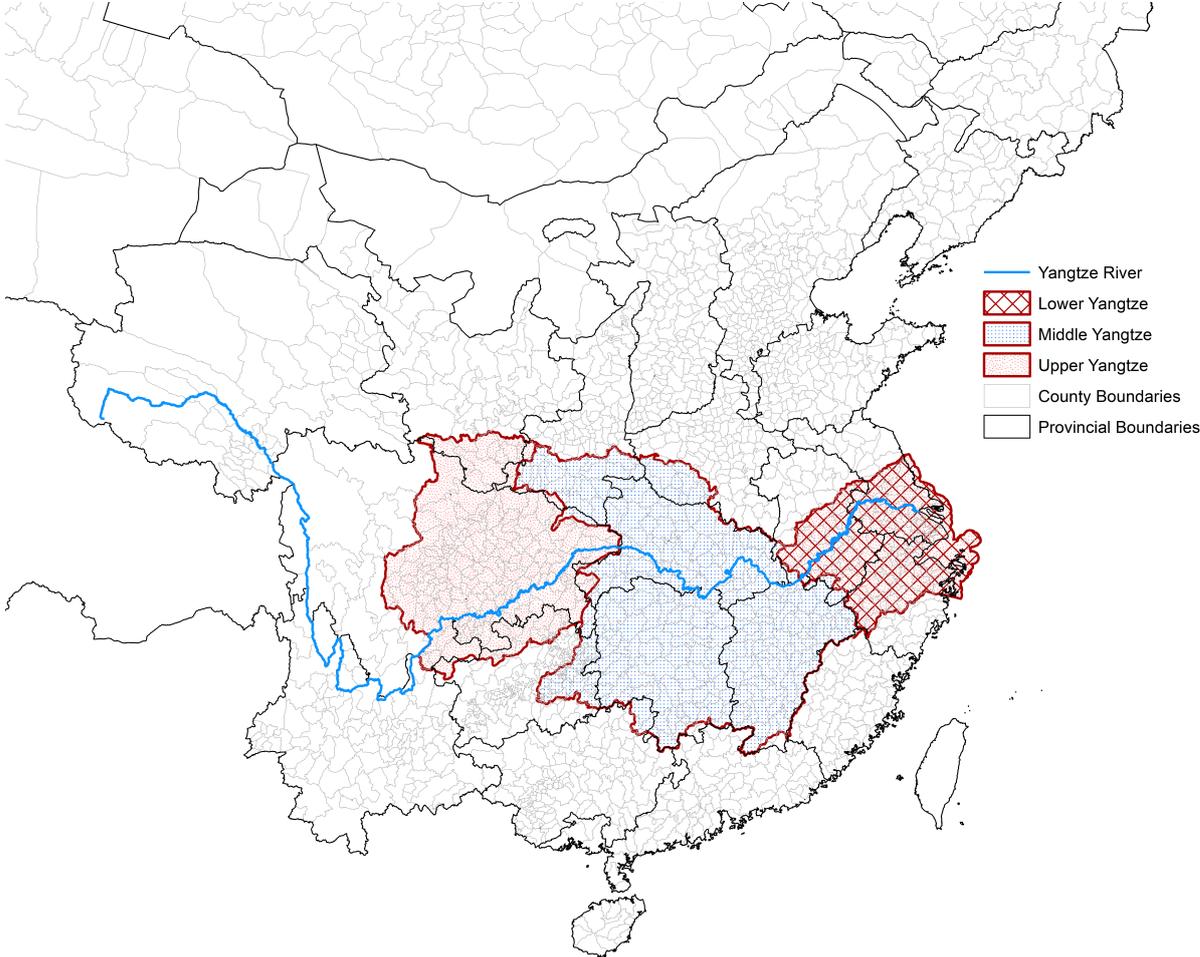
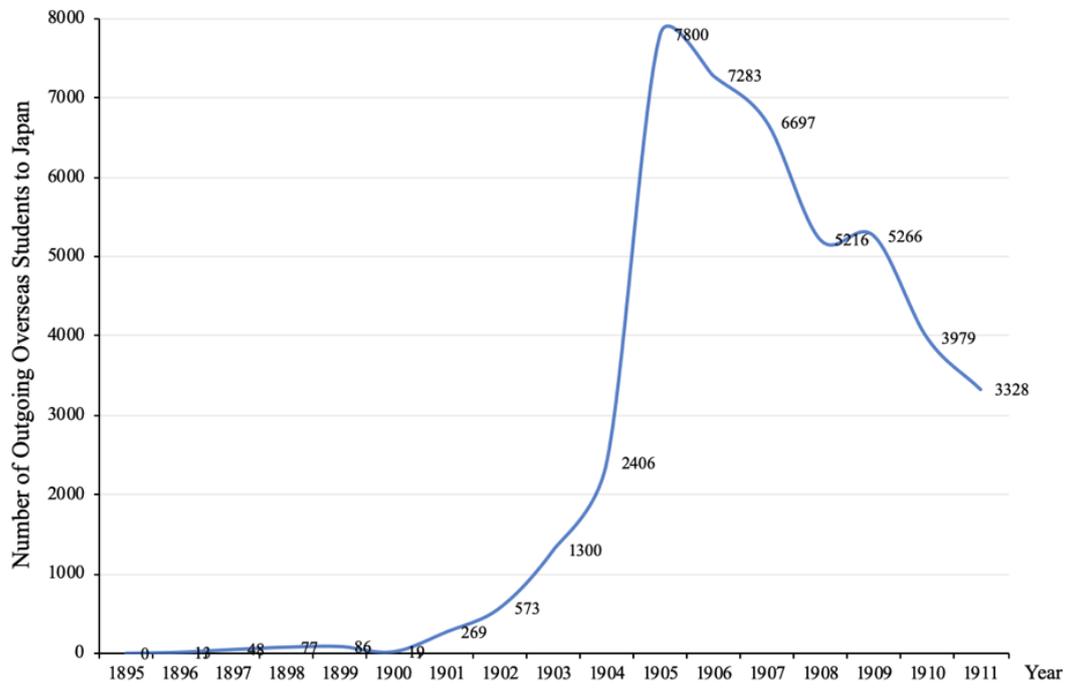


