

Memories of Colonial Law: The Inheritance of Human Capital and the Location of Joint Ventures in Early-Reform China*

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Abstract

Using a unique data set of Chinese foreign direct investment (FDI) contracts from the 1980s and early 1990s, we explore those mechanisms of historical persistence resulting from China's unique colonial experience. Adopting difference-in-differences as well as difference-in-difference-in-differences analysis within conditional logit, we provide evidence that foreign investors favored locating FDI in Chinese cities in which their home country had a colony in the 19th century and that a human-capital channel best explains this persistent impact of colonial experience. While alternative explanations for long-term persistence are not consistent with the empirical findings, the results suggest that legal human capital inherited from colonial times affected economic decisions after 1978. Thus, we attempt to advance the literature on history's long-lasting influence by proposing one particular mechanism of persistence—memory of legal institutions, or inheritance of legal human capital.

Keywords: historical persistence, colonial influence, FDI location, China, human capital

JEL Classifications: K00, N95, O10

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1. Introduction

Nunn (2014: 347) remarks that "In recent years, a new dynamic literature has emerged empirically examining whether historical events are important determinants of current economic performance." This literature has made great progress in documenting the lasting impact of many apparently idiosyncratic historical events. After early work focusing on the effects of European colonization,¹ the subsequent literature has branched in many directions, for example, the rise of Europe (Acemoglu et al. 2005, Voigtländer and Voth 2013), the consequences of the slave trade for African development (Nunn and Puga 2012, Nunn and Wantchekon 2011), and the current effects of pre-colonial African institutions (Gennaioli and Rainer 2007).²

Most of these studies focus on the fact of historical persistence itself, aiming to disentangle the effects of a historical event per se from the more prosaic hypothesis that geography or some other persistent variable had effects in both historical times and today. Huillery (2009) provides a fascinating example, showing that regional and functional patterns in colonial government spending in West Africa match current patterns. She provides convincing evidence that the adventitious features of colonial policy are important determinants of spending today. But when searching for mechanisms that might explain why history has such persistent effects, Huillery (2009: 206) stops at a conclusion similar to that of many papers, "I do not have a clear explanation for the persistence of public investments."

This is exactly the point that Nunn (2014: 395) stresses when examining future directions for research: "Moving forward, the second major task for the literature to tackle is to better understand channels of causality. In the past decade, we have made significant progress empirically testing whether historical events have lasting impacts....What is less clear is exactly why it matters." The central goal of this paper is to contribute to Nunn's second task, to help understand the mechanisms of persistence in one historical case.

Our example is afforded by regional patterns of joint ventures (JVs) in early post-reform China. China's history offers three distinctive features that allow us to generate insights from these patterns. First, in the 19th and early 20th centuries many cities in China were colonized by Western powers.³ The colonists established their own institutions in the colonial cities, following their own domestic models. These institutions varied significantly across Chinese colonial cities and were far different from indigenous Chinese institutions, which held sway in a majority of cities. Second, Chinese professionals living in the colonial cities accumulated human capital that was complementary to the different types of institutions set up by the colonial powers. Third, the convulsive first eight decades of the twentieth century destroyed virtually all

¹ See, for example, Acemoglu, Johnson, and Robinson, 2001, 2002; Engerman and Sokoloff, 2002; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998; North, 2009.

² See also Acemoglu and Johnson, 2005; Banerjee and Iyer, 2005; Becker and Woessmann, 2009; Dell, 2010; Feyrer and Sacerdote, 2009; Iyer, 2010; Nunn, 2008; Nunn and Qian, 2011; Nunn and Wantchekon, 2011.

³ For the sake of brevity, we use the adjective 'Western' in its colloquial sense, that is, non-Chinese. Among the colonial powers were developed countries in North America and Europe, but also Japan and Russia.

formal institutions relevant to the conduct of day-to-day legal matters connected to business issues. And the post-1978 reform years saw no efforts to revive those old institutions.

Remarkably, when China opened up to foreign investment in 1978, after three decades of minimal contact with foreigners, firms from former colonial powers had an affinity for the former colonial cities of their country. In our empirics, we establish this affinity, examining JV location choices across 205 Chinese cities. To accomplish this, we use a unique data set on all JVs established in China between 1979 and 1996. We estimate a conditional logit model that captures the choices of Western firms as they deliberated on which Chinese cities to invest in.⁴ We consider the mechanisms by which past colonial experience might influence the location of modern JVs, by examining their consistency with the data using both difference-in-differences and difference-in-difference-in-differences methods. The former isolates the preference for a country's old colonial cities; the latter shows how the strength of this preference varies across different combinations of cities, countries, and industries.

We follow Nunn (2009, 2014) in identifying four broad categories of mechanisms of persistence—institutions, human capital, culture, and path dependence in selection among multiple equilibria. We examine selection among multiple equilibria by exploiting the fact that the colonial powers not only had colonial cities but also divided the complete territory of China into spheres of influence. The defining characteristic of a sphere of influence (outside the colonial cities) was the commonly agreed principle that, within its own sphere, a specific country was to be favored in any economic activities that involved foreigners. We find no evidence that historical patterns in sphere of influence match the patterns in JV location during the 1980's and 1990's and therefore reject the multiple-equilibrium hypothesis.⁵

The hypothesis that the patterns of JV location can be explained by persistence in formal economic institutions can be quickly dismissed. Colonial institutions were completely eradicated more than three decades before the beginning of reforms. The set of formal institutions at the beginning of reforms—when colonial effects on JV location were already present—was based on a non-market model that hardly could have reflected any element of the old colonial institutions. Additionally, Western-style market-oriented institutions—which did have the possibility of imitating the old colonial institutions—were created very slowly, not having developed enough to have any significant effect in the period covered by our data. We therefore examine whether human capital and culture provide the explanations for the effects of the colonial past.⁶

⁴ The use of conditional logit on the JV data implies that formally we model the firm's choice in choosing in which Chinese city to form a JV. But implicit in the model is the possibility that Chinese cities were choosing among countries.

⁵ However, our version of this hypothesis is narrow because we assume that any long-lasting effects of the colonial powers on domestic institutions, human capital, or culture are categorized as changes in fundamentals. The dividing line between what are fundamentals and what are the permanent products of history must always be fuzzy.

⁶ We reserve the term 'human capital' for skills applicable in professional or business activities and 'culture' for tastes or preferences in the general population, while acknowledging that this is somewhat arbitrary since some definitions of the concept of culture would include inherited human capital.

JV location could be affected by relative transaction costs in different locations,⁷ which are a product of underlying factors such as complementarity between human capital in the Chinese city and the firm's human capital. Given the importance of legal expertise in establishing joint ventures, one type of relevant human capital is that relating to legal matters. Thus, if some memories of colonial legal matters survived in the city, then it could affect the stance of city officials in a manner recognizable to investors from the city's former colonial power. We examine this hypothesis in three ways.

First, we divide city-country colonial pairs into those that had civil-law colonial legal institutions and those that had common-law colonial legal institutions. As the tradition of codification and interpretation is more compatible with the more centralized political system dominating China's history (Li 2003), we hypothesize that civil-law legal human capital would resonate more with China's civil-law regime (under both the Guomindang and the PRC) and thus would survive longer than common-law legal human capital.⁸ Consistent with this, the effect of a colonial tie is larger for civil-law city-country pairs than for common-law ones.

Second, we examine whether this human-capital complementarity occurs when the legal type of the colonial institutions of the city matches the legal type of the firm's country, even though there was no city-country colonial tie. We find evidence for complementarity within these non-colonial legal ties—firms from civil-law countries have an affinity for cities that had civil-law colonial regimes implanted by any colonial power.⁹ The analogous effect is not present for common law.

Third, we examine whether this complementarity between the human capital of a city and that of a firm is more important in those sectors where transaction-cost problems loom larger, and therefore where legal-human-capital complementarities are more important. Those sectors are ones that use contracts intensively or have a greater need for external financing (Rajan and Zingales 1998; Nunn 2007). We find that both colonial ties and non-colonial legal ties are especially important in these sectors, confirming the importance of legal complementarities between firm and city.

We also examine the interaction between colonial ties and the nature of the JV's output by examining differences in the colonial-tie effects for three product types: services, differentiated goods, and standardized goods. That effect is strongest in the service sector, which is plausible

⁷ JV location will also be affected by fundamentals such as geographical characteristics, regional levels of economic activity, etc.. These are included in our empirical estimations but are not the focus of this paper.

⁸ Indeed, the eradication of common law influence from China's Republic Era has been so complete after the founding the PRC that a former judge at the International Court of Justice at Hague, Professor Zhengyu Ni, shared the grave concern that there may no longer be any qualified candidates representing China at the International Court. The loss of related human capital in common law is the combined effect of total elimination of common law education from the country's education system and severe suppression of scholars trained in the common law tradition. See the January 9, 2003 issue of Southern Weekly (in Chinese), "The Legal Elites Forgotten for 30 Years" for more detailed discussion.

⁹ Note that this cannot be explained by an affinity for colonies per se because we include city fixed effects in the estimations, which would absorb any city-specific affinity for colonies.

given that a service sector JV is most likely to have a large proportion of sales in the city of its location. Then, there are two possible reasons. First, there could be local cultural affinity for products associated with an old colony. Second, there might be human-capital complementarities between the firm and the potential buyers of the service. Crucially, the service-product effect is found for both colonial and non-colonial legal ties. These results cannot be explained by general cultural affinity alone since only the human-capital hypothesis—and not the cultural one—is applicable in the case of non-colonial ties.

Finally, we examine the influence of general cultural familiarity, using data on the size of each Western country's presence in the colonial cities at the beginning of the twentieth century. The effect of colonial population is consistently statistically significant but rather unimportant economically. Had these results shown colonial population to be of large importance in addition to the colonial tie effect, then we would have been forced to conclude that general cultural affinity is important. But this is not the case, consistent with our emphasis on the effect of inherited human capital.¹⁰

Thus, the principal conclusion of our paper is that inherited human capital is the major pathway explaining the colonial-tie effect. The empirical findings, however, do not allow us to test whether it is the Chinese officials who received the inheritance or citizens of the country of the Western JV partner. But substantial legal education received by Chinese individuals during the colonial period, both from abroad and at home, suggests that the inheritance on the Chinese side may be important. Perhaps, memories of colonial law were still present in Chinese cities and perhaps memories of how to apply law in China were present among the Western citizens.

In addition to its contribution to the more general research on historical persistence, our paper also adds to a growing literature on persistence within China. Jia (2014) shows that the old Chinese treaty-port system has impacted economic development to this day. Chen, Wang, and Yan (2014) provide empirical evidence that the spread of Protestantism in the early twentieth century generated significant positive effects on long-term economic growth, educational development, and health care outcomes. And, Lu and Tao (2009) find that the degree of family control of a business is associated with whether the region was administered by Great Britain in the late Qing Dynasty.

Because these papers on persistence in China do not identify specific mechanisms, our results can add insights to their findings. For example, since there is a considerable degree of overlap between the cities that had treaty ports and those that were colonies, our results might help explain those patterns emphasized by Jia (2014). Similarly, given that we find greater importance of inherited human capital in industries with higher contract intensity, our results

¹⁰ In Section 6, we also examine the effect of the size of the Chinese population within the colony and find that this effect is large. However, a city's colonial Chinese population does not vary across observations on firms considering that city for a JV. Hence, specifications in which colonial Chinese population is included cannot also include city fixed effects, meaning that Chinese colonial population could be simply proxying time-invariant properties of the modern Chinese city, such as current population. Thus, the interpretation of the colonial Chinese population effect is ambiguous.

could provide justification for the methodology of Lu and Tao (2009), who use administration by Great Britain as an instrumental variable for contract enforcement. Finally, Chen, Wang, and Yan (2014) argue that Protestantism has lasting effects through improvements in education and health care outcomes, and these are sectors where human-capital inheritance could be important.

Additionally, our paper contributes to the literature on the determinants of the location of JV's in China, which has in fact helped to guide our empirical specifications. We find that our results are complementary with several existing papers. Head and Ries (1996) and Cheng and Kwan (2000) cover the same time period as us, examining the core determinants of provincial foreign direct investment (FDI) and especially concluding that agglomeration effects are important. We include agglomeration explanatory variables in our analysis. Du, Lu, and Tao (2008) use conditional logit to examine the effects of institutions on the location of US investment across provinces. In contrast to our investigation, they focus on a later time period after the new institutions of post-reform China had time to develop. Using similar methods and data as in their earlier study, but adding several FDI source countries, Du, Lu, and Tao (2012) show that the effect of institutions is more important for host countries that are more distant culturally from China. Li and Park (2006) examine FDI at the province-industry level, endorsing the importance of agglomeration and institutional effects. Closest to our paper is that of Che et al. (2015) in emphasizing the historical roots of current investment (and trade) patterns by showing that Japanese trade and investment is less in those areas in which the deaths in the Sino-Japanese conflict were highest.¹¹ Since such deaths were higher outside the Japanese colonial areas, the results of Che et al. (2015) are complementary with those we present below.

