Banking on the Confucian Clan: Why Did China Miss the Financial Revolution?

Zhiwu Chen, Chicheng Ma, and Andrew J. Sinclair*

August 2020

Abstract

What made finance develop in the West but not in China? We argue that long before modern finance, China chose to rely on the kinship-based Confucian clan, whereas the West chose the corporate entity combined with impersonal instruments, to deal with the challenges of interpersonal risk sharing and resource pooling. That difference in choice led to two distinct institutional-development paths. Pre-modern China was ordered hierarchically around patrilineal clans that each served as an informal internal financial market for members, where intra-clan pooling and sharing obligations were rigidly enforced through Confucian rules and rituals. For more than two millennia, institutional innovations focused almost exclusively on solidifying the clan system to minimise the uncertainty and transaction costs of implicit intra-clan exchange. By the early nineteenth century, the clan as an internal financial market and as a business corporation served China well. However, it came at the cost of ignoring the development of the impersonal institutions needed for formal finance. Even when formal finance was transplanted in the late nineteenth century, its adoption was not smooth. We provide empirical evidence that the Confucian clan competed with and indeed inhibited the development of modern banking in the early twentieth century, and that Confucianism continues to limit finance in contemporary China.

Keywords: financial development, financial history, Confucianism, clan, risk sharing, resource pooling, banking
JEL Codes: G21, N20, O16, Z12

* Zhiwu Chen, Faculty of Business and Economics and Asia Global Institute, the University of Hong Kong, Pokfulam Road, Hong Kong. Email: zhiwu.chen@hku.hk. Chicheng Ma, Faculty of Business and Economics, the University of Hong Kong, Pokfulam Road, Hong Kong. Email: macc@hku.hk. Andrew J. Sinclair, Faculty of Business and Economics, the University of Hong Kong, Pokfulam Road, Hong Kong. Email: andrew.sinclair@hku.hk.

Electronic copy available at: https://ssrn.com/abstract=3671280

The literature on financial development, which is greatly informed by modern data, has deepened our understanding of what institutions drive progress in finance (La Porta et al., 1997, 1998; Rajan and Zingales, 1998). However, it remains an open question why some countries had many of the necessary institutions ready for finance to take off in the nineteenth century or earlier, whereas most other countries did not.[1] In this paper, we address this by hypothesising why modern finance originally developed in the West but not in China and then empirically testing our hypothesis by using both historical and contemporary data from that country. Money was invented in China some 3500 years ago, with paper money first introduced in the Song dynasty (960–1279 AD) (Goetzmann and Koll, 2005; von Glahn, 2005), and intertemporal lending was practised as early as 3000 years ago during the Zhou dynasty (1046–256 BC).[2] Yet these early financial innovations did not lead to the indigenous development of advanced arms-length finance or capital markets in China. It was only during the late nineteenth century that modern banking, insurance, the limited-liability joint-stock company and capital markets were transplanted into China. However, even since then, financial development has remained stunted.

Today, China's financial markets are considerably more substantial than a century ago. Nonetheless, in relative terms, there is still a long way to go before the country reaches its full financial development potential. For example, its market capitalisation to GDP is 46.5% with only 8.8% of households participating in the stock market (either directly or indirectly through funds); in contrast, the respective rates in the US are at 148.5% and over 50%.[3] Many people in China continue to rely on informal lending at high interest rates, and personal cheques are not accepted anywhere.

[1] La Porta et al. (1997) demonstrated that the historical development of a country's legal institutions affects its financial market development. Haber (1991, 1996) showed that political and national institutions are critical for financial development. The cause of the financial revolution in England around 1700 is still widely debated (Temin and Voth, 2008).

[2] Intertemporal lending is reflected in one of the first three Confucian classics, *The Rites of Zhou*, which was written during the second century BC about the earlier Zhou Dynasty (1046–256 BC). Furthermore, *The Nine Chapters on Mathematical Art* (*Jiuzhang Suanshu*), written by scholars from the tenth to the second century BC, contains examples of classic asset pricing and discounted cash-flow problems, including the time value of money (Goetzmann, 2005). If financial transactions had not been common during those centuries, scholars would not have created these general mathematical problems.

[3] For market capitalisation ratios, see the World Bank's World Development Indicators database, variable CM.MKT.LCAP.GD.ZS, available at https://databank.worldbank.org/source/world-development-indicators. For stock market participation rates, see page 95 of the report by Gan et al. (2014) on the China Household Finance Survey 2012, and page 730 of the Statistical Abstract of the United States: 2012.

Electronic copy available at: https://ssrn.com/abstract=3671280

In contrast, the groundwork for Western capital markets was laid in antiquity. Ancient Rome developed an active capital market for trading the shares of *societas publicanorum*, an early form of joint-stock companies (Malmendier, 2009). A jurist, Ulpianus (170–223 AD), constructed a life table for pricing life annuity contracts, and Roman civil law had sections regulating transactions in life and other insurance policies (Kopf, 1927). Clearly, the Romans were already reliant on formal financial instruments to achieve resource pooling and risk sharing between themselves and beyond kinship. Financial development halted after the collapse of the Roman Empire and did not resume until the thirteenth century, when the city-state of Venice developed a public security market to assist with government finance. This set Western Europe on a centuries-long trajectory towards large-scale and far-reaching capital markets (Poitras, 2000).

Recent work by Greif and Tabellini (2010, 2017) highlighted that at least over the past millennium, the West has relied on the 'corporate entity' or corporation, whereas China has relied on the Confucian clan, to achieve interpersonal cooperation in terms of resource pooling and risk sharing. In the West, although the family was important for both resource pooling and risk sharing, much more emphasis was placed on cooperation beyond bloodlines, which led to the development of non-kinship organisations (e.g. the church, the corporation and non-profit organisations) and their supporting legal rules and institutions. Ownership shares, securities, financial contracts and trading markets are just instruments created to facilitate cooperation between strangers. Because of its reliance on non-kinship-based resource pooling beginning more than a millennium ago, the West has long perfected impersonal legal and contract-enforcement institutions, affording Western countries the capacity to develop large-scale capital markets and arms-length finance.

In China, however, society chose to rely almost exclusively on the clan (or lineage) to achieve interpersonal cooperation. The clan acted like an internal financial market, or a corporation, for its members where intra-clan resource pooling and insurance were not based on explicit financial instruments or formal agreements, but rather on implicit contracts that dictated the rights and obligations of each member with respect to every other member, enforced by Confucian moral rules and institutions. Effectively, between any two clan members, there is an implicit set of bilateral commitments binding them to helping and sharing with each other in times of need (Lang, 1946). Since the start of Confucianism in the fifth century BCE, generation after generation of Chinese scholars have devoted their lives to perfecting and operationalising Confucian rules to minimise the risk of members' default on their obligations. By the early twentieth century, the clan system was so developed that it was largely the only effective, reliable resource-pooling and risk-sharing institution that people could securely depend on. Not

Electronic copy available at: https://ssrn.com/abstract=3671280

only were members counting on other kinsmen for help in times of need, both materially and emotionally, but the clan was also the main medium to pool resources for business ventures and growth (Faure, 1989; Goody, 1996). According to Zelin (2004), in nineteenth-century Zigong, China, salt businesses were usually named after the founder's ancestral hall, e.g. 'Wang Sanwei *tang*', where Wang was the founder's family name, Sanwei his nickname, and *tang* the shorthand for 'ancestral hall', in this case meaning 'clan trust'. Thus, for business purposes, the clan was treated as the equivalent of a Western corporation, holding land and other assets and conducting business on behalf of clan members.[4]

We claim that the choice of the clan, made more than two millennia ago,[5] as the focal medium for risk sharing and resource pooling is why China did not endogenously develop formal finance. First, given the clan's dominance, the Chinese people did not have much demand for external finance because the Confucian clan and financial markets were largely substitutable competitors before the Industrial Revolution. Second, that choice led almost all scholars to focus on perfecting Confucian norms to secure intra-clan commitments while ignoring the development of impersonal contract-enforcement and property-protection institutions, which are essential for formal arms-length finance to build on (Rajan and Zingales, 1998; La Porta et al., 1997, 1998). Lacking such necessary institutions, China could not develop formal finance even when it wanted to. This is why after formal finance was transplanted in the late nineteenth century, its adoption was slow (Kirby, 1995; Goetzmann et al., 2007). Although modern financial markets could provide superior risk mitigation and resource pooling, the marginal benefits did not exceed the switching costs as long as the scale of finance needed was not high. In contrast, Western Europe relied more on impersonal resource pooling beyond bloodlines, requiring the development of formal governance institutions and the rule of law early on. Its path of choice, although costly (Greif and Tabellini, 2010, 2017), laid the foundation for the long growth trajectory of arms-length finance in the West.

In this paper, we empirically test the hypothesis that the deeply entrenched Confucian clan as an internal financial market stifled, and continues to depress, both the demand for and the supply of external finance, using banking data from the 1897–1936 period and finance survey data from 2010. As part of China's modernisation

[4] After the British came to Malaysia and Hong Kong in the nineteenth century, a number of lawsuits occurred concerning whether a Chinese *tang* would have the same standing as a 'legal person' in a British court as a corporate entity. The British court ruled that it did not, forcing most Hong Kong *tangs* to re-incorporate in the 1920s and 30s. See Chung (2010).

[5] At the beginning of the Han dynasty (206 BC–220 AD), Confucianism was made the official state ideology, dictating how Chinese society should be structured and organised.

Electronic copy available at: https://ssrn.com/abstract=3671280

movement, modern banking was introduced from 1897 onward when the Confucian clan was in its zenith.[6] Still, not all of the 283 prefectures in our sample adopted modern banks enthusiastically or to the same extent, and the prominence of the Confucian clan differed significantly between them as well, offering us an ideal context to examine our hypothesis. We measure each prefecture's Confucian clan development using clan density, defined as the number of genealogy books per 10,000 members of the population that had been compiled as of 1897. Genealogy books were not just a written record of the lineage's male members since its inception, but also contained clan rules transmitting Confucian teachings and prescribing norms and conduct for members, usually laying out rewards for conforming behaviour and punishment for violations. The ultimate purpose of these books was to promote clan solidarity and secure intra-clan intertemporal exchange. Our analysis finds that in regions with higher genealogy density—that is, stronger Confucian clans—significantly fewer modern banks were started during the 1897–1936 period. A doubling of genealogy density reduces bank density by 16.0%. We also find this result to be stronger when restricting our analysis to eastern China, where Confucian influence was stronger.

Note that our key explanatory variable, clan strength, may proxy for omitted variables correlated with both the prevalence of modern banks and clan strength. For example, historically impoverished regions may have developed more reliance on the Confucian clan, and modern banks might have a policy against expanding into poor regions. To address this concern, we instrument clan strength using a prefecture's shortest great-circle distance to the nearest academy where Confucian master Zhu Xi (1130–1200 CE) taught. Zhu Xi played a crucial role in spreading the Confucian way of life to the grassroots level by allowing every clan to build an ancestral hall where all male members had to gather at least once every three months and conduct ancestor-worship rituals. Over a 20-year period, he frequently lectured on his operationalised version of Confucianism at three academies. Most of his 448 disciples were from prefectures that were close to these academies (Chan, 1982; Online Appendix Figure A2), and thus his influence on nearby regions should be high. Furthermore, these academies were not located at economic centres, and their impact on banking development 600 years later should only be through his indoctrination and its resulting effect on local clan strength.[7] Our instrumented-variable results reinforce our baseline

[6] The first modern bank, Commercial Bank of China, was founded in 1897, and the second, now known as Bank of China, was founded in 1904 (Wu, 1935).

[7] For example, we find that a prefecture's distance to a Zhu Xi academy negatively predicts bank development 600 years later. However, when introducing local clan density into the analysis, we find the predictive power of distance goes away. This suggests that the predictive power of the

Electronic copy available at: https://ssrn.com/abstract=3671280

conclusion, and the negative effect of clan strength on bank development becomes approximately 2.5 times stronger.

Another concern is that clan strength may be related to local factors that are not controlled for by our covariates or IV analyses. To address this, we conduct a placebo test that shuts down the clan competition channel. We repeat our main analysis by studying the spread of foreign banks (1860–1936) and official banks (1897–1936), whose services did not compete with clan-based informal finance. The expansion of foreign banks in China was primarily driven by the need to serve foreign-owned businesses, whereas official banks were established to facilitate government activities. These banks should have little to do with local clans, and indeed we do not find a relationship between clan strength and the presence of foreign or official banks.

