Journal of Comparative Economics 48 (2020) 100–123

Contents lists available at ScienceDirect

Journal of Comparative Economics

journal homepage: www.elsevier.com/locate/jce

Clans, entrepreneurship, and development of the private sector in China

Zhang Chuanchuan

School of Economics, Central University of Finance and Economics, 39 South College Road, Haidian, Beijing, China

ARTICLE INFO

Keywords:
Culture
Clans
Entrepreneurship
Private sector
China

JEL classifications:
J21
O10
P20
R12
Z10

ABSTRACT

This paper examines the role of clans in China's unprecedented development of the private sector. Although with no well-developed financial and legal systems, China witnesses a boom of private sector, which has contributed to most of its economic growth during the past three decades. Using inter-census population survey and economic census data, I find that the clan is positively associated with the likelihood of entrepreneurship and the share of economy in the private sector. Exploring possible mechanisms, I find that the clan helps privately-owned enterprises overcome financing constraints and escape from local government's "grabbing hand". In addition, the clan is significantly related to a set of individual values, which are arguably relevant for private business. Finally, I find that the support of clans for private business is limited as clans deter private businesses from growing into large firms. The results also suggest that the role of clans reduces as formal institutions develop.

1. Introduction

It has been well studied that entrepreneurship is crucial for economic growth and development (Baumol, 1990; Baumol and Strom, 2007; Schmitz, 1989), particularly in less-developed economies (Bruton et al., 2008; McMillan and Woodruff, 2002). One of the key research questions in economics is how to direct a country's resources into entrepreneurial activities that improve the economic performance and contribute to a country's prosperity (King and Levine, 1993; Murphy et al., 1991).

Previous studies argue that institutional context is the main determining factor of private business as it affects individuals' leverage of personal resources toward entrepreneurial opportunities (Baker et al., 2005; McMullen et al., 2008). It has also long been considered that well-developed legal and financial systems are necessities for economic growth (Allen et al., 2005). However, well-developed institutions are usually nonexistent in developing countries. Instead, private business in developing economies is often hampered by excessive bureaucracy (Djankov and Murrell, 2002), inefficient tax systems (Estrin et al., 2006; Guriev 2004; Hellman et al., 2003; Johnson et al., 2000), and the distorted allocation of financial resource (Li et al., 2006). Without market-supporting

I thank two anonymous referees and the editor Hongbin Li for helpful comments. I also thank Ting Chen, Avraham Ebenstein, Ruixue Jia, Yu Xie, Xiaobo Zhang, Torsten Persson, and seminar participants at South China Normal University, Dalian University of Technology, Wuhan University, Remin University, Sun Yat-sen University, Jinan University, Fudan University, Peking University (the Joint 2017 Conference on Entrepreneurship, Innovation and Development), Henan University (the 4th International Symposium on Quantitative History), Chinese Academy of Social Sciences (CASS) for helpful comments and suggestions. I acknowledge financial support from the National Natural Science Foundation of China (grant no. 71503282) and the Fok Ying-Tong Education Foundationfor Young Teachers in the Higher Education Institutions of China. An earlier version of this paper appears in https://ssrn.com/abstract=2865105. I am solely responsible for any remaining errors.

E-mail address: ccz.zhang@gmail.com.

https://doi.org/10.1016/j.jce.2019.08.008
Received 18 April 2018; Received in revised form 22 August 2019; Accepted 26 August 2019
Available online 03 September 2019

institutions, private entrepreneurs have to rely on other forms of support to conduct business. For examples, entrepreneurs in Eastern Europe and Russia have been observed going underground to escape over-regulation and high taxes (Friedman et al., 2000; Johnson et al., 1997; Johnson et al., 1998). Firms in Vietnam depend on informal credits from suppliers when they have limited access to formal financial markets (McMillan and Woodruff, 1999a).

This paper contributes to the literature by examining the role of clans in entrepreneurial activities and development of the private sector. The clan is one of the most important social organizations in pre-modern China. It creates and enforces rules and norms, which are generally defined as informal institutions by North (1991). Greif and Tabellini (2010, 2017) argue that the clan was the locus of cooperation in pre-modern China. As a kinship-based unit of cooperation, the clan "sustained cooperation among members, regulated interactions with non-members, provided local public or club goods, and coordinated interactions with the market and with the state"(Greif and Tabellini, 2017). The clan culture, as a reflection of a clan organization, is also the hallmark of Chinese culture. There is a recent but rapidly growing literature demonstrating that culture is relevant for economic development and economic choices. Some pioneering works reviewed by Guisoet al. (2006) show that culture has broad impacts on economic outcomes through its effects on individual preferences or values, and some influences change quite slowly.[1] More recently, Alesina and Giuliano (2015) show that culture interplays with formal institutions and that they both affect economic performance.

Building on this literature, this paper examines the role of clans, either as social organizations or cultural traditions, in the unprecedented development of China's private sector during the transition process. Similar to most transition or developing countries, there are also no well-developed financial and legal systems in China, and financial constraints and excessive bureaucracy significantly impede the development of private business (Allen et al., 2005; Feng and Wang, 2010). Nevertheless, in spite of the underdevelopment of market-supporting institutions, the private sector in China has still made significant advances during the past three decades, especially in some regions (Fig. 1). Based on China's 2005 inter-census population survey data, the private sector employment share in the country's two most developed provinces, Zhejiang and Guangdong, is 76 and 57 percent, respectively. According to the National Bureau of Statistics' annual statistical reports, approximately 80 percent of net new jobs in China's urban area, during the past decade, were created by POEs.

In this paper, I first estimate the effect of clans on entrepreneurship and the share of economy in China's private sector, using population and economic census data. I find that clans lead to a higher occurrence of entrepreneurship, and larger employment and asset shares of POEs. An "epidemiological approach" analysis suggests that these findings are unlikely driven by local confounding factors, and verifies that the culture channel from clans to private business exists. The results are also robust to measuring local strength of clans at higher administrative levels, sample restriction, and the inclusion of historical confounding factors. As a further robustness check, I show that the effects of the clan exist only among Han Chinese but are absent among ethnic minorities. This is consistent with the fact that clan culture is mainly prevalent among Han Chinese, while minorities generally hold different religious beliefs. This suggests that the relationship between the clan and private businesses is unlikely due to unobservable local characteristics shared by all ethnic groups.

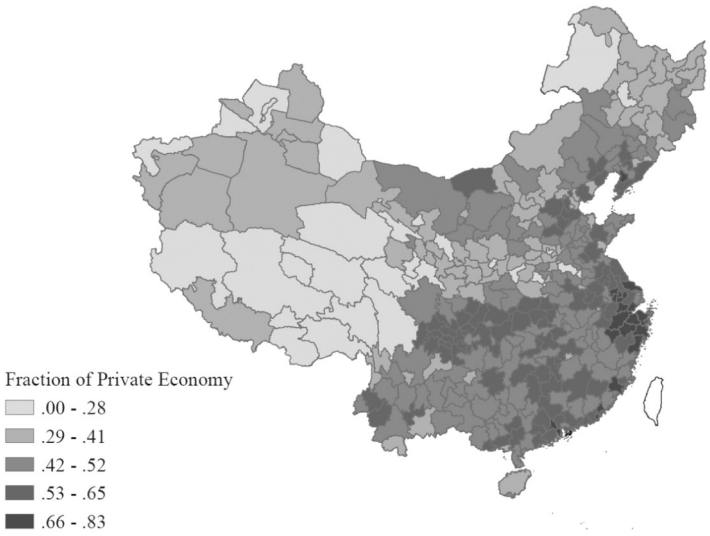
I then explore possible mechanisms. Using survey data from 10 percent of manufacturing firms in China, I find that the clan helps POEs overcome financing constraints and escape from local governments' "grabbing hand" through tax system and other regulations. In contrast, I find no evidence of such advantages for non-POEs. I then use household survey data to show that the clan is closely related to a set of individual values, which are arguably relevant for private business. Given these findings, I conclude that the clan influences economic development through affecting both the local business environment and individual values.

Although the overall findings demonstrate a positive effect of the clan on China's private sector development, the effect could be limited as some of the cultural traits of Chinese clans, such as limited moral obligation and strong family ties, may in some cases negatively affect private business. After all, the merit of clans only stands out in the absence of well-developed market-supporting systems, making current private sector development the "second-best" (Lipsey and Lancaster, 1956). Consistently, I find that POEs in regions with stronger strength of clans are significantly smaller in size. These findings suggest that the clan facilitates the opening of private firms, which are mainly family businesses in China, but deters them from growing into large firms. Moreover, I find that the positive relationship between the clan and private sector development is significantly weaker in regions with a better market environment, suggesting that the role of clans diminishes as formal institutions develop.

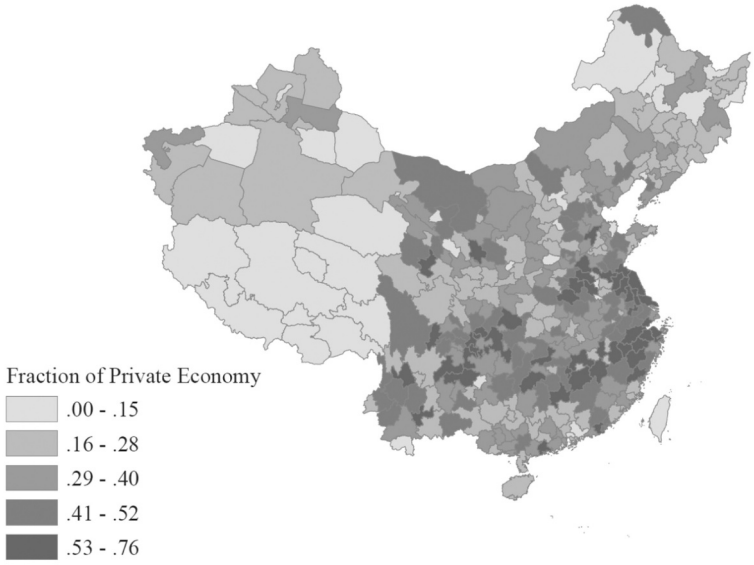
These findings contribute to several aspects of the ongoing literature. First, the findings build up the existing literature that investigates the determinants of entrepreneurship and private sector development by examining the effects of informal institutions (i.e. cultural norms).[2] Previous literature generally focuses on formal institutions, such as legal or financial systems, leaving the role of informal institutions untouched (Allen et al., 2005; Baker et al., 2005; Danis and Shipilov, 2002; Djankov and Murrell, 2002; Estrin et al., 2006; Feng and Wang, 2010; Li et al., 2006; McMillan and Woodruff, 1999a; McMillan and Woodruff, 1999b; McMullen et al., 2008). Second, the findings provide new evidence on the causal mechanism between culture and economic outcomes and also provide novel evidence on the interaction between culture and formal institutions (Alesina and Giuliano, 2015; Fernandez, 2010; Guiso et al., 2006). Finally, as development of the private sector has been contributing to most of China's economic growth and is

[1] There is also a growing body of literature that tests the causal effect of culture on economic choices such as fertility, labor supply and migration using the so-called "epidemiological approach", where culture is usually proxied by economic variables. These studies generally test the effect of culture by looking at immigrants, who have different cultural background but reside in the same location to isolate the impact of culture from local economic and institutional environment. Fernandez (2010) provides an excellent review on studies using the "epidemiological approach".

[2] Institutions, as defined in North (1990), are made up of formal constraints (rules, laws, and constitutions) and informal constraints (norms of behavior, convention, and self-imposed codes of conduct), where the informal constraints are usually imposed by cultural norms.



(a) In China's 2005 Inter-census Population Survey



(b) In China's 2005 Economic Census

Fig. 1. Employment share of POEs across prefectures
(a) In China's 2005 inter-census population survey
(b) In China's 2005 economic census.
Note: The inter-census population survey is also called the 1 percent national population sample survey. The data used in this paper are a 20 percent sample of the original survey data. The 2005 economic census is China's first national economic census.

closely related to local economic performance (Li et al., 2012), the findings also add to a large strand of literature on China's post-reform economic growth and regional development by providing a novel perspective. Previous literature on China's economic growth generally focuses on the formation of physical capital (Chow, 1993; Zhang and Zou, 1998), infrastructure construction (Demurger, 2001; Fan and Zhang, 2004), and structural transformations (Fan et al., 2003; Kanbur and Zhang, 2005; Lin and Liu, 2000; Song et al., 2011), but few have examined the role of Chinese culture. Highlighting the role of culture in economic growth is especially insightful in the context of China, as Chinese culture is quite different from that in Western countries.