The rest of this paper is organized as follows. In section 2, we describe the pertinent colonial and legal history of China. In section 3, we describe the formal structure of the conditional logit model that captures FDI location choice. Section 4 describes our dataset along with details of all other variables used in the analysis. In Section 5, we establish the affinity between Western firms and the former colonial cities of their own country. Section 6 introduces hypotheses on the mechanisms by which past colonial experience might influence the location of modern JVs, providing preliminary empirical results by examining each hypothesis individually. Section 7 examines which hypotheses are supported when competing with one another to explain JV location. We conclude in section 8.

2. Pertinent Colonial and Legal History

2.1 The Colonies and their Institutions

The modern colonization of parts of China began in 1842 with the Treaty of Nanking, imposed by the British at the end of the first Opium War.¹² Among the terms of this treaty was one that opened up five Chinese cities to the British for both foreign trade and the residence of

¹¹ Less closely related to are paper are Sharma, Wang, and Wong (2014), examining spatial linkages across provinces in FDI using data from a later time period, and Huang and Wei (2014), examining the location of FDI within one metropolitan area.

¹² See, for example, Fairbank (1978), Feuerwerker (1978), and Tai (1918) on the relevant history.

foreigners. Over the next eighty years, treaties with other foreign powers opened up many more cities in the same way. Many of the treaty ports experienced influxes of population because of their lively commerce. This created pressures on the foreign powers to provide stronger administrative arrangements for their own citizens. Thus, the Chinese authorities were forced to lease in perpetuity enclaves of some of the cities that contained treaty ports. These enclaves became self-governing foreign colonies. They raised their own taxes, provided their own (foreign-controlled) government, and applied their own administrative and legal arrangements. Chinese law was not applicable in these colonies.¹³ These early colonies were of two types, called concessions and international settlements. The former were under the control of one colonial power; in the latter, power was shared among several colonial powers.

Towards the end of the 19th century, several similar leaseholds were awarded to foreigners after diplomatic or military pressure. Zones of foreign control were also granted to facilitate the building and the management of new railway lines. These leaseholds and railway zones were also de facto colonies—self-governing foreign enclaves. Thus, the colonies were of four types, international settlements, concessions, leased territories, and railway zones. In all, there were 55 colonies under the control of 11 foreign powers. These were distributed across 29 cities.¹⁴ We refer to them as colonial cities in the following discussion. In Appendix A, we provide the details of our coding of colonial city-country pairs. Table 1 lists the colonizing powers and the cities in which they had colonies, while Figure 1 shows the location of the cities.

The colonizers determined institutional developments in their colonial cities.¹⁵ Foreigners were allowed to own property, they made the rules and regulations, and they provided security forces. Foreign law applied to all residents, even Chinese citizens. Thus in a Chinese submission to the discussions that led up to the Treaty of Versailles in 1919 there was a complaint that "If in the international settlement at Shanghai a Chinese commits a crime on another Chinese, or is sued by another Chinese, he, even though the case involves no foreigner or foreign interest, must be tried before a mixed court, wherein a foreign Assessor [or judge] not only watches the proceedings but virtually tries and decides the case." (Kotenev 1925: 274)¹⁶ Institutional connections to the colonial power were strong, with governing laws for the colonies made in the foreign capitals. Most of the foreign powers that had courts in China allowed appeal of the decisions of these courts to higher courts in the foreign country (H.M.S.O. 1926, pp. 116-

¹³ Fairbank (1978) describes the growth of foreign influence in Shanghai in the following way: "Thus was created a traders' republic with authority to tax and to police...Aggressive foreigners at Shanghai could create new institutions when the imperial officials were weak and local Chinese interests not yet entrenched."

¹⁴ We exclude Hong Kong and Macau from this accounting since in the period covered by our data these two cities were still controlled by foreign powers. The sample used in the data analysis covers 28 colonial cities. Since there was no FDI in Hailaer from 1979 to 1996, that city could not be used in the empirical analysis.

¹⁵ In addition to the references cited earlier in this section, see Huang (2001), Zimmerman (2014), and Report of the Commission on Extraterritoriality in China (1926).

¹⁶ There is a substantial literature on how Western law had helped transform the legal realm in Republican Era China, especially after the reform of the Shanghai Mixed Court in 1912, when the importance of foreign assessors came to be emphasized even more than before. See for example, NGK B2.39 (1925), pp. 61-62; and Ding (1915).

140). Although law and administration were dominated by foreigners, the number of Chinese residents in the colonies outnumbered foreigners by an order of magnitude. Therefore, in these areas a considerable number of Chinese had reason to become deeply acquainted with foreign law.

The type of law that Chinese came to learn reflected the legal system of the colonizing power. For example, Kotenev (1925 p. 166) quotes a report on civil cases in the Shanghai mixed court: "no definite rules of procedure then existed for the trial, but as the result of the efforts of many successive [English] Assessors [i.e., judges], the procedure attended more and more to approximate to that of an English court of justice. This course was followed by the German Assessors, who recognize that this procedure was the most appropriate in the circumstances in [the British settlement in] Shanghai, while the American Assessors conformed as closely as possible to the procedure of American courts." In Qingdao, a German colony, cases involving foreigners were ruled upon using German law and "The legal treatment of the Chinese was guided by a mixture of German and Chinese law, with the latter being filtered through German interpretations." (Steinmetz, 2005).

Outside the colonies, legal reforms began only in the waning years of the Qing dynasty and were of little significance for the conduct of routine legal matters related to business issues. These reforms followed the civil-law tradition, and Republican governments continued that approach and largely completed the formal process by the 1940s, but implementation was often incomplete.¹⁷ The Guomintang government produced a new German-style Civil Code in 1930, but in the midst of civil war and international conflict, this had a limited effect. For example, only half of China had reformed courts by the mid-1930's.

In the last ten years of its rule, the Guomintang took firm control of both legal education and the judiciary, emphasizing commitment to the party and thus weakening the independence of lawyers and judges. Tiffert (2011) states that "By the late 1940s, the Guomintang had effectively redefined the identity of the Chinese judiciary. The idealized Chinese judge shifted from a latter-day scholar-official worthy of the ethical burdens of judicial independence to a seasoned, technically competent cadre dutiful to the state and the ideology of its ruling party." It is worth emphasizing, however, that legal education continued to flourish during the period, despite the partisan efforts of the Guomintang government: "a great deal of independence in educational thought and a variety of foreign influences (American as well as European) could still be found before 1949" (Connor 2010). We now turn to more discussion of legal education and related human capital accumulation during Republican era China.

2.2 Accumulation of Human Capital before 1949

In his discussion of the Shanghai mixed court, Kotenev (1925) provides evidence that the experience within colonial institutions affected the practices and skills of Chinese legal

¹⁷ See Tiffert (2011) on the development of the courts under the Guomintang.

professionals. He argues that "The system applied by the foreign Assessors, or co-Judges, as they were frequently called in court records, had a certain effect upon the psychology of the Chinese Judges" and then cites a case in 1869 which gives "A most striking instance of the European methods of giving judgments introduced by the Assessors and adopted by the Chinese magistracy..." Kotenev (1925: 66). This influence continued into the Republican era and became even stronger as the colonial powers used the political turmoil as a reason to impose tighter control over the operations of the mixed court.

During the Republican era, legal reforms provided a framework of formal institutions and also led to substantial legal human capital accumulation through the provision of legal training for professionals domestically and the employment of legal professionals educated abroad. In this subsection, we present evidence that a substantial amount of legal training was available in Republican era China, both through domestic legal education and through legal training abroad. This would have resulted in a substantial accumulation of legal human capital. Moreover, the type of legal human capital accumulated in different regions was impacted by the colonial ties in the regions.

The number of legal professionals in the modern sense was close to zero at the end of the Qing dynasty, but it grew rapidly afterwards. Kotenev (1925) records that the number of Chinese lawyers registered in the Shanghai mixed-court tribunal surpassed 100 by 1915, merely a year after the court started making a list of lawyers with permission to practice in the court. And the rapid growth went on for many more years. For example, Lee (1993) shows that membership in the Chinese Bar Association of Shanghai increased by more than 500% from 1926 to 1936, and Conner (2010) documents that "By 1935 more than 10,000 lawyers were registered in China..."

Foreign influence on the Chinese legal system during the Republican era was substantial. Lee (2012) summarizes the extent to which the community of lawyers in Shanghai sought, and needed, legal human capital based on non-Chinese experience: "Despite their differences, however, the two camps [common and civil lawyers] shared...an embrace of foreign legal systems. This embrace of foreign legal systems was at odds with the rising nationalism of all elites in China from 1910 through the 1930s. The foreign nature of most of the courts and the global nature of much of the business of Shanghai at this time compelled Chinese lawyers to temper any pride in Chinese tradition with mastery of alien legal practices. The mutual respect for comparative law of both legal camps well equipped the Shanghai Bar to argue cases before the city's dozen-plus international tribunals and to service the globalized businesses that operated in the city."

Judges, prosecutors and other legal staff also played important roles in addition to lawyers in the legal system. Our data show that not only had their number increased substantially in the first half of the 20th century, but they also had impressive education levels by the standards of the time. Based on the Legal Statistical Yearbook (1936), there were in total 2508 legal personnel in high courts in China, among whom 78% had degrees in higher education either from China or

aboard. There were in total 3709 legal personnel in local courts in China, among whom more than 87% had degrees in higher education either from China or abroad. For more details, refer to Appendix Table B.1.

Data from the “Legal Statistical Yearbook (1936)” show a large number of legal professionals trained abroad, but especially in Japan in the 1930s, most likely due to Japan's relative closeness to China both in geography and culture. To be more precise, among the 93 High Court Chief Judges in 1936, 66% were professionally trained in China, 4% were trained in Europe or US, while 30% were trained in Japan. At the local court level, there were 173 Chief Judges, among whom 2% were professionally trained in Europe or the US, 8% were trained in Japan, and the rest were trained in China. The corresponding statistics for Chief Prosecutors exhibit similar patterns. The data are provided in Appendix Table B.2.

The number of foreign-trained legal professionals was undoubtedly boosted by explicit government initiatives to dispatch students and scholars abroad for legal training. Beginning in the 1870s, the Qing government began to send Chinese students to study in Western countries (Rhodes 2011). These initiatives expanded substantially during the Republican era, with the annual number of Chinese going abroad increasing from 120 in 1872 to thousands in the late 1940s.¹⁸ When it came to the choice of location for overseas education, individuals from Chinese cities with colonial ties would have been more likely to study law in countries with similar legal traditions, due to exposure to the type of western law that governed local firms. This mechanism would then have allowed the transfer of law that matched the tradition of the colonial country back to the Chinese colonial city.

While the Legal Statistical Yearbook of 1936 does not provide information for the specific types of colleges for those trained domestically, it gives the broad regions where foreign-trained professionals received their training (US/Europe and Japan). Whether we examine presidents or chief prosecutors of the high courts or both together, the proportion of officials educated abroad who had been educated in Japan relative to those educated in the US, UK, or Europe is higher in provinces that had civil-law colonies than in provinces with common-law colonies. And the same pattern holds when we examine the legal officials working in the local courts, or when we study officials working in both levels of courts.

This process was enhanced by initiatives of Westerners to establish organizations for higher learning within China. For example, the Qingdao German-Chinese University was established in 1909 with the goal of providing the whole of Shandong with German knowledge. The centerpiece of that knowledge was to be imparted by a law faculty, which the school's political promoters regarded as being the most effective means of influencing the Chinese politically (Steinmetz 2005). On the side of the common-law tradition, the American-founded Soochow

¹⁸ A Survey of Chinese in American Universities, 26-27. The total number of Chinese students coming to the United States between 1909 and 1944 was roughly 8,457, while the number coming in the years immediately after the War against Japan, 1945-49, was roughly 4,675.

Law School in Shanghai taught Anglo-American law and remained one of the best law schools in China till the late 1940s, providing the internationalized Shanghai with the legal professionals it needed (Conner 1994).

The life experience of Pan Hui Lo is particularly telling about how the foreign legal training of Chinese scholars went hand in hand with domestic legal education in China. Lo, who earned both a JD and an MA in Political Science from the University of Chicago in 1911, returned to China and taught at the Soochow University Law School in Shanghai (Mordfin 2012).

According to Conner (1994, 2010), legal education remained vibrant during the Republican era, due to broad interest from the populace. Nationally "fifty-three schools taught law in 1949, and enrollment reached a high of 155,000 in 1947." In addition to well-known law programs offered at national universities such as Tsinghua, Fudan, Sun Yat-sen, Wuhan and Nankai Universities, the city of Shanghai alone hosted at least eight law schools during the 1930s.