Figure 2. Number of Outgoing Students to Japan, 1896-1911



Source: Shu (1929), Saneto (1960) and Huang (1975)

Table 1. Characteristics of Overseas Students in Japan

	Num	Percentage	Mean	Std. Dev.	Min	Max
Returned Overseas Students (in Dataset)	4194	100%	2.618	6.554	0	68
<i>By location</i>						
Yangtze Delta	2712	65%	4.913	8.596	0	54
Lower Yangtze	[969]	[35.7%]	6.776	9.393	0	44
Middle Yangtze	[1319]	[48.7%]	4.940	9.424	0	54
Upper Yangtze	[424]	[15.6%]	2.986	5.001	0	43
Other Regions	1482	35%	1.411	4.746	0	68
<i>By Sponsorship</i>						
Government-sponsored	1552	37%	0.969	2.465	0	35
Self-financed	2643	63%	1.650	4.434	0	46
<i>By Traditional Educational Qualifications</i>						
With	1688	40%	1.054	2.690	0	28
Without	2511	60%	1.567	4.332	0	47
<i>By Disciplines</i>						
Arts, Humanities, and Social Sciences	1727	41%	1.237	2.715	0	50
Law, Business and Economics	1369	33%	1.104	3.262	0	44
Sciences, Engineering, Applied Sciences, and Medicine	474	11%	0.296	1.057	0	14
Military	625	15%	0.390	1.327	0	16
<i>By Level of Education</i>						
University Degree and above	1681	40%	1.049	2.767	0	36
Senior High School	2512	60%	1.568	4.261	0	44

Table 2. A Comparison of Outcome Variables between Counties with and without Returned Overseas Students

	Overall		With Returned Overseas Students		Without Returned Overseas Students		Difference
	Mean	Std.	Mean	Std.	Mean	Std.	[T-statistic]
<i>Lower Yangtze</i>							
Democratic Party Memberships	1.098	1.705	1.467	1.851	0.0789	0.273	[1.388]***
Assemblymen	1.594	1.217	1.905	1.197	0.737	0.795	[1.168]***
1911 Upheavals	0.469	0.501	0.581	0.496	0.158	0.370	[0.423]***
<i>Lower and Middle Yangtze</i>							
Democratic Party Memberships	1.187	3.035	1.879	3.689	0.0686	0.352	[1.810]***
Assemblymen	1.206	1.130	1.430	1.170	0.843	0.962	[0.587]***
1911 Upheavals	0.393	0.489	0.473	0.501	0.265	0.443	[0.208]***
<i>Yangtze Valley</i>							
Democratic Party Memberships	1.092	2.573	1.540	2.973	0.0769	0.345	[1.464]***
Assemblymen	1.203	1.100	1.410	1.122	0.734	0.890	[0.676]***
1911 Upheavals	0.364	0.482	0.433	0.496	0.207	0.406	[0.226]***
<i>Full-Sample</i>							
Democratic Party Memberships	0.706	2.099	1.364	2.887	0.134	0.542	[1.230]***
Assemblymen	0.980	1.040	1.352	1.132	0.657	0.827	[0.695]***
1911 Upheavals	0.239	0.427	0.337	0.473	0.154	0.361	[0.183]***

Table 3. Balance Check of the Lower Yangtze Counties
in the Difference-in-Differences (DD) Estimation