The rest of this paper is laid out as follows. Section 2 introduces the clan in China, and its traits, which are arguably relevant for private business. Section 3 describes the data. In Section 4, I estimate the effects of the clan on entrepreneurship and private sector

development, and conduct several robustness checks. Section 5 then turns to mechanisms, investigating the effects of the clan on the local business environment and individual values. In Section 6, I further discuss limitations of the role of clans, and the interaction between clans and formal institutions. Section 7 concludes.

2. Research background

2.1. The Chinese clan

A clan, which is usually a synonym for patrilineage, is an organized group of descendants of one common ancestor. The ancestor is referred to as an apical ancestor who is at the apex of the genealogy by which the lineage membership is determined.[3] It is considered that Chinese clans have broad social and economic functions (Feng, 2013). A traditional clan typically had a hall (ancestral temple), in which sacrifices to ancestors were offered; a code of conduct to direct, guide and constrain clan members; an elder board to administer clan affairs; and property, such as land, used to assist members in need (Feng, 2013).[4] In summary, Chinese clans were important providers of public goods and social services, and sometimes substitutes for the state (Fei, 1946; Feng, 2013; Freedman, 1965).

Despite the important role of clans in Chinese society, they have, until recently, drawn little attention among economic scholars. In an early study, Peng (2004) shows that, using a sample of 366 villages collected in 1993 and 1994, kinship networks are positively related to the number and worker size of rural enterprises. More recently, Greif and Tabellini (2010) and Greif and Tabellini (2017) argue that the clan and the corporation are distinct social organizations sustaining cooperation in China and Europe, respectively. They provide a model to analyze the cultural and institutional co-evolution that has led to such a bifurcation. Xu and Yao (2015) show that clans, as one of the most important vehicles of informal institutions in China, helped local leaders overcome collective action problem of financing public goods in rural areas. This paper builds on this thin literature by investigating the effects of clans on entrepreneurship and private sector development using census and survey data, and also providing novel evidence on underlying mechanisms.

Following Chen et al. (2017), Greif and Tabellini (2010), and Greif and Tabellini (2017), I measure the strength of clans using genealogies. A genealogy is a book that records the history of a clan. It covers the historical and cultural processes of each clan, including the lives, breeds, marriages and beliefs of its members, as well as the clan's code of conduct. The number of genealogies is a good measure of the strength of clans, as "compiling genealogy is one essential component of a clan's activities (*bianzuan zupu shi zongzu huodong de jiben neirong*)" (Feng, 2013, p.218). Prior to the Song dynasty (960–1279), only imperial families and senior officials were allowed to write genealogies and only under the supervision of a specific government department. Genealogies are also under the custody of the government. The government relaxed regulation on clans during the Song dynasty, and since then some local large clans have started to write their own genealogies (Fei and Liu, 1982). The compilation of genealogies finally boomed during the Qing dynasty (1644–1911) when the governments encouraged compiling and updating genealogies, and made use of clans for local governance (Feng, 2013). Fig. 2 displays the written or updated year of Chinese genealogies included in the General Catalog of Chinese Genealogies.[5] One typical observation is that there are almost no newborn genealogies from 1950 to 1980, when the Chinese political leaders officially objected to China's traditional culture. However, if we look at the relationship between the number of genealogies written or updated before 1950 and those after 1980 across regions, we find a very strong positive relationship, as shown in Fig. 3. This suggests that China's clan culture persisted even after over 30 years of harsh state-power suppression.

In addition to temporal variation, the strength of clans is also unevenly distributed across regions in China, with a stronger strength in the southern and eastern regions (Fig. 4).[6] The substantial variation in the strength of clans across regions provides us with a good opportunity to test the role of culture in economic development within a single country. Most previous studies on the relationship between culture and economic development exploit variations across countries, which makes it difficult to control for country-specific confounders.

2.2. Why does the clan matter?

Social network. The Chinese clan is primarily a lineage group, which maintains social relationships among family members. These social relationships are important for generating effective sanctions, sharing information, financing and economizing on

[3] Anthropologists sometimes make a distinction between the clan and the lineage, although these two terminologies are often used interchangeably. More precisely, anthropologists treat the clan and the lineage as two different Chinese kinship groups, where a clan is defined as a wannabe lineage, of which the apical ancestor is unknown or fictionalized (Watson, 1982). In our research context, however, it is not necessary to make such a distinction as both the clan and the lineage are organized according to the principles of patrilineal descent and have the same cultural traits.

[4] In some cases, clan property consisted of only a few fields that were rented out to provide income for the worship of shared ancestors. In other cases clans had substantial holdings, and could afford to maintain loan funds, catastrophe insurance, student scholarships, or even schools for the benefit of clan members.

[5] This catalog is compiled by the Shanghai Library and was published by the Shanghai Ancient Books Publishing House in 2008. At the time of this writing, it is the largest catalog of Chinese genealogies, including more than 50,000 clan genealogies.

[6] There is a consensus among historians that the spatial distribution of China's clan culture is closely related to the historical migration of families and clans, especially the mass population migration that occurred during the Song, Ming and Qing dynasties (Feng, 2013).

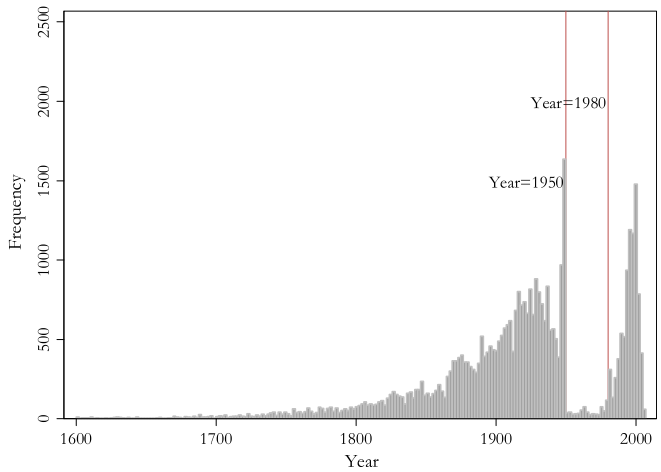


Fig. 2. Genealogies by year: 1600–2005.
Note: The data used in calculation are from The General Catalog of Chinese Genealogies, edited by Shanghai Library and published by the Shanghai Ancient Books Publishing House in 2008.

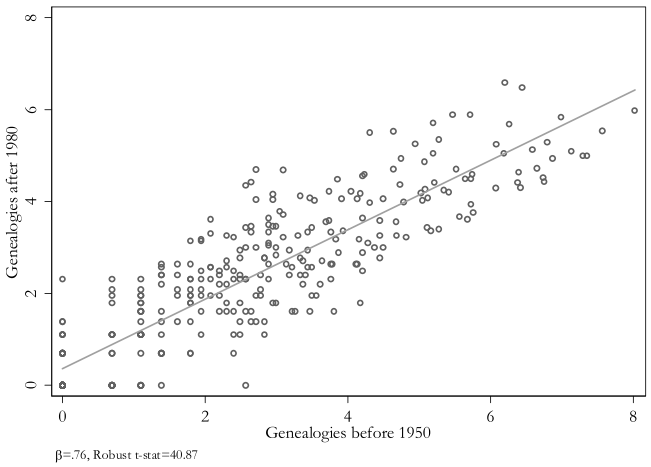


Fig. 3. Persistence of the clan.
Note: The data used in the calculations are from the General Catalog of Chinese Genealogies, edited by Shanghai Library and published by the Shanghai Ancient Books Publishing House in 2008. The number of genealogies is in logarithmic scale. The fit line is from a regression run at the prefecture level (N = 345).

enforcement costs (Greif and Tabellini, 2010; Peng, 2004). When there are no formal market-supporting institutions (e.g., well-developed legal and financial systems), the kinship-based clan could be especially valuable to private business as it provides alternative channels for financing and information sharing. For example, using a survey of 17 entrepreneurs and executives, Allen et al. (2005) show that China's private sector developed in spite of poorly applicable legal protection and standard financing channels by relying on informal financing channels (e.g., founders' families and friends) and corporate governance based on social relationships and reputations. Consistent with this observation, Huang (2007) argues that "the centerpiece of the Wenzhou model was an active informal credit market servicing the private enterprises".[7] More explicitly, Boisot and Child (1996) argue that instead of developing a western-type market system, the market arrangements for its private sector in China are "clan-type networks" based on personal connections. They also consider that the Chinese economic organization in the 1990s is to some degree the reemergence of traditional social structures and behavior patterns.

Social network is also important for the development of private enterprises in the sense that they are usually small and new. Singh et al. (1986) and Aldrich and Fiol (1994) find that as the number of ties held by executives of new and small organizations increases, the chances of their survival increase.

In summary, these discussions imply that clans could facilitate private firm's financing as well as inter-firm cooperation through their kinship-based network, given the state-owned enterprise (SOE)-biased banking and financial systems and underdeveloped legal

[7] Wenzhou is a prefecture-level city located in Zhejiang Province. It is famous for its concentration of individual businesses and private enterprises.

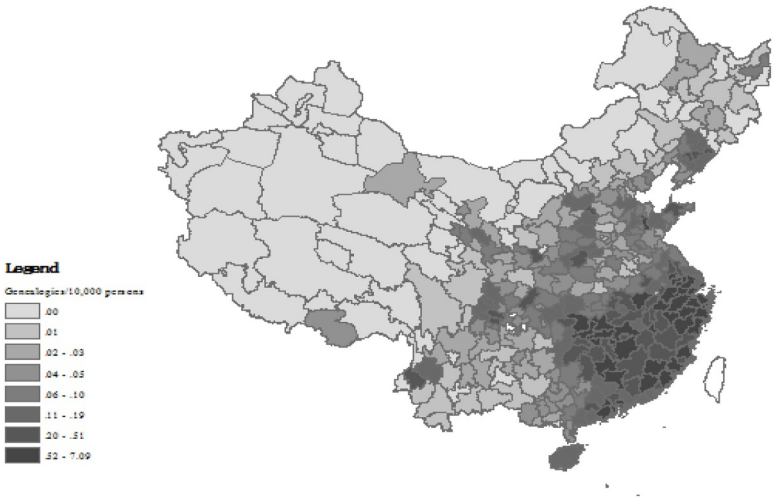


Fig. 4. Spatial distribution of the clan.
Note: The number of genealogies has been normalized by local population size and the reported number of genealogies is per 10,000 persons.

system in post-reform China.

Social organization and protection. The Chinese clan was traditionally a social organization that had, in the pre-modern era, a well-organized hierarchy. The clan heads have strong authority in managing clan affairs and dealing with disputes within, between, among and outside clans. As a well-organized hierarchy with a formal authority structure, the Chinese clan was considered an autonomous organization or as a corporation, which was an important provider of public goods and social services, and sometimes a substitute for the state (Fei, 1946; Feng, 2013; Freedman, 1966; Watson, 1982). Clans have helped in dealing with local affairs such as collecting taxes, settling civil conflicts, and providing protections against invasions. When clan members have disputes with governments, clans coordinate mediate and protect its members from government expropriation. Although a well-organized hierarchy may no longer exist, the clan still has its function in coordinating relationships among clan members, and between clan members and the government. Therefore, we expect that clans can lubricate relationships between government and clan members to avoid conflicts or strained relationships. In addition, a clan may also fight for its interests against public interventions.[8]

The above discussions imply that the political control or interventions of China's communist government could be weaker in regions with strong clan strength. And therefore, private business is less likely to suffer from predatory tax administration and regulations, i.e., the “grabbing hand”.[9] However, it is also acknowledged that social organizations like clans can hardly play a role when the state power is as strong as it was in China during Mao's era (1949 to 1976). Private business was strictly forbidden and traditional cultural norms were suppressed during that period.

Individual values. Previous studies show that some specific values have impacts on economic choice and economic growth, such as family ties (e.g., perception of the importance of family and duties for families, loves, and respect for family elders), trust, moral obligations, attitude towards work and the perception of poverty (Alesina and Giuliano, 2015). For example, Greif (2005; 2006) argue that extended kinship groups helped facilitate trade and establish trust-based relationships. Alesina and Giuliano (2010) and Bertrand and Schoar (2006) show that in cultures with strong family ties, family capitalism is more common and a larger percentage of firms are family businesses. Alesina et al. (2015) find that individuals who inherit stronger family ties are less mobile, and support more stringent labor market regulations. The attitude towards work and the perception of poverty are shown to be relevant for forms of economic organization (Alesina and Giuliano, 2015).