2.3 Legal Institutions after 1949

In the period from 1949 to 1976, all remnants of Western-style market-capitalist law were removed and, to the extent there was any substitute, replaced with Soviet-style law. Over this time, the legal system was decimated by successive political convulsions. In the 1950s, law was converted into a set of principles for conducting class struggle, and for converting what was regarded as a feudal society into a utopian communist one. These general principles saw little embodiment in precise laws, so that by the beginning of Deng's reforms there was little on the statute books. Courts and the legal profession saw a similar demise.¹⁹ During the anti-rightist movement of the late 1950s, the legal profession and the Ministry of Justice were abolished. The Cultural Revolution completed the eradication of those legal measures passed in the PRC's early days. By the end of the Cultural Revolution, no lawyers had been trained in China for 20 years. A legal system that would be recognizable anywhere in the rest of the world, even in the Soviet Union of Stalin's time, simply did not exist in China in 1979.

Legal reforms were not the top priority for the post-1978 changes even though the absence of a functioning legal system was one factor deemed responsible for the excesses of the previous years (Clarke et al. 2008). In the first stage of economic reforms, the focus was on incentives in the rural sector and the measures were administrative, not legal. The Economic Contract Law of 1981 viewed contracts through the lens of planning and was relevant only to state entities. A contract law covering individuals was passed only in 1986. The first market-economy oriented contract law was implemented in 1999, beyond the time-period covered by our data.

One significant exception to this characterization was the passage of the Law on Sino-Foreign Equity Joint Ventures in 1979.²⁰ The JV law made state-owned enterprises the only

¹⁹ See Conner (2010) on the rise, decline, and rise of the legal profession in modern China.

²⁰ *The Law of the People's Republic of China on Joint Venture using Chinese and Foreign Investment*, July 1, 1979. On the law and subsequent developments, see Brickley (1988), Potter (1993), and Zhang and McLean (1987).

eligible Chinese partners. Multiple levels of the bureaucracy had a role in approving, setting up, and monitoring the JVs. Vague in many of its pronouncements, this law was really a set of general principles. And one of the principles was to create a special regime for JV contracts, separate from domestic law. The 1979 law was somewhat clarified in regulations promulgated in 1983, amendments passed in 1990, and in the Foreign Economic Contract Law of 1985.²¹ Notably, the 1983 regulations did not allow transacting partners in JV's to sidestep domestic Chinese law by contracting around it, in contrast to the many other types of transactions that fell under the 1985 law. JV partners could name an arbitration panel in either China or the country of the foreign partner, but Chinese domestic law governed. If the favored Chinese alternative of mediation, i.e., supervised direct negotiation between the parties, and then arbitration failed to resolve disputes, the parties could file suit in a Chinese court and would be subject to Chinese legal procedures as well as Chinese law.

In sum, the legal regime surrounding Chinese JVs in the first two decades of reforms was hardly specific enough, nor so certain in its operation, to characterize JVs as entities whose behaviors were determined in the shadow of the law. Moreover, to the extent that formal institutions did play a role, it was not law that had persisted from before communist times, but law that had been created anew as economic reforms proceeded. Thus the persistence of formal institutions such as law certainly could not be the mechanism that explains the patterns that we find in our data.

However, given the sizeable number of professionals with legal training and the long lasting memories of individuals, legal human-capital accumulated during the colonial years could have persisted for many years after 1949. Moreover, the adoption of the civil law system in the Republican era would have meant that civil-law human capital might have persisted more strongly over time. We now turn to an examination of how such persistence might be detected in data on JV location after 1978.

3. A Conditional Logit Model

We now describe a model for estimation. In the early reform years, governments at different levels, through their planning commissions, played the determining role in all enterprise-related decisions. Thus, the decisions of state-owned enterprises (SOEs) were under the purview of local officials, including the decisions to form joint-ventures with foreign investors. When given the task of attracting foreign direct investment, oftentimes local governments automatically took it upon themselves to select the most appropriate SOE as the domestic partner and to search for a foreign firm brave enough to enter into a JV in China, then still an unknown entity to most of the rest of the world. Or in cases when some potential foreign investors had expressed interest in setting up a JV in the region, the local government would be in a position to choose the local

²¹ *Amendments to the Law of the People's Republic of China on Chinese-Foreign Equity Joint Ventures*, Apr. 4, 1990; *People's Republic of China Foreign Economic Contract Law*, 6 Int'l Tax & Bus. Law. 50 (1988); *Regulations for the Implementation of the Law of the People's Republic of China on Chinese-Foreign Equity Joint Ventures*, 1983-09-20.

partner. In either case, we could view Western firms as choosing between different cities rather than different enterprises.²²

We refer to a particular firm f from Western country w considering signing a JV contract in year t as f_{wt} . The set of such firms from w in year t is denoted by $F(wt)$. We further refer to a particular Chinese city as c . When considering making the decision of whether to invest in Chinese city c in year t , the utility of firm f_{wt} is:

$$U_{f_{wt}ct} = \alpha Z_{f_{wt}} + \beta X_{ct} + \gamma V_{f_{wt}ct} + \eta_{f_{wt}ct} \text{ for } f_{wt} \in F(wt), c = 1, \dots, C_t, \text{ and } t = 1, \dots, T, \quad (1)$$

where C_t is the number of Chinese cities firms consider for a JV in year t and T is the total number of time periods under study; α , β , and γ are parameter vectors; $Z_{f_{wt}}$ is a vector of variables that vary across firms (and therefore across time and countries), but not across cities; X_{ct} is a vector of variables that vary only across time and cities, but not across firms (and therefore not across countries); $V_{f_{wt}ct}$ is a vector of variables that are interaction effects of the characteristics of firms and cities, and therefore in general vary across foreign firms (and thus countries), cities, and time; $\eta_{f_{wt}ct}$ is the error term. This formulation is general enough that it could include all determinants of FDI that would normally be included in a gravity model. Thus our conditional logit formulation subsumes a basic gravity model, which would be formulated at a higher level of aggregation.²³ It is also general enough that cultural factors can be included in either X_{ct} or $V_{f_{wt}ct}$ or both.

Also note that although we focus on the utility of the Western firm, this does not exclude Chinese cities finding some benefit from particular types of firms. For example, a Chinese city might prefer a particular condition in a JV arrangement and offer it to all potential Western partners and that condition could in fact be particularly useful to specific types of Western partners, for example, those from a particular country. That is, although we frame our model as the Western firm choosing, nothing in this model precludes this choice being affected by the preferences of the Chinese city.

This is a natural application of conditional logit (McFadden 1974). Assume that any given firm chooses the single city that gives it the highest utility and that the error term $\eta_{f_{wt}ct}$ has a type I extreme-value distribution. Then the probability of city g being chosen is given by: $\frac{e^{\alpha Z_{f_{wt}} + \beta X_{gt} + \gamma V_{f_{wt}gt}}}{\sum_c e^{\alpha Z_{f_{wt}} + \beta X_{ct} + \gamma V_{f_{wt}ct}}}$. Note that the $Z_{f_{wt}}$ terms in the numerator and denominator cancel out in this expression, so that variations in firm-specific variables that are constant across cities will not affect the data that we analyze. Thus implicitly, the model contains firm fixed effects, which implies country and time fixed effects.

²² Given the multiple authorities involved in approving foreign direct investment projects in China's early reform years, Chinese enterprises were in no position to negotiate joint ventures with foreign partners unless supported by local governments.

²³ Thus, for example, our conditional logit model includes such variables as city fixed effects, country fixed effects (implicitly), the interaction of the GDP of the foreign firm's home country and the GDP of the Chinese host city's province and the distance between the Chinese city and the capital of the foreign country, all in standard versions of the gravity model.

Using data on X_{ct} , V_{fwtct} , and the choices made by firms, one can then estimate the above model using maximum likelihood (McFadden 1974). Our prime interest is in the V_{fwtct} , which capture the particular affinity between enterprises from a specific country and specific cities. The simplest of these variables, which drives our initial analysis, is *colonial tie*, a dummy variable equal to 1 if the firm's country had a colony in the city that the firm is considering for its joint venture, and 0 otherwise.

In contrast, the results relevant to the X_{ct} do not provide much information to guide the main inquiry of this paper. Even so, it is important to include the X_{ct} in the conditional logit regressions in order to counter possible omitted variable bias. First, and most important, X_{ct} contains city fixed-effects. Second, it captures the time varying characteristics of cities in the sample. We choose the specific variables in X_{ct} on the basis of the existing literature on FDI (see in particular Blonigen and Piger 2014), making our specification consistent with the existing literature on FDI location in China, reviewed earlier. These variables are discussed in the next section, which also describes the data we use for this study.

4. Data

We first define the geographical concept that is referred to as a "city" in our study, because it is the unit that identifies for us the colonial tie of any foreign firm considering a JV. We use the 3-digit level, prefectural, postal zone of the Chinese postal code system in 1996 to define a city, which gives us 271 prefectural-level cities.²⁴ We chose the prefectural level because this was the administrative level used to define the cities that were open to foreign investment in China's early reform era. If the country of the foreign firm had maintained a colony in a certain Chinese city, then we consider the firm as having a colonial tie with the city.

The geographical areas of the colonies of 19th and 20th century China were usually quite limited, much smaller than the corresponding prefectural level city in modern China. For example, the Jiaozhou Bay concession was a German leased territory in Imperial China from 1898 to 1914, located in the coastal area of Qingdao. It covered 552 square kilometers in 1914, while in 2000 the land area of Qingdao covered 10,456 square kilometers. Thus, today, the old colonial areas are to be found in the center of the current cities. Note that in some cities, there was more than one colonial area. For example, in the Hankou district of Wuhan, there were concessions granted to Great Britain, France, Russia, Germany, and Japan. In these cases, we set the colonial-tie dummy variable equal to one for all pertinent country-city pairs.

²⁴ Note that the prefectural level postal zones are not completely identical to prefectural level cities defined within the administrative classification system, but they overlap substantially. Since the old colonial areas are all located in the center of the cities and never on the border between cities, our results are not affected by this definition of prefectural level city.

Our data come from multiple sources, the most important being the FDI contract database from the Ministry of Foreign Trade and Economic Cooperation (MOFTEC).²⁵ Between 1978 and 1996, MOFTEC published information on each JV contract agreed upon and implemented by the related parties, listing the identities of the investors, industry, location, amount of contractual investment by both parties, and duration of the contract. Thus, for 1978-1996, the MOFTEC data set provides information on the whole population of JV contracts in China. After 1996, due to the substantial increase in the number of JV contracts, MOFTEC decided to publish data on only those projects above a certain threshold value of investment.

Between 1978 and 1996, there were 8,505 JV projects that were implemented. After dropping observations with missing values, there are 7,836 projects available for inclusion in the analysis. The number per year varies from 6 in 1979 to 979 in 1994. The JVs were located in 205 Chinese cities, in 63 two-digit US SIC_87 industries, and involved 55 different source countries and regions. Of the 205 Chinese cities, 21 were former colonies, whereas of the 55 source countries and regions, 10 were former colonial powers in China.

While we know in which cities the JVs eventually located, we do not know which cities they were considering when making their decisions. Thus, in all estimations we provide results for three different plausible city choice-sets. In dataset 1, the set of alternative cities in each year includes only those that had concluded joint ventures in that year. In dataset 2, the set of alternative cities includes those that had concluded joint ventures at any time during 1978-1996 (205 alternative cities in each year). In dataset 3, the set of alternative cities includes those in data set 1 plus all cities that were both officially designated as 'open' in the year and had hosted a JV at any time during 1978-1996. An open city is one that had been named by the central authorities as allowed to enjoy preferential policies in international interactions. The use of three different city choice-sets also addresses the importance for our results of a critical assumption of conditional logit, the independence of irrelevant alternatives, which we discuss explicitly in the next section.

When focusing on mechanisms of persistence, the variables of principal interest reflect three main items of information: the city in which the potential Chinese partner is located; the country from which the Western partner originates; and the sector of the JV's principal product. The Chinese city allows us to identify whether a colony was present in the city, which colonial powers had colonies in the city, and which type of legal tradition (common-law or civil-law) existed in the colonial city. The Western country allows us to identify whether the firm emanates from a country that had a colony in a particular city, and the type of legal system with which the firm is most familiar. Finally, the sector of the JV allows us to use standard data sources to characterize the nature of the JV, for example, the degree to which firms in the sector of a JV

²⁵ In 2003, MOFTEC went through a re-organization to become the Ministry of Commerce, during which the ministry also incorporated the former State Economic and Trade Commission (SETC) and the State Development Planning Commission (SDPC).

rely on external financing. We use combinations of these items of information to construct the explanatory variables.