If Confucianism inhibits financial development, then we expect to see resource-pooling activities within the clan, which should reduce the demand for, and hence depress the price of, external capital. We obtain interest rates on loans from the China Historical Interest Rate dataset constructed by Chen et al. (2016). If clans provided enough intermediation between members, then interest rates in regions with strong clans will be lower, given a similar total demand for capital. Indeed, we find that interest rates in 1912–1936 were significantly lower in prefectures where clan structures were stronger, supporting our claim that the Confucian clan and financial markets are substitutes to the extent that risk and investment scale are not yet high.

Furthermore, clan-based informal finance continues to play an important role in contemporary China. Our final empirical analysis studies the long-term effect of Confucian values on formal finance. Using data from the 2010 China General Social Survey (CGSS), we find that in prefectures with strong Confucian clans, people (1) tend to trust relatives more and outsiders less, (2) prefer not to use formal contracts in business with relatives, and (3) are less likely to borrow money from banks. Further, these prefectures have less per-capita banking and a smaller banking sector relative to GDP. Taken together, these results suggest that Confucianism casts a long shadow on financial market development in China, which is true in the twentieth and early twenty-first centuries. The competition between Confucianism and finance continues to the present day.

The literature on what makes finance develop and why institutions matter has attracted a great deal of interest. La Porta et al. (1997, 1998) showed that differences in legal institutions can explain differences in financial development (see also Rajan and Zingales, 1998), whereas others claimed that cultural and religious institutions

distance to a Zhu Xi academy goes through clan strength, and provides evidence that the exclusion restriction holds.

Electronic copy available at: https://ssrn.com/abstract=3671280

affect economic growth (e.g., Knack and Keefer, 1997; Guiso et al., 2003, 2016; Becker and Woessmann, 2009; Voigtländer and Voth, 2012; Giuliano and Nunn, 2017).[8] Existing studies usually take as given that societies had different institutions at the beginning of the modern era, which then led to distinct outcomes of financial development at a later time. Our study goes further back and claims that it is the different choices in the Axial Age (800–200 BCE) between China and the West concerning the mode of interpersonal resource pooling that launched the two onto different paths of institutional development. Due to China's choice of the kinship network to achieve resource pooling and mutual insurance, its endogenously developed institutions were, at the dawn of the Industrial Revolution, too focused on perfecting the Confucian clan, rather than on the kind of institution needed for impersonal financial development. This is consistent with the findings of Pascali (2016) that the presence of Jewish communities was instrumental to banking development in Italy, and those of Grosjean (2011) that Islamic rules had a long-term negative impact on financial development in Southeastern Europe.

Consistent with Alesina and Giuliano's (2015) study on how cultural institutions compete with and substitute for formal finance, we show that if and when clan solidarity is reliable, the biology-based order may be too strong for external financial markets to compete with, lowering the demand for formal finance. Our findings based on data from China may also help explain why formal financial development in Italy, Spain and Portugal (southern Europe) has lagged behind Britain and the US. Bentolila and Ichino (2008) documented that Italians and Spaniards deal with unemployment shocks more effectively than the British and Americans, not because of better developed financial markets or more government unemployment benefits (in fact southern Europe scores lower in both dimensions) but because of tighter extended families (stronger clan support). We conjecture that after the Counter-Reformation in southern European countries in the sixteenth and seventeenth centuries (Becker et al., 2016), Italians and Spaniards retreated from financial market development and went back to rebuild and strengthen their kinship clans for resource pooling and risk sharing, which led to the rise of the extended family and the stagnation or decline of formal finance. This should be especially true for Italy, as it was the most developed in finance among European countries before the late sixteenth century (Peyrefitte, 1995). However, the cases of Italy and China show opposite causality: the retreat from finance starting in the sixteenth century caused Italians to re-work their clan institutions,

[8] Guiso et al. (2004, 2008) demonstrated that social capital (especially trust) plays a crucial role in shaping people's financial behaviour and development. D'Acunto et al. (2018) documented a negative (long-term) effect of historical antisemitism on contemporary financial development.

Electronic copy available at: https://ssrn.com/abstract=3671280

whereas the excessive Confucian focus on the clan for over two millennia prevented the Chinese from developing an appetite for external finance. The advantages and disadvantages of intra-family risk sharing are studied in other contexts by Kotlikoff and Spivak (1981), Townsend (1994), and Alesina and Giuliano (2010), among a long list of related papers. These informal insurance and financing networks supported by local culture have been and will continue to be what formal finance must contend with.

To the best of our knowledge, this is the first attempt to systematically examine the long historical and cultural origins of the financial divergence between China and the West. Our paper expands the literature on the 'great divergence', which seeks to understand why the Industrial Revolution took place in the West but not China (Weber, 1905; Pomeranz, 2009). Our study supports Faure's (2006) argument that the clan-based system was unable to intermediate sufficient capital and spread the large risk to support an industrial economy. The exclusive focus by Confucianism on building the clan-based social order helped achieve local risk sharing but ignored the construction of the larger impersonal social order required for financial intermediation beyond the clan.

Our work is also related to studies on the role of Confucian culture in China's economic development (Kung and Ma, 2014; Chen et al., 2019). By documenting a negative effect of Confucianism on modern banking, our analysis adds to the literature on the determinants of China's modernisation process in the late Qing dynasty (e.g. Goetzmann et al., 2007; Yuchtman, 2017).

This paper proceeds by first discussing in Section 1 the economics of the Confucian clan. Section 2 presents the data used in our empirical tests. Section 3 studies the impact of the clan on the spread of modern banking in the early twentieth century. Section 4 investigates an alternative hypothesis that Confucianism lowers demand for external finance. Section 5 discusses the long-term impact of Confucianism on financial development, and Section 6 concludes the paper.

1. Economics of the Confucian Clan

Risk is a fact of life, regardless of a society's stage of development. For modern societies, financial markets offer powerful tools for people to pool resources and spread risks. An entrepreneur whose wealth is tied to their firm can diversify their risk by selling their company's shares on either the private or public market. A young worker whose future earnings are subject to mortality risk can hedge by purchasing term life insurance. Families can buy insurance to mitigate disaster risks with relatively high certainty. However, long before the advent of modern finance, such luxuries were not

Electronic copy available at: https://ssrn.com/abstract=3671280

available, so people had to find functionally equivalent forms of interpersonal cooperation in terms of risk spreading and resource pooling. In the Axial Age (800–200 BCE), the West responded to these challenges by transcending bloodlines in favour of the social/corporate approach (e.g. the church, the corporation) and by subsequently developing supportive impersonal institutions (Malmendier, 2009), such as impersonal contract-enforcement institutions, checks and balances, and the rule of law, providing an institutional foundation that was later used for formal financial development (La Porta et al., 1997, 1998; Rajan and Zingales, 1998). China, however, went in a different direction, choosing to focus on the bloodline. In this sense, the divergence in mode of interpersonal cooperation between China and the West dates back 2500 to 3000 years, almost two millennia earlier than Greif and Tabellini (2017) claimed.

During the Zhou dynasty (1046 to 256 BCE), Confucius (551–479 BCE) responded to the challenge of interpersonal cooperation by prescribing a socio-cultural solution based on rigid social structuring. In Confucius' time, Zhou China had more than 100 states that were constantly fighting with each other, and bloody conflicts defined the day. Confucius held that the root cause of the predominance of violence lay in the lack of a clear social structure. In such a turbulent society, it should be no surprise that rule and order did not exist. According to Confucius, to achieve harmony, we must rectify every name and title so that everyone knows his or her position in the social hierarchy and does what that position entails in terms of responsibility and obligations to others: '[T]he father must act like a father, and the son like a son' (Zhao, 2015, p. 180). Because every man must be someone's son, then all men will behave 'properly' if each man acts according to his place in the stratified order. Furthermore, if every woman follows the Confucian principle of obeying her father before marriage, her husband during marriage, and her son in widowhood, then everyone will know his or her place, resulting in a rigid but orderly structure of bilateral relations each with clearly specified rights and obligations. The set of Confucian rules took two millennia to perfect after the Han dynasty (202 BC–220 AD) made Confucianism the official state orthodoxy. Because one's position in the stratified social hierarchy and the associated obligations remained unchanged for life (there was thus no individual freedom under Confucianism), this perpetual constancy made such morality-based exchange more secure than free will-based market exchange.

By the time period under study, 1897–1936, there were two layers of resource pooling and sharing: the nuclear family and the clan or lineage. The role of the nuclear family in risk sharing is not unique to Confucianism. What is unique is the Confucian emphasis on both the husband owning property rights for his wife and the father owning property rights for his children:

Electronic copy available at: https://ssrn.com/abstract=3671280

> 'The head of the family was its eldest male member. ... He held the title to all family property and he alone could dispose of it, as well as of the earnings and savings of all the family members. He settled the marriages of his children and signed the marriage contracts. ... Furthermore, the law exonerated father or grandfather who killed his son or grandson unintentionally when chastising him "in a lawful and customary manner". Nobody disputed the right of the head of the family to sell its members into slavery.' (Lang, 1946, pp. 26–27)

With the ownership of property rights so clear and children being indoctrinated on absolute filial piety,[9] they became, in the eyes of parents, secure and personalised instruments of investment and insurance for old age and sickness. 'Just as dogs were raised to hunt for their masters before they were pets, so in early traditional China children were raised as a source of income and a store of wealth. Provided that a child obeys his parent, he is a relatively secure asset holding' (Cheung, 1972, p. 641). Children continue to play an important role in the provision of old age security in contemporary China. Although most people in China receive state pensions, as of 2005, nearly half of old-age support came from family members. In contrast, only 4.7% of older adults in the US (as of 2012) receive financial support from their children (Wu, 2013).

As a broader network for resource pooling and risk sharing beyond the nuclear family, the Confucian clan acted as the internal financial market for members. Before the Song dynasty (960–1279 CE), the social engineering efforts by Confucius and his followers were focused more on tightening the nuclear and extended family, and less on perfecting the wider kinship clan. Subsequently, during the Song dynasty, a transition occurred as scholars started to concentrate on popularising the Confucian way of life at the grassroots level and formally institutionalising the clan by encouraging both the construction of ancestral halls and genealogy and the practice of periodic ancestor-worship rituals (Chen, forthcoming). Because intra-clan resource pooling and risk sharing were usually not based on explicit free-will contracts but on kinship tie-dependent obligations, we highlight a few key aspects that made the

[9] Filial piety is considered the highest moral principal in Confucianism. For example, *The Analects* (*Lun Yu*) 13.18 describes a conversation where Confucius argues that family loyalty is more important than legal obligations: 'The Governor of She in conversation with Confucius said, "In our village there is someone called 'True Person'. When his father took a sheep on the sly, he reported him to the authorities." Confucius replied, "Those who are 'true' in my village conduct themselves differently. A father covers for his son, and a son covers for his father. And being true lies in doing so."'

Electronic copy available at: https://ssrn.com/abstract=3671280

Confucian clan robust even when facing competition from formal finance in China's modernisation process.

First, between any two members in the clan, the bilateral rights and obligations to share resources and offer help were determined by four dimensions: biological distance, generational gap, relative age and gender. In general, the closer the biological distance, the more claim two members had on each other's property and income, and hence the greater the obligations to share. The senior kinsman by generation or age had more claim on the junior's property and income, and the latter had more obligations to care for the former. Likewise, a man had more seniority than a woman in entitlement claims (Lang, 1946). Because the economics of Confucianism were based on biological distance, generation, relative age and gender, early Chinese scholars invented a specific title/name for each bilateral relation within the clan. Each title represented a corresponding set of rights and obligations to ensure that the intra-clan contract-less pooling and sharing of resources was dispute-free (decreasing both ambiguity and transaction costs), which was especially important given that Confucian clans were typically large, sprawling patrilineal trees. For example, a son had absolute obligation to pay back and care for his father, but also obligations, in successively declining degrees, to his father's oldest brother, second-oldest brother, ..., youngest brother; his father's oldest sister, ... youngest sister; his father's cousins (again in declining degrees by age), second cousins, second cousins once removed, and so on. His mother's relatives would bring in another large set of additional bilateral obligations. The son had to call each of his father's and mother's relatives by a unique title, not just 'uncle' and 'aunt' as in English. Because kinship was not the main resource-sharing solution in England, identifying each of a son's relatives by a unique title would be unnecessary, but in traditional China, the opposite was true.[10] In Chinese society, each person's obligations to others were pinned down by a system of titles that worked to facilitate bilateral risk sharing within the lineage.