The Chinese clan has cultural traits that are related to some of these values. In clan culture, people cooperate relying on kinship-based reputation and trust, have strong family ties and limited moral obligations that are confined to family members. Kinship-based reputation and trust may have positive impacts on private sector development given that China's legal and financial systems are underdeveloped, as they reduce transaction costs by facilitating cooperation. Strong family ties and limited moral obligations may affect people's attitudes toward the public sector, which in turn can affect individual economic choices as well as the relationships between the private and public sectors. In clan culture, the perception of one's duty for family may stimulate individual drive, which is closely related to entrepreneurial activity. The clan culture can also affect economic choices through individuals’ attitudes toward hard work and the perception of poverty, if it does affect such values.

Based on the above discussions, we would expect a positive impact of clans on the prosperity of private business, given the lack of

[8] According to a recent news report, in a community located in Lufeng, Guangdong province, the clan strength involved in organized criminal drug production and provided local protection against public officials. See the report in BBC news: http://www.bbc.com/news/world-asia-china-25585275.

[9] Frye and Shleifer (1997) propose three “ideal types” of government: the invisible hand, helping hand, and grabbing hand. In the grabbing hand model, the government consists of bureaucrats pursuing their own agendas.

well-developed market-supporting systems. And there are at least two possible channels. First, as important vehicles of social networks or social organizations, clans provide alternative financial channels and protect private business from government expropriation, which improves business environment. Second, clans could lead to some specific values that can stimulate entrepreneurship. It is important to note that these two mechanisms are interrelated and may reinforce each other. For example, clan cultural norms may facilitate the formation of social organizations such as industrial associations and enterprises clubs. The existence of strong family network is also helpful in maintaining specific values.

Nevertheless, some of the individual values related to clans may have negative effects on private business. As argued in Greif and Tabellini (2010), the clan is a kinship-based hierarchical organization in which strong moral ties and reputations among clan members are important in sustaining cooperation, but it may limit cooperation across kinship lines.[10] Since the market arrangements for China's private sector are "clan-type networks" based on trust and personal connections (Boisot and Child, 1996), most of the private firms would be family firms.[11] A 2006 national survey of POEs in China shows that approximately 73 percent of the country's POEs are family firms, which is also consistent with the findings in Alesina and Giuliano (2010) and Bertrand and Schoar (2006).[12] Previous studies from Europe and Asia show that family firms generally have poor performance, although some studies in the United States show that in some cases, family firms offer superior performance.[13] Several recent studies show that family firms are more likely to outperform non-family firms among small- and medium-sized enterprises, but will do neither among large enterprises (Chu, 2009; Miller et al., 2013).

Using data introduced in the following section, I first test the relationships between the clan and entrepreneurship and the private sector development in Section 4, and then explore two possible channels in Section 5. Section 6 provides some further discussion on the limitations of the role of clans.

3. Data and variables

Genealogy data. The genealogy data are from *The General Catalog of Chinese Genealogy*, which is compiled by the Shanghai Library and was published in 2008. The compilation project was launched in 2000 and completed in 2008. It aims to facilitate research on Chinese lineage and help overseas people of Chinese origin find their family roots. The catalog consists of 52,401 Chinese genealogies written in either mainland China or overseas by the end of 2004. Most of these genealogies are stored in local archives and libraries, while some of them are held by families. At the time of this writing, it is the largest collection of Chinese genealogies. For each genealogy, the catalog records its written or updated date and the clan's location. Following Chen et al. (2017), I measure the strength of local clans using the number of genealogies compiled in a prefecture and normalized by the population in that prefecture (in log).[14] Fig. 4 displays the spatial distribution of the strength of clans in mainland China.

2005 Inter-census population survey and 2005 economic census. The main outcome variables measuring entrepreneurship and China's private sector development are from the country's 2005 inter-census population survey (also called the 1% National Population Sample Survey) and the first national economic census.

The population survey data is a 20 percent sample of the original survey data, including approximately 13.9 millions of workers with employment information. Similar to many previous studies on entrepreneurship (Ahmad and Seymour, 2008; Cunningham and Lischeron, 1991), I classify a person as an entrepreneur if the employment status is "self-employed" or "employer of POEs".[15] According to this definition, entrepreneurs account for 8.2 percent of the working people. As robustness checks, I use one more restrictive definitions, the "employer of POEs". Although the definition of entrepreneur usually refers to self-employed individuals or the founder of a new business, there is another famous but quite different definition that was first used by Schumpeter (Ahmad and Seymour, 2008; Cunningham and Lischeron, 1991). Schumpeter (1934) defined entrepreneurs as innovators who implement entrepreneurial change within markets. Since we are primarily interested in the development of private business rather than innovation, we refer to entrepreneurs as self-employed individuals or owners of private firms. I measure development of the private sector at the prefecture level using the employment share of POEs.

The Chinese government conducted its first national economic census at the beginning of 2005, recording economic indicators of firms as at the end of 2004. We have access to a sample of 1,375,148 industrial firms, of which 902,622 are POEs. I measure local

[10] It is worth noting that, cooperation based on kinship networks is not necessarily limited to a small circle, as some clans seek to attract members from the widest circle possible (Watson, 1982). In some cases, kinship groups recruit on the basis of surname alone and the members are not necessarily from the same lineage (Baker, 1977).

[11] Burkart et al. (2003) argue that family firms are more likely to emerge in regions with weak legal protection, which is also consistent with the fact that China has less-developed legal system.

[12] The survey is conducted jointly by the United Front Work Department of the Central Committee of the Communist Party of China, the All China Industry and Commerce Federation, and the China Society of Private Economy at the Chinese Academy of Social Sciences. It contains around 3,800 POEs which are randomly chosen from all of the POEs in China. Family firms are defined as firms in which several family members are important shareholders, board members, or senior managers.

[13] See Miller et al. (2007) for a review of relevant studies.

[14] The results are insensitive to normalization. I obtain the same conclusions with the number of genealogies normalized by land area instead of population size. I also obtain the same qualitative results without taking the log of the population-normalized number of genealogies, although simple graphical analysis suggests a non-linear relationship (see Figs. A1 and A2 in the Appendix). These results are all available upon request.

[15] Li and Wu (2014) use a similar definition in their examination of the relationship, using the same dataset, between housing prices and entrepreneurship. One distinction is that they also include employers of non-POEs as entrepreneurs.

development of the private sector using both the employment share and asset share of POEs in this economic census. The drawback of economic census data is that it does not include China's service sector, but it also has an obvious advantage over the population survey as the ownership type is much more accurately recorded. Individual respondents in the population survey may misreport the ownership type of the firm in which they work.

The prefecture level employment shares of POEs, calculated based on both the population survey data and economic census data, are plotted in Fig. 1. One typical observation is the large spatial variation. The difference in the employment share of POEs from the two data sources could be due to either different coverage of industries or misreporting employer ownership in the population survey data.

Investment Climate Survey (2004) and the China General Social Survey (2006). I use both firm survey data and household survey data to explore the underlying mechanisms that link the clan to entrepreneurship and development of the country's private sector. The firm survey data is from the 2004 Investment Climate Survey (ICS). The ICS was conducted by the World Bank in collaboration with the National Bureau of Statistics of China. The ICS collected a wide array of qualitative and quantitative information through face-to-face interviews with managers and owners regarding the investment climate in China and the performance of firms. The topics covered in the ICS include obstacles to doing business, finance, labor, corruption, regulation, etc. The household survey data is from the China General Social Survey (CGSS) conducted by the Renmin University in 2006.[16]

The firm survey covers approximately 10 percent of the manufacturing firms (12,400) in China, while the household survey consists of around 10,000 individuals from 125 counties. Both the ICS and CGSS samples have national representativeness.

Other data. I use several other datasets for robustness checks. These include the 2009 Bejing College Students Survey (BCSS) and historical information on arable land, population size, commercialization, and treaty ports documented by historians, which I will discuss later in this paper.

4. The relationship between clans, entrepreneurship and development of the private sector

4.1. The empirical setup

I first investigate the effect of clans on entrepreneurship by estimating the following equation:

$$Entrepreneur_{ic} = \beta_0 + \beta_1 Clan_c + \beta_2 X_{ic} + \lambda_p + u_{ic} \quad (1)$$

The dependent variable $Entrepreneur_{ic}$ is a dummy variable denoting whether individual i in prefecture c is an entrepreneur. $Clan_c$ is the strength of clans in prefecture c, proxied by the number of genealogies per 10,000 persons in log.[17] To avoid reverse causality, I use only the genealogies compiled prior to 1950. The Chinese government conducted a so-called "socialist transformation of handicraft industries and capitalist industry and commerce" (*shougongye he ziben zhuyi gongshangye shehui zhuyi gaizao*) from 1952 to 1956, changing all private businesses into publicly-owned businesses. Private business was strictly forbidden from 1957 to 1978, so there were barely any private firms. Therefore, using only the genealogies compiled prior to 1950 assures that the $Clan_c$ variable is predetermined. One drawback of this restriction is that it may underestimate the effects of clans if the strength of clans or clan culture declines with the process of modernization. Nevertheless, Fig. 3 demonstrates that clan culture is quite persistent, as the numbers of genealogies compiled before 1950 and after 1980 are highly correlated. X_{ic} are individual controls including age, and dummy variables for gender, ethnic group, and education level. λ_p denotes the province fixed effects, which to a large extent, can absorb the impacts of confounding factors such as geographical location and climatic characteristics. u_{ic} is a disturbance term. All of the standard errors are clustered at the prefecture level.

I then examine the effect of clans on local private sector development at the prefecture level. In particular, I estimate the following equation:

$$PrivateEconomy_c = \alpha_0 + \alpha_1 Clan_c + \alpha_2 X_c + \lambda_p + \varepsilon_c \quad (2)$$

The dependent variable is now development of the private sector in prefecture c, measured by the employment share or asset share of POEs. The employment share in the private sector is calculated using both the 2005 inter-census population survey and the economic census data, while the asset share is calculated using only the 2005 economic census data. The definition of $Clan_c$ is the same as in Eq. (1). X_c are prefecture-level controls including the share of urban people, the average number of years of schooling and local population size in log. The urbanization rate and the number of years of schooling are likely to have impacts on private business, and previous studies also show that they are correlated with clans (Chen et al., 2017; Greif and Tabellini, 2017). Since both the dependent variable and the clan variable are normalized by population, I control for population size to avoid spurious relationship.[18] λ_p denotes the province fixed effects and ε_c is a disturbance term.

Given that the $Clan_c$ variable is predetermined and that most of the contemporary economic variables could be caused by our outcome variable, the control variables in Eqs. (1) and (2) are made sparse to avoid "bad control" problems (Angrist and

[16] The official website of the CGSS: http://www.chinagss.org/index.php?r=index/index&hl=en.

[17] The population size in the denominator is calculated using data from China's 2000 population census. I obtain the same qualitative results using either the number of genealogies normalized by area or without normalization.

[18] It is worth noting that omitting these variables does not necessarily cause an omitted variable bias as they could be channels through which the clan affects private business.

Table 1.
Clans and entrepreneurship: probit estimation.

	Dependent variable: Entrepreneur (YES = 1)			
	Self-Employed or Employer of POEs		Employer of POEs	
Mean of Y	0.082	0.082	0.017	0.017
Clan	0.021***	0.011**	0.030***	0.021***
	(0.006)	(0.005)	(0.008)	(0.008)
	[0.0030]	[0.0016]	[0.0013]	[0.0009]
Control variables	No	Yes	No	Yes
Observations	1388166	1388166	1388166	1388166
Number of prefectures	345	345	345	345
Pseudo R-squared	0.019	0.053	0.020	0.059

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people. All of the regressions include a constant term and dummy variables for each province. Control variables include age, and dummy variables for gender, ethnic status and education level. The average marginal effects are reported in brackets. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Pischke, 2008, p. 47). Nevertheless, I test the robustness of the results to the inclusion of several potential confounding factors, and further address potential endogenous problems with falsification tests and an "epidemiological approach" analysis.