	Treatment		
	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley
	(1)	(2)	(3)
Dependent Variables:			
Population Density	0.108* (0.0295)	0.0500 (0.0355)	0.0567 (0.0277)
Urbanization Rate	0.0175 (0.0109)	0.00569 (0.00726)	0.0100 (0.00813)
Jinshi Density (per 10,000)	0.514 (0.569)	0.246 (0.165)	0.212 (0.114)
Share of Shengyuan Quota (per 10,000)	-0.0724 (0.0569)	-0.0183 (0.0339)	-0.0269 (0.0284)
University	0.587 (0.408)	0.323 (0.163)	0.524 (0.292)
Treaty Ports	0.0366 (0.0511)	0.147 (0.0681)	0.143* (0.0486)
Communicants Density (per 10,000)	-0.044 (0.0191)	-0.00837 (0.0219)	-0.00675 (0.0150)
Foreign Firms and Banks	6.586 (3.907)	2.882 (2.279)	2.324 (1.572)
Yangtze Valley F.E.		Y	Y
No. of Counties	143	405	540

Table 4: Difference-in-Differences Estimation (DD) Results

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
<i>Democratic Party Membership</i>				
Returned Overseas Students	0.967*** (0.247)	0.981*** (0.222)	0.870*** (0.215)	0.931*** (0.207)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.216	0.182	0.176	0.152
<i>Provincial Assembly Representation</i>				
Returned Overseas Students	0.969*** (0.203)	0.766*** (0.196)	0.680*** (0.167)	0.550*** (0.0818)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.239	0.152	0.190	0.183
<i>Declaration of Independence</i>				
Returned Overseas Students	0.255*** (0.0929)	0.181*** (0.0492)	0.183*** (0.0451)	0.128*** (0.0384)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.275	0.278	0.279	0.232
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$ *** $p < 0.01$.

Table 5: Social Conflicts

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Declaration of Independence</i>			
Returned Overseas Students	0.293*** (0.0847)	0.162*** (0.0483)	0.179*** (0.0327)	0.145*** (0.0334)
Civil Conflicts	-0.00663* (0.00362)	0.00135 (0.00158)	0.000873 (0.000846)	0.000308 (0.000343)
Adjusted R^2	0.313	0.280	0.284	0.234
	<i>Declaration of Independence</i>			
Returned Overseas Students	0.289*** (0.0847)	0.161*** (0.0472)	0.175*** (0.0336)	0.145*** (0.0333)
Anti-Qing Conflicts	-0.00792** (0.00387)	0.00224 (0.00167)	0.00212 (0.00123)	0.000499 (0.000429)
Adjusted R^2	0.315	0.283	0.288	0.234
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$ *** $p < 0.01$.

Table 6: Japan as a Connecting Place for the Rebels

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Democratic Party Membership</i>			
Returned Overseas Students before 1905	1.175*** (0.257)	1.461*** (0.435)	1.469*** (0.342)	1.489*** (0.317)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.264	0.221	0.225	0.196
	<i>Provincial Assembly Representation</i>			
Returned Overseas Students before 1905	0.938*** (0.203)	0.805*** (0.195)	0.672*** (0.163)	0.661*** (0.110)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.262	0.177	0.210	0.198
	<i>Declaration of Independence</i>			
Returned Overseas Students before 1905	0.303*** (0.0842)	0.179*** (0.0498)	0.188*** (0.0354)	0.149*** (0.0351)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.310	0.282	0.289	0.236
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 7.1. Membership of Political Party

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Revolutionaries</i>			
Returned Overseas Students	0.635*** (0.199)	0.731** (0.271)	0.640** (0.251)	0.702*** (0.177)
Mean of Control Group	0.0526	0.0500	0.0592	0.0782
Adjusted R^2	0.283	0.194	0.180	0.145
	<i>Constitutionalists</i>			
Returned Overseas Students	0.331** (0.142)	0.250*** (0.0670)	0.231*** (0.0638)	0.230*** (0.0596)
Mean of Dependent Variable	0.0263	0.0214	0.0178	0.0560
Adjusted R^2	0.157	0.133	0.137	0.120
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$ *** $p < 0.01$.

Table 7.2. Declaration of Independence

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Riots</i>			
Returned Overseas Students	0.224*** (0.0677)	0.164*** (0.0410)	0.167*** (0.0377)	0.103*** (0.0289)
Mean of Control Group	0.0789	0.186	0.166	0.124
Adjusted R^2	0.320	0.253	0.231	0.206
	<i>Peaceful Transition</i>			
Returned Overseas Students	0.0307 (0.0708)	0.0170 (0.0358)	0.0161 (0.0285)	0.0248* (0.0142)
Mean of Dependent Variable	0.0789	0.0500	0.0414	0.0303
Adjusted R^2	0.046	0.129	0.139	0.100
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$ *** $p < 0.01$.