Second, from the Song dynasty onward, clans became prominent owners of land and other rental properties, the income of which was mostly used to pay for lineage festival expenses, wedding and funeral costs, children's education, rewards for success, disaster relief and to help poor clansmen, and to provide loans for business and other one-time needs of members of the extended clan. A prominent Confucian scholar-official, Fan Chung-yen (989–1052 AD), has been credited with inventing the charitable clan estate in 1050, to which he donated 1000 acres of his own land as a permanent

[10] As this was a patrilineal tree, there was only a weak sense of moral obligation to outsiders. For example, the title of a son's maternal grandfather is *waigung*, and the first character *wai* means 'outside'. His maternal grandfather, having a different surname, is thus considered outside of his family tree.

Electronic copy available at: https://ssrn.com/abstract=3671280

reserve for the estate and for which he wrote a charter detailing operational rules for the management of the trust's assets and for the distribution of its income, emphasising the original intention of helping the poor and the unfortunate among the Fan clan members (Twitchett, 1959). The Fan clan's charitable estate was such a success that it was soon widely copied across the country and continued until the twentieth century (Feng and Yan, 2012).[11] The clan as a charitable estate not only gave the Confucian clan a tangible existence and took its risk-sharing function to a new level, but also boosted the attraction of membership and hence clan solidarity.

Third, under Confucianism, the formal code recognised property rights as held not at the individual level but at either the nuclear family or the *tang* level (Zelin, 2004), where *tang*, being literally derived from 'ancestral hall', was a fictional corporate entity. Assets were pooled, owned and operated in a *tang*, which functioned similarly to a British trust (Chung, 2010). A *tang* was often set up by the patriarch of an extended family (i.e. a sub-branch within the clan), and it could also be set up by the clan head, in which case the clan and the *tang* were identical, making the clan a corporation. For example, a collection of clan members could pool assets and set up a *tang* in the name of a deceased common ancestor. A clan could have just one *tang* with all clan members as its shareholders, or it could have multiple *tangs* located at different nodes along the clan tree. Secured by Confucian norms and clan rules, these *tangs* were instrumental for intra-clan fund raising for business ventures, providing a trusted form of business organisation for economic growth in pre-modern China (Faure, 1989; Shiroyama, 2004; Zelin, 2004). A clan rule in the 'Genealogical Records of the Wu Family in Mingzhou' stated that 'if a man in the family has no talent to study nor land to plough, he can take advantage of his kin network to do business'.[12] Hence, clan members were expected to support other members in starting a business. However, the *tangs* as unlimited-liability organisations could not pool resources and spread risk beyond the clan membership, limiting their ability to scale and compete with the modern corporation in the industrial age (Kirby, 1995).

Fourth, before the Song dynasty, genealogy books were the exclusive privilege of the aristocrats. Starting in early Song, two Confucian scholars (Ou-Yang Xiu and Su Shi) introduced a simplified genealogy template suited for grassroots clans to track the

[11] For example, during the Qing dynasty, a Confucian scholar-official named Zhang Zhao established a 'coffin home' fund (*zhangshi yizhuang*) for his clan in Songjiang Prefecture (where Shanghai is located today). He donated a thousand mu (approximately 164.8 acres) of land to the coffin home fund. The land was put to productive use, and the revenue was used to support those clan members in need.

[12] More examples are found among the prominent Huizhou merchants in Anhui province who formed large joint ventures with other kinsmen (Tang, 1997). See also Faure (1989) and Zelin (2004).

Electronic copy available at: https://ssrn.com/abstract=3671280

history and achievements of past male members on the clan's patrilineal tree so that current members knew where and how their clan had come to where it was and could put a face to each ancestor they were supposed to worship. Some regions adopted it quickly, whereas others were less responsive, depending on local preferences. By the Ming dynasty (1368–1644), the genealogy had expanded to include full sections of clan rules operationalising Confucian principles, prescribing proper conduct and regulation, stipulating rewards for conformity and measures of punishment for deviations, and offering guidelines for parenting and other duties (Liu, 1959). 'If there is no genealogy, the families do not know their origins and cannot be kept together very long. Without a control among the kin, even the sentiment between parents and children tends to be weak' (quoted in Liu, 1959, p. 64). Being the clan's rule book and physical historical record, the genealogy was one of the key devices that helped strengthen clan solidarity and build cohesion among members.

Finally, the ancestral hall was popularised to the grassroots level, also around the Song dynasty, by Zhu Xi (1130–1200). 'To control the heart of the people needs the gathering of clan members and the promotion of good customs so that the people will not forget their origins' (quoted from Liu, 1959, p. 64). The ancestral hall was where clan members would gather to worship ancestors at least once each quarter and during festivals. It was also where banquets for new births, weddings and funerals would take place. In addition to strengthening the clan, regular gatherings at the ancestral hall allowed members to update information about each other and monitor other kinsmen's behaviour so that, should they discover free-riding by anyone, the clan's elderly would issue early warnings. Thus, the space for physical gatherings and their rituals provided an important platform to address the moral hazard that might arise from the resource sharing provided by the clan.

After more than two millennia of efforts, the Confucian system centred around the clan was working reasonably well, providing an adequate amount of resource pooling for business and risk sharing for everyday life and leading to an economic boom in pre-industrial eighteenth-century China (Faure, 1989, 2006; Zelin, 2004; Pomeranz, 2009). However, that success came at a high price: the almost exclusive focus of the intellectual elites on perfecting the Confucian way of life caused China to ignore the development of impersonal contract-enforcement and other legal institutions needed for formal financial development (Kirby, 1995). For example, the Qing Code had only 31 sections (out of a total of 2,354) devoted to commercial matters, treating them almost as a footnote (Peng and Lin, 2020). That is, the Qing state largely left business and financial matters to the clans and grassroots associations to handle and did not try to offer impersonal market institutions as a public good (Cohen et al., 1981). According to Greif and Tabellini (2017), its focus on the Confucian clan to achieve

Electronic copy available at: https://ssrn.com/abstract=3671280

interpersonal cooperation made China develop 'kinship-based morality', in contrast to the West's 'generalised morality' supported by impersonal institutions. That divergence in institutional development paved the way for the great financial divergence: the West engaged in formal financial development because its societies needed external financial instruments to facilitate cooperation among strangers, whereas the Chinese relied on the Confucian clan as an internal financial market and did not have much demand for external finance.

After the Opium War of 1839–1841 shocked the Chinese elites with Western technology and capacity for large-scale capital mobilisation, they were forced to adopt the joint-stock limited-liability corporation and formal securities markets from the mid-nineteenth century onward (Kirby, 1995; Goetzmann et al., 2007). That launched a competition between the clan as the traditional incumbent facilitator of resource pooling and formal arm's-length finance as the newcomer. As the main hypothesis that the rest of the paper will test, it is proposed that the odds were stacked against the newcomer, as all the pre-existing institutions and cultural norms in Confucian China favoured the clan. Even over the past four decades, informal finance afforded by the clan has remained important for China's economic growth (Peng, 2004; Bol, 2008; Martinez-Bravo et al., 2017).

2. Data Description

In the late nineteenth century, while Confucian influence was still in its heyday, China saw the creation of modern financial markets. After the country was forced to open in 1842, modern banks were introduced by the British and other Europeans. In 1897, the Chinese elites began to set up their own modern banks. This provides us with a unique historical context to examine the effect of Confucian culture on financial development. Another unique advantage of the 1897–1936 period is that financial development primarily manifested through the rise of modern banking, rendering the measurement of financial development cleaner and more homogeneous relative to contemporary (more sophisticated) financial markets.

2.1. *Banks*

To measure financial development, we use the average annual number of modern Chinese banks (or branches) operating in each prefecture between 1897 and 1936. After the first modern Chinese bank, the Imperial Bank of China, was established in 1897, the banking industry followed a sustained growth trajectory and reached nearly 2,000

Electronic copy available at: https://ssrn.com/abstract=3671280

banks by 1936, covering 73% prefectures across China proper (Figure 1).[13] We use 1936 as the end year because the Sino-Japanese war broke out in 1937, complicating the economic environment. The bank data are obtained from county gazetteers (*xianzhi*) and the *Banking Yearbooks* compiled between 1912 and 1937.

Specifically, we define bank density for each prefecture as the number of banks per 10,000 members of the prefectural population (based on its 1880 population). We choose 1880 because this is the last year prior to the emergence of modern Chinese banks for which prefectural population data are available from Cao (2000). To attenuate the effect of outliers, our main measure is the natural logarithm of bank density (plus 1), i.e. ln(*banks*+1).

[Figure 1 about here]

2.2. *Confucianism*

Confucianism is a complicated moral, philosophical and cultural system that prescribes a way of life. We focus on the solutions to risk-sharing and resource-pooling prescribed by Confucianism as reflected by clan solidarity and cohesion. As stated earlier, the Confucian clan became the predominant medium of interpersonal cooperation in the late Song and especially from the late fourteenth century onward.

To measure the strength of the clan system in a prefecture, we used the number of genealogy books compiled in the prefecture and before a given year. Genealogy books recorded lineage members and relationships to concretise the sense of belonging and promote lineage cohesion (Bol, 2008) and specified clan rules for members to follow, detailing 'carrots' for conformity and 'sticks' for deviations (Liu, 1959). We can thus infer that regions that cared more about clan solidarity and hence devoted more efforts to clan organising would in general have kept more genealogy books.

The genealogy data are obtained from Shanghai Library's (2009) *Comprehensive Catalogue on Chinese Genealogy* (*Zhongguo Jiapu Zongmu*). The *Catalogue* contains the genealogies of up to 52,401 clans, including more than 700 surnames across 283 prefectures in China. A majority of these genealogy books were compiled during the Ming and Qing dynasties (1368–1911). We use the books compiled before 1897, the first year of our sample period under study, as our primary measure of clan strength. By doing so, we avoid any reverse causality from financial development on Confucian clans' strength. Similar to bank density, we use genealogy density defined as the

[13] China proper refers to territory included under the regular county-province administration; it excludes some frontier and other areas that had alternative forms of administration.

Electronic copy available at: https://ssrn.com/abstract=3671280

number of genealogy books per 10,000 members of the population in the prefecture (based on the population size averaged over the 1393–1880 period). For the regressions, we take the natural logarithm of one plus this number.[14]

The genealogy sample in the *Catalogue* may have survival bias in the sense that some genealogy books may have disappeared or been destroyed before 2009 and that the survivorship patterns may differ from one prefecture to another. However, this survivorship bias should strengthen our proxy for Confucian influence because genealogies were more likely to survive in prefectures that historically had strong Confucian adherence and powerful clans. Moreover, the geographic distribution of the genealogy books (Figure 2) is consistent with historical narratives on the distribution of clans: southern and southeastern China (especially Zhejiang, Fujian, Anhui and Guangdong provinces) cared more about clan organisations than northern and western China (Zheng, 2001; Szonyi, 2002). This suggests that our genealogy records have little systematic survivorship bias in terms of geographic distribution. Moreover, we will address the survivorship bias issue using the instrumental variable approach as described in Section 3.

[Figure 2 about here]

2.3. *Control Variables*

We control for the following factors that may be correlated with both clan strength and financial development.

Human Capital. Clan strength for a region is known to be closely associated with human capital achievement. To help sons of the clan compete in the imperial civil examination,[15] a resourceful clan would typically provide support by hiring tutors, acquiring books and funding schools (Elman, 2013). To disentangle the resource-pooling effect of the clan from that of human capital, we control for the overall human capital achievement at the prefectural level. That is, in our regressions, we control for the number of *jinshi* (the highest civil-exam grade) holders produced in a given prefecture during the entire Ming-Qing period (1368–1905), which proxies for the

[14] We also use the total unique volumes of genealogy books (normalised by population size) in each prefecture as an alternative measure of clan strength. The reasoning is that stronger clans would compile their genealogy in more detail and thus have more volumes. The results using the volume measure (not reported) are similar to those reported in this paper.

[15] Since the seventh century, the imperial civil examination was offered once every three years and used to select about 250 candidates per cohort from the entire nation for appointment to senior government positions. This practice was abolished in 1905.