Table 2 provides variable definitions, Table 3 presents summary statistics, and Table 4 lists data sources. While readers can refer to those tables for precise information on the variables, we include some discussion here on the most important variables to provide context for the empirical analysis that follows. We begin with the set of variables that identify the influence of foreign powers on Chinese cities, which are of chief interest. *Colonial tie* is a dummy variable equal to 1 if the city potentially hosting the JV was a colony of the country from which the potential foreign partner comes. *Colonial tie (civil law)* and *colonial tie (common law)* identify whether the city's *colonial tie* was with a civil-law country or a common-law country. Additionally, *non-colonial civil-law tie* takes the value of 1 if the potential host city of the JV was a colony of a civil-law country, and the potential foreign partner comes from a different civil-law country, and 0 otherwise. *Non-colonial common-law tie* is defined analogously.

An alternative way of measuring historical foreign influence on China is to use *sphere of influence*, an indicator equal to 1 if the city that is a potential host of the JV was in the sphere of influence of the country from which the potential foreign partner comes. *Sphere of influence* was a form of imperialism in which the imperial power claimed exclusive investment or trading privileges over a specific region of China. Five foreign powers exerted their respective influence on 18 provinces in China (MacMurray, 1921).²⁶ Figure 2 maps the sphere of influence of the five foreign powers in China, while Table 5 lists the specific regions in China under the influence of each power. A comparison between Figures 1 and 2 shows that there is a considerable difference between sphere of influence and colonial cities, with sphere of influence covering much larger areas and neither classification fully nested within the other.

Additional variables that provide information on the degree of foreign influence on Chinese colonial cities are *colonial firms*, the number of firms from a country in a colonial city between 1891 and 1921, and *colonial population*, the number of citizens of the country present in the colonial city in the same years.

Implicitly, the above discussion already defines several variables at the country and city level. Such variables include *colonizer*, which is equal to 1 if the home country of a foreign firm was formerly a colonizer of any Chinese colony city (and 0 otherwise), as well as *civil-law country* and *common-law country*, which indicates whether the country of a foreign firm is a civil law or common law country. Similarly, *colonized* indicates that the potential host city of the JV was a former colony, *civil-law colonial city* that the city was colonized by a civil law country and analogously *common-law colonial city*. These variables are used in interactions with others, in ways to be described in Section 6.

²⁶ Our classification of provinces into spheres of influence uses the treaties reported in MacMurray (1921). The treaties were signed over the period 1898-1915, with most being concluded in 1898.

We also make use of several sectoral level characteristics. The first is *contract intensity*, which is the degree to which a firm (in this case, the JV) needs to use transaction-cost-reducing mechanisms in order to construct workable relationships with its input suppliers. The second is external financing, which measures the degree to which the production of a good relies on external financing. Note that *contract intensity* and *external financing* do not vary across cities given a specific Western firm, and therefore the estimation of the effects of these variables is not possible within the conditional logit framework. However, one can examine the effects of the interaction of these variables and the various colonial-tie variables.

There are three dummy variables that define the sector of output of the JV, whether it is in services, or produces a standard or differentiated product. Again, these variables are used in interactions with other variables.

Finally, using the literature on FDI location, especially those papers on China cited in introduction, we include as control variables characteristics of cities in the sample that either vary over time or vary across the countries of potential JV partners. We follow the recommendations of Blonigen and Piger (2014) in using a parsimonious specification and include the core variables recommended by these authors. Specifically, we include in our baseline model the *GDP* of the foreign firm's home country and the *GDP* of the Chinese host city's province (both in logarithms), the *distance* between the Chinese city and the capital of the foreign country (in logarithms), as well as *open city* (taking the value of 1 for Chinese cities that were assigned certain preferential policies in foreign interactions),²⁷ and *agglomeration by country* and *agglomeration by industry*. To control for infrastructure quality, human capital level, and productivity level, we include *roads per capita*, the logarithm of total road length per capita in the city's province in year *t*, *graduates*, the logarithm of the number of college graduates per capita in the city's province in year *t*, and *average wage*, the logarithm of the average wage in the city's province in year *t*.

We also include *economic centrality*, which is an index of a city's closeness to centers of economic activities in China (or the distance to Chinese markets). For city *c* belonging to province *k*, economic centrality equals the sum over all other provinces of the ratio between provincial level GDP and the square of the distance between *c* and the provincial capital. Thus, $economic\ centrality_{ct} = \sum_{j \neq k} (\frac{GDP_{jt}}{Distance_{cj}^2})$, where $Distance_{cj}$ represents the distance from Chinese city *c* to the capital city of province *j* and GDP_{jt} is the GDP of province *j* in year *t*.²⁸

²⁷ The preferential policies were on tariffs, entry and exit of aliens, import and export of raw materials and products, land sales and leases, and financial and monetary policies. During the 1980s, China designated many "open zones" in several stages, ranging from the initial special economic zones and open coastal cities and areas, to additional inland and coastal economic and technology development zones. The variable $open\ city_{ct} = 1$ if one or more open zones or areas were designated in city *c* in year *t*.

²⁸ We also conducted the estimations controlling for a market-access measure instead of the centrality measure and obtained very similar results.

The only variable in Chinese-FDI studies that has been found to be consistently significant that we have not included is an explicit institutional variable, as in Du, Lu, and Tao (2008; 2012) and Li and Park (2006). But these studies do not include location fixed-effects, so it is entirely possible that it is the cross-sectional content of this institutional variable that drives their results. Our city fixed-effect obviates the need for inclusion of a cross-sectional institutional variable. Moreover, these studies cover a later time period than we do, after post-reform institutions had time to develop. In the early time-period that we study, institutions would have been much less important. This is indicated by the lack of suitable data on institutions, which prevents our inclusion of a time-varying institutional variable.

5. Colonial ties and their effects over time

Our first results appear in Table 6. There we present the estimates of a conditional logit model that assumes that the location of a JV is determined by the maximization of the utility function given in equation (1) of section 3. The main variable of interest is *colonial tie*, but the estimation includes the additional controls discussed in Sections 3 and 4 (the terms in X_{ct}). Our data is a repeated cross-section and all regressions explicitly contain city fixed effects, unless otherwise noted. Moreover, since the estimation can be viewed as reflecting the differential attractiveness of cities for a given Western firm in a specific year, the estimates implicitly contain firm, country, and time fixed effects (the terms in Z_{fwt}). All standard errors are clustered at the country level. The numbers of observations in the regressions are large because each Western firm is viewed as considering each Chinese city as a possible location. Taking data set 2 as an example, for each of the 7836 Western firms there are 205 city possibilities, leading to 1,606,380 observations in total.

The estimates are for each of the three data sets described in Section 4. In part, this is to address the well-known deficiency of the conditional logit model in that it assumes the independence of irrelevant alternatives (IIA): the odds of choosing alternative i relative to choosing alternative k are not affected by the inclusion of alternatives other than i or k . In the literature, one common way to investigate whether this assumption is critical is to provide estimates for different sets of alternatives and examine whether the results are robust (see, for example, Head, Ries, and Swenson (1995), Blonigen, Ellis, and Fausten (2005), and Du et al. (2008)). In the results presented below, there are no cases where the results vary appreciably across the three datasets, suggesting that violations of IIA are not important.

The specification of our model gives further confidence that our results are not affected by violations of IIA. The most likely source of violations of IIA would arise because the error terms in (1) are correlated across cities or firms, that is, closely related cities or firms have unobserved characteristics that are similar (Guimarães et al. 2004, Wooldridge 2010). However, because we are using a repeated cross-section, our specification includes both city and firm fixed-effects, either explicitly or implicitly. Thus, time-constant sources of cross-city or cross-firm correlations in the error terms are ruled out, eliminating a major doubt concerning the validity of IIA for our dataset.

To facilitate interpretation, estimates are presented as odds ratios, i.e., the coefficients reported in Table 6 are estimates of the e^{β} and e^{γ} terms of Section 3. Therefore, the numerical value of the colonial tie coefficient in Table 6 can be interpreted as approximately the ratio of the probability that a Western firm picks a city with a colonial tie to the probability that the firm picks an otherwise comparable city that does not have a colonial tie.²⁹ Consistently, all test statistics are for the null hypothesis that an odds ratio equals one.

The estimates of the colonial-tie odds ratios are significantly greater than 1 at the 1% level. Moreover, the colonial ties are economically important. The probability that a firm picked a city with a colonial tie for its joint venture is approximately 1.4 times the probability of picking a city with no colonial tie and otherwise similar characteristics. The economic importance of this effect can be placed in context by comparing the size of the colonial tie effect to the effect of being an open city. Open cities enjoyed preferential policies that facilitated and encouraged international interactions. Yet, the results of Table 6 show that the colonial link was at least as important as the preferential treatment given to open cities, the colonial-tie odds ratio being higher than that for open cities for two of the three data sets.³⁰

The results for the control variables are all in line with the expectations derived from both theory and the findings in previous papers. Moreover, most of the coefficients for these variables are significant at the 1% level, which backs the interpretation of our regression as capturing the motives of Western firms and Chinese cities as they chose matches between each other. Given that the results on these control variables are not of intrinsic interest for this paper and given that these results are consistent across all our regressions, we omit the estimates for these variables from subsequent tables, but emphasize that these variables are included in all regressions reported in those tables.

We also investigate how the colonial tie effect changes over time. The pertinent results appear in Table 7. *Time trend of colonial tie* is the colonial tie dummy multiplied by a time trend (the year of the JV contract minus 1978). The odds ratio of the colonial tie time trend is statistically significantly below 1, meaning that the colonial-tie effect diminishes over time. At the beginning of our sample period, the probability of a firm picking a city with a colonial tie is approximately 2.35 times the probability of picking a city with no colonial tie and otherwise similar characteristics. This ratio falls to 1.15 by the end of our sample period. An alternative approach to estimating the time trend is to include dummy variables for each year.³¹ The

²⁹ The approximation is more accurate the greater the set of alternatives faced by the firm is, i.e., the greater the number of cities in the data set. Since the number of cities for data set 2 is 205 in every year, the approximation is very close for our estimation. Furthermore, we find that the results for all three data sets are consistent throughout the paper.

³⁰ A fascinating example of how such colonial ties can be important is provided in the following news item from <http://news.qq.com/a/20110629/000865.htm>: "Some parts of a sewer system in a previous German concession in Qingdao needed to be replaced after being used for about a century, but the previous German company no longer exists. The Chinese company taking charge of it searched and received an email from a related German company saying that, based on German criterion, spare parts could be found within a radius of 3 meters. The Chinese company finally found well protected spare parts in a oilskin package."

³¹ As there were few joint ventures in 1979, a single dummy variable is used for 1979 and 1980.

resultant estimates, with their confidence intervals, are depicted in Figure 3, which provides a picture consistent with the results of Table 7. The colonial-tie effect is large and significant in the early years of reform and declines almost monotonically.³²

Exactly how such a time trend should be explained will depend on the specific mechanisms that produce the colonial-tie effect. Because many aspects of the Chinese economy and society evolved substantially after the beginning of reforms, multiple theories are consistent with the declining effect. For example, at the beginning of our sample period formal institutions for a market regime were virtually non-existent, but by 1996 these institutions were beginning to develop. Therefore colonial ties could be a substitute for formal institutions, and the value of the ties was eroding as institutions improved. Additionally, while few Western firms had interacted with Chinese companies in the two decades prior to the late 1970s, in the following decade a large number of westerners accumulated experience in the Chinese market and many Chinese developed ties with foreigners. The increasing familiarity of Western firms and Chinese companies with each other and the resultant transfer of human capital and cultural values could explain the declining value of colonial ties. We investigate such mechanisms in the next section.

6. Exploring the Mechanisms of the Colonial-tie Effect

We now consider possible mechanisms that could produce the remarkable correspondence between China's colonial past and JV location in the first years of reform.³³ We consider each mechanism in turn, adding each separately to the empirical specification of Table 6. This serves to highlight each distinct hypothesis. Section 7 considers all mechanisms together, analyzing which survive in a competition to explain JV location. As it happens, Section 7 is supportive of all the conclusions we reach in this section's partial analysis.

The broader theoretical context of the current investigation is summarized succinctly by Redding et al. (2011): "A central prediction of a large class of theoretical models is that industry location is not necessarily uniquely determined by fundamentals...These models predict...several steady state spatial distributions of economic activity. Which of these steady states is selected depends on either initial conditions and the history of shocks or agents' expectations." Thus, our fundamentals are all the explanatory variables in Table 6, except for colonial tie, while colonial tie reflects the peculiar 'shock' of colonialism in China and the expectations that arose from it.

There immediately arises the question of whether that colonial-tie effect could be proxying some omitted fundamentals. Colonial cities did have fundamental economic advantages relative to other cities.³⁴ Shanghai, after all, has a superb location for commerce. But our results on

³² This is similar to the pattern that Head, Mayer, and Ries (2011) find for trade between colonizer and former colony after independence.

³³ Due to the non-availability of data, one mechanism we have not been able to investigate is the effect of earlier Chinese emigration from the colonial city to the colonial country, which might then provide human capital to be used by a Western firm. However, the provision of such human capital is consistent with the general theory underlying this paper.