4.2. Baseline results

Table 1 reports the results on the effect of clans on entrepreneurship. In the first two columns, an entrepreneur is defined as "self-employed" or an "employer of POEs". The estimates suggest that for every 10,000 people, a 1 percent increase in genealogies corresponds to increases in the chance of being an entrepreneur by 0.3 and 0.16 percentage points at the sample mean (3.7 and 2 percent relative to the mean of 0.082) without and with control variables, respectively. As robustness checks, Columns 3 and 4 report the estimates using an alternative definition of entrepreneur. With a more restrictive definition of entrepreneur, the estimates in Columns 3 and 4 suggest that, for every 10,000 people, a 1 percent increase in genealogies corresponds to increases in the chance of being an entrepreneur by 0.13 and 0.09 percentage points (7.6 and 5.3 percent relative to the mean of 0.017) without and with control variables, respectively. Although the point estimates in Columns 3 and 4 drop significantly, the estimated effects relative to the mean level are actually much larger than those in Columns 1 and 2. Overall, the results demonstrate that stronger strength of clans is significantly related to a larger likelihood of entrepreneurship.

As entrepreneurial activities lead to the prosperity of private business, it is straightforward to expect a positive effect of clans on private sector development. I first estimate the effects of clan on the employment share in private firms using China's 2005 inter-census population survey. The results are reported in Table 2. The effects presented in Column 1 suggest that, for every 10,000 people, a 1 percent increase in genealogies corresponds to an increase in the employment share of POEs by 1.234 percentage points (2.7 percent of mean). The estimate drops to 0.732 in Column 2 after including control variables and is still statistically significant.

I then calculate the employment share of POEs using the economic census data. This measurement is arguably more precise as the firm interviewees are less likely to mistakenly report their firm's ownership status than the individual interviewees. Another merit of the economic census data is that we can calculate the private sector share using the asset share of POEs in addition to the employment share. The size of the private sector is sometimes measured by assets in official statistical reports. Columns 3–6 in Table 2 report the

Table 2.
Clans and share of employment and assets in the private sector.

	2005 Population Survey		2005 Economic Census			
	Employment Share of POEs		Employment Share of POEs		Asset Share of POEs	
	(1)	(2)	(3)	(4)	(5)	(5)
Mean of Y	46.24	46.24	33.74	33.74	18.97	18.97
Clan	1.234***	0.732***	0.990**	0.882***	0.495*	0.638**
	(0.252)	(0.243)	(0.398)	(0.343)	(0.279)	(0.268)
Control variables	No	Yes	No	Yes	No	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	345	345	342	342	342	342
R-squared	0.704	0.748	0.433	0.547	0.297	0.363

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. All of the regressions include a constant term and dummy variables for each province. Control variables include the share of respondents with urban Hukou, the average number of years of schooling and logged population size. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

results from the 2005 economic census data. The effects in Columns 3 and 5 suggest that, for every 10,000 people, a 1 percent increase in genealogies corresponds to an increase of 0.99 percentage points (2.9 percent of mean) in the employment share of POEs and an increase of 0.50 percentage points in the asset share (2.6 percent of mean). Columns 4 and 6 report the estimation results with prefecture-level observable features controlled, which are quite similar in magnitude and are also statistically significant.

4.3. Robustness checks

4.3.1. Measuring the strength of clans at the provincial level

One potential problem of the model specification in Eqs. (1) and (2) is the unit used to define the local strength of clans. To exploit variations in clan strength as much as possible and more importantly to avoid potential endogenous problems caused by local unobservable factors, I define the clan variable at the prefecture level and conduct within province estimations. But it is possible that individuals in one province, a higher administration level than prefecture, share the same cultural tradition. For example, in China, individuals from the same province usually share the same dialect, which is quite different from that spoken in other provinces. Anecdotally, when Chinese people talk about regional cultural traits, they usually refer to them in one specific province or even one larger geographical region. Therefore, to account for the close relatedness of culture within province, it could be more appropriate to define the clan variable at the provincial level and thus exploit only the variations across provinces. To check the robustness of the results, I measure clan strength at the provincial level and reexamine the relationship between the clan and private business. The results, reported in Tables A1 and A2 in the Appendix section of this paper, are qualitatively the same but have larger estimates in magnitude.

4.3.2. Sample restriction

China has 56 ethnic groups, which include the Han Chinese and 55 other ethnic minorities. A large number of the ethnic minorities reside in five ethnic autonomous regions: Guangxi, Tibet, Ningxia, Inner Mongolia, and Xinjiang. Since clan culture is mainly prevalent among the Han Chinese while minorities generally hold different religious beliefs, it may be inappropriate to include these minority-concentrated regions into our analysis. In addition, due to China's ethnic policies, the economy in ethnic autonomous regions has some special characteristics. For example, economic growth in Tibet relies heavily on central fiscal transfers and economic assistance from other rich provinces. I therefore test whether the results are robust to the inclusion of the five ethnic autonomous regions. The results on entrepreneurship are reported in Table A3 in the Appendix, while those on the share of the private sector economy are reported in Table A4. As shown in Tables A3 and A4, the estimation results exhibit qualitatively similar and larger effects.

4.3.3. Historical correlates

I didn't include many control variables in the baseline analysis. The first reason is that the clan variable is predetermined by definition. The second reason is that most of the contemporary economic variables such as gross domestic product (GDP) per capita and industrial structure are outcomes of private business. Including these variables in the regressions would lead to the “bad control” problem and would not be very helpful in avoiding potential omitted variable problems. But some historical correlates could be vital, and if the estimates are biased it is most likely due to omitting these variables. I test if the results are robust to the inclusion of two sets of historical factors: economic prosperity in history, proxied by arable land endowment and commercialization; and forced openness to Western Countries in the late Qing dynasty.

Historical economic prosperity. Maintaining a strong clan network traditionally requires common property and the compilation of genealogies also requires physical inputs. Therefore, we may expect that clan strength would be stronger in more prosperous prefectures. If the prefecture that was more prosperous is also more likely to develop private business today, our estimates will be biased upward. To address this concern and test the robustness of the results, I include two variables, arable land per capita and whether or not a prefecture is a commercial center in history. Arable land is the most important resource endowment in the pre-industrialization era and highly affects economic prosperity. I calculate arable land per capita in 1820 based on regional arable land area and population size documented in the Yi-Table 77 in Liang (1980). Although China did not experience the same high speed capitalistic economic development as European countries did during the 18th century, several regions were highly commercialized, which may also be correlated with both the strength of clans in the past and private business today. Following Chen et al. (2017), I employ a dummy variable indicating whether a prefecture was a major commercial center during the Ming-Qing period as recognized by historians (Cao, 2000).

Openness in the late Qing Dynasty. From the 1840s to the 1910s, China conceded more than 80 cities, called “treaty ports”, to Western Countries. The Westerners established municipal authorities, factories and public infrastructures in these ports. This is the first period that the old and feudal China meets the new and capitalist world. It is no doubt that this forced openness would substantially affect the economic performance of treaty ports. Jia (2014) shows that although treaty ports and non-treaty ports grew at similar rates from 1949 to 1980, treaty ports have grown much faster than non-treaty ports in terms of GDP per capita since China began to open up its economy after 1980. Jia (2014) also finds that the main driver of this long-run treaty ports group advantage is development of the commerce and service sectors. If the treaty port system simultaneously affects social norms and economic activities, it may threaten our identification of the relationship between the strength of clans in the past and private business today.

I test if the relationship between the clan and private business are robust to the inclusion of these historical correlates, and report the results in Tables A5 and A6 in the Appendix. It turns out that whether including these potentially important confounding factors in regressions or not does not change the estimates on the clan variable very much.

Table 3
Clans and entrepreneurship among migrants: an epidemiological approach.

	Dependent Variable: Entrepreneur (Yes = 1)	
	Self-Employed or Employer of POEs	Employer of POEs
	(1)	(2)
Mean of Y	0.134	0.036
Clan (Hometown)	0.009***	0.004***
	(0.002)	(0.001)
Destination Prefecture Fixed Effects	Yes	Yes
Observations	139930	139930
R-squared	0.087	0.029

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people who migrated across prefectures. All of the regressions include a constant term, age, and dummy variables for gender, ethnic status and education level. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.3.4. Falsification tests: Han and ethnic minorities

Although we have tested the robustness of the results to the inclusion of some vital control variables, we are unable to control all of the relevant variables. Without randomization of clan strength, we are unsure if there are unobservable factors that can bias our estimates. As a further robustness check, I separately examine the relationship between the clan and entrepreneurship and private sector development for Han Chinese and ethnic minorities. The clan culture is mainly prevalent among Han Chinese while minorities generally hold different religious beliefs. Therefore, if the differences in entrepreneurship and prosperity of private business across regions are merely due to differences in clan culture but not local unobservable factors, we would find no effects of the clan among ethnic minorities given no spillover or peer effects between the Han Chinese and ethnic minorities.

Table A7 presents the results of the effects of clans on entrepreneurship. Panel A presents the results for Han Chinese, while Panel B presents the results for ethnic minorities. In the sample of Han Chinese, the point estimates for the two definitions of entrepreneurship are 0.012 and 0.023, respectively, which are almost the same as those obtained using the full sample (e.g., 0.011 and 0.021). In contrast, I find no significant evidence in the sample of ethnic minorities.

Table A8 presents the results on the relationship between the clan and share of economy in the private sector. It is worth noting that, unlike entrepreneurial activity, the employment share in the private sector among ethnic minorities is more likely to be affected by the entrepreneurial activities of Han Chinese. A private firm opened by a Han person can of course hire workers from other ethnic groups. Such a spillover effect is more likely to occur among ethnic minorities with cultural norms similar to the Han Chinese if the employer has a culture-based preference. Nevertheless, I find significant evidence for the Han Chinese, but no significant evidence for the ethnic minorities.

4.3.5. An "epidemiological approach" analysis

There is a growing body of literature that tests the causal effect of culture on economic choices such as fertility, labor supply and migration using the so-called "epidemiological approach". These studies generally test the effect of culture by looking at immigrants, who have different cultural background but reside in the same location, to isolate the impact of culture from local economic and institutional environment (Fernandez, 2010). In this subsection, I take the advantage of the "epidemiological approach" by focusing on a sample of migrants across prefectures. This allows us to separate the effect of culture from all local influencers.

I first estimate the following equation using the 2005 inter-census population survey data:

$$Entrepreneur_{ic} = \beta_0 + \beta_1 HomeClan_{ij} + \beta_2 X_{ic} + \lambda_c + u_{ic} \quad (3)$$

The dependent variable and the individual level covariates are the same as those in Eq. (1). However, the key explanatory variable, $HomeClan_{ij}$, is now the strength of clans in prefecture j ($\neq c$), which is the hometown of individual i. The prefecture fixed effect, λ_c, captures both the effect of the local business environment, which could be affected by clans in destination, and that of all of the other unobservable local confounding factors. I run a linear probability model for simplicity.

Table 3 reports the results. The results demonstrate significant effects of hometown clan culture on the likelihood of being entrepreneurs among migrants, for both of the definitions of entrepreneur. The findings suggest that the relationship between the clan and entrepreneurship cannot be completely driven by unobservable local confounding factors such as public policies, macro-economic shocks, and geographical characteristics. In addition, the results suggest that the clan affects entrepreneurship through the culture channel as migrants "presumably differ in their cultures but share a common institutional and economic environment" (Fernandez, 2010).[19]

I further analyze a sample of college students utilizing the same approach. I use data from the 2009 Beijing College Students

[19] In Table A9 in the Appendix, I add both the clan level of the destination prefecture and that of the hometown, and compare their coefficients. The results consistently show that it is the clan in one's hometown matters. In order to include the clan level of the destination prefecture, we have to leave out the fixed effects of the destination prefecture. Therefore, the clan in destination may capture effects of any local confounding factors.

Survey (BCSS). The BCSS was conducted by the CPC Beijing Municipal Education Committee in 2009. The BCSS covers 4771 college students who were studying in 15 colleges or universities in Beijing at the survey time. 3000 of them are Han Chinese and come from 327 prefectures outside Beijing. I use the sample of these migrant students in analysis. The BCSS contains information on demographics, school performance, daily life, career planning, home location, etc. Regarding the career planning, each student was asked which employer they wish to work with after graduation. The employers in list include government, schools, academic institutes, state-owned enterprises, foreign-owned enterprises, private enterprises, and starting a business as an entrepreneur. I test whether the clan in a student's hometown (excluding Beijing) is associated with the likelihood of wishing to start a business as an entrepreneur. The regression equation is specified as follows:

$$Entrepreneur_{ih} = \delta_0 + \delta_1 Clan_h + \delta_2 X_{ih} + \mu_{ih} \quad (4)$$

The dependent variable, $Entrepreneur_{ih}$ equals one if student i from prefecture h wishes to start a business after graduation, and zero otherwise. $Clan_h$ is the strength of clans in prefecture h. X_{ih} are individual controls including logged household income, and dummy variables for age, gender, schools, grades and whether the individual's father or mother is an entrepreneur. Again, I run a linear probability model for simplicity.[20] As we can see in Table 4, the results are reassuring, showing that students from regions with stronger strength of clans are more likely to wish to start a business after graduation.