Table 8. Role of Academic Specialization

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Democratic Party Membership</i>			
Returned Overseas Students $\times \beta_{Arts}$	0.889*** (0.252)	1.215*** (0.323)	0.951** (0.339)	0.968*** (0.223)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.215	0.200	0.183	0.155
	<i>Provincial Assembly Representation</i>			
Returned Overseas Students $\times \beta_{Arts}$	0.709*** (0.213)	0.751*** (0.169)	0.639*** (0.152)	0.517*** (0.0764)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.201	0.161	0.194	0.178
	<i>Declaration of Independence</i>			
Returned Overseas Students $\times \beta_{Arts}$	0.311*** (0.0872)	0.220*** (0.0414)	0.227*** (0.0377)	0.151*** (0.0402)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.306	0.294	0.297	0.239
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 9. Role of Human Capital

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Democratic Party Membership</i>			
Returned Overseas Students $\times \beta_{University}$	0.355 (0.266)	0.205 (0.190)	0.170 (0.167)	0.222* (0.114)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.173	0.161	0.160	0.119
	<i>Provincial Assembly Representation</i>			
Returned Overseas Students $\times \beta_{University}$	0.394* (0.233)	0.318** (0.115)	0.288** (0.101)	0.341*** (0.0689)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.158	0.094	0.145	0.147
	<i>Declaration of Independence</i>			
Returned Overseas Students $\times \beta_{University}$	0.116 (0.0906)	0.103*** (0.0295)	0.124*** (0.0365)	0.112*** (0.0368)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.244	0.263	0.268	0.225
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 10: Channels

Dependent Variables:	School			Newspapers		
	Senior Primary Schools	Middle Schools	Universities	Newspapers	Postal Offices	Postal Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Returned Overseas Students	2.573*** (0.822)	1.610*** (0.397)	0.0221** (0.0109)	0.211*** (0.0887)	0.303*** (0.0976)	0.527** (0.201)
Adjusted R^2	0.533	0.578	0.355	0.4778	0.258	0.373
All Controls	Y	Y	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y	Y	Y
Provincial Clustering	Y	Y	Y	Y	Y	Y
Observations	210	210	210	210	1,510	1,510

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Appendix

Table I: *Meiji* Education System in Japan

Class	School	Title Conferred by Qing Government	Our Dataset
Year 1	Elementary School (Junior School)		
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7	Junior High School (Secondary School)	<i>Gongsheng</i>	
Year 8			
Year 9			
Year 10			
Year 11			
Year 12	Senior High School or Specialized School (Sixth form college)	<i>Juren</i>	Yes
Year 13			Yes
Year 14			Yes
First Year	University or Specialized College	<i>Jinshi</i>	Yes
Second Year			Yes
Third Year			Yes
Postgraduate	University	<i>Hanlin</i>	Yes

Figure I. Data Source Sample

The image displays two historical Chinese records of overseas students in Japan, each with modern annotations. The left record is for a student who arrived in 1898, and the right record is for a student who arrived in 1904. Both records are structured as vertical columns of text, with modern text boxes overlaid to provide additional context.

Left Record (1898):

- Year of Arrival in Japan: 1898** (Annotated)
- 江蘇省** (Jiangsu Province)
- 咨派省分** (Assigned Province): 兩江 (Two Rivers)
- 到東年月** (Arrival Date): 光緒二十六年五月 (May 1898)
- 經過學校** (Schools Attended): 高等學堂 (Higher Education Hall)
- 現在學校學科** (Current School/Subject): 帝國大學法科 (Imperial University Law School)
- 在學年限** (Duration of Study): 三十 (Thirty)
- 畢業試驗成績** (Graduation Exam Results): 及格 (Passed)
- Year of Graduation: 1909** (Annotated)
- Age: 30** (Annotated)
- Tokyo University: Ph.D. in Law** (Annotated)

Right Record (1904):

- Year of Arrival in Japan: 1904** (Annotated)
- 江蘇省** (Jiangsu Province)
- 咨派省分** (Assigned Province): 兩江 (Two Rivers)
- 到東年月** (Arrival Date): 光緒三十年三月 (March 1904)
- 經過學校** (Schools Attended): 清廷專門學堂 (Qing Dynasty Specialized School), 早稻田大學農科 (Rikkyo University Agriculture Department)
- 現在學校學科** (Current School/Subject): 日本大學專門部法科 (Meiji University Specialized Department Law School)
- 在學年限** (Duration of Study): 二十七 (Twenty-seven)
- 畢業試驗成績** (Graduation Exam Results): 及格 (Passed)
- Year of Graduation: 1909** (Annotated)
- Age: 27** (Annotated)
- Meiji Gakuin University Professional Degree in Law** (Annotated)

Additional annotations include a list of previous schools for the 1904 student: 1. Accounting Institute [Kaikai Gakuin], 2. Hongwen Institute [Kobun Gakuin], 3. Foundation Year Program in Waseda University.