Electronic copy available at: https://ssrn.com/abstract=3671280

prefecture's human capital achievement. The *jinshi* data are obtained from Zhu and Xie's (1980) *Official Directory of Ming-Qing Imperial Exam Graduates* (*Ming-Qing Jinshi Timing Beilu Suoyin*). We normalise the number of *jinshi* by each prefecture's average population between 1393 and 1910 (per 10,000 persons) and take the natural logarithm. As expected, *jinshi* density is positively correlated with genealogy density (with a correlation coefficient of 0.44, significant at the 1% level).

Population Density. Both clan strength and financial development may be positively correlated with local economic prosperity. In the absence of prefectural GDP data for the nineteenth century, we use population density in 1880 as a proxy. Population density was measured by the natural logarithm of the number of people per 10,000 square metres, as obtained from Cao (2000).[16]

Treaty Ports. China's modernisation started from the treaty ports – the territorial concessions given to Western powers, beginning with the Treaty of Nanjing in 1842. Under Western influence, modern banks were established in the treaty ports, and the Confucian ethos was gradually undermined there by Western culture. We control for this using a dummy variable indicating whether a prefecture was a treaty port between 1842 and 1936.

In addition, we control for a gamut of prefectural geographic factors, including distance to the coast, distance to the nearest navigable river, land area and whether a prefecture was a provincial (or national) capital. The variable-definition and summary statistics are reported in Online Appendix Table A1.

3. Confucianism and Modern Banking

Our empirical analysis focuses on the hypothesis that the Confucian clan competed with and impeded the development of modern banking in the late nineteenth and early twentieth centuries. To test this, we estimate the following cross-sectional regression:

$$Banks_i = a + \beta\ Clans_i + \gamma \mathrm{X}_i + \varepsilon_i\ , \tag{1}$$

where $Banks_i$ is the natural logarithm of (one plus) the average modern bank density in prefecture i between 1897 and 1936. $Clans_i$ is the natural logarithm of (one plus) the average genealogy density compiled in prefecture i before 1897. $\mathbf{X}_i$ is a vector of control variables that include the number of *jinshi* degree holders per 10,000 people, population

[16] Cao (2000) also provides population data for 1850 and 1910. The results remain consistent when using the population density as of 1850 or 1910.

Electronic copy available at: https://ssrn.com/abstract=3671280

density in 1880, treaty-port dummy, distance to river, distance to coast, land area and provincial-capital dummy.

The results are reported in Table 1. The ordinary least squares (OLS) estimation (column 1) shows that clan strength had a significantly negative effect on modern bank density. The coefficient on $Clans_i$ is -0.002 and statistically significant. This is a log-on-log regression, however, so care should be taken interpreting the coefficients because bank density and genealogy density are both relatively small and we added one before taking the logarithms. That is, the standard interpretation does not apply. A doubling of genealogy density (0.659) leads to an increase of 39.7% in our variable of interest (log of [one plus] genealogy density), which, after being multiplied by the beta coefficient of -0.002, implies that after several steps of calculation, the outcome variable, bank density, will decline from an average value of 0.005 to 0.0042, or by 16%. That is, doubling the average genealogy density for a prefecture will decrease bank density by 16%. Given that 26% of prefectures had no banks in our sample, we also run the Tobit estimation, with the results remaining robust (column 2).

In China, the east-west difference has historically been considerable, with the east being culturally and economically more prosperous. Accordingly, there were more and stronger clans as well as more banks concentrated in eastern China (Figures 1 and 2). Thus, one might suspect that the negative effect of the Confucian clan on banking arises from the inherent east-west difference. To address this concern, we removed the five western provinces (Gansu, Shaanxi, Sichuan, Guizhou and Yunnan) and re-run the analyses, with the resulting OLS and Tobit estimations presented in columns 3 and 4. The results confirm the baseline claim that the clan still had a significantly negative impact on bank density. Moreover, the effect of the clan is now greater than with the full sample: the coefficient of interest increases by 50%.

[Table 1 about here]

3.1. *Instrumented Results*

The estimated effect of the clan in Table 1 may be biased due to endogeneity issues. First, this effect may be due to unobserved prefectural factors, i.e. factors that are simultaneously correlated with both clan strength and bank density. For example, given that Confucianism was the state orthodoxy, prefectures with a strong Confucian ethos might also have had higher governance quality and government capacity, which would have facilitated economic and banking development. In addition, a strong clan presence might also be associated with strong social capital in general, and social capital might be instrumental to economic development (Guiso et al., 2004, 2008).

Electronic copy available at: https://ssrn.com/abstract=3671280

However, because we use genealogy data as of 1897, whereas the bank density comes from the 1897–1936 period, our outcome variable should not have retroactively affected the clan practice prior to the emergence of modern banks. Another factor to consider is measurement error in the number of genealogy books due to survivorship bias, as discussed in Section 3 (i.e. the bias should underestimate the real effect of the clan on financial development). To address these possible concerns, we additionally use as an instrumental variable a prefecture's shortest distance to the nearest Zhu Xi academy in the Southern Song dynasty (1127–1279). It is plausible that this instrument only affected modern banking growth 600 years later through its effect on regional clan strength, as explained below.

As introduced in Sections 1 and 2, Zhu Xi was the most important contributor to popularising Confucianism, especially the Confucian clan system, to the grassroots communities in the twelfth century. His philosophy was formulated and diffused while teaching at the *Yuelu Academy* in Changsha (in Hunan Province), the *Hanquan Academy* in Jianyang (Fujian Province) and the *Bailudong Academy* in Jiujiang (Jiangxi Province), as displayed in Figure 2. We refer to these as 'Zhu Xi academies'.[17] In these academies, he completed several classics including *Rituals of the Family*, which provided a model of family rituals and customs and had a profound impact on how the Confucian clan was structured and organised throughout the thirteenth to nineteenth centuries (Ebrey, 1991). Meanwhile, he recruited students and invited renowned Confucian scholars to lecture at these academies, making them the best-known Confucian academic centres in succeeding centuries (Shu, 2003).

Between 1150 and 1200, 448 disciples studied under Zhu Xi. These disciples came from 58 nearby prefectures (Chan, 1982) (Online Appendix Figure A2), and they not only spread Zhu Xi's teachings geographically across many regions but also reprinted his books and wrote commentaries from various perspectives (Chan, 1987). The different channels all diffused his version of Confucianism, perfecting the Confucian clan (Shu, 2003).

Given the high costs of transport and communication at the time, regions close to the Zhu Xi academies are more likely to have been permeated by his teachings earlier. Over time, these regions must have developed a stronger clan culture than more distant regions, especially after the founding emperor of the Ming dynasty adopted Zhu Xi's design for the Confucian clan as a model to be followed empire-wide.[18] Indeed, Figure 2 shows that genealogy books were concentrated in the regions

[17] Zhu Xi spent about 6 years in *Yuelu Academy*, 10 years in *Hanquan Academy* and 4 years in *Bailudong Academy* (Shu, 2003).

[18] Zhu Xi's books were standard references for the civil examinations from the fourteenth century until 1905.

Electronic copy available at: https://ssrn.com/abstract=3671280

close to Zhu Xi academies (in particular Jiangxi, Fujian and Hunan Provinces), with much fewer in remote prefectures (north and west).

To formally test the impact of distance to Zhu Xi academies on the diffusion of clan culture, we obtain the place-of-origin information for each of Zhu Xi's disciples from Chan (1982) and add the number of disciples who were from a given prefecture. Then, we regress each prefecture's number of Zhu Xi disciples on the prefecture's shortest distance (in logarithmic value) to any Zhu Xi academy (in 100 kilometres). The results in Table 2 show that the distance to Zhu Xi academies had a significantly negative effect on the number of Zhu Xi's disciples (columns 1–3), where, given that 70% of the prefectures had zero Zhu Xi disciples, we also report the Tobit estimations. Based on the coefficient estimates, a 10% increase in the shortest distance to any Zhu Xi academy would reduce a prefecture's number of Zhu Xi disciples by 0.57 or 36% relative to the mean number of 1.6 (column 2). Furthermore, distance to the Zhu Xi academies had a statistically significant and negative effect on a prefecture's clan strength (i.e. genealogy density) (columns 4–6). A 10% increase in the distance to the nearest Zhu Xi academy would decrease the genealogical density in 1897 by 4.24% (column 5). These results remain robust after controlling for human capital (number of *jinshi* holders), economic prosperity (population density) and geography (distance to coast, distance to river, land area and provincial capital) and when based on the Tobit estimations.[19]

[Table 2 about here]

Distance to the Zhu Xi academies should arguably be orthogonal to economic and financial development in the early twentieth century, because the prefectures hosting the academies were by no means economic or political centres in the twelfth century or later. Statistically, there is no significant difference between these prefectures and others in terms of historical economic prosperity (measured by population density during 1393–1880) and human capital achievement during the Ming and Qing dynasties. There is also no significant difference between the two groups in terms of GDP per capita in 2010 (Online Appendix Table A2).[20] Furthermore, we document a

[19] In other words, using this distance metric as the instrumental variable for genealogy density, we estimate the supply effect of Zhu Xi's philosophy on the formation and strengthening of clans rather than the demand effect. The supply effect is based on geographical proximity to Zhu Xi's teaching places and hence is more exogenous, whereas the demand for clan solidarity might be endogenously determined by local factors that might also bear upon the demand for finance.

[20] Given the limitation in historical observables, we cannot rule out other unobserved factors that may be correlated with both the proximity to the academies and financial development. We view the instrumented results as suggestive rather than conclusive.

Electronic copy available at: https://ssrn.com/abstract=3671280

positive effect of the distance to the academies on bank density during 1897–1936 (column 1 of Online Appendix Table A3). However, the effect becomes insignificant after the inclusion of clan strength (column 2), indicating that the impact of distance to the academies in the twelfth century on banking development in the early twentieth century was mainly through fostering the institutions of Confucian clans.

The instrumental variable results are reported in Table 3. After instrumenting by distance to the Zhu Xi academies, we still find clan strength to have a significantly negative effect on banking (column 1). The results remain robust when we restrict the sample to prefectures in eastern China (columns 2 and 3). The instrumented effect of clans on bank density is greater than that of the OLS regression: the effect increases by about 2.5 times and doubling the average genealogy density reduces the average bank density by 39.9%. This implies that the OLS regressions may have underestimated the effect of clans on banks, possibly due to the measurement error (survivorship bias) in the number of genealogy books and omitted prefectural factors. The F-statistics suggest that distance to the academies is far from a weak instrument. The results remain robust when we conduct the two-stage IV-Tobit estimations (column 3).

[Table 3 about here]

3.2. *Persistence of the Clan Effect*

We have shown that Confucian clans inhibited the development of modern banks from 1897 to 1936. However, during this period, China underwent sustained institutional changes, and it is unclear whether the clan way of life remained relevant throughout this period. Following the New Policies reform (1901–1911), the Qing court established the first central bank (the Great Qing Bank), enacted bank laws and unified the national currency. Modern press, communications and schools were also introduced to China. The institutional and market environments were further improved after the collapse of dynastic rule and the establishment of the Republic of China in 1911. The sustained modernisation process may have undermined the dominance of the traditional Confucian system. If this was the case, the hampering effect of the Confucian clan on modern banking should diminish over time.

To test this, we use a panel regression framework to study the effect of clan strength on bank development over time, with the following specification:

$$Banks_{it} = \alpha + \beta\ Clans_i \times Period_t + \gamma \mathrm{X}_i \times Period_t + Pref_i + Period_t + \varepsilon_{it}\ , \quad (2)$$

Electronic copy available at: https://ssrn.com/abstract=3671280

where $\mathbf{X}_i$ is a vector of control variables: the number of *jinshi* holders per 10,000 members of the population, population density in 1880, treaty port, distance to river, distance to coast, land area and a provincial-capital dummy. We estimate this regression using 5-year windows between 1891 and 1935. Because the period dummy variables ($Period_t$) are collinear, we drop the first and thus the reference period for all effects, 1891–1895 (before the emergence of modern banks). We interact $Clans_i$ with a full set of 5-year-period dummies between 1896 and 1936 to examine whether the negative effect of clans was mitigated by the modernisation progress. To account for the changing effects of prefectural correlates on banks over time, we also interact the same set of prefectural factors (as we did for Table 1) with the 5-year-period dummies. $Pref_i$ and $Period_t$ capture prefectural and 5-year fixed-effects, respectively.