³⁴ See Jia (2014) for examples on the location of treaty ports.

colonial ties reflect only city-country matches: the regressions control implicitly for country fixed effects and explicitly for city fixed effects. Therefore, the colonial tie effects cannot be proxying any special features of cities that apply to all countries, or any special features of countries that apply to all cities, or any time effects. In addition, as noted above, our specification includes time-varying or cross-country-varying characteristics of cities that have been consistently important in the literature on FDI location in China.

Thus, for fundamentals to explain our results, one would have to tell a story of country-city interactions proxying pre-colonial economic fundamentals. As an illustration, one would have to argue that the British set up their colony in Amoy (Xiamen) in Imperial China in 1878 because of some peculiar economic advantages of that city that were relevant only to the British, not to the Germans, for example, and that these advantages were not to be found by the British in other places, in Qingdao, for example, which in turn had an economic attraction specific to Germans. Moreover, those pre-colonial economic fundamentals that made Amoy particularly attractive to the British would have to have survived from Imperial China and be present in modernizing China, having lasted 100 years, through the fall of the Qing Empire, the warlord era, Guomindang rule, Japanese occupation, civil war, the economic changes wrought by the PRC, and a century of changes in the world economy over the same time period. This seems unlikely for any purely economic variable other than city-country distance, which we directly control for in our regressions.³⁵ In contrast, the mechanism of the colonial-tie effect on which we focus is simply survival of knowledge developed within the colonies, some of which lasted until the early 1940s. Such knowledge is one aspect of culture, for which there are many examples in the economics literature of very long-term persistence. Indeed, in our case survival could have been very direct because some lawyers who had been educated and trained in the colonial era did participate in legal activities in the 1980s (Lee 2012).

Additionally, historical examples suggest that the location of particular colonies had much to do with the specificities of 19th century international relations, warfare, and politics, and less to do with fundamentals relevant to modern economics. For example, Amoy was a small port that had been as familiar to the Portuguese as to the British before the Treaty of Nanking, and was convenient for opium trade. The growth of Shanghai in contrast to Ningbo was primarily due to the lack of previous development in Shanghai, so that local officials were weak in contrast to those in Ningbo, which had been a flourishing center of trade from early on (Fairbank 1978). Later, when leaseholds were obtained, the absence of existing activities was as much an advantage as their presence. Qingdao was a small fishing village before it was garrisoned with Chinese troops, making it an obvious target for the Germans who at first had military, not commercial, objectives.

³⁵ We also examined the effect of the difference in average temperature between the Chinese city and the Western country, the difference in latitude, and the difference in annual rainfall. None of these variables were statistically significant and their addition did not change the colonial-tie coefficient appreciably.

To put even more flesh on this argument, we examine the details of one particular country-city pair, Japan-Dalian. This colony was established in 1905 immediately after the Russo-Japanese war, when Russia transferred the leased territory to Japan. It also became part of Japan's South Manchuria Railway Zone. It is usually assumed that Japan had designs on the natural and agricultural resources of Manchuria. Given Japan's need to import raw materials throughout the 20th century, this would seem to be a good candidate to identify any weakness in our identification assumption.

Appendix C lists the products of Japan's FDI in three periods, early in the 20th century, 1933, and within our data set. It is easy to see that there is little overlap in the products between the modern and earlier periods. In fact, a majority of the products of modern FDI could not have been produced in the early part of the 20th century: they are products of later technological developments. There is even little overlap at the 2-digit SIC level: modern FDI is spread across 19 categories, whereas 1933 FDI occurs in only 5 of these categories, and early 20th century FDI is only in 6. This example clearly supports our identification assumption that country-city colonial ties do not proxy economic fundamentals.

We therefore maintain the assumption that colonial-tie effects reflect the history of shocks arising from the idiosyncrasies of colonial location, or agents' expectations resulting from those shocks. We now turn to investigate the mechanisms that might have produced these effects.

6.1 Beliefs about the natural location of foreign activities

It is possible that memories of colonial history, passed on from older generations, encouraged government officials, say planners in Beijing, and managers of firms to believe that somehow the British belonged in Amoy and the Germans belonged in Qingdao, etc. Could the effect of colonial ties have arisen simply because people came to believe that these city-country pairs were, in some sense, natural, without anything deeper underlying those effects? We are able to investigate this hypothesis in two ways. In the following subsections, we find that only some city-country pairs, with theoretically plausible institutional and economic characteristics, evidence a colonial effect. The empirics suggests that not all city-country colonial pairs are natural locations for FDI. In this subsection, we rely on some features of the history of China's interactions with the Western powers outside the colonies, demonstrating that the colonial tie effect cannot have arisen because of some belief about the natural location of foreign firms.

Although the Western powers had their greatest effects in small parts of China, towards the end of the 19th century nearly the whole territory of China was viewed as being in the sphere of influence of one specified Western power or another. This did not imply any form of direct colonization but gave a Western country priority in investment or trading activities in its own sphere of influence.³⁶ Therefore, each Western power would have had more historical ties in its

³⁶ According to Prichard (1942), "The powers claimed and were given first opportunity in the development of specific geographical areas or spheres of influence and were granted leaseholds and railway and mining concessions, which once given to one power it was physically impossible to grant to some other power or for other powers to claim them under the most-favored-

own sphere of influence than in other parts of China. However, outside colonial cities, the Western powers undertook little institutional development. Indeed, the principle of extra-territoriality meant that outside the colonial cities, sphere of influence implied nothing about institutional arrangements. For example, within the British, Russian, and French spheres of influence, Italy had consular courts that adjudicated cases that could involve Chinese citizens (H.M.S.O. 1926). Similarly, over one-half of British Consulates—the local administrators of English law—were located outside the British sphere of influence (Coates 1988, pp. 488-9). Hence, if Chinese citizens were located within a country's sphere of influence but were not residents of a colonial city or doing business in it, they would not have any reason to know more about that country's institutions than about some other country's. If there is any effect of sphere of influence, it would have to have arisen purely from a belief that the spheres were natural domains of operation for firms from the respective Western countries.

The *sphere of influence* variable captures whether the Chinese city being considered by a Western firm for a joint-venture (JV) lies in the region that was once the sphere of influence of the firm's country. The results appear in Table 8. The odds ratios on the colonial-tie effect barely change from those in Table 6 and the odds ratios on sphere of influence are below 1 and insignificant, indicating that there is no detectable effect arising from expectations that firms from Western countries belong in specific areas of China.³⁷ The colonial-tie effect is not based on expectations of natural location. Thus, we reject the hypothesis that the colonial-tie effect arises from the mere persistence of one of a multiple of equilibrium outcomes. We now turn to explore whether the effect lies more deeply in the institutional or cultural influence that the Western powers had within their colonies.

6.2 *The persistence of formal institutions*

By using the information already presented in Section 2, it is easy to dismiss the possibility of persistence arising from institutions. No formal colonial institutions outlasted the end of the colonial period (1943) and those formal Chinese legal institutions that existed before 1949 did not survive the first two decades of the PRC. One theoretically possible scenario is that features of the colonial institutions were absorbed into local institutions in the first half of the 20th century, which were then carried over into local formal institutions in the 1950s, and then spontaneously revived in 1978 when reforms began. This is implausible. In the first two decades of the PRC there was little that resembled the institutions of a capitalist market economy to be found anywhere: all pre-existing legal institutions were abolished to be refashioned completely following the Soviet model.³⁸ The legal institutions relevant to FDI did not spontaneously surface in 1979 relying on local initiatives, but were a product of a specific central government

nation clause. Concessions like these automatically destroyed equal investment opportunities and were potentially capable of destroying equal trading rights."

³⁷ We checked whether adding a time-trend to either or both of the colonial-tie or sphere-of-influence variables altered this conclusion in any way. It does not.

³⁸ See Ye (2014), for example.

initiative, one which aimed at separating the regime for FDI from other aspects of China's legal institutions (Clarke et al. 2008). The persistence of formal institutions cannot explain the colonial-tie effect.

6.3 Human capital relevant to institutions 1: city-country effects

A related hypothesis—but one that does not rely upon the persistence of institutions—is that the colonial experience imparted legal human capital in the Chinese community of a city and this affected—via cultural inheritance—the cognitive processes of officials dealing with FDI decisions.³⁹ Whatever the structure of formal institutions, law-related processes in the modern city might have the hue of the legal system of the old colony. This could affect the productivity of a relationship between the city and any firms from the former colonial power. Perhaps, city officials are able to understand better what such firms desire when constructing agreements. Additionally, the foreign firms might recognize features of legal practice that are complementary to their own modes of functioning. This would be enhanced if employees of the Western firm had, via cultural inheritance, absorbed some knowledge about the way their legal system had been implanted in the Chinese colony. Thus, cultural inheritance on both sides of the city-country pair would reduce the transaction costs of reaching agreements.

The key to examining this theory is the recognition that its essence is that each side of a potential transaction recognizes something complementary about the way in which the other side transacts and that the resultant reduction in transaction costs varies across city-country pairs. One source of this variation would be the type of legal system present in the colonies, whether it was civil law or common law. Importantly, legal knowledge in the colonial cities would have depreciated at different rates for these two systems. Chinese legal developments (especially the importation of civil law under the Guomindang) would have reinforced the civil-law legal characteristics of civil-law cities and weakened the common-law characteristics of common-law cities. Lee (2012) points out that Shanghai, while having a large British and American presence, had one law school teaching common law and six teaching civil law. Moreover, the centralized and codified civil law resonated with both China's experience under imperial rule and China's efforts to recentralize in the 1920s and 1930s. The ideas underlying the common-law system, relying on more decentralized, less hierarchical processes, would have been much less influential in China's far-flung colonial cities. For example, juries were used in a very limited way and consular officials acted as investigators and judges, looking more like civil-law judges than common-law jurists.

To examine these ideas, we move from the differences-in-differences analysis of Section 5 to a differences-in-differences in-differences analysis. We create two variables from the original colonial-tie variable: *colonial tie (civil law)* is *colonial-tie* times a dummy variable equal to 1 if the colonizing country was a civil law country and *colonial tie (common law)* is defined analogously. (To make language less convoluted, we will refer, somewhat inaccurately, to

³⁹ Indeed, in some cases inheritance was not needed since some lawyers who had been educated and trained in the colonial era survived to participate in the legal reforms of the 1980s (Lee 2012).

common-law and civil-law cities, denoting the legal type of the city's colonial regime.) These two new variables now replace colonial tie in Table 6's specification. The results appear in Table 9. As predicted, the effect of a civil-law colonial tie is larger than the effect of the common-law tie, with the latter having an odds ratio not significantly different from one.

It is possible to go further with this analysis. If indeed there is inherited, legal-system-dependent human capital that reduces transaction costs, then the effect of this capital might not be confined to those city-country pairs that had a direct colonial relationship. It could also contribute to reducing the transaction costs when a firm from any civil-law country was considering investing in any civil-law city. To test this we use *non-colonial civil-law tie*, a dummy variable equal to 1 when a firm from a civil-law country is considering investing in a civil-law city that was not a colony of the country. *Non-colonial common-law tie* is defined analogously.⁴⁰

The results appear in Table 10. Notice that a colonial-tie variable would reflect two effects—direct knowledge within the specific city and country about each other and complementarities between city and country resulting from a shared history of the same type of legal-system. Non-colonial ties would reflect only the second of these. Our predictions are therefore that civil-law ties are more important than common-law ties and that direct colonial ties are more important than non-colonial ties. These predictions are borne out in the regression results.

The results for civil law give strong evidence that it is inherited legal human capital that accounts for the previous results. The effect of a non-colonial civil-law tie is greater than the effect of a colonial common-law tie, suggesting that familiarity of legal-styles is more important than country-city familiarity. Consider the result on non-colonial civil law ties. That estimate implies, for example, that a company from a civil-law country that did not have a colony in China, for example Denmark, is 44% more likely to start a joint venture in a city that was colonized by some other civil-law power than in a city that was not colonized by a civil-law power. In contrast, the negative coefficient on *non-colonial common-law tie* suggests that it is counter-productive for city and firm to share human capital reflecting a legal approach different from the one prevailing in China today.

6.4 Human capital relevant to institutions 2: sector-input effects

An alternative approach to exploring whether the colonial-tie effects derive from inherited legal human capital is to examine whether the effects are larger in sectors where the transaction

⁴⁰ According to the memoir of Mr. Rihua Xue, who was one of the first negotiators working for Guangzhou's Economic Development Zone during the 1980s, the U.S. firm, Pepsi, asked a Hong Kong attorney to help the company look for government representatives from Guangzhou, to discuss potential collaborations. The negotiations took several years but eventually led to the permission for Pepsi to set up a wholly owned bottling plant in Guangzhou, which was the second foreign wholly owned firm in China. We interpret the initiative to contact the Guangzhou government via a Hong Kong attorney as evidence that the U.S. firm perceived some favorable features of legal practice in Guangzhou for making investment, given that city's experience with the common law dating from the period of the British concession. See Guangzhou Economic Development Zone, Office of Policy Research (2015).

costs of FDI contracts would be particularly sensitive to the presence of human legal capital. This again is a differences-in-differences in-differences analysis. A JV has two partners, each contributing inputs to the JV's production. We have no direct knowledge of the inputs of particular JVs, but we do know the sector of the JV's product, making implementation of the general Rajan and Zingales (1998) methodology feasible.