5. Mechanisms: business environment and individual values

I now proceed to explore the mechanisms that link the clan to entrepreneurship and private sector development. I first investigate the effects of clans on the local business environment facing POEs. Based on the discussions in Section 2 and also the firm data in use, three aspects of business environment are examined: financial accessibility, tax administration, and the relationship between firms and government.

I then estimate the effects of clan on a set of specific values, which are arguably relevant for entrepreneurship or for operating private firms. Exploiting household survey data conducted in 2006 (CGSS), I focus on the individuals' attitudes toward the following statements: (a) government's regulation on private entrepreneurs should be strengthened; (b) obedience to the government can never be wrong; (c) the government always agree with the court's judgement; (d) laws can only work with government's support; (e) poverty is due to people's unwillingness to work; and (f) more taxes should be levied on the wealthy to support the poor . The first four statements are about the attitudes toward the role of government in the economy, although with different emphasis; the last two are about the perception of poverty and attitude towards redistribution.

5.1. Effect on the local business environment

Table 5 presents the results of the effects of clans on a firm's financial accessibility and tax administration. The results reported in Columns 1 and 2 of Panel A show that the clan has a significant moderating effect on the financial constraints facing POEs. In contrast, as shown in Panel B of Table 5, there is no significant evidence of such an effect among non-POEs. The effects among non-POEs in Columns 1 and 2 are either small or statistically insignificant. The government's "grabbing hand" through the tax system is one important obstacle facing private enterprises in developing countries (Friedman et al., 2000; Johnson et al., 1998). Our firm survey data show that 5.2 percent of POEs report that operation and growth have been severely impeded by local tax administrations. It is interesting that an even higher percentage of non-POEs report impediment by local tax administrations. Nevertheless, we see that the clan has a significant moderating effect on the taxation constraints among POEs (Column 3 in Panel A), but no comparable effect among non-POEs (Column 3 in Panel B).

I now turn to the relationship between firms and government. Private business in developing economies is often hampered by excessive bureaucracy (Djankov and Murrell, 2002), which could be reflected as a strained relationship between firms and government. There are several questions in the firm survey that allow us to examine the effect of clans on the relationship between firms and government. In particular, the relationships with four government departments are reported by each firm, as well as if the firm has specialized staff to handle its relationship with government. I regress these variables on local clan strength. Table 6 presents the results. The results in Column 1 of Panel A show that the clan significantly decreases the probability of having specialized staff for handling the relationship with government among POEs. In comparison, the results in Column 1 of Panel B show that the effects among non-POEs are very small and statistically insignificant. Columns 2–5 present the results of the effects of clans on firm-government relationships. The results show a significant effect of clans on a firm's relationships with three of the four government departments, except for the public security department. In Column 6, I use principal component analysis (PCA) on the relationships with four departments, and obtain a score for the relationships between firms and government.[21] This comprehensive measure is similar to the "metabolic syndrome" used in previous literature (e.g., Kling et al., 2007; Anderson, 2008; Hoynes et al., 2016), which may improve the statistical power of the analysis by aggregating multiple measures. The results suggest a moderating effect of clans on the firm-government relationship, which is statistically significant at the 5 percent level. In summary, the clan leads to a better relationship between POEs and local governments. In contrast, the effects of clans on a firm's relationships with government departments among non-POEs are always small and statistically insignificant.

[20] The results from discrete choice model are similar in magnitude and with a stronger statistical significance.

[21] This measure has a zero mean and ranges from −0.62 to 2.28, with a standard deviation of 1.

Table 4
Clans and career planning among college students: an epidemiological approach.

	Dependent Variable: Wish to start a business (Yes = 1)	
	(1)	(2)
Mean of Y	0.062	0.062
Clan (Hometown)	0.0030*	0.0031*
	(0.0018)	(0.0018)
Parental entrepreneurship	No	Yes
Observations	3000	3000
R-squared	0.0247	0.0252

Note: Employment data are from the 2009 Beijing College Students Survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to students who are Han people and come from prefectures outside Beijing. All of the regressions include a constant term, logged household income, and dummy variables for age, gender, schools, and grades. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5.
Clans and factors impeding a firm's operation and growth.

	Dependent Variable: Firm's Operation Impeded by the Following Factors with High Severity (Yes = 1)		
	Access to Finance (1)	Financing Cost (2)	Tax Administration (3)
Panel A: POEs			
Clan	−0.034***	−0.016**	−0.011**
	(0.011)	(0.007)	(0.006)
Observations	1675	1675	1675
R-squared	0.060	0.050	0.034
Mean of Y	0.232	0.124	0.052
Panel B: Non-POEs			
Clan	0.003	0.005	0.001
	(0.009)	(0.005)	(0.003)
Observations	10725	10725	10725
R-squared	0.043	0.022	0.014
Mean of Y	0.252	0.143	0.081

Note: Data are from the Investment Climate Survey 2004, and the General Catalog of Chinese Genealogies. Reported are coefficients from the linear probability model (LPM) estimation. All of the regressions include a constant term, share of minorities, share of respondents with urban Hukou, the average number of years of schooling, and dummy variables for each province. Robust standard errors clustered at the prefecture level are reported in parentheses.

5.2. Effect on individual values

In Section 4.3.5, I use the "epidemiological approach" to isolate the effect of clan culture from that of local influencers. The results not only mitigate the concerns about omitted variable bias, but also verify that the culture channel from clans to entrepreneurship exists. Although the "epidemiological approach" is very useful for testing the existence of a causal effect of clans on private business through affecting individual values, it tells us nothing about what values are affected. I examine the effects of clans on some specific individual values using the CGSS data.[22] The CGSS contains several questions regarding individual's attitudes toward the government and wealth. I examine if these values are related to clan culture. As discussed in Guiso et al. (2006), culture has impacts on economic outcomes through affecting individual preferences or values. However, it is difficult to empirically disentangle the causality between clan culture and individual values. Cultural beliefs and individual values are actually two often used definitions of culture, and empirical studies usually combine beliefs and values in the same definition (Alesina and Giuliano, 2015). In addition, Benabou (2008) shows that beliefs and values interact systematically. In other words, there could be a co-evolution of clan culture and individual values. It is important to bear this in mind when interpreting the relationship between clan culture and individual values.

Table 7 presents the results. The most relevant "attitude" is that examined in Column 1. The results show that individuals from

[22] Since I now have a new sample, I first estimate the effect of clans on entrepreneurship using the CGSS data. If the causal link between the clan and entrepreneurship exist, we should find similar results using different samples. The results from the CGSS are presented in Table A10 in the Appendix. The results across various model specifications consistently show that individuals from regions with stronger clan strength are more likely to report being an entrepreneur.

Table 6.
Clans and the relationships between firms and the government.

	Dependent variables					
	Having Specialized Staffs to Handle Government Relationships (Yes = 1)	Relationship with the Following Department (Bad = 1)				
		Taxation	Public Security	Environment	Labor and Social	Relationship Score
	(1)	(3)	(5)	(7)	(9)	
A: POEs						
Clan	−0.022**	−0.036***	−0.015	−0.030**	−0.022*	−0.064**
	(0.011)	(0.009)	(0.012)	(0.012)	(0.012)	(0.031)
Observations	1675	1661	1577	1606	1614	1549
R-squared	0.049	0.038	0.039	0.044	0.037	0.040
Mean of Y	0.233	0.232	0.285	0.282	0.283	0.144
B: Non-POEs						
Clan	−0.006	0.003	0.005	−0.000	0.003	0.008
	(0.007)	(0.004)	(0.007)	(0.005)	(0.005)	(0.015)
Observations	10725	10666	10178	10338	10485	10051
R-squared	0.020	0.015	0.024	0.018	0.013	0.022
Mean of Y	0.271	0.174	0.234	0.228	0.202	−0.022

Note: Data are from the Investment Climate Survey 2004 and the General Catalog of Chinese Genealogies. Reported are coefficients from the linear probability model (LPM) estimation. All of the regressions include a constant term, share of minorities, share of respondents with urban Hukou, the average number of years of schooling, and dummy variables for each province. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7
Clans and attitudes toward the government and wealth.

	Dependent Variable: Do you agree with the following statement? (Disagree = 1)					
	Attitudes Toward Government				Attitudes Toward Wealth	
	Government's regulation on private entrepreneurs should be strengthened	Obedience to the government can never be wrong	The government always agrees with the court's judgement	Laws can only work with government's support	Poverty is due to people's unwillingness to work	More taxes should be levied on the wealthy to support the poor
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of Y	0.18	0.27	0.38	0.15	0.20	0.67
Panel A:						
Clan	0.025**	0.017	0.019	0.027***	−0.045*	0.033**
	(0.010)	(0.021)	(0.017)	(0.010)	(0.025)	(0.013)
Control variables	No	No	No	No	No	No
Observations	8655	8617	8442	8740	9019	8834
R-squared	0.013	0.063	0.043	0.017	0.049	0.043
Panel B:						
Clan	0.025**	0.013	0.018	0.026***	−0.045*	0.032**
	(0.010)	(0.019)	(0.016)	(0.010)	(0.025)	(0.013)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8655	8617	8442	8740	9019	8834
R-squared	0.015	0.071	0.044	0.020	0.049	0.048

Note: Data are from the CGSS (2006) and the General Catalog of Chinese Genealogies. An entrepreneur is defined as an employer of an individual business or POE. All of the regressions include a constant term and dummy variables for each provinces. Control variables include age, and dummy variables for gender, ethnic status and education level. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8.
Clans and firm size.

	Dependent Variable:		
VARIABLES	Total Employment (1)	Net Fixed Assets (2)	Business Income (3)
A: POEs			
Clan	−0.073*	−0.112**	−0.099**
	(0.038)	(0.050)	(0.049)
Observations	1675	1675	1675
R-squared	0.284	0.262	0.324
B: SOEs			
Clan	0.006	0.016	−0.001
	(0.028)	(0.041)	(0.036)
Observations	10725	10712	10725
R-squared	0.209	0.183	0.253

Note: Data are from the Investment Climate Survey 2004, and the General Catalog of Chinese Genealogies. All of the dependent variables are measured in log form in the regressions. All of the regressions include a constant term, prefecture-level urbanization and average number of years of schooling, and dummy variables for firm birth year, two-digit industry category and each province. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

prefectures with clans significantly object to strengthening government's regulation on private entrepreneurs. The effects are almost the same after controlling for observable features of individuals, suggesting that the estimates are unlikely to suffer from an omitted variable bias. Individuals in prefectures with clans also disagree with the statement: “obedience to the government can never be wrong”. Generally, the results presented in Columns 1–4 imply that individuals in prefectures with strong strength of clans resist government interventions. The last two columns present the results of the effects of clans on two attitudes toward poverty and redistribution. Individuals in prefectures with stronger strength of clans are more likely to agree that poverty is due to an unwillingness to work, and that government should not support the poor by taxing the wealthy. These imply that individuals in regions with stronger strength of clans are more likely to pursue wealth through personal efforts and hard work, which are considered closely related to entrepreneurship.

6. Further discussions

The clan, as a vehicle of informal institutions, affects private business primarily through substituting for ineffective formal institutions. Therefore, we expect that the effect of clans reduces as formal institutions develop. In some cases, the clan may hinder private sector development since some of its cultural traits are incompatible with modern firms, as we have discussed in Section 2.2. In short, although private business prospers in the presence of clans, this is a second-best scenario where well-developed legal and

Table 9.
Clans, institutional context, and entrepreneurship.

	Dependent Variable: Entrepreneur (Yes = 1)	
VARIABLES	Self-Employed or Employer of POEs (1)	Employer of POEs (2)
*Clan*HFC*	−0.008*	0.003
	(0.005)	(0.002)
Clan	0.002	−0.000
	(0.003)	(0.001)
Observations	1359000	1359000
R-squared	0.029	0.010

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. All of the regressions control for prefecture level foreign capital investment (in log), age, and dummy variables for gender, ethnic status, education level and each province. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10.
Clans, institutional context, and private sector development.