The results demonstrate that the negative effect of clan density on banking does not diminish but rather increases over time (Figure 3). This effect remains robust when we again restrict the sample to eastern China, use Tobit estimations and instrument the distribution of clans using distance to the Zhu Xi academies. Thus, the effect of the Confucian clan was so powerful and durable that it was not mitigated by modernisation efforts, at least in the early twentieth century. Instead, China's modern banks only achieved sustained growth in regions with relatively weak clan infrastructure.

[Figure 3 about here]

3.3. *Foreign and Official Banks as a Placebo*

To provide further support for the claim that the effect of clans on banking development does not reflect that of unobserved local factors (e.g. business tradition or strength of other social organisations), we regress a prefecture's foreign bank density on genealogy density as a placebo test. In the early years of the expansion of foreign banks in China, the process was primarily driven by the Western powers to support foreign businesses rather than to serve the local population (and compete with the local clans). The distribution of foreign banks should therefore have little to do with the Confucian clan culture. However, if our genealogy measure only captures unobserved local determinants of financial development, then it should also have an effect on the distribution of foreign banks.

Foreign banks were introduced to China in the 1860s. We obtain information on foreign banks from county gazetteers and the *Banking Yearbooks*, and calculate the average annual number of foreign banks in each prefecture between 1860 and 1936. We construct a measure of foreign bank density at the prefectural level by dividing the

Electronic copy available at: https://ssrn.com/abstract=3671280

number of foreign banks by prefectural population (in units of 10,000 persons), adding one to this number and taking the natural logarithm. Both the OLS and instrumented regression results demonstrate that clan density had no effect on foreign bank density across the prefectures (columns 1–3, Table 4). These results remain robust to the exclusion of the western provinces.

Likewise, we use the number of official banks as an additional placebo test. Official banks refer to the banks owned and controlled by the government. The official banks mainly served the government's remittance and administrative needs and hence were not in competition with the Confucian clans for the same clientele. The data on official banks are obtained from the same source as those for private banks. We build a measure of official bank density in the same way as for the other bank density measures. As reported in columns 4–6 of Table 4, clans had no effect on official bank density.

[Table 4 about here]

3.4. *Confucian Clans or Conservatism?*

Giving the status quo and stability supreme priority, Confucianism is conservative and averse to change and learning from outsiders (Weber, 1905; Landes, 2006). The negative effect that we have documented so far might be driven by Confucian conservatism towards adopting new financial institutions rather than by substitutive competition between formal finance and the Confucian clan.

To rule out the confounding effect of conservatism, we examine the effect of clans on each prefecture's number of traditional Chinese banks: money houses (*qian zhuang*), native banks that arose from convenience shops in historical China, providing currency exchange and small loan services to petty merchants and households. These money houses had been around for many centuries and should not have been subject to the influence of conservatism but rather to competitive pressure from the Confucian clans as informal internal financial markets. For this reason, if the clans also had a negative impact on the number of money houses, this implies that it was the clan's internal resource-pooling and sharing function, not Confucian conservatism, that decreased demand for external finance and suppressed the need.

The data on money houses are obtained from the *Statistics on Agriculture and Commerce* (*Nongshang Tongji Biao*) compiled by the Republican government between 1912 and 1916. We used the annual average number of money houses in each prefecture between 1912 and 1916, and construct a measure of money house density in the same way as for the other bank density measures. Again, clan strength had a significantly

Electronic copy available at: https://ssrn.com/abstract=3671280

negative impact on a prefecture's money house density (Table 5). This effect is robust to restricting the sample to eastern China and using distance to the Zhu Xi academies as an instrument. The instrumented results indicate that doubling the number of genealogy books would reduce the number of money houses by approximately 12% (or 31% based on the instrumented results).

[Table 5 about here]

To further ensure that our result is mainly driven by Confucian clans rather than conservatism, we use the number of Confucian temples to proxy for overall Confucian cultural influence in each prefecture and contrast it with the clan measure in terms of impact on modern bank density. Confucian temples were built to worship Confucian sages and local eminent Confucian exemplars, and hence their number serves to gauge the *comprehensive* influence of Confucian culture (not just the clan as an economic institution) in a region (Kung and Ma, 2014). Specifically, Confucian temples are measured by the log number of Confucian temples per 10,000 members of the population in the nineteenth century, with temple data obtained from the provincial gazetteers compiled at various time points throughout that century. Online Appendix Figure A1 depicts the prefectural distribution of the number of Confucian temples. The results in Table 6 show that Confucian temples had a negative effect on modern bank density, but the coefficient is not statistically significant. The negative effect of clan density on banking remains robust. Therefore, it is the Confucian clan, rather than Confucian culture, that inhibited modern finance.

[Table 6 about here]

4. Financial Demand Channel

We argue that the negative impact of the clan on financial development is primarily due to the suppressed demand for external finance. Although we have no direct measure of a region's total financial demand, we can use a prefecture's average interest rate for private lending as a proxy. Holding the total demand constant, if the clans provided enough internal financial solutions, then the interest rate for external finance should be lower.

To test this, we use the China Historical Interest Rate Database constructed by Chen et al. (2016), which includes 13,258 private lending/borrowing records over the period from the seventeenth century to 1950. The records are mainly collected from 1)

Electronic copy available at: https://ssrn.com/abstract=3671280

surviving private documents (e.g. contracts, business correspondences, bank archives, homicide case archives, diaries and notes); 2) newspapers and periodicals (e.g. *Bank Weekly*, *Central Bank Monthly Reports* and *Economic Statistics* published during the Republican period); 3) economic surveys conducted by the Republican government; and 4) academic publications on finance. Each record has detailed information on interest rate, credit clauses and lender/borrower identity. To the best of our knowledge, this is the most complete collection of China's historical interest rates.

We focus on the regional interest rates during 1911–1936 because the records in this period are most complete and suitable for inter-regional comparison. Another reason is that this period saw the genesis of China's modern financial markets. Figure 4 depicts the prefectural variation of average interest rate between 1911 and 1936, ranging from zero to more than 100% (the mean is 27%). Note that the interest rates in prefectures close to the Zhu Xi academies were significantly lower than in other areas.

[Figure 4 about here]

We formally examine the effect of the Confucian clan on interest rates in Table 7, for which we remove observations with interest rates above 100% and use clan density based on the number of genealogy books compiled as of 1911 and prefectural population in 1910. We cluster the standard errors at the prefectural level to mitigate within-prefecture auto-correlation. We control for the five types of lender: 1) individual (the reference group), 2) community, 3) merchant, 4) traditional financial institution (money houses) and 5) bank (private, official and foreign banks). In addition, we control for the term to maturity (1 month to over 3 years) of each loan and whether the loan occurred in a rural area, besides the controls used earlier and capturing prefectural characteristics, i.e. population density in 1910, number of *jinshi* holders, treaty port, provincial capital and geographic factors (distance to coast, distance to river and land area).

Our log-on-log regression results show that the interest rate was significantly lower in prefectures with a higher clan density, supporting our hypothesis. These results are robust when using distance to the Zhu Xi academies as the instrument for clan strength, or restricting the sample to eastern China. The instrumented estimates for the full sample indicate that doubling the number of genealogy books would reduce the interest rate by 12% (column 3).

[Table 7 about here]

Electronic copy available at: https://ssrn.com/abstract=3671280

Thus, intra-clan financing and resource pooling must have been more prevalent in regions with strong clans. Although there are no systematic statistics on intra-clan pooling and sharing services, case studies on powerful clans have documented practices such as land trusts and other charitable activities of clans (Section 2) and the clans often provided low- or zero-interest loans to members (Tang, 1997).

We informally assess the extent of intra-clan finance by checking the number of clan-based lending records in the China Historical Interest Rate Database. Out of the 12,392 loan transactions, 467 (3.77%) were provided by clan organisations. We call these 'clan loans'. To account for possible recording biases, we calculate the ratio of the number of clan loans to the total number of loans in each prefecture. To mitigate the effect of outliers, we take the natural logarithm of this ratio (by adding a value of 0.01 for each prefecture). Figure 5 shows that most clan loans in the database were concentrated in regions close to the Zhu Xi academies, again suggesting a positive relation between clan strength and intra-clan lending.

[Figure 5 about here]

The regression results in Table 8 confirm that the share of clan loans was significantly higher in prefectures with strong clans, implying that the clans indeed played an important role in providing informal finance to members. This result remains robust to the inclusion of prefectural characteristics and other specifications.

[Table 8 about here]

5. Long-term Effects of Confucianism on Finance

The results reviewed above demonstrate that despite the modernisation efforts during the early twentieth century, Confucianism continued to inhibit financial development through reduced demand. The question that follows is whether prefectural clan cultures have persisted in shaping their people's demand for and attitudes towards external finance even to the present. Given that Confucianism took more than two millennia to perfect, its effect on Chinese people's way of life cannot be expected to die easily. Confucianism was denounced and clan structures were destroyed before and during the Cultural Revolution (1966–1976), but clan organisations were revived after the market reforms started in 1978 (Peng, 2004). As described in this section, we study whether the Confucian clan continues to compete with external finance in contemporary China.

Electronic copy available at: https://ssrn.com/abstract=3671280

We measure each prefecture's clan strength using the number of genealogy books that are kept in the Shanghai Library's (2009) *Comprehensive Catalogue on the Chinese Genealogy*. To test whether past clan strength still predicts today's influence of clan culture, we construct two trust variables based on the data from the CGSS of 2010.[21] We first collect the answers to the following questions: 1) 'To what extent do you trust your family members and relatives?' and 2) 'To what extent do you trust other people (outside the family)?' Answers to both are graded on a 1–5 scale, where 5 denotes complete trust and 1 denotes complete distrust. Then, for each of the two questions, we convert the graded values to a dummy variable: 1–3 are coded as 0 (less trust) and 4–5 as 1 (more trust).

Next, we regress the two dummy variables of trust on historical clan density at the prefectural level by controlling for individual characteristics that may affect trust, including education, age, gender, rural-household dummy, ethnic-minority dummy, number of kin and annual income, and for such prefectural factors as *jinshi*, population density, treaty-port dummy, provincial-capital dummy, GDP per capita in 2009 and geography (distance to coast, distance to river, land area). We report both OLS and Probit estimates in Table 9, where we also report the two-stage least squares (2SLS) and IV-Probit estimates using distance to the Zhu Xi academies as the instrument. The results show that in prefectures historically with strong clans, people report higher levels of trust in relatives (Panel A, Table 9), but tend to distrust outsiders (Panel B). Thus, a region's clan culture from the past is still prevalent and continues to consolidate clan ties today.

To gauge the influence of past Confucian clan culture on members' business conduct in the present, we use the answers to another CGSS question: 'To what extent do you prefer to use formal contracts in doing business with relatives?' (1–5 scale). Likewise, we convert each answer to a dummy variable: 1–3 are coded as 0 (less likely to use formal contracts) and 4–5 as 1 (more likely). The instrumented results illustrate that people in prefectures historically with strong clans prefer not to use formal contracts in business dealings with relatives (Panel C, Table 9).

[Table 9 about here]

A direct consequence of the persistence of clan culture is that people from strong clans are less likely to use formal external finance. To test this, we proxy for individual

[21] CGSS conducted by the Renmin University of China, is the most representative social survey in China. In 2010, 11,294 people were interviewed across all provinces. To ensure homogeneity, we excluded people aged below 20 or over 60.

Electronic copy available at: https://ssrn.com/abstract=3671280

participation in formal finance based on the answers to the following CGSS question: 'Do you borrow money from banks (including mortgage loans)?' The results are as expected: people in prefectures with historically strong Confucian clans are less likely to take out bank loans (Table 10, Panel A). Moreover, we find that even when people do borrow from a bank, the typical loan size is significantly smaller in prefectures with high clan density in the past (Panel B). These results are robust to other specifications used in earlier exercises.

[Table 10 about here]

Lastly, we find that in prefectures with a strong clan culture, the level of financial development is also lower today. To proxy for financial development, we use both 1) the logarithm of total bank loans and deposits per 10,000 members of the population and 2) the logarithm of bank loans and deposits to GDP, based on data obtained from the *2010 City Statistical Yearbook of China*. In addition to the controls used in Table 1, we control for the number of banks in 1936 to capture the long-term effect of historical finance and for the contemporary economic prosperity measured by GDP per capita in 2009. The results in Table 11 demonstrates that there is less banking per capita and that banking is a smaller part of the local economy in prefectures that had strong clans in the past.