We first examine contract intensity (Nunn 2007), which measures the degree to which a purchasing firm would have to rely upon transaction-cost reducing mechanisms in order to construct workable relationships with input suppliers. We build on the specification of Table 10, adding four variables constructed by interacting contract intensity with the four colonial/legal-system dummy variables. The results appear in Table 11.

The results for the variables already included in Table 10 change little, but the results on the contract-intensity variable add a new dimension of interpretation. While none of the odds-ratios for contract-intensity interacted with the civil law variables are significantly different from one, the corresponding coefficients for common law are statistically significant. However, the economic importance of these common-law coefficients has to be evaluated by taking into account that these are interaction effects. Recall that common-law ties were counter-productive in the results for Table 10. In fact, the results in Table 11 also evidence this negative effect. A non-colonial, common-law tie would become productive in a sector only when contract intensity is above 0.54. However, the maximum value of contract intensity in the data used for Table 11 is 0.35. This implies that while the negative effects of non-colonial common-law ties diminish with contract intensity, they are negative for all city-firm matches in our data set.

We next construct a set of results exactly analogous to those in Table 11 using a measure of the degree to which production of a good requires external financing (Ciccone and Papaioannou 2009).⁴¹ JV contracts that are more dependent on successful external financing would be more dependent on the presence of human capital relevant to financial-legal issues. The results appear in Table 12. Non-colonial common-law ties are on average counterproductive since the mean of the external-financing variable is zero. A non-colonial common law tie would become productive in a sector where external financing is equal to 0.78, but the maximum value of external financing in our data set is 0.55. This implies that while the negative effects of non-colonial common-law ties diminish with the need for external-financing, they are still counter-productive for all city-firm matches in our data.

6.5 Cognizance in the general population: cultural affinity or inherited human capital?

Cultural memories might be relevant for a larger population, rather than just those held by the local and firm officials dealing with contractual details. The culture of the general populace of the city might influence the demand for the products of the JV, but this effect will vary with the nature of the JV's product. We divide products into three types, services, differentiated

⁴¹ This is an update of Rajan and Zingales' (1998) measure of industry reliance on external finance, which is defined as 1 minus industry cash flow over industry investment. Our measure is normalized to have mean zero.

goods, and standardized goods. These product types have different customer bases. The service sector will have sales that are primarily local, relying on personal contact. Standardized goods will have broader regional or even national markets. For these goods, specialized transactional arrangements are not required. Differentiated goods can also be sold outside the locality, but require specialized transactional arrangements.

We therefore use three new dummy variables indicating the type of output of the potential JV. For example, *differentiated product* is a dummy variable equal to one if the JV produces a differentiated good as classified by Giannetti, Burkart, and Ellingsen (2011). The other two dummy variables are defined analogously. These variables are interacted with the colonial-tie and non-colonial tie dummy variables. The method is the same as the difference-in-difference-in-differences of the previous two subsections. The results appear in Tables 13-15.

The large contrast is between the results for services and those for the other two types of goods. The colonial-tie effect is present for services but not for the other two. The effect for services is strong: for example, the estimated odds ratio is 4.42 for a civil-law colonial tie for a firm in the service sector. Note that the extra colonial-tie effect in the service sector could occur for two reasons. First, since the output of that sector is sold locally, it might simply show some local cultural affinity for products that can be associated with the old colony. Second, also since the output is sold locally, the initiators of a JV might have predicted that it would be easier to sell the output of a JV with a colonial tie, since there would be more complementary human capital among the potential buyers of the output for colonial-tie JVs than among potential buyers for JVs without colonial ties. Neither of these reasons apply to the two other product types because their sales would not be concentrated in the local market.⁴²

Importantly, the first of these arguments does not apply to the results on *service products* interacted with non-colonial legal ties. By definition, the local populace is not especially acquainted with a country having a non-colonial tie. It is only the second of these arguments that can apply. For example, a foreign firm from a civil-law country that is considering forming a JV would recognize in a civil-law colonial city a group of potential customers for service products who have some knowledge of civil-law procedures. Therefore, the firm would predict less difficulty in selling the JV's output. This is a crucial observation for the general conclusions of this paper: inherited human capital is consistent with the results in Tables 13-15, which cannot be explained by cultural affinity.

⁴² One might ask how this argument could explain an odds ratio on *standardized products*non-colonial common law tie* that is significantly below 1. This would follow from comparative advantage reasoning in an environment where, for whatever reason, there is competition between Western firms wanting to sign a JV contract in a particular city. Contrast two firms that are identical except for the sector in which their proposed JV will operate: A is in the service sector and has city ties (either colonial or non-colonial); B is in the standardized-goods sector and has the same type of city ties. Then A could offer better terms to the city than B because A would see that the culture or the human capital of the city would aid it in selling the products of the JV, whereas B would not see such advantages because its sales are nationwide. B would suffer a comparative disadvantage in the competition to seal JV contracts in that city.

6.6 *Culture, possibly human capital*

Attitudes to foreigners can affect interactions for reasons other than the complementarities arising from inherited human capital (Guiso et al. 2009). There are several mechanisms by which this could have occurred in the case of colonial ties. Chinese officials might have preferences over interactions with businesses from an old colonizer because of cultural references to the colonizer within the city or stories about the colonizer inherited from ancestors.⁴³ An analogous preference could exist on the Western side: perhaps the firm or its officials, or their ancestors, had past experience in the colony. One example is AIG's returning to China in 1992 as the country's first foreign life insurance company. Morris Greenberg, its then president, even asked to move back to the same building in Shanghai where AIG's precursor, AIA, was housed. This was a pure preference effect.

Most models of the replicator dynamics of culture stress the size of the interacting populations as determining the speed and extent of the spread of culture. The more adherents to different cultures there are, the more likely there will be cultural interchange and learning. To examine the possible influence of cultural familiarity, therefore, we use data on the size of each Western country's presence in the colonial cities in the early twentieth century.

The population and firm data are from a source that focused upon treaty ports, reporting foreign population by country, the number of foreign firms by country, and the Chinese population within the treaty port.⁴⁴ The area of a treaty port was always much smaller than the area of the current Chinese city. Sometimes there were two or three treaty ports in one city in which the citizens of a specific Western country could be living. Thus, we sum over all treaty ports in a single city to find both the city's population and its number of firms from any specific Western country. Because the data on population and firms are on treaty ports and not on colonies, and because there are gaps in these data even for treaty ports, the sample of cities included in the current analysis is considerably different from the sample used in the previously reported regressions.⁴⁵

⁴³ These preferences can be either positive or negative as Che et al. (2015) find in the case of the areas that Japan invaded during World War II. However, most of the areas analyzed by Che et al. (2015) were not Japanese colonies in the sense in which we use the term.

⁴⁴ See Mao, J., et al. (2001). This source reports on inhabitants and firms in the years 1891, 1901, 1911, and 1921. We use the maximum values over the four reporting years.

⁴⁵ From 1843 to 1930, there were 110 treaty ports, distributed across 77 cities (using the 1996 definitions). Only 62 of these 77 cities are included in the cities used in our empirical exercises. (Fifteen of the original 77 cities are either not in modern-day China or had no FDI in the relevant time period.) We have historical (1891-1921) data on population and firms for 37 of these 62 cities. These 37 cities are by far the most important of the 62. Of the 25 cities included in our sample of FDI cities that contained treaty-ports and on which we do not have population and firm data, we included 19 in the regressions, assuming foreign firms and populations were zero, because in these 19 cities, foreign influence was likely to have been limited. (6 were cities that were opened voluntarily by the Chinese government, without foreign influence; 6 were treaty port cities only after 1921; 7 were in areas of China that were underdeveloped and less populated in the first decades of the 20th century, that is, in Xinjiang and in provinces north of the Great Wall.) We dropped the remaining six of those 25 cities from the regression analysis, because they were important enough that it would be inappropriate to assume that the foreign firms and population in these cities could have been insignificant. (These cities are Zhanjiang, Shenyang, Siping, Tieling, Changchun, and Qiqihaer.) There are also four cities that are included in our sample of FDI cities that were not treaty port cities—and therefore on which we have no firm and population data—and which were important enough to have a significant foreign presence. Thus, we treat the population and

Table 16 reports the results examining the effect on FDI location of the number of firms from a Western country operating in the city in the early twentieth century and the number of people from the Western country residing in the city at the same time. Fixed effects ensure that the results do not reflect current city or country size. The estimated effects of firms and population are effects over and above the colonial-tie effect. Although the odds ratios are significantly different from one, the economic effects of firms and population are only large in the upper-end of the distribution of the observations on these variables. For example, consider a city with a number of firms from a specific country that is at the 95th percentile of the distribution of numbers of firms in the sample of country-city pairs with a foreign presence. That city would only have a probability of being chosen by the firm that is 13% more than the probability for a city that had no foreign firms in colonial times.⁴⁶ The analogous figure for foreign population is 9%.

There is another population relevant to cultural transmission, the Chinese population living within the limits of the treaty port or colonial territory. This was a small subset of the population of the whole Chinese city, since the treaty port areas or colonies were narrowly subscribed portions of much larger cities. To include this Chinese population in the regressions, we must remove city fixed effects. Hence, the results in Table 17 can only be suggestive of the effect of the historical Chinese population, since now there are undoubtedly omitted-variable biases. Again, although the odds ratios are significantly different from one, the economic effect of the Chinese population is only large in the upper-end of the distribution of our observations on the Chinese population variable. For example, a city with a Chinese population that is at the 95th percentile of the distribution of Chinese population in the sample of city-country pairs with a foreign presence would have a probability of being chosen by the firm that is 72% more than the probability for a city that had no Chinese population in colonial times.

7. The Mechanisms Considered Simultaneously

For clarity in exposition, we introduced a variety of mechanisms of persistence in sequence, analyzing each separately. We now use the rigorous procedure of including all different mechanisms in a single regression. Tables 18-20 include all mechanisms and their constituent variables, with the only exception being beliefs about the natural location of foreign activities, since sphere of influence had no effect in Section 6. We group the variables into five conceptual categories that correspond to the broad theoretical mechanisms previously identified. In the

firm data as missing for these cities and omit them from the regressions that include the population and firm variables. (These cities are Beijing, Fushun, Anshan, and Benxi.) Finally, we do include the cities of Yantai and Dalian in the sample for the current set of regressions even though we have no firm and population data on their colonies, Weihaiwei and Lüshunkou, which basically served as naval or military bases. The reason for this is that we do have data on foreign firms and population in the port of Dalian (Dairen), which we use as a proxy for Dalian's historical firm and population data, and we do have data on Yantai's two former treaty ports (Lungkow, Chefoo), which we use the total of populations and firms in these two treaty ports as proxies for Yantai's historical firm and population data.

⁴⁶ To emphasize, this is at the 95th percentile of the distribution of the set of observations where there was any presence in treaty-port times of people from the country from which the firm considering the JV comes. This is a much smaller sample than used for the regressions and by definition includes only observations in which the population variable is positive.

following, we focus only on the results for dataset 1 in Table 18, since the results for the two other datasets are similar in all ways. We also focus mainly on comparing the results in Table 18 with the corresponding ones in Section 6 since that section already provided interpretation. As it happens, none of the central conclusions reached so far need modification.

Column 1 of Table 18 uses the set of observations that includes most of the variables previously discussed in Section 6. Then, columns 2-4 add variables that are not available for all observations in this data set, thereby successively reducing sample size. Column 1 includes variables on colonial ties, the legal system, and industry product type. Column 2 introduces variables characterizing the input requirements of the JVs, necessitating the loss of service-sector observations since the contract intensity and external financing variables are not available for this sector. Columns 3 and 4 repeat columns 1 and 2 except for the addition of the firm and population variables, which requires a further loss of observations.

The coefficient of colonial tie (common law) is still smaller than the coefficient of colonial tie (civil law). However, now the overall effects of legal and colonial ties are composites. For example, in column 1, the effect of colonial tie (civil law) is the direct effect plus the effect via interactions with the differentiated goods and service sector dummy variables. Calculating these effects at the means of these dummy variables, the composite odds ratio on colonial tie (common law) is 1.16 and the analogous value for colonial tie (civil law) is 1.77. The corresponding composite odds ratios for non-colonial ties are 1.56 for civil law and for 0.81 for common law. This pattern is repeated in all columns of Table 18, reinforcing the conclusions made in subsection 6.3 that civil-law ties are more important than common-law ties and that direct colonial ties are more important than non-colonial ties.