Source: *Kaoyan chuyang biyesheng zhangcheng* (Records of Overseas Students in Japan)

Figure II. Spatial Distribution of Outgoing Students to Japan

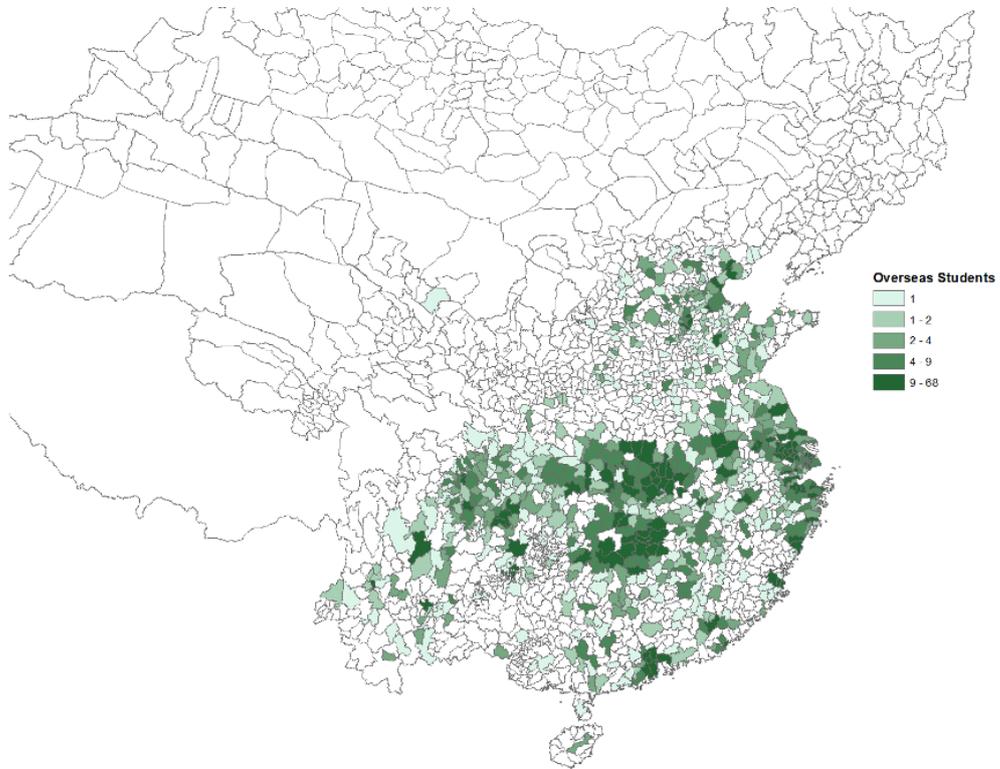


Figure III. Spatial Distribution of Party Membership

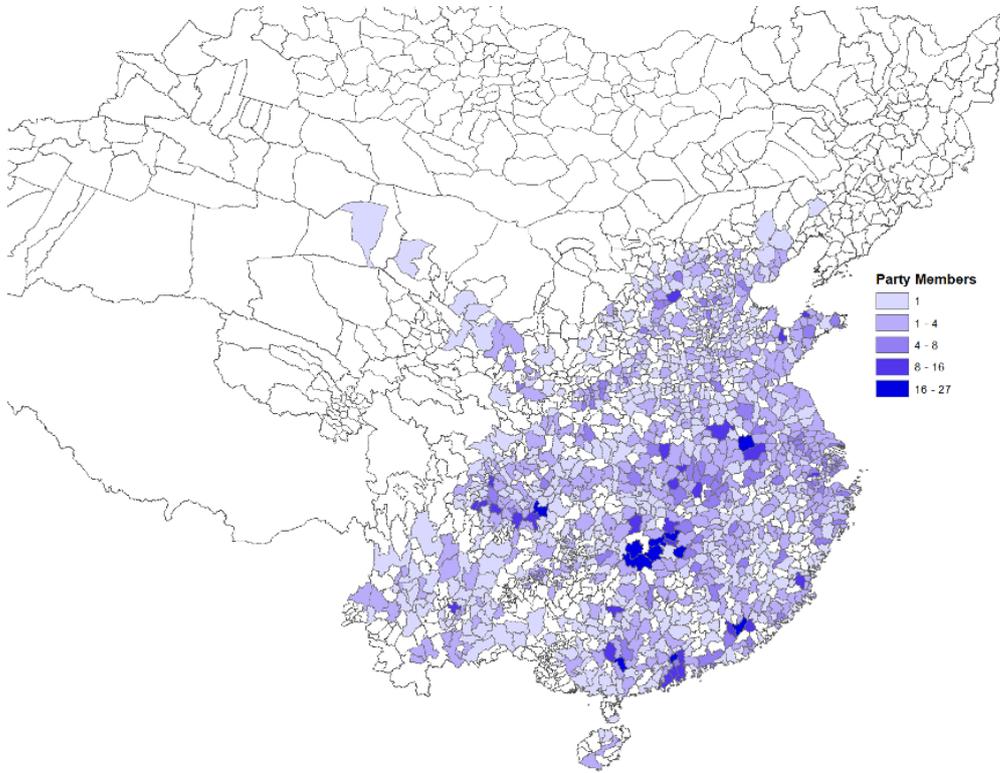


Figure IV. Spatial Distribution of Provincial Assemblymen

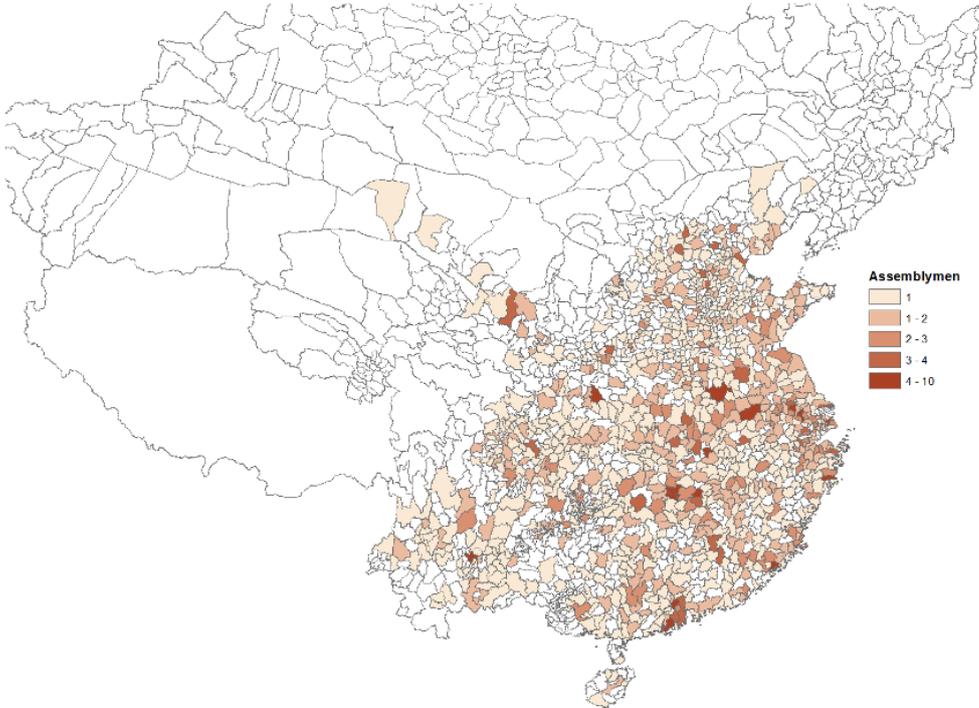


Figure V. Independence and Uprisings in the 1911 Revolution

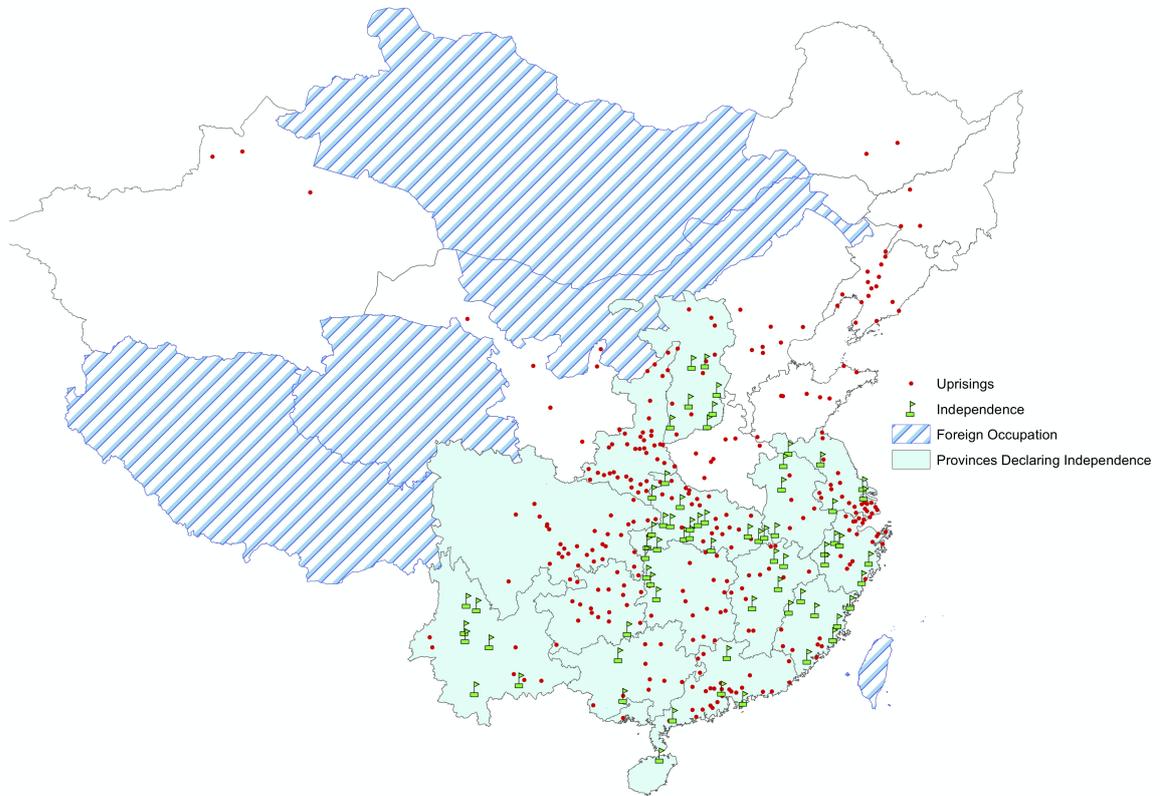


Figure VI. Illustration of DD Design

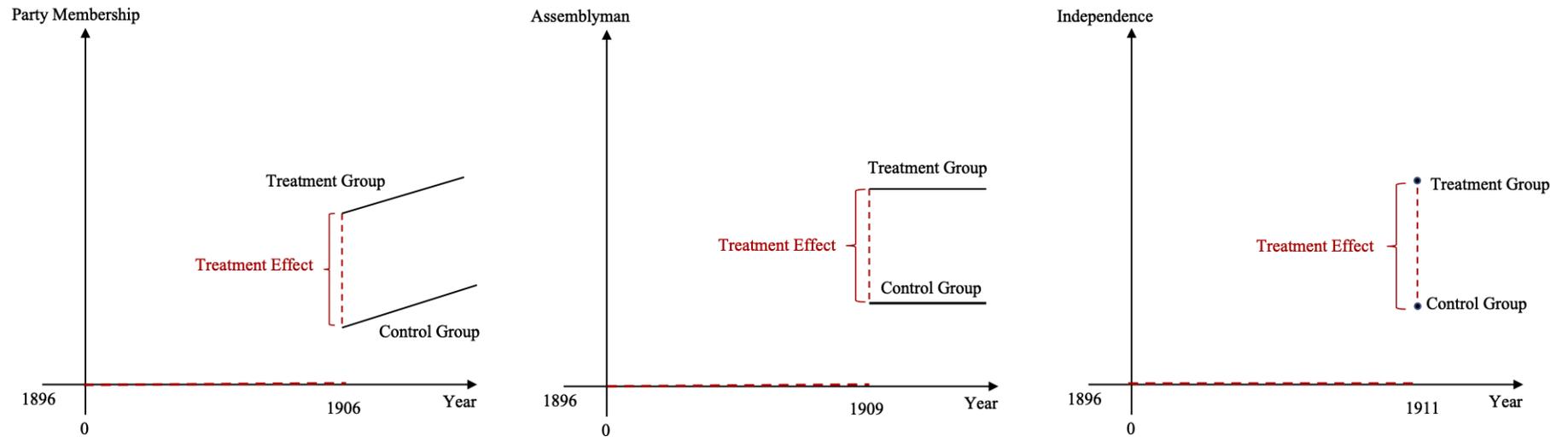


Table II: Robustness Check: Self-selection “out” – Government-sponsored Students

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
<i>Democratic Party Membership</i>				