[Table 11 about here]

6. Conclusion

Our empirical results based on data from both the 1897–1936 period and recent decades are clear: since modern finance was introduced to China in the late nineteenth century, it has faced significant but subtle competition from the traditional resource pooling and risk-sharing services provided by the Confucian clan. After more than two millennia of efforts by Confucian scholars and the imperial courts to perfect the clan, it has served sufficiently well as an internal financial market and business corporation to mostly meet the needs for resource pooling and risk sharing, at least in pre-industrial China. It is thus no surprise that many aspects of modern finance were, and may still be, redundant for many ordinary people and businesses. Thus, when it was first introduced, few individuals had an incentive to switch to formal finance, which limited the demand for financial development. Of course, the supply side of arms-length finance was not easy to stimulate either. The Confucian clan had provided much of the solution

Electronic copy available at: https://ssrn.com/abstract=3671280

to the challenge of pooling and sharing since the Han dynasty and especially since the Song dynasty; the lack of demand for external finance persisted for two millennia, limiting the need for the development of impersonal market institutions that were necessary for formal finance. As a result, not only did external finance not develop endogenously in China, but society remained comparatively uninterested when it was transplanted. Even in today's China, regions that traditionally had strong clans still have relatively low demand for modern finance, as the intra-clan services continue to fulfil many of the functions that formal finance provides.

A key insight from our analysis is that financial development is path-dependent, in contrast with the extant focus of the financial-development literature on the institutions that are common among well-developed financial markets. Our exercise shows that to understand why some societies had the necessary institutions for financial development whereas others did not, we need to go back far in history, as some societies may have developed alternative systems that played the same resource pooling and risk sharing roles as does formal finance and therefore did not perceive a need to introduce or perfect the kind of impersonal institutions needed for financial development. Throughout human history, every society had to find some way to deal with risk and interpersonal cooperation to achieve resource pooling. As discussed here and in Greif and Tabellini (2017), China and the West found different answers to the resource pooling challenges, leading to distinct institutional- and cultural-development paths, which in turn caused the great financial divergence between China and the West. This deep historical influence implies that it will probably take a while longer for China and other traditional societies to catch up.

Electronic copy available at: https://ssrn.com/abstract=3671280

References

Alesina, A., and Giuliano, P. (2010). The power of the family. *Journal of Economic Growth*, *15*(2), 93–125.

Alesina, A., and Giuliano, P. (2015). Culture and institutions. *Journal of Economic Literature*, *53*(4), 898–944.

Becker, S., Rubin, J. C., and Pfaff, S. (2016). Causes and consequences of the Protestant Reformation, *Explorations in Economic History* 62: 1-25.

Becker, S., and Woessmann, L. 2009. Was Weber wrong? A human capital theory of Protestant economic history, *The Quarterly Journal of Economics 124*(2), 531-596.

Bentolila, S., and Ichino, A. (2008). Unemployment and consumption near and far away from the Mediterranean. *Journal of Population Economics*, *21*(2), 255–280.

Bol, P. K. (2008). *Neo-Confucianism in history*. Harvard University Press.

Cao, S. (2000). *Zhongguo renkou shi: Qing Shiqi* (*Population history of China: Qing Dynasty*). Fudan Daxue Chuban She.

Chan, W.-T. (1982). *Zhuxi Menren* (*The Disciples of Zhu Xi*). Taiwan Xue Sheng Shu Ju.

Chan, W.-T. (1987). *Chu Hsi, life and thought*. Chinese University Press.

Chen, Y. J., Chen, Z., and He, S. (2019). Social norms and household savings rates in China. *Review of Finance*, *23*(5), 961–991.

Chen, Z. (forthcoming). *Wenmin de luoji* (The logic of civilizations). CITIC Press.

Chen, Z., Peng, K., and Yuan, W. (2016). Qingchu zhi ershi shiji qianqi zhongguo lilvshi chutan: Jiyu zhongguo lilvshi shujuku (1660–2000) de kaocha (A preliminary study of Chinese interest rates from the early Qing to the twentieth century based on an examination of the historical database of Chinese interest rates (1660–2000)). *Qingshi Yanjiu* (*Studies in Qing History*), *4*, 36–51.

Cheung, S. N. (1972). The enforcement of property rights in children, and the marriage contract. *The Economic Journal*, *82*(326), 641–657.

Chung, S. P. Y. (2010). Chinese tong as British trust: Institutional collisions and legal disputes in urban Hong Kong, 1860s–1980s. *Modern Asian Studies*, *44*(6), 1409–1432.

Cohen, J. A., Chen, F.-m. C., and Edwards, R. R. (1981). *Essays on China's legal tradition*. Princeton University Press.

D'Acunto, F., Prokopczuk, M., and Weber, M. (2018). Historical antisemitism, ethnic specialization, and financial development. *The Review of Economic Studies*, *86*(3), 1170–1206.

Electronic copy available at: https://ssrn.com/abstract=3671280

Ebrey, P. B. (1991). *Confucianism and family rituals in Imperial China: A social history of writing about rites*. Princeton University Press.

Elman, B. A. (2013). *Civil examinations and meritocracy in late Imperial China*. Harvard University Press.

Faure, D. (1989). The lineage as business company: Patronage versus law in the development of Chinese business. In *Reprinted from The Second Conference on Modern Chinese Economic History.* The Institute of Economics, Academia Sinica, Taipei, pp. 347-376.

Faure, D. (2006). *China and capitalism: A history of business enterprise in modern China* (Vol. 1). Hong Kong University Press.

Feng, E., and Yan, A. (2012). *Zongzu shihua* (The history of clans). Shehui Kexue Wenxian Chubanshe.

Gan, L., Yin, Z., Jia, N., Xu, S., Ma, S., and Zheng, L. (2014). *Data you need to know about China: Research report of China Household Finance Survey 2012*. Springer-Verlag.

Giuliano, P., and Nunn, N. (2017). *Understanding cultural persistence and change* (No. w23617). National Bureau of Economic Research.

Goetzmann, W. N. (2005). Fibonacci and the Financial Revolution. In W. N. Goetzmann and G. Rouwenhourst (Eds.), *The origins of value: The financial revolutions that created modern capital markets*. Oxford University Press, pp. 123-144.

Goetzmann, W. N., and Koll, E. (2005). Paying in paper. In W. N. Goetzmann and G. Rouwenhourst (Eds.), *The origins of value: The financial revolutions that created modern capital markets*. Oxford University Press, pp. 91-104.

Goetzmann, W. N., Ukhov, A. D., and Zhu, N. (2007). China and the world financial markets 1870–1939: Modern lessons from historical globalization 1. *The Economic History Review*, *60*(2), 267–312.

Goody, J. (1996). *The East in the West*. Cambridge University Press.

Greif, A., and Tabellini, G. (2010). Cultural and institutional bifurcation: China and Europe compared. *American Economic Review: Papers and Proceedings*, *100*(2), 135–140.

Greif, A., and Tabellini, G. (2017). The clan and the corporation: Sustaining cooperation in China and Europe. *Journal of Comparative Economics*, *45*(1), 1–35.

Grosjean, P. (2011). The institutional legacy of the Ottoman Empire: Islamic rule and financial development in South Eastern Europe. *Journal of Comparative Economics*, *39*(1), 1–16.

Electronic copy available at: https://ssrn.com/abstract=3671280

Guiso, L., Sapienza, P., and Zingales, L. (2003). People's opium? Religion and economic attitudes. *Journal of Monetary Economics*, *50*(1), 225–282.

Guiso, L., Sapienza, P., and Zingales, L. (2004). The role of social capital in financial development. *American Economic Review*, *94*(3), 526–556.

Guiso, L., Sapienza, P., and Zingales, L. (2008). Trusting the stock market. *The Journal of Finance*, 63(6), 2557–2600.

Guiso, L., Sapienza, P., and Zingales, L. (2016). Long-term persistence. *Journal of the European Economic Association*, *14*(6), 1401–1436.

Haber, S. H. (1991). Industrial concentration and the capital markets: A comparative study of Brazil, Mexico, and the United States, 1830-1930. *Journal of Economic History*, *51*(3), 559–580.

Haber, S. (1996). *The efficiency consequences of institutional change: Financial market regulation and industrial productivity growth in Brazil, 1866-1934* (No. h0094). National Bureau of Economic Research.

Kirby, W. C. (1995). China unincorporated: Company law and business enterprise in twentieth-century China. *The Journal of Asian Studies*, *54*(1), 43–63.

Knack, S., and Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, *112*(4), 1251–1288.

Kopf, E. W. (1927). The early history of the annuity. *Proceedings of the Casualty Actuarial Society Casualty Actuarial Society – Arlington, Virginia*, *13*, 225–266.

Kotlikoff, L., and Spivak, A. (1981). The family as an incomplete annuities market. *Journal of Political Economy*, *89*(2), 372–391.

Kung, J. K., and Ma, C. (2014). Can cultural norms reduce conflicts? Confucianism and peasant rebellions in Qing China. *Journal of Development Economics*, *111*, 132–149.

Landes, D. S. (2006). Why Europe and the West? Why not China? *Journal of Economic Perspectives*, *20*(2), 3–22.

Lang, O. (1946). *Chinese family and society*. Yale University Press.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, *52*(3), 1131–1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, *106*(6), 1113–1155.

Liu, H.-C. W. (1959). An analysis of Chinese clan rules: Confucian theories in action. In D. S. Nivison and A. F. Wright (Eds.), *Confucianism in action* (pp. 63–96). Stanford University Press.

Malmendier, U. (2009). Law and finance 'at the origin'. *Journal of Economic Literature*, *47*(4), 1076–1108.

Electronic copy available at: https://ssrn.com/abstract=3671280

Martinez-Bravo, M., Padró i Miquel, G., Qian, N., and Yao, Y. (2017). Social fragmentation, public goods and elections: Evidence from China. Working paper.

Pascali, L. (2016). Banks and development: Jewish communities in the Italian Renaissance and current economic performance. *Review of Economics and Statistics*, *98*(1), 140–158.

Peng, K., and Zhan, L. (2020). Governance model as reflected in legal amendments: an analysis based on the *Qing Code* and *Collection of Legal Cases* (Cong li de xiuding kan qingdai zhili moshi: yi Da Qing Luli, Huidian Shili weizhu de fenxi). Henan University working paper.

Peng, Y. (2004). Kinship networks and entrepreneurs in China's transitional economy. *American Journal of Sociology*, *109*(5), 1045–1074.

Peyrefitte, A. (1995). *La société de confiance*. Editions O. Jacob.

Poitras, G. (2000). *The early history of financial economics, 1478–1776: From commercial arithmetic to life annuities and joint stocks*. Edward Elgar Publishing.

Pomeranz, K. (2009). *The great divergence: China, Europe, and the making of the modern world economy* (Vol. 28). Princeton University Press.

Rajan, R. G., and Zingales, L. (1998). Which capitalism? Lessons from the East Asian crisis. *Journal of Applied Corporate Finance*, *11*(3), 40–48.

Shiroyama, T. (2004). Companies in debt: Financial arrangements in the textile industry in the Lower Yangzi Delta. In Zelin, M., Ocko, J. K., Gardella, R. (Eds) *Contract and property in early modern China*, Stanford, Calif: Stanford University Press. pp. 298-326.

Shu, J. (2003). *Zhu Zi da zhuan* (*Biography of Zhu Xi*). The Commercial Press.

Szonyi, M. (2002). *Practicing kinship: Lineage and descent in late Imperial China*. Stanford University Press.

Tang, L. (1997). *Shangren yu wenhua de shuangchong bianzou: Huishang yu zongzu shehui de lishi kaocha* (*Merchants and culture: A historical study of Huizhou merchants and lineage society*). Huazhong Ligong Daxue Chubanshe.

Temin, P., and Voth, H. J. (2008). Private borrowing during the financial revolution: Hoare's Bank and its customers, 1702–24 1. *The Economic History Review*, *61*(3), 541–564.

Townsend, R. (1994). Risk and insurance in village India. *Econometrica*, *62*(3), 539–591.

Twitchett, D. (1959). The Fan Clan's charitable estate, 1050–1760. In D. S. Nivison and A. F. Wright (Eds.), *Confucianism in action* (pp. 97–133). Stanford University Press.