	(1) 2005 Population Survey	(2) 2005 Economic Census	(3)
	Emp. Share of POEs	Emp. Share of POEs	Asset Share of POEs
*Clan*HFC*	0.182	−0. 758**	−0.523**
	(0.192)	(0.280)	(0.253)
Clan	0.756**	1.176***	0.793**
	(0.258)	(0.361)	(0.293)
Observations	339	336	336
R-squared	0.757	0.563	0.389

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. All of the regressions control for prefecture level foreign capital investment (in log), share of minorities, share of respondents with urban Hukou, the average number of years of schooling, logged population size and dummy variables for each province. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

financial systems are absent. In this section, I first examine the relationship between the clan and firm development, and then test whether the role of clans declines as formal institutions develop.

6.1. Clans and firm size

The calculation, based on a national survey of POEs in China in 2006, shows that approximately 73 percent of POEs in China are family firms. This is consistent with the findings in Alesina and Giuliano (2010), and Bertrand and Schoar (2006), which show that in cultures with strong family ties, a larger percentage of firms are family businesses. These family firms may have a lower likelihood of growing into large firms than non-family firms as recent studies show that family firms underperform non-family firms among large enterprises (Chu, 2009; Miller et al., 2013). I therefore test whether the POEs in regions with stronger clan strength are less likely to grow into large firms. I use the ICS data and examine the size of firms in three dimensions: employment, assets and business income. Table 8 reports the results. Panel A of Table 8 reports the results for POEs. As a comparison, I report the results for SOEs in Panel B of Table 8. It is shown that the POEs in regions with stronger clan strength have fewer employees, a smaller asset size and lower business income, after controlling for the birth year and industrial category of each firm and other regional characteristics. In contrast, there is no statistically significant relationship between clan strength and firm size for SOEs.

6.2. Interaction effects of clans and formal institutions

As noted in Bisin and Verdier (2017), culture and institutions might complement each other, or they might act as substitutes, contrasting each other and limiting their combined ability to promote economic growth. Miquel et al. (2015) provide novel evidence on the importance of culture in enhancing the performance of formal institutions. Using village-level survey data, they show that clan culture, proxied by ancestral temple, enhances the effectiveness of election reforms in Chinese villiages. In order to understand the effects of clans on economic outcomes, we cannot set aside formal institutional backgrounds. As we have noted in the Introduction section of this paper, it has been well accepted that the economic institutional context is the main determining factor of private business. This paper does not argue that informal institutions or culture embedded in clans are more important than formal institutions, or that formal institutions are not important. Instead, it just highlights the role of informal institutions or culture, especially when formal market-supporting institutions are underdeveloped. On the one hand, if China has well-developed legal and financial systems, we may expect prosperity of private business, regardless of what the cultural traits are. On the other hand, if the state power in China is as strong as that during Mao's era (1949 to 1976) and strictly suppresses traditional cultural traditions, the clan can hardly play a role. Basically, the clan works as a substitute for ineffective formal institutions during China's transition process. Therefore, we expect that the effect of clans diminishes over time as China is developing better legal and market systems.

To test whether the effect of clans diminishes with formal market-supporting institutions, I add an interaction term between the clan variable and the quality of local formal institutions into Eqs. (1) and (2). One challenge is that it is usually difficult to measure the quality of formal institutions, partly due to data limitations. Previous studies show that foreign direct investment (FDI) is more likely to flow into regions with a high quality of economic institutions, including the protection of private property and contract enforcement (Wei, 2000a; Wei, 2000b; Campos and Kinoshita, 2003; Du et al., 2008), I therefore proxy the quality of local formal institutions using the amount of foreign capital investment in each prefecture. Specifically, I estimate the following equations:

$$Entrepreneur_{ic} = \beta_0 + \beta_1 Clan_c + \beta_2 Clan_c{*}HFC_c + \beta_3 LnFC_c + \beta_4 X_{ic} + \lambda_p + u_{ic} \quad (5)$$

$$PrivateEconomy_c = \alpha_0 + \alpha_1 Clan_c + \alpha_2 Clanc{*}HFC_c + \alpha_3 LnFC_c + \alpha_4 X_c + \lambda_p + \varepsilon_c \quad (6)$$

The dependent variables and the *Clan* variable in Eqs. (5) and (6) are the same as those in Eqs. (1) and (2). The variable HFC_c is a dummy, which equals 1 if the amount of foreign capital in prefecture c is higher than the mean value among all of the prefectures,

and zero otherwise. $LnFC_c$ is the amount of foreign capital investment in prefecture c, in log form.[23] X_{ic} are control variables, which are also the same as those in Eqs. (1) and (2). λ_p denotes the province fixed effect. Theoretically, we expect a positive sign of β_1 and α_1, but a negative sign of β_2 and α_2.

The results for entrepreneurship are presented in Table 9. The results in Column 1 show that the relationship between the clan and the likelihood of entrepreneurship significantly depends on the quality of local formal institutions, which is proxied by the amount of foreign capital investment. In prefectures with an above-average amount of foreign capital investment, the relationship between the clan and entrepreneurship is negative. The negative sign of the interaction between the clan variable and the amount of foreign capital investment suggests a substitution effect between informal institutions and formal institutions. We didn't find any significant evidence when we use a more restrictive measure of entrepreneurship.

The results on the relationships between clans, quality of formal institutions and the share of economy in the private sector are presented in Table 10. We detect no substitution effects between clans and formal institutions using the population survey data. The estimation results from the economic census data do suggest a heterogeneous effect of clans on the share of economy in private sector, as the positive relationship between clans and the share of the private sector economy exists only in prefectures with a below-average amount of foreign capital. These results suggest that overall, the role of clans diminishes as formal institutions develop. Recall that there are also no POEs and that the clan plays no role from 1949 to 1977, when the Chinese government strictly prohibited private business. This evidence suggests that the impacts of informal institutions, e.g., culture, on economic performance rely heavily on formal institutions or the political environment. This may explain why some countries or regions share similar cultural traditions but have huge differences in economic performance, for example, the North Korea and South Korea.

7. Conclusion

While well-developed formal institutions, such as market-supporting legal and financial systems, have long been regarded as the necessities for the prosperity of private business, the private economy still develops in countries or regions with less-developed formal institutions. In this paper, I show that the clan, as one of the most important vehicles of informal institutions or culture, can substitute for ineffective formal institutions and significantly influence economic development by examining China's private sector development.

In spite of the lack of well-developed legal and financial systems, China still witnesses dramatic private sector growth, which has contributed to most of its economic growth during the past three decades. This paper demonstrates that the clan plays an important role in entrepreneurial activities and development of the private sector. Using inter-census population survey data and economic census data, I find that the clan leads to a higher chance of entrepreneurship and larger employment and asset shares of POEs. Using survey data of 10 percent of the manufacturing firms in China, I find that the clan helps POEs overcome financing constraints and escape from local governments' "grabbing hand" through taxation and other regulations. Using household survey data with national representativeness, I show that the clan is closely related to a set of individual values that are arguably relevant for private business. Last but not least, tentative analysis suggests that the role of clans declines as formal institutions develop.

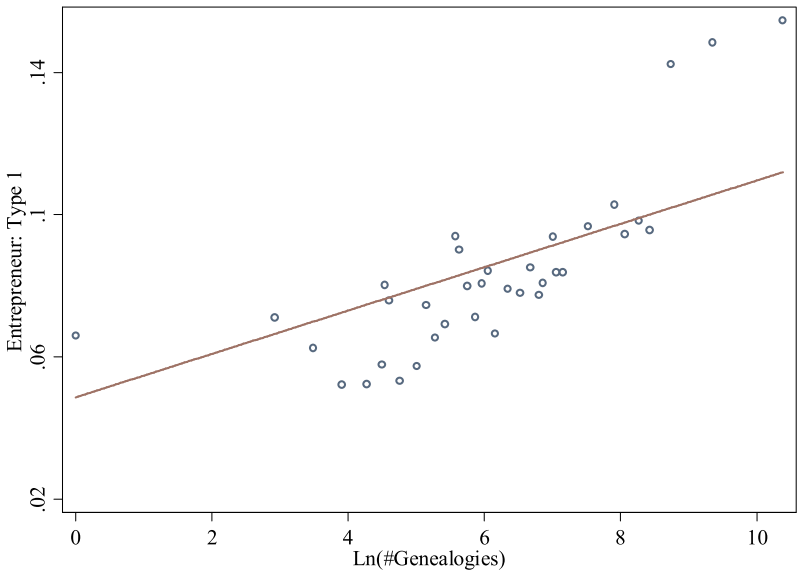
These findings build upon the literature in development economics that studies entrepreneurship, private business, economic growth, and regional development in developing and transition countries. It is shown that in spite of the lack of formal market-supporting institutions, entrepreneurial activities and private business can still develop relying on informal institutions. In addition, these findings add new evidence to the ongoing literature on the causal mechanism between culture and the economy. Utilizing the large spatial variation of culture and economic performance within China, this study demonstrates that one specific culture, the clan culture, has substantial impacts on private sector development. The findings also provide novel evidence on the interaction effects of culture and formal institutions on economic performance, which is still understudied in literature.

This paper demonstrates a robust relationship between clans and entrepreneurship and private sector development. Although this relationship has been verified through various robustness checks, there are still limitations. First, the underlying mechanisms are still not fully uncovered. Although the "clans to local business environment to economy" channel sound reasonable and are strongly supported by empirical results, the "clans to values to economy" channel is still far from clear. The relationship between clans and many important values like risk preference, diligence, and aggressiveness are not examined due to data limitations. Also, the causal relationship between individual values and entrepreneurial activities has not been directly verified. Second, I use foreign capital investment to proxy the quality of local formal institutions, which is not ideal. More studies on the interaction between culture and formal institutions are needed.

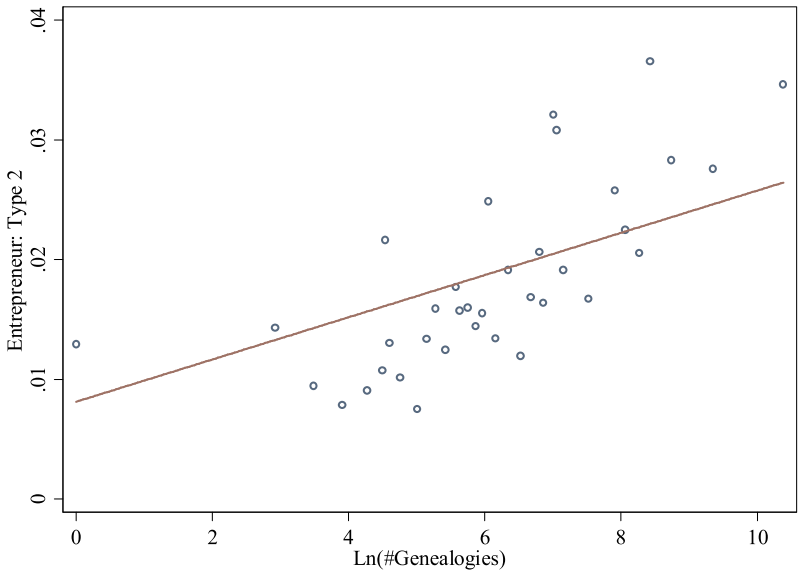
Appendix

Figs. A1 and A2, Tables A1, A2, A3, A4, A5, A6, A7, A8, A9, A10.

[23] The amount of foreign capital in each prefecture is calculated based on firm-level information in the economic census data.