Government-sponsored Overseas Students	1.045*** (0.266)	1.110*** (0.316)	1.090*** (0.217)	1.127*** (0.227)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.228	0.191	0.194	0.167
<i>Provincial Assembly Representation</i>				
Government-sponsored Overseas Students	0.889*** (0.213)	0.755*** (0.161)	0.603*** (0.144)	0.617*** (0.0742)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.228	0.157	0.192	0.196
<i>Declaration of Independence</i>				
Government-sponsored Overseas Students	0.342*** (0.0912)	0.219*** (0.0426)	0.196*** (0.0319)	0.157*** (0.0344)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.313	0.291	0.290	0.241
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table III: Robustness Check: Self-selection “out” – Government-sponsored Military Students Only

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
<i>Democratic Party Membership</i>				
Government-sponsored Military Students	1.578*** (0.308)	1.728** (0.578)	1.836*** (0.495)	1.778*** (0.404)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.339	0.235	0.237	0.196
<i>Provincial Assembly Representation</i>				
Government-sponsored Military Students	0.915*** (0.204)	0.684*** (0.101)	0.621*** (0.103)	0.659*** (0.0910)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.252	0.142	0.184	0.178
<i>Declaration of Independence</i>				
Government-sponsored Military Students	0.341*** (0.0866)	0.297*** (0.0629)	0.298*** (0.0545)	0.199*** (0.0463)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.328	0.320	0.318	0.241
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$ *** $p < 0.01$.

Figure VII: Robustness Check: Migration – The Effect of Random Assignment of Birthplace on the Outcome Variables