Electronic copy available at: https://ssrn.com/abstract=3671280

Voigtländer, N., and Voth, H. J. (2012). Persecution perpetuated: The medieval origins of anti-Semitic violence in Nazi Germany. *The Quarterly Journal of Economics*, *127*(3), 1339–1392.

Von Glahn, R. (2005). The origins of paper money in China. In W. N. Goetzmann and G. Rouwenhourst (Eds.), *The origins of value: The financial revolutions that created modern capital markets*. Oxford University Press, pp. 65-89.

Weber, M. (1905). *Die protestantische Ethik und der Geist des Kapitalismus.* English Translation: *The Protestant ethic and the spirit of capitalism*, London: Allen and Unwin, 1930.

Wu, K. B. (2013). Sources of income for older Americans, 2012. AARP Public Policy Institute.

Wu, L. T. (1935). China's paradox–Prosperous banks in national crisis. *Far Eastern Survey*, 4(6), 41–45.

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*, 70–90.

Zelin, M. (2004). A critique of rights of property in prewar China. In Zelin, M., Ocko, J. K., Gardella, R. (Eds) *Contract and property in early modern China*, Stanford, Calif: Stanford University Press. pp. 17-36.

Zhao, D. X. 2015. *The Confucian-legalist state: A new theory of Chinese history.* Oxford University Press.

Zheng, Z. (translated by Michael Szonyi). (2001). *Family lineage organization and social change in Ming and Qing Fujian*. University of Hawai'i Press.

Zhu, B., and Xie, P. (1980). *Ming-Qing jinshi timing beilu suoyin* (*Official directory of Ming-Qing imperial exam graduates*). Shanghai Guji Chubanshe.

Electronic copy available at: https://ssrn.com/abstract=3671280

Figures and Tables

Figure 1. Prefectural Distribution of Chinese Modern Banks in 1936

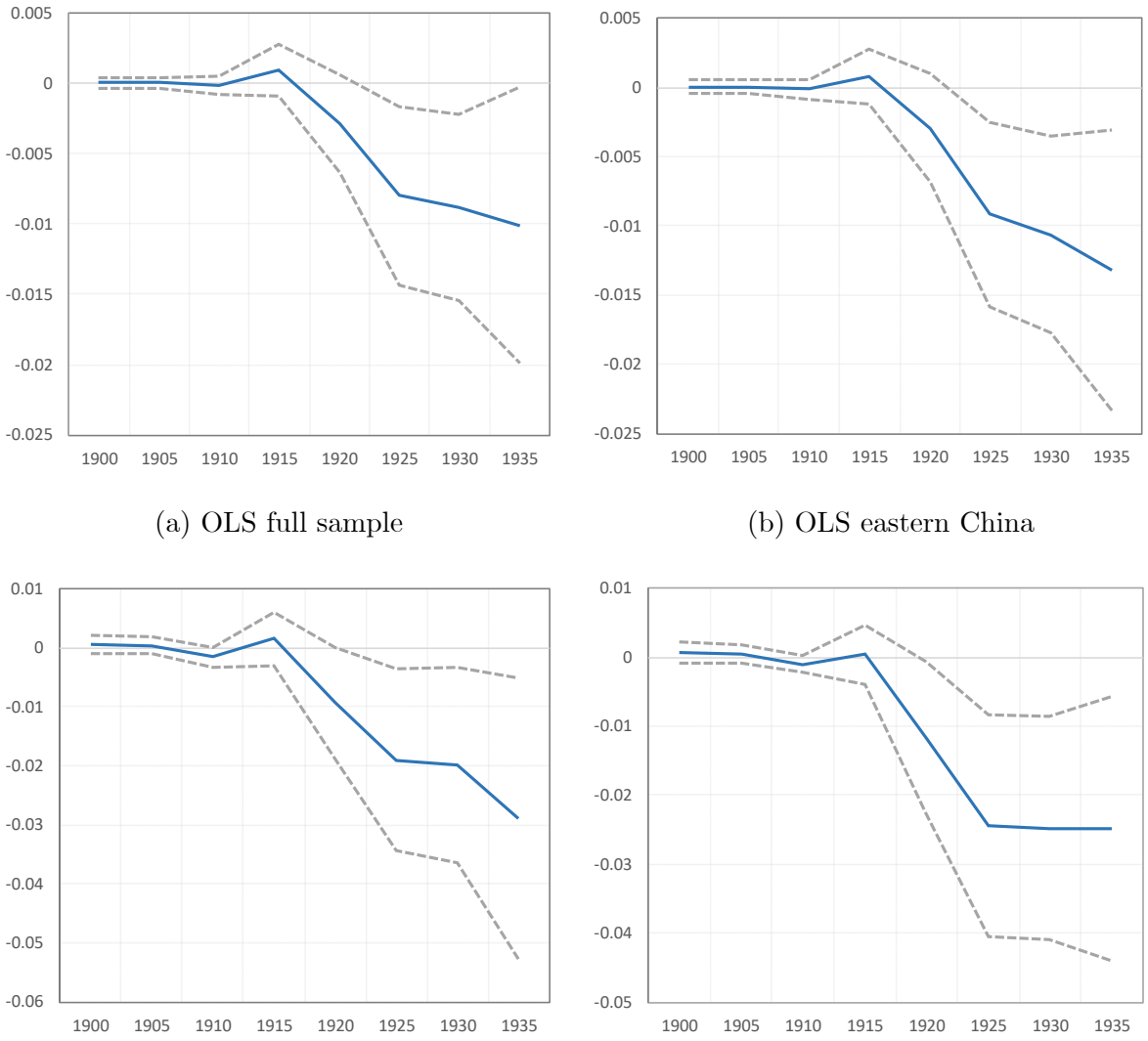
Notes: This figure depicts the prefectural distribution of the number of Chinese modern private banks in year 1936. The data are obtained from county gazetteers (*xianzhi*) and Banking Yearbooks (*yinhang nianjian*) compiled in 1912-1937

Electronic copy available at: https://ssrn.com/abstract=3671280

Figure 2. Prefectural Distribution of Genealogy Books by 1897

Notes: This figure shows the prefectural distribution of the number of genealogy books compiled before the year 1897. Genealogy book is a form of written record of the lineage members with purpose of consolidating the sense of belonging to the lineage. The data are obtained from Shanghai Library's (2009) *zhongguo jiapu zongmu* (Comprehensive Catalogue on the Chinese Genealogy). The three blue points are the locations of the main academies where the Neo-Confucian master Zhu Xi diffused his philosophy in the 12th century.

Electronic copy available at: https://ssrn.com/abstract=3671280



(a) OLS full sample

(b) OLS eastern China

(c) 2SLS full sample

(d) 2SLS eastern China

Figure 3. The Changing Effects of the Clans on Modern Banks, 1891-1935

Notes: These figures shows the effect of the log number of genealogy books per 10,000 peoples in 1897 on the log number of Chinese private banks per 10,000 peoples in each 5-year interval between 1891 and 1935. The solid lines are the coefficients of genealogy books based on the flexible difference-in-difference estimation of Equation (2). They indicate the difference in the effect of genealogy books between each 5-year and the reference period (1891-1895). The dash lines denote the 95% confidence intervals. All estimations have controlled for the prefectural- and 5-year fixed effects and the interaction terms between prefectural factors and a full set of 5-year dummies. Figures (c) and (d) use distance to the Zhu Xi academies to instrument the distribution of genealogy books.

Electronic copy available at: https://ssrn.com/abstract=3671280

Figure 4. Prefectural Average of Interest Rates, 1911-1937

Notes: The data of interest rates are obtained from China Historical Interest Rate Database constructed by Chen et al. (2016). The three blue points refer to the locations of the Zhu Xi academies in the 12th century.

Electronic copy available at: https://ssrn.com/abstract=3671280

Figure 5. Prefectural Distribution of Intra-Clan Lending, 1911-1937

Notes: The figure depicts the share of intra-clan lending in all lending records at the prefectural level from 1911 to 1937. Clan lending refers to credit provided by clan organizations. The data are obtained from China Historical Interest Rate Database constructed by Chen et al. (2016). The three blue points refer to the locations of the Zhu Xi academies in the 12th century.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 1. Clan and Banking Development in 1897-1936

	Dependent variable: number of private banks			
	OLS	Tobit	OLS eastern China	Tobit eastern China
	1	2	3	4
Clan	-0.002**	-0.002*	-0.003**	-0.004**
	(0.001)	(0.001)	(0.001)	(0.001)
Controls	Yes	Yes	Yes	Yes
Observations	283	283	283	283
R-squared	0.229		0.232	

Notes: Dependent variable is the annual average of the number of Chinese private banks in each prefecture between 1897 and 1936. We normalize the number of banks by population in 1880 (in unit of 10,000) and take the logarithm. Clan is measured by the number of genealogy books that had been compiled by the year 1897 in each prefecture. We normalize the number of genealogy books by the average population between 1393 and 1880 (in unit of 10,000) and take the logarithm. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Columns 3 and 4 exclude five provinces in western China (Gansu, Shaanxi, Sichuan, Guizhou and Yunnan) in order to ensure a more homogenous economic and geographic environment. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Table 2. Proximity to Zhu Xi Academies and the Diffusion of Confucianism

	Number of Zhu Xi's disciples			Clan		
	OLS	OLS	Tobit	OLS	OLS	Tobit
	1	2	3	4	5	6
Distance to the Zhu Xi academies	-4.859***	-5.706***	-11.528***	-0.436***	-0.424***	-0.428***
	(1.236)	(1.564)	(2.606)	(0.051)	(0.067)	(0.067)
Controls	No	Yes	Yes	No	Yes	Yes
R-squared	0.233	0.370		0.306	0.384	
Observations	283	283	283	283	283	283

Notes: Distance to the Zhu Xi academies is calculated as a prefecture's shortest great circle distance (in 100km) to the nearest Zhu Xi academy in the 12th century China (in log). Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 3. Confucianism and Modern Banks in 1897-1936: Instrumented Results

	Dependent variable: number of private banks		
	2SLS	2SLS eastern China	IV-Tobit eastern China
	1	2	3
Clan	-0.005**	-0.006***	-0.006**
	(0.002)	(0.002)	(0.003)
Controls	Yes	Yes	Yes
Observations	283	191	191
R-squared	0.220	0.220	
K-P F statistic	40.07	45.10	

Notes: Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Distance to the Zhu Xi academies is calculated as a prefecture's shortest great circle distance (in 100 km) to the nearest Zhu Xi academy in the 12th century China (in log). Columns 2 and 3 exclude five provinces in western China (Gansu, Shaanxi, Sichuan, Guizhou and Yunnan) in order to ensure a more homogenous economic and geographic environment. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Table 4. Foreign Banks and Official Banks as Placebo

	Foreign banks			Official banks		
	OLS	2SLS	2SLS eastern China	OLS	2SLS	2SLS eastern China
	1	2	3	4	5	6
Clan	-0.0007	0.0021	0.0019	0.0002	-0.0004	0.0004
	(0.0007)	(0.0027)	(0.0026)	(0.0004)	(0.0008)	(0.0009)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	283	283	191	283	283	191
R-squared	0.086	0.055	0.058	0.223	0.218	0.237

Notes: Foreign banks refer to the banks owned by foreigners in China. It is measured by the annual average of the number of foreign banks in each prefecture between 1860 and 1936. Official banks refer to the banks owned by the government. It is measured by the annual average of the number of official banks in each prefecture between 1897 and 1936. For each type of banks, we normalize their number by population in 1880 (in unit of 10,000) and take the logarithm. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. In columns 2, 3, 5 and 6, clan is instrumented by the distance to the Zhu Xi academies. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 5. Clans and Traditional Chinese Banks (Money Houses)

	OLS	2SLS	2SLS eastern China	IV-Tobit
	1	2	3	4
Clan	-0.030**	-0.078**	-0.155***	-0.098**
	(0.015)	(0.034)	(0.039)	(0.044)
Controls	Yes	Yes	Yes	Yes
Observations	283	283	191	283
R-squared	0.240	0.220	0.114	

Notes: Dependent variable is the number of traditional money houses, which is measured by the annual average number per 10,000 peoples (in logarithm) in each prefecture between 1912 and 1916. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. In columns 3-5, clan is instrumented by the distance to the Zhu Xi academies. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Table 6. Confucian Temples and Modern Banks