For variables related to product sectors, the results are robust, except that the coefficient of the interaction between contract intensity and non-colonial common law tie decreases in magnitude and significance. But this reinforces the previous conclusion that non-colonial common-law ties are never productive.⁴⁷ Given the results in column 2, a non-colonial, common-law tie would become productive in a sector where contract intensity is equal to 1.7. However, the maximum value of contract intensity in our data set is 0.35, implying that while the negative effects of non-colonial common-law ties diminish with contract intensity, they are still counter-productive for all city-firm matches that we observe. The results in column 2 and 4 reinforce the previous conclusion that the civil law heritage is a general one, not specific to specific industries. In contrast, the effect of common-law heritage is quite industry specific, with industries that rely more on transaction-cost-reducing mechanisms less likely to be comparatively disadvantaged by such a heritage.

⁴⁷ Since these composite results are based on regressions with many variables, and since some of our evidence is in the form of non-significant coefficient estimates, we examined whether any non-significance could result from high degrees of multicollinearity. The standard approach in such an examination is to examine whether variance-inflation factors (VIFs) are greater than 5. Our results would remain qualitatively the same, if we removed from consideration any variables whose VIFs were greater than 5.

The effect of the number of colonial firms is weaker after we add other mechanisms into the regression.⁴⁸ However, the estimate of the coefficient of colonial population is robust. Using column 3 as an example, the coefficient of colonial population is 1.15, implying that a city having a colonial population from a specific country that is at the 95th percentile of the distribution of colonial population would only have a probability of being chosen by the firm that is 8.1 % more than the probability for a city that had no colonial foreign population. The corresponding estimate in Section 6 is 9%.

Comparing columns 1 and 2 of Table 18 to columns 3 and 4, the addition of the population variables does not cause any change in the previous interpretation of the results. For example, the odds ratios on the interactions of external financing and colonial tie (common law) and of contract intensity and colonial tie (common law) do change in magnitude between columns 2 and 4, but both odds ratios are significantly greater than unity in both specifications.⁴⁹

In sum, our conclusions from Section 6 remain intact when examining the various mechanisms within a single estimation framework.⁵⁰ This in itself is a test of the robustness of results in the face of variations in specification and datasets, thereby increasing the confidence in those results.

8. Conclusion

Using a unique data set on China's foreign direct investment contracts implemented in its early years of economic reform, we demonstrate that foreign firms had an affinity for those Chinese cities where the investors' countries had a colonial presence. These findings are consistent with many results in the existing literature that show the persistent impact of historical events on current economic performance. However, we go beyond this literature in examining which specific mechanisms lead to the historical persistence.

⁴⁸ We do not include the historical Chinese population of the city in the regressions because the estimated coefficient on that variable could well be biased because city fixed effects cannot be included in a regression that contains a city-level variable that does not vary either across time or across countries. In regressions not reported here, we amend the specifications of columns 3 and 4 of Tables 18-20 by dropping the fixed effects and including the historical Chinese population. The magnitude of the coefficients on Chinese population are similar to those in Tables 18-20 and the estimates of the coefficients of all other variables remain similar to those in Tables 18-20.

⁴⁹ In fact, this difference seems to be due to the change in sample size rather than in addition of the population variables. When running the regressions analogous to those in columns 1 and 2 with the smaller sample and then adding colonial firm number and colonial population into the regression, the results change little.

⁵⁰ Although the results on the interaction between differentiated products and common-law ties are different from those reported in Section 6, this is more cosmetic than substantive. In column 2 the odds ratio of the interaction between differentiated product and colonial tie (common law) is below unity. This is purely an artifact: Differentiated products exhibit high levels of contract intensity and greater needs for external financing. The addition of the latter two variables in column 2, which have odds ratios greater than one for common-law ties, accounts for the estimates related to differentiated products. For example, one can use column 2 to calculate a compound effect resulting from a change in industry from standardized product to differentiated product. This compound effect is the direct effect of the differentiated product industry plus the effect of the higher rates of contract intensity and external financing in differentiated product industries times the effect on location choice of the higher rates of contract intensity and external financing. The ratio between the odds ratio of the compound effect of differentiated product when a colonial tie (common law) is present and the odds ratio when it is not present is greater than one, consistent with standard results in the literature on the greater significance of transaction-cost reducing mechanisms—in our case colonial ties—in differentiated product industries (Rauch 1999).

Following Nunn (2009, 2014), we explore four mechanisms of historical persistence: domestic institutions, human capital, culture, and path dependence in the selection among multiple equilibria. Among these mechanisms, we find robust evidence in support of only the human-capital channel. While a broader cultural affinity is consistent with some of our results, it cannot explain many of the significant effects we uncover. We fail to find any evidence in support of the hypothesis of selection from multiple equilibria. The channel of persistence of domestic institutions is easily dismissed given the history of these institutions.

These findings help shed light on the specific channels that account for the long-term impacts of historical events, thereby contributing to the literature that has focused on the presence of historical persistence. For example, our approach can help to explain why Keller et al. (2013) find that Shanghai's FDI in 1921 has explanatory power for Shanghai's current trade patterns. Similarly, the mechanism that we have identified is consistent with the finding of Head et al. (2015) that there are heightened trade levels between old Chinese colonial cities and former colonial powers, whether or not the city was actually a former colony of the power. More broadly our results could provide one reason why China had long-lasting effects from the old Chinese treaty-port system (Jia 2014) and from Protestantism (Chen, Wang, and Yan 2014).

The findings in this paper highlight the importance of inherited human capital in accounting for the persistent influence of historical events. However, additional research is needed to ascertain whether the channel of human capital is important in explaining persistence in other countries, or whether its prominent role is only limited to China, a country where education has been highly valued throughout history.

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Appendix A: The Coding of City-Country Pairs as Colonies

The coding is primarily based on Johnstone (1937). That source lists four types of jurisdictions:

- A. International Settlements
- B. National Concessions
- C. Settlements without Chinese government consent
- D. Settlements with Chinese government in full control

where 'settlements' was used if foreign powers shared equal rights and 'concessions' if only one foreign power had special rights. In defining our colony variable, we included only the first two. The logic of that decision follows.

In settlements without the Chinese government's consent, "foreigners congregated in an area and set up a quasi-municipal organization, assessing themselves for the upkeep of roads, sanitation, etc., with the tacit but not explicit consent of the Chinese government." (Johnstone 1937). These were informal settlements in which the level of authority of the foreigners did not reach that of a colonial government.

Settlements with Chinese government in full control comprise small parts of cities where foreigners wanted to do business and the Chinese government set aside areas for foreigners to live. But the Chinese government controlled these settlements: "the Chinese government retained full jurisdiction as to taxation, policing, etc. Gradually these settlements were absorbed into the Chinese city, and they cannot now be distinguished as separate areas." (Johnstone 1937).

Regarding National Concessions, we take Johnstone (1937) as our major source. Johnstone (1937), whose analysis is hardly rigorous, classifies the concessions into four different categories: granted, never formally recognized, granted but never taken up, and present (i.e., 1937) status in doubt. We include the concessions with the status of granted and exclude the concessions with the status of granted but never taken up or never formally recognized. For those national concessions whose status was in doubt for Johnstone, we referred to later sources (Yan 1955 and Fei 1991). Since neither Yan (1955) nor Fei (1991) include Yochow, we did not include it as a colony. We include all other national concessions whose status was in doubt for Johnstone, since at least one of Yan (1955) or Fei (1991) mentions them (and in a majority of cases both do so).

Johnstone (1937) listed only two international settlements, in Shanghai and Amoy (Xiamen). In our data coding, we treat these two settlements as if they are colonies of both the UK and the USA because these two powers were primarily responsible for the formation of these two settlements and then dominated governance there throughout the colonial period. For example, in the Shanghai International Settlement, all of the 56 chairmen of the Shanghai Municipal Council from 1854 to 1941 were from either Great Britain or the US. Britain and the US also had the largest number of seats on the Council and headed all the municipal departments.

Similarly, in the Amoy International Settlement the Chairmen of the Kulangsu Municipal Council were either from Britain or the US in 34 of the 39 years preceding 1941.

In determining which city-country pairs can be classified as colonies due to leasehold status, we rely on Wang (1957). In determining which city-country pairs can be classified as due to their status as railway zones, we rely on Tang (1957), ManshiKai (1988), and Tan (2016).

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Appendix B: Education Levels of Court Personnel in China, 1936

Table B.1: Education Level of Legal Staff

Legal Staff with all level education (high level, middle level, and primary level)									
Court	Total Legal Staff with high level education								
	Total	Total	Special education	Law school			Non-Law School		
			<i>Domestic</i>	<i>Domestic</i>	<i>Euro-US</i>	<i>Japan</i>	<i>Domestic</i>	<i>Euro-US</i>	<i>Japan</i>
	No. of Legal Staff								
High Court	2508	1944	127	1430	13	96	271	4	3
Local Court	3709	3227	396	2450	12	83	285	0	1
% of total Legal Staff									
High Court	100%	78%	5%	57%	1%	4%	11%	0%	0%
Local Court	100%	87%	11%	66%	0%	2%	8%	0%	0%

Table B.2: Education Level of Chief Judge

Chief Judge with all level education					
Court	Total	Chief Judge with high level education			
		Total	<i>Domestic</i>	<i>Euro-US</i>	<i>Japan</i>
No. of Legal Staff					
High Court	93	93	61	4	28
Local Court	173	176	159	3	14
% of total Legal Staff					
High Court	100%	100%	66%	4%	30%
Local Court	100%	100%	92%	2%	8%

Appendix C: The Products of Japanese FDI Projects in Dalian, Over the 20th Century

SIC 1987	1979-1996	1906-1914	1933
9	aquaculture, aquatic products		
20	oil, plant protein, noodles, vegetables, aquatic products, livestock, coffee, bread	bean products, rice, oil,	
22	towels and embroidery		cotton, yarn, hemp prods.
23	clothing materials, clothes,		
24	molds	wood products	
26	corrugated cardboard boxes		paper
27		printing	printing, newspaper
28	polyfluoroethylene, synthetic resin products	chemicals	
30	plastic packaging material, plastic products		
31	water mink clothes and products		
32	building materials and accessories, cement	cement	glass products
33	ball screws and related products, steel structure products		
34	valves		
35	excavator/bulldozer sheet metal, CNC machine tools, nuclear power plant equipment, petrochemical equipment, refrigeration compressors, power distribution machinery		
36	TVs, communication connectors, picture tubes, audio components and molds, optical connector movements, VCRs, circuit boards, automotive electronic equipment, power distribution switches, automatic control equipment, electric tools, electronic parts for water valves		
37	motors	ships, railway equipment,	ships
38	control and detection instrumentation, cameras, firearms		
42	cargo loading, storage and transportation		
49	industrial gases	electricity	water service
54	restaurants and shops		
58	restaurants		

References for Appendix C:

For 1906-1914: Wang, J. (1957). *Zhongguo jin dai gong ye shi zi liao. di 2 ji. 1895-1914* (History Materials of Modern China, Volume 2, 1895-1914). Beijing: Science Press.

For 1933: Wu, B. (1947). *Guo min suo de gai lun* (China National Income). Shanghai: Zheng Zhong Press.