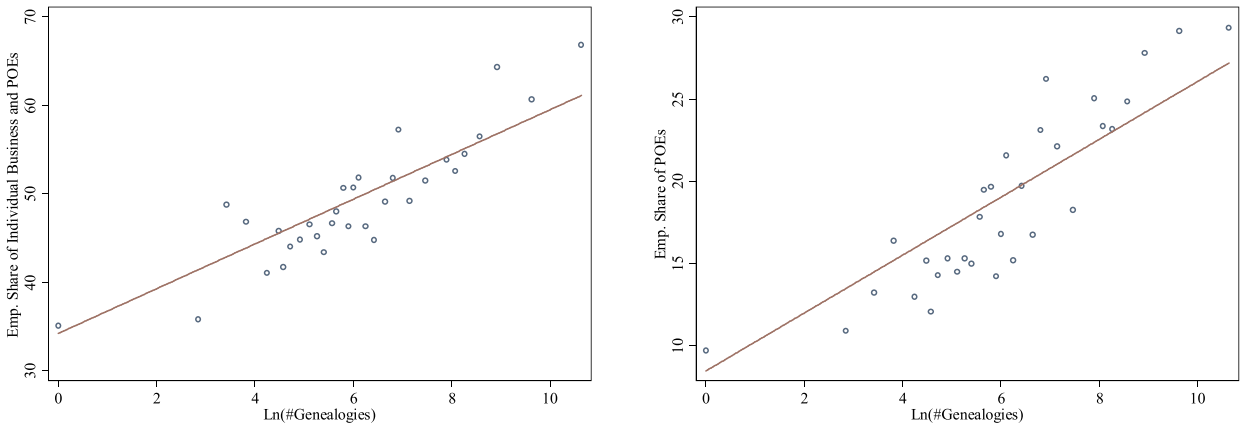


(a) Type 1 Entrepreneur: Self-employed or Employer of POEs

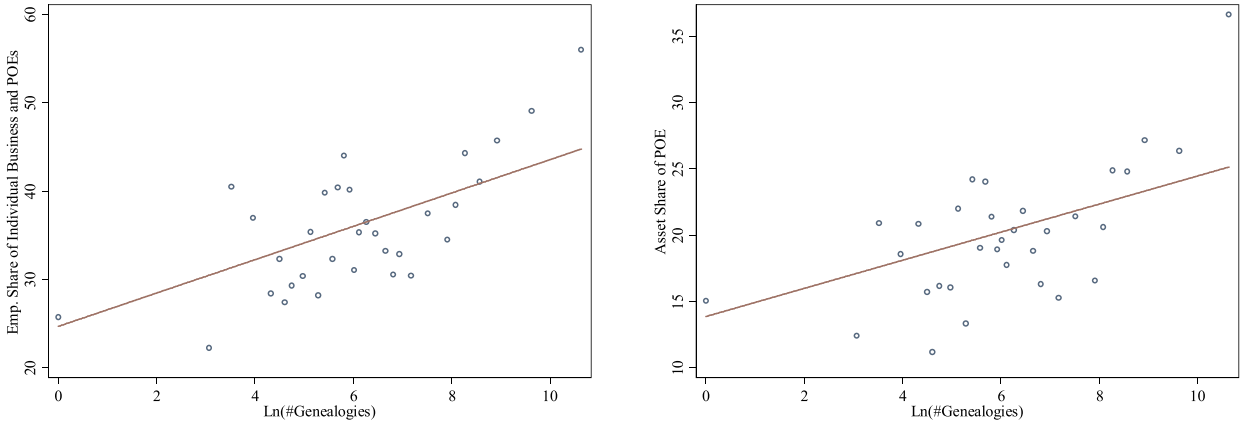


(b) Type 2 Entrepreneur: Employer of POEs

Fig. A1.. Clans and entrepreneurship
(a) Type 1 entrepreneur: self-employed or employer of POEs
(b) Type 2 entrepreneur: employer of POEs.
Notes: Binscatter graphs with the number of bins set to 40. Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The type 1 definition of entrepreneur includes self-employed individuals and employers of POEs. The type 2 definition of entrepreneur includes only employers of POEs. The number of genealogies have been normalized by local population size and taken logs.



(a) 2005 Inter-census Population Survey



(b) 2005 Economic Census

Fig. A2. Clans and the share of economy in the private sector
(a) 2005 inter-census population survey
(b) 2005 economic census.
Notes: Binscatter graphs with the number of bins set to 40. Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. The number of genealogies have been normalized by local population size and taken logs.

Table A1.
Clans and entrepreneurship: measuring clan strength at the provincial level.

	Dependent Variable: Entrepreneur (Yes = 1)	
	(1) Self-Employed or Employer of POEs	(2) Employer of POEs
Clan	0.072***	0.058***
	(0.026)	(0.018)
Observations	1388166	1388166
Pseudo R-squared	0.045	0.051

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people. All of the regressions include a constant term, age, and dummy variables for gender, ethnic status and education level. Reported are coefficients from Probit estimations. Robust standard errors clustered at the provincial level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2.
Clans and the share of economy in the private sector: measuring clan strength at the provincial level.

	(1) 2005 Inter-census Population Survey	(2) 2005 Economic Census	(3)
	Employment Share of POEs	Employment Share of POEs	Asset Share of POE
Clan	2.617***	2.068***	1.462***
	(0.702)	(0.585)	(0.461)
Observations	339	336	336
R-squared	0.476	0.346	0.182

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. All of the regressions include a constant term, the share of respondents with urban Hukou, the average number of years of schooling and logged population size. Robust standard errors clustered at the provincial level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3.
Clans and entrepreneurship: excluding five autonomous regions.

	Dependent Variable: Entrepreneur (Yes = 1)	
	(1) Self-Employed or Employer of POEs	(2) Employer of POEs
Clan	0.015***	0.024***
	(0.005)	(0.007)
Province fixed effects	Yes	Yes
Observations	1277787	1277787
Pseudo R-squared	0.054	0.059

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people and excludes respondents in five minority-autonomous regions: Xinjiang, Ningxia, Tibet, Guangxi, and Inner Mongolia. All of the regressions include a constant term, age, and dummy variables for gender, ethnic status, and education level. Reported are coefficients from Probit estimations. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4.
Clans and the share of economy in the private sector: excluding five autonomous regions.

	(1) 2005 Inter-census Population Survey	(2) 2005 Economic Census	(3)
	Employment Share of POEs	Employment Share of POEs	Asset Share of POE
Clan	0.880***	0.851***	0.517*
	(0.267)	(0.383)	(0.305)
Province fixed effects	Yes	Yes	Yes
Observations	289	289	289
R-squared	0.730	0.532	0.390

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. The sample excludes prefectures in five minority-autonomous regions: Xinjiang, Ningxia, Tibet, Guangxi, and Inner Mongolia. All of the regressions include a constant term, the share of respondents with urban Hukou, the average number of years of schooling and logged population size. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A5.
Clans and entrepreneurship: with more control variables.

	Dependent Variable: Entrepreneur (Yes = 1)				
	(1)	(2)	(3)	(4)	(5)
Panel A: Self-Employed or Employer of POEs					
Clan	0.011**	0.011**	0.011**	0.008*	0.008*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	1388166	1328480	1388166	1388166	1328480
Pseudo R-squared	0.0533	0.0535	0.0533	0.0535	0.0538
Panel B: Employer of POEs					
Clan	0.021***	0.020***	0.020***	0.015**	0.014**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Observations	1388166	1328480	1388166	1388166	1328480
Pseudo R-squared	0.0593	0.0597	0.0594	0.0603	0.0609
Arable land	No	Yes	No	No	Yes
Commercial center	No	No	Yes	No	Yes
Treaty port	No	No	No	Yes	Yes

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people. All of the regressions include age, and dummy variables for gender, ethnic status, education level and each province. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A6.
Clans and the share of economy in the private sector: with more control variables.

	Dependent Variable: Employment Share of POEs				
	(1)	(2)	(3)	(4)	(5)
Clan	0.723***	0.695***	0.733***	0.753***	0.710***
	(0.243)	(0.237)	(0.244)	(0.244)	(0.237)
Observations	345	311	345	345	311
R-squared	0.753	0.727	0.753	0.753	0.728
Arable land	No	Yes	No	No	Yes
Commercial center	No	No	Yes	No	Yes
Treaty port	No	No	No	Yes	Yes
(a) 2005 Inter-census Population Survey					
	(1)	(2)	(3)	(4)	(5)
Panel A: Dependent Variable: Employment Share of POEs					
Clan	0.882**	0.745**	0.885**	0.959***	0.825**
	(0.343)	(0.342)	(0.344)	(0.340)	(0.339)
Observations	342	311	342	342	311
R-squared	0.548	0.536	0.548	0.558	0.543
Panel B: Dependent Variable: Asset Share of POEs					
Clan	0.638**	0.531*	0.640**	0.727***	0.632**
	(0.268)	(0.270)	(0.269)	(0.267)	(0.268)
Observations	342	311	342	342	311
R-squared	0.370	0.406	0.371	0.397	0.428
Arable land	No	Yes	No	No	Yes
Commercial center	No	No	Yes	No	Yes
Treaty port	No	No	No	Yes	Yes
(b) 2005 Economic Census					

Note: Data are from China's 2005 inter-census population survey, China's 2005 economic census, and the General Catalog of Chinese Genealogies. All of the regressions include a constant term, the share of respondents with urban Hukou, the average number of years of schooling, logged population size and dummy variables for each province. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A7.
Clans and entrepreneurship: Han and ethnic minorities.

	Dependent Variable: Entrepreneur (YES = 1)	
	Self-Employed or Employer of POEs	Employer of POEs
Panel A: Han Chinese		
Clan	0.012**	0.023***
	(0.005)	(0.007)
Observations	1232235	1232235
Pseudo R-squared	0.048	0.055
Panel B: Ethnic Minorities		
Clan	0.009	0.005
	(0.008)	(0.009)
Observations	155931	155931
Pseudo R-squared	0.073	0.073

Note: Data are from China's 2005 inter-census population survey and the General Catalog of Chinese Genealogies. Reported are coefficients from the Probit estimation. All of the regressions control for age, and dummy variables for gender, education level and each province. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A8
Clans and the share of economy in the private sector: Han and ethnic minorities.

	Dependent Variable: Employment Share of POEs	
	Han Chinese (1)	Ethnic Minorities (2)
Clan	0.525*	0.449
	(0.286)	(0.650)
Observations	337	315
R-squared	0.603	0.379

Note: Data are from China's 2005 inter-census population survey and the General Catalog of Chinese Genealogies. All of the regressions control for the share of respondents with urban Hukou, the average number of years of schooling, logged population size and dummy variables for each province. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A9
Clans and entrepreneurship among migrants: comparing the effects of clans in hometown and destination.

	Dependent Variable: Entrepreneur (Yes = 1)	
	Self-Employed or Employer of POEs (1)	Employer of POEs (2)
Mean of Y	0.134	0.036
Clan (Hometown)	0.006***	0.003***
	(0.002)	(0.001)
Clan (Destination)	−0.011***	−0.002***
	(0.001)	(0.000)
Observations	139880	139880
R-squared	0.051	0.019

Note: Employment data are from China's 2005 inter-census population survey, and the genealogy data are from the General Catalog of Chinese Genealogies. The sample is restricted to working people who migrated across prefectures. All of the regressions include a constant term, age, and dummy variables for gender, ethnic status and education level. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A10.
Clans and entrepreneurship in the CGSS: probit estimation.

	Dependent Variable: Entrepreneur (Yes = 1)			
	Full sample		Current Workers	
	(1)	(2)	(3)	(4)
Mean of Y	0.022		0.032	
Clan	0.117**	0.086**	0.115**	0.095**
	(0.054)	(0.041)	(0.047)	(0.043)
	[0.0061]	[0.0043]	[0.0082]	[0.0066]
Control variables	NO	YES	NO	YES
Observations	9085	9085	6178	6178
Pseudo R-squared	0.0260	0.0818	0.0273	0.0613

Note: Data are from the CGSS (2006) and the General Catalog of Chinese Genealogies. An entrepreneur is defined as an employer of an individual business or POE. All of the regressions control for age, and dummy variables for gender, ethnic status, education level and each province. The average marginal effects are reported in brackets. Robust standard errors clustered at the prefecture level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

References

Ahmad, Nadim, Seymour, Richard, 2008. Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection. techreport, OECD, Available at SSRN: https://ssrn.com/abstract=1090372 or http://dx.doi.org/10.2139/ssrn.1090372.

Aldrich, Howard, Fiol, Marlene, 1994. Fools rush in? The institutional context of industry creation. Acad. Manage. Rev. 19 (4), 645–670.

Alesina, Alberto, Algan, Yann, Cahuc, Pierre, Giuliano, Paola, 2015. Family values and the regulation of labor. J. Eur. Econ. Assoc. 13 (4), 599–630.

Alesina, Alberto, Giuliano, Paola, 2010. The power of the family. J. Econ. Growth 15 (2), 93–125.

Alesina, Alberto, Giuliano, Paola, 2015. Culture and institutions. J. Econ. Lit. 53 (4), 898–944.

Allen, Franklin, Qian, Jun, Qian, Meijun, 2005. Law, finance, and economic growth in China. J. Financ. Econ. 77 (1), 57–116.