	OLS	OLS	2SLS	2SLS eastern China
	1	2	3	4
Confucian temples	-0.002	-0.002	-0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.004)
Clan		-0.002**	-0.005**	-0.006**
		(0.001)	(0.002)	(0.003)
Controls	Yes	Yes	Yes	Yes
Observations	281	281	281	190
R-squared	0.221	0.230	0.222	0.220

Notes: This table assesses the relative importance between the overall Confucian culture and the Confucian clan in affecting modern banking. The overall Confucian culture is measured the number of Confucian temples that existed in the 19th century. It is normalized by population (in units of 10,000) in 1880 and takes the logarithm. Measures of clan, modern banks and prefectural controls are the same as that of Table 1. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. In columns 3 and 4, clan is instrumented by the distance to the Zhu Xi academies. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 7. Confucianism and Interest Rate, 1911-1936

	OLS	OLS	2SLS	2SLS eastern China
	1	2	3	4
Clan	-0.113***	-0.065***	-0.120**	-0.113***
	(0.043)	(0.021)	(0.048)	(0.041)
Lending controls	No	Yes	Yes	Yes
Prefectural controls	No	Yes	Yes	Yes
Observations	12,301	7,680	6,722	5,628
R-squared	0.152	0.634	0.573	0.574

Notes: Dependent variable is the logarithm of the interest rate of each lending record between 1912 and 1936. Clan is measured by the number of genealogy books that had been compiled by 1910; it is normalized by population in 1910 (in 10,000) and taken the log form. In columns 3 and 4 clan is instrumented by the distance to the Zhu Xi academies. Lending controls include maturity, rural area dummy, and lender category dummies (individual, community, merchants, traditional banks and modern banks). Prefectural controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Robust standard errors adjusted for clustering at the prefectural level are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Table 8. Confucianism and Intra-Clan Lending, 1911-1936

	OLS	OLS	2SLS	2SLS eastern China	IV-Tobit
	1	2	3	4	5
Clan	0.311***	0.372***	0.670***	0.535***	2.478***
	(0.056)	(0.071)	(0.152)	(0.131)	(0.527)
Controls	No	Yes	Yes	Yes	Yes
Observations	223	221	200	160	200
R-squared	0.146	0.238	0.137	0.227	

Notes: Dependent variable is the logarithm of the share (%) of clan lending in all lending records at the prefectural level between 1911 and 1936. Clan lending refers to lending transactions by clan organizations to members. Clan is genealogy density, measured by the number of genealogy books that had been compiled by 1910 normalized by population in 1910 (in 10,000) and taken in the log form. In columns 3-5 clan is instrumented by the distance to the Zhu Xi academies. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 9. Persistence of Clan Values (CGSS 2010)

	1	2	3	4
	OLS	Probit	2SLS	IV-Probit
Panel A	DV: Trust relatives			
Clan	0.004	0.017	0.020***	0.091**
	(0.003)	(0.017)	(0.007)	(0.035)
Observations	5,086	5,086	5,018	5,018
Panel B	DV: Trust others			
Clan	-0.004	-0.010	-0.030***	-0.079***
	(0.005)	(0.014)	(0.010)	(0.027)
Observations	5,087	5,087	5,019	5,019
Panel C	DV: Has contract in doing business with relatives			
Clan	-0.000	-0.001	-0.038***	-0.146***
	(0.004)	(0.016)	(0.009)	(0.029)
Observations	5,077	5,077	5,009	5,009

Notes: All dependent variables are dummies based on the respondents' answers in China General Social Survey (CGSS 2010). Clan is measured by the number of existing genealogy books in 2009, which is normalized by population (in 10,000) in 2009 and taken the log form. All regressions have controlled for individual characteristics (education, age, gender, rural household, minority, kin size, and income) and prefectural factors (log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital, and GDP per capita in 2009). In columns 3 and 4, genealogy books are instrumented by a prefecture's shortest distance from the Zhu Xi academies (in log). Robust standard errors adjusted for clustering at the prefectural level are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Table 10. Clan and Financial Market Participation (CGSS 2010)

Panel A	DV: Has bank loan			
	OLS	Probit	2SLS	IV-Probit
Clan	-0.010**	-0.034**	-0.039***	-0.155***
	(0.004)	(0.016)	(0.008)	(0.033)
Observations	5,090	5,090	5,022	5,022
Panel B	DV: Log bank loan amount			
	OLS	Tobit	2SLS	IV-Tobit
Clan	-0.111**	-0.490**	-0.401***	-2.313***
	(0.044)	(0.234)	(0.085)	(0.521)
Observations	5,090	5,090	5,022	5,022

Notes: The dependent variables are based on the respondents' answers in China General Social Survey (CGSS 2010). Clan is measured by the number of existing genealogy books in 2009, normalized by population (in 10,000) in 2009 and taken in the log form. All regressions have controlled for individual characteristics (education, age, gender, rural household, minority, kin size, and income) and prefectural factors (log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital, and GDP per capita in 2009). In columns 3 and 4, genealogy books are instrumented by a prefecture's shortest distance from the Zhu Xi academies (in log). Robust standard errors adjusted for clustering at the prefectural level are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table 11. Confucianism and Regional Financial Development in 2010

	Total bank loans and deposits per 10,000 peoples (log)		Bank loans and deposits to GDP (log)	
	OLS	2SLS	OLS	2SLS
	1	2	3	4
Clan	-0.040*	-0.129***	-0.041**	-0.085**
	(0.020)	(0.042)	(0.018)	(0.035)
Controls	Yes	Yes	Yes	Yes
Observations	234	234	234	234
R-squared	0.791	0.773	0.191	0.166

Notes: Bank loans and deposits are measured in 100 million CNY. The data of bank loans and deposits are obtained from the *City Statistical Yearbook of China*. Clan is measured by the number of existing genealogy books in 2009, which is normalized by population in 2009 (in 10,000) and taken the log form. In columns 2 and 4 clan is instrumented by a prefecture's shortest distance to the Zhu Xi academies (in log). Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area, province capital, number of banks per 10,000 population in 1897 to 1936, and GDP per capita in 2009. Robust standard errors adjusted for clustering at the prefectural level are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280

ONLINE APPENDIX

Figure A1. Distributions of Confucian Temples in China Proper, the 19th century

Notes: Confucian temples are built to worship Confucian sages and local eminent Confucian exemplars. The number of the temples can reflects an overall strength of Confucian ethos. The data are obtained from the provincial gazetteers compiled in the 19th century.

Electronic copy available at: https://ssrn.com/abstract=3671280

Figure A2. Distribution of Zhu Xi's Disciples, the 12th to 13th centuries

Notes: This figure demonstrates the importance of the proximity to Zhu Xi Academies (the three blue points) in the diffusion of Zhu Xi's philosophy. The latter is measured by the number of Zhu Xi's disciples. The data of Zhu Xi's disciples are obtained from Chan's (1982) *Zhuzi Menren* (The Disciples of Zhu Xi). The distribution of the disciples is based on their places of origin.

Electronic copy available at: https://ssrn.com/abstract=3671280

Table A1. Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
For Historical Banks	283	0.002	0.003	0	0.032
Private banks (per 10,000 persons)	283	0.005	0.010	0	0.112
Official banks (per 10,000 persons)	283	0.002	0.003	0	0.032
Foreign banks (per 10,000 persons)	283	0.001	0.007	0	0.061
Money houses (per 10,000 persons)	283	0.111	0.174	0	1.351
For Confucian Clan and Controls					
Clan (genealogy books per 10,000 persons)	283	0.659	1.224	0	8.293
Distance to the Zhu Xi academies (in 100 km)	283	6.853	3.75	0	20.837
Number of Zhu Xi disciples	283	1.606	5.651	0	58
Jinshi degree holders (per 10,000 persons)	283	1.439	1.251	0	9.43
Population density in 1880	283	141	197.1	0.274	1826.8
Treaty ports	283	0.17	0.539	0	7
Distance to river (in 1,000 km)	283	292.7	230.1	1.41	1524.2
Distance to coast (in 1,000 km)	283	510.3	376.1	2.186	1924.7
Land area (in km^2)	283	14873	14221.4	779.8	131190.3
Province capital	283	0.064	0.244	0	1
For Interest Rate					
Interest rate	12392	26.55	16.9	0	98.16
Interest rate by lenders:					
individual	6519	34.46	17.3	0	98.16
community	467	20.84	8.59	0	60
merchant	927	25.21	13.1	1.2	90
traditional financial institution	1848	22.22	12.36	0	96
bank	2631	11.48	4.7	0	90
Maturity	9085	2.91	0.79	1	5
Rural	12392	0.56	0.5	0	1
For CGSS 2010					
Trust relatives	5839	0.87	0.33	0	1
Trust others	5843	0.63	0.48	0	1
Has contract in doing business with relatives	5829	0.83	0.37	0	1
Has bank loan	5848	0.17	0.38	0	1
Gender	5848	1.53	0.5	1	2
Age	5848	41.12	10.62	20	59
Minority	5838	0.08	0.27	0	1
Rural residence	5848	0.54	0.5	0	1
Educational level	5842	2.31	1.42	0	6
Kin size	5793	1.45	0.99	0	10
Income (10,000 *yuan*)	5081	2.07	6.09	0	280
For City Statistics 2010					
Total bank loans and deposits per 10,000 peoples in 2010 (100 million *yuan*)	247	8.07	12.85	1	130.5
Bank loans and deposits to GDP 2010 (100 million *yuan*)	247	2.09	1.03	0.79	6.76
Genealogy books 2009 (per 10,000 peoples)	247	0.8	2	0.002	14.77
GDP per capita (10,000 *yuan*)	246	2.95	1.89	0.54	11.64

Electronic copy available at: https://ssrn.com/abstract=3671280

Table A2. Comparison between Prefectures of Zhu Xi Academy and Other Prefectures

	Mean	Mean	Difference (*t*-statistic)
	Prefectures of Zhu Xi academy	Other prefectures	
Population density 1393	23.713	34.274	-10.561 (0.243)
Population density 1580	49.180	77.925	-28.745 (0.321)
Population density 1680	57.398	85.190	-27.792 (0.285)
Population density 1776	104.607	136.198	-31.591 (0.221)
Population density 1880	94	141.536	-47.535 (0.415)
Jinshi of Ming dynasty (1368-1643)	1.524	1.237	0.287 (-0.375)
Jinshi of Qing dynasty (1644-1905)	0.963	0.625	0.338 (-0.962)
GDP per capita 2010	33209.17	29740.69	3468.475 (-0.441)

Notes: Prefectures of Zhu Xi academy refer to Jiujiang Prefecture of Jiangxi Province, Changsha Prefecture of Hunan Province, and Jianning Prefecture of Fujian Province (Figure 2). Other prefectures refer to all the other 280 prefectures in China Proper. Population density is measured by the number of persons per km^2. *Jinshi* refer to the number of *jinshi* degree holders per 10,000 people in the Ming or Qing dynasty. The results are similar when we restrict the other prefectures to the eastern China.

Table A3. Exclusion Restriction Test for the Instrumental Variable

	Number of private banks 1897-1936			
	Full sample	Full sample	eastern China	eastern China
	1	2	3	4
Distance to the Zhu Xi academies	0.002**	0.001	0.003**	0.002
	(0.001)	(0.001)	(0.001)	(0.002)
Clan		-0.002		-0.002
		(0.001)		(0.002)
Controls	Yes	Yes	Yes	Yes
Observations	283	283	191	191
R-squared	0.228	0.231	0.233	0.237

Notes: Dependent variable is the annual average of the number of Chinese private banks in each prefecture between 1897 and 1936. We normalize the number of banks by population in 1880 (in unit of 10,000) and take the logarithm. Distance to the Zhu Xi academies is calculated as a prefecture's shortest great circle distance (in 100km) to the nearest Zhu Xi academy in the Southern Song dynasty (in log). Clan is measured by the number of genealogy books that had been compiled by the year 1897 in each prefecture. We normalize the number of genealogy books by the average population between 1393 and 1880 (in unit of 10,000) and take the logarithm. Controls include the log number of *jinshi* degree holders, log population density in 1880, distance to river, distance to coast, land area and province capital. Columns 3 and 4 exclude five provinces in western China (Gansu, Shaanxi, Sichuan, Guizhou and Yunnan) in order to ensure a more homogenous economic and geographic environment. Robust standard errors are given in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10%, respectively.

Electronic copy available at: https://ssrn.com/abstract=3671280