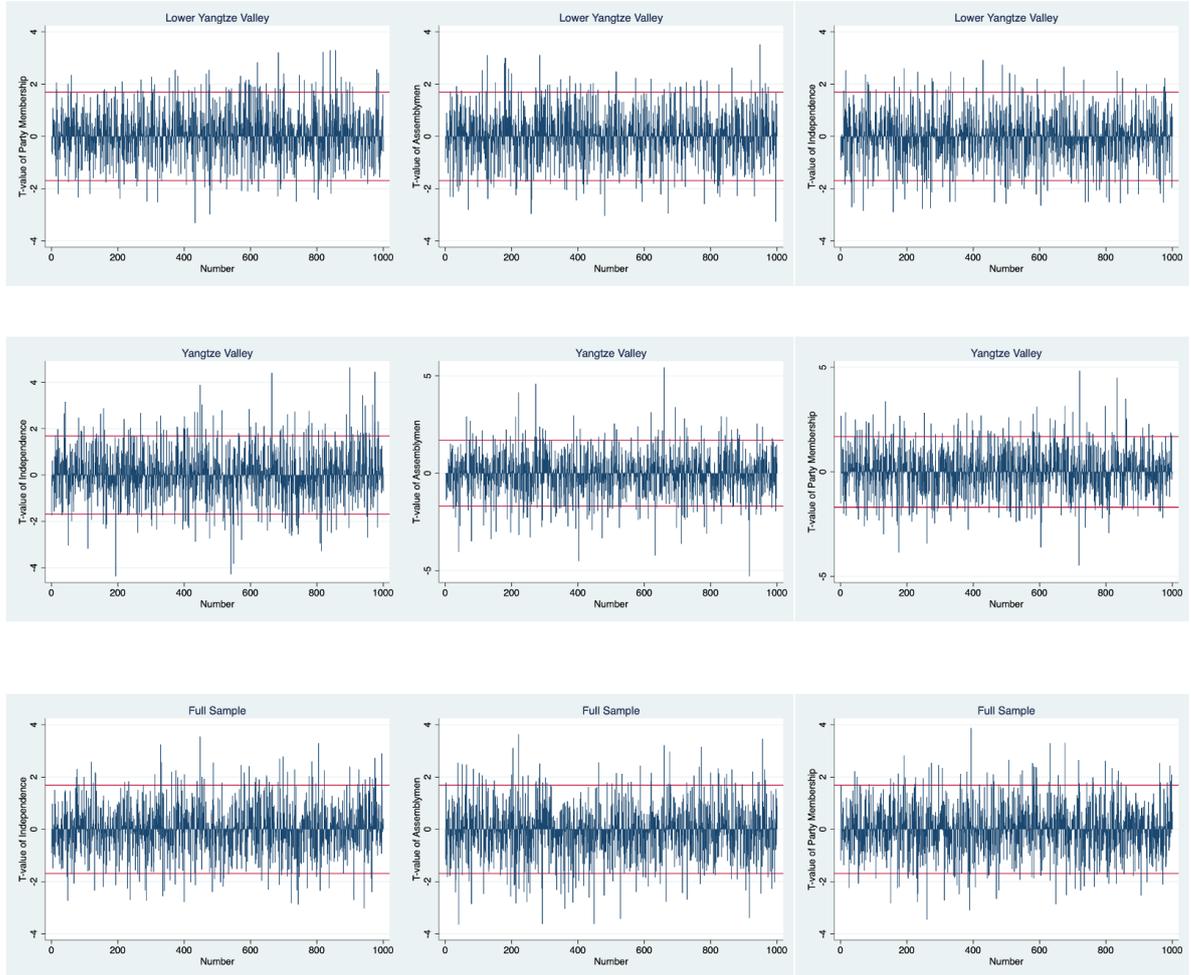


Table IV: Specialization – Concerns for Self-selection into Majors

	Lower Yangtze	Lower and Middle Yangtze	Yangtze Valley	Full Sample
	(1)	(2)	(3)	(4)
Independent Variables:				
	<i>Democratic Party Membership</i>			
Government-sponsored Students $\times \beta_{Arts}$	1.010*** (0.174)	1.044*** (0.185)	1.291*** (0.294)	0.861*** (0.279)
Mean of Control Group	0.0789	0.0714	0.0769	0.134
Adjusted R^2	0.224	0.212	0.271	0.239
	<i>Provincial Assembly Representation</i>			
Government-sponsored Students $\times \beta_{Arts}$	0.469*** (0.0780)	0.353*** (0.0811)	0.523*** (0.137)	0.377** (0.172)
Mean of Dependent Variable	0.736	0.814	0.734	0.657
Adjusted R^2	0.178	0.156	0.243	0.273
	<i>Declaration of Independence</i>			
Government-sponsored Students $\times \beta_{Arts}$	0.171*** (0.0282)	0.146*** (0.0395)	0.222*** (0.0511)	0.318*** (0.0922)
Mean of Dependent Variable	0.158	0.236	0.207	0.154
Adjusted R^2	0.212	0.208	0.282	0.349
Controls	Y	Y	Y	Y
Geographic Controls	Y	Y	Y	Y
Province F.E.	Y	Y	Y	Y
Yangtze Valley F.E.		Y	Y	Y
Provincial-level Clustering		Y	Y	Y
No. of Counties	143	405	540	1528

Note: Controls include “Population density (per 1000/ km^2), Urbanization Rate, *Jinshi* Density (per 10,000), *Shengyuan* Quota Density (per 10,000), University Density (per 10,000), Treaty Ports, Communicant Density (per 10,000), Number of Foreign Firms and Banks”. Geographic controls include “latitude and longitude” and “Distance to the Yangtze River”. Robust standard error in parentheses. Constant added but not reported. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.