Anderson, Michael, 2008. Multiple inference and gender differences in the effects of early intervention: a reevaluation of the abecedarian, perry preschool, and early training projects. J. Am. Stat. Assoc. 103 (484), 1481–1495.

Angrist, Joshua, Pischke, Jorn-Steffen, 2008. Mostly Harmless Econometrics: An Empiricist's Companion.

edited byBaker, Hugh, 1977. Extended kinship in the traditional city. In: Skinner, William (Ed.), The City in Late Imperial China. Stanford University Press edited bychap. Extended Kinship in the Traditional City.

Baker, Ted, Gedajlovic, Eric, Lubatkin, Michael, 2005. A framework for comparing entrepreneurship processes across nations. J. Int. Bus. Stud. 36 (5), 492–504.

Baumol, William, 1990. Entrepreneurship: productive, unproductive, and destructive. J. Polit. Econ. 98 (5), 893–921.

Baumol, William, Strom, Robert, 2007. Entrepreneurship and economic growth. Strateg. Entrepreneur. J. 1 (3–4), 233–237.

Benabou, Roland, 2008. Joseph Schumpeter lecture ideology. J. Eur. Econ. Assoc. 6 (2–3), 321–352.

Bertrand, Marianne, Schoar, Antoinette, 2006. The role of family in family firms. J. Econ. Perspect. 20 (2), 73–96.

Bisin, Alberto, Verdier, Thierry, 2017. On the Joint Evolution of Culture and Institutions. National Bureau of Economic Research Working paper, no. w23375.

Boisot, Max, Child, John, 1996. From fiefs to clans and network capitalism: explaining China's emerging economic order. Adm. Sci. Q. 41 (4), 600–628.

Bruton, Garry, Ahlstrom, David, Obloj, Krzysztof, 2008. Entrepreneurship in emerging economies: where are we today and where should the research go in the future. Entrepreneur. Theo. Pract. 32 (1), 1–14.

Burkart, Mike, Panunzi, Fausto, Shleifer, Andrei, 2003. Family firms. J. Finance 58 (5), 2167–2201.

Campos, Nauro F and Yuko Kinoshita. 2003. “Why Does FDI Go Where It Goes? New Evidence from the Transition Economies.” Working paper, IMF.

Cao, Shuji, 2000. *Zhongguo renkoushi, Diwujuan* (*History of Population in China, Volume 4*). Fudan University Press, Shanghai.

Chen, Ting, Kung, James, Ma, Chicheng, 2017. Long Live Keju! The Persistent Effects of China's Imperial Examination System. SSRN. https://ssrn.com/abstract=2793790.

Chow, Gregory, 1993. Capital formation and economic growth in China. Q. J. Econ. 108 (3), 809–842.

Chu, Wenyi, 2009. The influence of family ownership on SME performance: evidence from public firms in Taiwan. Small Bus. Econ. 33 (3), 353–373.

Cunningham, Barton, Lischeron, Joe, 1991. Defining entrepreneurship. J. Small Bus. Manage. 29 (1), 45.

Danis, Wade, Shipilov, Andrew, 2002. A comparison of entrepreneurship development in two post-communist countries: the cases of Hungary and Ukraine. J. Develop. Entrepreneur. 7 (1), 67.

Demurger, Sylvie, 2001. Infrastructure development and economic growth: an explanation for regional disparities in China? J. Comp. Econ. 29 (1), 95–117.

Djankov, Simeon, Murrell, Peter, 2002. Enterprise restructuring in transition: a quantitative survey. J. Econ. Lit. 40 (3), 739–792.

Du, Julan, Lu, Yi, Tao, Zhigang, 2008. Economic institutions and FDI location choice: evidence from US multinationals in China. J. Comp. Econ. (36), 412–429.

Estrin, Saul, Meyer, Klaus, Bytchkova, Maria, 2006. Entrepreneurship in Transition Economies. Oxford University Press, pp. 693–725 chap. 27.

Fan, Shenggen, Zhang, Xiaobo, 2004. Infrastructure and regional economic development in rural China. Chin. Econ. Rev. 15 (2), 203–214.

Fan, Shenggen, Zhang, Xiaobo, Robinson, Sherman, 2003. Structural change and economic growth in China. Rev. Develop. Econ. 7 (3), 360–377.

Fei, Hsiao-Tung, 1946. Peasantry and gentry: an interpretation of Chinese social structure and its changes. Am. J. Sociol. 52 (1), 1–17.

Fei, John CH, Liu, Tsui-Jung, 1982. The growth and decline of Chinese family clans. J. Interdiscipl. Hist. 12 (3), 375–408.

Feng, Erkang, 2013. *Zhongguo Gudai de Zongzu he Citang* [*Clans and Ancetral Temples in Ancient China*]. The Commercial Press.

Feng, Tianli, Wang, Guofeng, 2010. How private enterprises establish organizational legitimacy in China's transitional economy. J. Manage. Develop. 29 (4), 377–393.

Fernandez, Raquel, 2010. Does Culture Matter? National Bureau of Economic Research Working paper 16277.

Freedman, Maurice, 1965. Lineage Organization in Southeastern China. University Athlone Press.

Freedman, Maurice, 1966. Chinese Lineage and Society: Fukien and Kwangtung. University of London, The Ahtlone Press, London.

Friedman, Eric, Johnson, Simon, Kaufmann, Daniel, Zoido-Lobaton, Pablo, 2000. Dodging the grabbing hand: the determinants of unofficial activity in 69 countries. J. Public Econ. 76 (3), 459–493.

Frye, Timothy, Shleifer, Andrei, 1997. The invisible hand and the grabbing hand. Am. Econ. Rev. 87 (2), 354–358.

Greif, Avner, 2005. Commitment, Coercion and markets: the Nature and Dynamics of Institutions Supporting Exchange. Springer, Berlin Heidelberg, pp. 727–786 chap. 28.

Greif, Avner, 2006. Family structure, institutions, and growth: the origins and implications of western corporations. Am. Econ. Rev. 96 (2), 308–312.

Greif, Avner, Tabellini, Guido, 2010. Cultural and institutional bifurcation: china and Europe compared. Am. Econ. Rev. 100 (2), 135–140.

Greif, Avner, Tabellini, Guido, 2017. The clan and the corporation: sustaining cooperation in China and Europe. J. Comp. Econ In Press.
Guiso, Luigi, Sapienza, Paola, Zingales, Luigi, 2006. Does culture affect economic outcomes? J. Econ. Perspect. 20 (2), 23–48.
Guriev, Sergei, 2004. Red tape and corruption. J. Dev. Econ. 73 (2), 489–504.
Hellman, Joel, Jones, Geraint, Kaufmann, Daniel, 2003. Seize the state, seize the day: state capture and influence in transition economies. J. Comp. Econ. 31 (4), 751–773.
Hoynes, Hilary, Schanzenbach, Diane Whitemore, Almond, Douglas, 2016. Long-run impacts of childhood access to the safety net. Am. Econ. Rev. 106 (4), 903–934.
Huang, Yasheng, 2007. Ownership biases and FDI in China: evidence from two provinces. Bus. Pol. 9 (1), 1–45.
Jia, Ruixue, 2014. "The legacies of forced freedom: China's treaty ports. Rev. Econ. Stat. 96, 596–608.
Johnson, Simon, Kaufmann, Daniel, McMillan, John, Woodruff, Christopher, 2000. Why do firms hide? Bribes and unofficial activity after communism. J. Public Econ. 76 (3), 495–520.
Johnson, Simon, Kaufmann, Daniel, Shleifer, Andrei, Goldman, Marshall, Weitzman, Martin, 1997. The unofficial economy in transition. Brook. Pap. Econ. Act. 1997 (2), 159–239.
Johnson, Simon, Kaufmann, Daniel, Zoido-Lobaton, Pablo, 1998. Regulatory discretion and the unofficial economy. Am. Econ. Rev. 88 (2), 387–392.
Kanbur, Ravi, Zhang, Xiaobo, 2005. Fifty years of regional inequality in China: a journey through central planning, reform, and openness. Rev. Develop. Econ. 9 (1), 87–106.
King, Robert, Levine, Ross, 1993. Finance, entrepreneurship and growth. J. Monet. Econ. 32 (3), 513–542.
Kling, Jeffrey, Liebman, Jeffrey, Katz, Lawrence, 2007. Experimental analysis of neighborhood effects. Econometrica 75 (1), 83–119.
Li, Hongbin, Meng, Lingsheng, Zhang, Junsen, 2006. Why do entrepreneurs enter politics? Evidence from China. Econ. Inq. 44 (3), 559–578.
Li, Hongbin, Yang, Zheyu, Yao, Xianguo, Zhang, Haifeng, Zhang, Junsen, 2012. Entrepreneurship, private economy and growth: evidence from China. Chin. Econ. Rev. 23 (4), 948–961.
Li, Lixing, Wu, Xiaoyu, 2014. Housing price and entrepreneurship in China. J. Comp. Econ. 42 (2), 436–449.
Liang, Fangzhong, 1980. *Zhongguo Lidai Hukou, Tiandi, Tianfu Tongji* (*Statistics of Population, Land and Taxes through the Ages in China*). Shanghai People's Publishing House.
Lin, Justin Yifu, Liu, Zhiqiang, 2000. Fiscal decentralization and economic growth in China. Econ. Dev. Cult. Change 49 (1), 1–21.
Lipsey, Richard, Lancaster, Kelvin, 1956. The general theory of second best. Rev. Econ. Stud. 24 (1), 11–32.
McMillan, John, Woodruff, Christopher, 1999a. Dispute prevention without courts in Vietnam. J. Law Econ. Org. 15 (3), 637–658.
McMillan, John, Woodruff, Christopher, 1999b. Interfirm relationships and informal credit in Vietnam. Q. J. Econ. 114 (4), 1285–1320.
McMillan, John, Woodruff, Christopher, 2002. The central role of entrepreneurs in transition economies. J. Econ. Perspect. 16 (3), 153–170.
McMullen, Jeffery S., Bagby, D., Palich, Leslie E., 2008. Economic freedom and the motivation to engage in entrepreneurial action. Entrepreneur. Theo. Pract. 32 (5), 875–895.
Miller, Danny, Breton-Miller, Isabelle Le, Lester, Richard H., Cannella, Albert A., 2007. Are family firms really superior performers? J. Corp. Finance 13 (5), 829–858.
Miller, Danny, Minichilli, Alessandro, Corbetta, Guido, 2013. Is family leadership always beneficial? Strateg. Manage. J. 34 (5), 553–571.
Miquel, Gerard Padro I, Qian, Nancy, Xu, Yiqing, Yao, Yang, 2015. Making Democracy Work: Culture, Social Capital, and Elections in China. National Bureau of Economic Research Working paper 21058.
Murphy, Kevin M., Shleifer, Andrei, Vishny, Robert W., 1991. The allocation of talent: implications for growth. Q. J. Econ. 106 (2), 503–530.
North, Douglass, 1990. Institutions, Institutional Change and Economic Performance. Cambridge university press.
North, Douglass, 1991. Institutions. J. Econ. Perspect. 5 (1), 97–112.
Peng, Yusheng, 2004. Kinship networks and entrepreneurs in China's transitional economy. Am. J. Sociol. 109 (5), 1045–1074.
Schmitz, James A., 1989. Imitation, entrepreneurship, and long-run growth. J. Politic. Econ. 97 (3), 721–739.
Schumpeter, Joseph A., 1934. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Harvard University Press.
Singh, Jitendra V., Tucker, David J., House, Robert J., 1986. Organizational legitimacy and the liability of newness. Adm. Sci. Q. 31 (2), 171–193.
Song, Zheng, Storesletten, Kjetil, Zilibotti, Fabrizio, 2011. Growing like china. Am. Econ. Rev. 101 (1), 196–233.
Watson, James L., 1982. Chinese kinship reconsidered: anthropological perspectives on historical research. Chin. Q. 92, 589–622.
Wei, Shang-Jin, 2000a. How taxing is corruption on international investors? Rev. Econ. Stat. 82 (1), 1–11.
Wei, Shang-Jin, 2000b. Local corruption and global capital flows. Brook. Pap. Econ. Act. , 2000 (2), 303–354.
Xu, Yiqing, Yao, Yang, 2015. Informal institutions, collective action, and public investment in rural china. Am. Politic. Sci. Rev. 109 (2), 371–391.
Zhang, Tao, Zou, Hengfu, 1998. Fiscal decentralization, public spending, and economic growth in China. J. Public Econ. 67 (2), 221–240.