Figure 1: Location of the Colonial Cities



Figure 2: Foreign Spheres of Influence

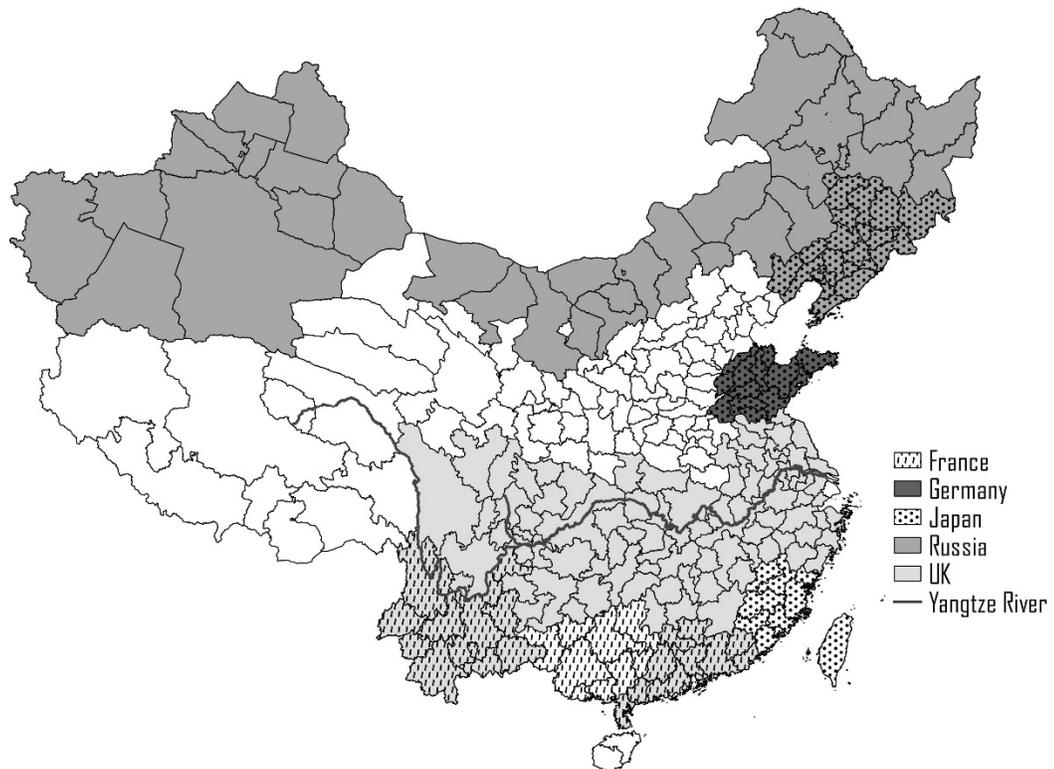


Figure 3: Colonial-tie Effect over Time

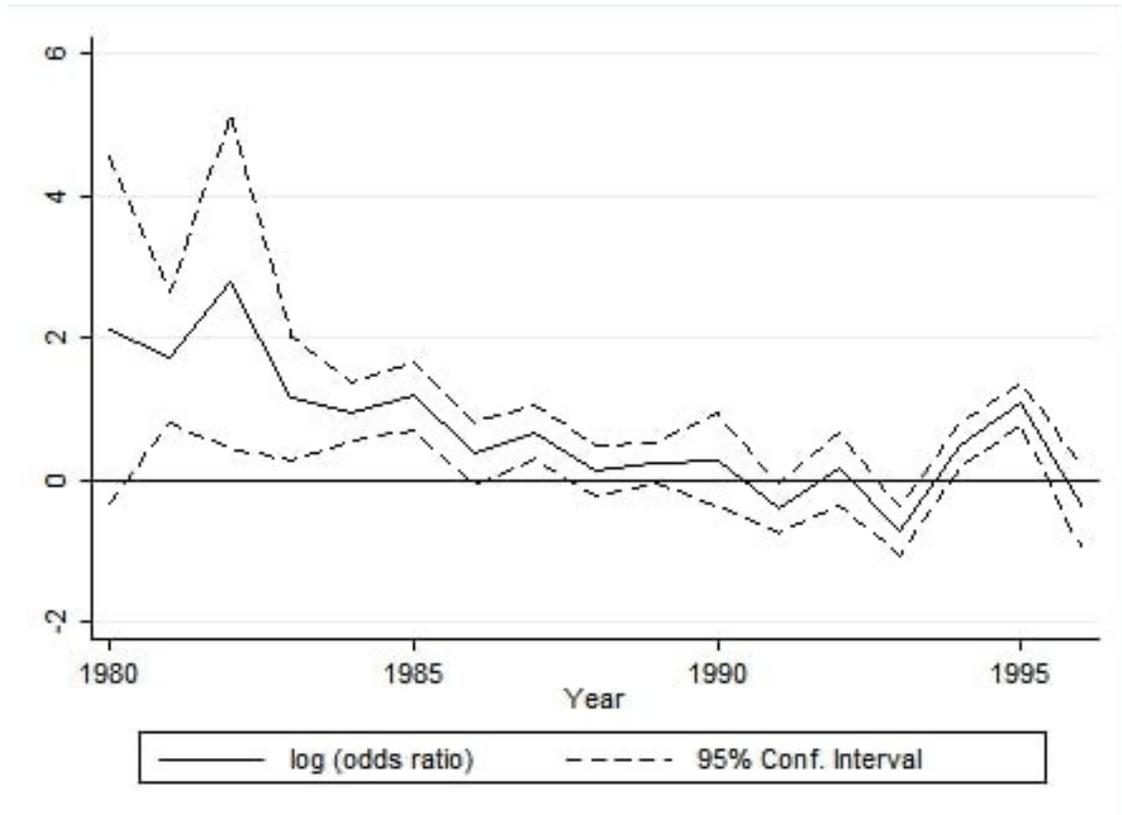


Table 1: Colonial Ties

Colonial Power	No. of Colonial Cities	Colonial Cities
Austro-Hungary	2	Beijing, Tianjin
Belgium	2	Beijing, Tianjin
UK	10	Beijing, Guangzhou, Hongkong, Jiujiang, Shanghai, Tianjin, Wuhan, Xiamen, Yantai, Zhenjiang
France	6	Beijing, Guangzhou, Shanghai, Tianjin, Wuhan, Zhanjiang
Germany	4	Beijing, Qingdao, Tianjin, Wuhan
Italy	2	Beijing, Tianjin
Japan	18	Anshan, Beijing, Benxi, Dalian, Dandong, Fushun, Hangzhou, Qingdao, Shashi, Shenyang, Siping, Suzhou, Tianjin, Tieling, Wuhan, Yingkou, Changchun, Chongqing
Netherlands	1	Beijing
Portugal	1	Macau
Russia	8	Beijing, Dalian, Haerbin, Hailaer, Mudanjiang, Qiqihaer, Tianjin, Wuhan
Spain	1	Beijing
U.S.A	4	Beijing, Shanghai, Tianjin, Xiamen

Table 2: Definitions of Variables

City-Country Interactions	
$Colonial\ Tie_{f_w c}$	Dummy variable, equal to 1 if the potential location of the JV, city c , was a colony of country w , the country of foreign firm f .
$Colonial\ Tie\ (Civil\ Law)_{f_w c}$	Dummy variable, equal to 1 if the potential location of the JV, city c , was a colony of civil-law country w , the country of foreign firm f .
$Colonial\ Tie\ (Common\ Law)_{f_w c}$	Dummy variable, equal to 1 if the potential location of the JV, city c , was a colony of common-law country w , the country of foreign firm f .
$Non\ Colonial\ Civil\ Law\ Tie_{f_w c}$	Dummy variable, equal to 1 when a firm from a civil-law country is considering investing in a civil-law colonial city that was not colonized by the firm's country.
$Non\ Colonial\ Common\ Law\ Tie_{f_w c}$	Dummy variable, equal to 1 when a firm from a common-law country is considering investing in a common-law colonial city that was not colonized by the firm's country.
$Sphere\ of\ Influence\ Tie_{f_w c}$	Dummy variable, equal to 1 if the potential location of the JV, city c , was in the historical sphere of influence of country w , the country of foreign firm f .
$Colonial\ Firms/100_{f_w c}$	Number of firms from foreign country w located a century ago in the potential location of the JV, city c , in modern China divided by 100. (Maximum of the number of firms in the years 1891, 1901, 1911, 1921.)
$Colonial\ Population/10000_{f_w c}$	Number of inhabitants from foreign country w resident a century ago in the potential location of the JV, city c , in modern China divided by 10,000. (Maximum number of inhabitants in the years 1891, 1901, 1911, 1921.)
Country Characteristics of Foreign Partners	
$Colonizer_{f_w}$	Dummy variable, equal to 1 if the home country w of foreign firm f was formerly a colonizer of any Chinese colony city.
$Civil\ Law\ Country_{f_w}$	Dummy variable, equal to 1 if the home country w of foreign firm f is a civil law country or a country with mixed systems of civil law and common law.
$Common\ Law\ Country_{f_w}$	Dummy variable, equal to 1 if the home country w of foreign firm f is a common law country or a country with mixed systems of civil law and common law.

Table 2 continued

City Characteristics of Chinese Partners	
<i>Colonized_c</i>	Dummy variable, equal to 1 if the potential location of the JV, city <i>c</i> , formerly had a colony.
<i>Civil Law Colonial City_c</i>	Dummy variable, equal to 1 if city <i>c</i> was colonized by any civil-law country.
<i>Common Law Colonial City_c</i>	Dummy variable, equal to 1 if city <i>c</i> was colonized by any common-law country.
<i>Chinese Population 1921/10000_c</i>	Chinese population inside the treaty ports of the potential location of the JV, city <i>c</i> , in 1921.
Sector Characteristics of Joint Ventures	
<i>Contract Intensity_i</i>	The cost-weighted proportion of differentiated inputs in sector. Original data is from Nunn (2007), which was based on the U.S. input-output tables in 1996 according to the 3-digit ISIC Rev. 2 classification. We use the 2-digit US SIC 87 classification for the industry classification, converting the industry classification from 3-digit ISIC Rev. 2 to 2-digit US SIC 87 classification using the Appendix of von Furstenberg (2006). Contract Intensity is demeaned.
<i>External Financing_i</i>	The industry-level median of the ratio of capital expenditure minus cash flow to capital expenditure. The original data are from Rajan and Zingales (1998) reflecting the information for U.S. firms using the 3 or 4-digit ISIC Rev. 2 classification. We convert the industry classification from 3 or 4-digit ISIC Rev. 2 to 2-digit SIC 87 using the Appendix of von Furstenberg (2006). External financing is demeaned.
<i>Service Products_i</i>	Dummy variable, equal to 1 if the sector produces service products. Original data is from Mariassunta Giannetti & Mike Burkart & Tore Ellingsen (2011).
<i>Differentiated Products_i</i>	Dummy variable, equal to 1 if the sector produces differentiated products. Original data is from Mariassunta Giannetti & Mike Burkart & Tore Ellingsen (2011).
<i>Standardized Products_i</i>	Dummy variable, equal to 1 if the sector produces standardized products. Original data is from Mariassunta Giannetti & Mike Burkart & Tore Ellingsen (2011).

Table 2 continued

Control Variables	
$GDP_{fwt} * GDP_{ct}$	The logarithm of GDP (in millions of 1990 International USD) in country w in year t times GDP (in 100 million Yuan) in the province where city c is located in year t .
$GDP\ per\ Capita_{fwt} * GDP\ per\ Capita_{ct}$	The logarithm of GDP per Capita (1000 1990 International USD) in country w in year t times GDP per Capita (in 10,000 Yuan) in the province where city c is located in year t .
$Distance_{fwc}$	The logarithm of the distance (in km) between Chinese city c and the capital of foreign country w .
$Economic\ centrality_{ct}$ $(\sum_{j \neq k} (\frac{GDP_{jt}}{(Distance_{cj})^2}))$	An index of the distance to centers of economic activity in China (or distance to Chinese markets). Since we have only provincial level GDP data for 1979-1996, not city GDP data, we can only calculate economic centrality based on provincial-level GDP. For city c belonging to province k , the economic distance equals the sum across provinces (except k) of provincial GDP divided by the square of the distance between c and the provincial capital. $Distance_{cj}$ is the distance from Chinese city c to the capital city of province j and GDP_{jt} is the GDP of province j in year t .
$Open\ City_{ct}$	Open Cities (or areas) are cities that are assigned by the State to enjoy certain preferential policies in terms of tariff, entry and exit of aliens, import and export of raw materials and products, land sales and leases, and financial and monetary policies. During the 1980s, Chinese policy went through several stages, ranging from the establishment of special economic zones and open coastal cities and areas, to designating open inland and coastal economic and technology development zones. Open Cities is equal to 1 if the Chinese city c includes one or more open cities in year t .
$Agglomeration\ by\ Country_{f_wct}$	The logarithm of FDI (in 10,000 USD) invested by firms from foreign country w in Chinese city c from 1979 to year t .
$Agglomeration\ by\ Industry_{f_{ict}}$	The logarithm of FDI (in 10,000 USD) invested in the sector of foreign firm f in Chinese city c from 1979 to year t .
$Roads\ per\ Capita_{ct}$	The logarithm of total road length (10,000 m) per capita in the province where city c is located in year t .
$Graduates_{ct}$	The logarithm of college graduates per capita in the province where city c is located in year t .
$Average\ Wage_{ct}$	The logarithm of the average wage (in Yuan) in the province where city c is located in year t .

Note: i indexes sector; f indexes Western firm; w indexes firm's country; c indexes the city that is the potential location of JV; t indexes year.

Table 3: Summary Statistics

City-Country Interactions						
	Obs	Mean	Std. Dev.	Min	Max	Level
<i>Colonial Tie</i> _{<i>f_{wc}</i>}	7836	0.094	0.292	0	1	City by Country
<i>Colonial Tie (Civil Law)</i> _{<i>f_{wc}</i>}	7836	0.051	0.220	0	1	City by Country
<i>Colonial Tie (Common Law)</i> _{<i>f_{wc}</i>}	7836	0.043	0.202	0	1	City by Country
<i>Non Colonial Civil Law Tie</i> _{<i>f_{wc}</i>}	7836	0.062	0.241	0	1	City by Country
<i>Non Colonial Common Law Tie</i> _{<i>f_{wc}</i>}	7836	0.182	0.386	0	1	City by Country
<i>Sphere of Influence Tie</i> _{<i>f_{wc}</i>}	7836	0.030	0.170	0	1	City by Country
<i>Colonial Firm/100</i> _{<i>f_{wc}</i>}	6893	0.229	1.269	0	29.310	City by Country
<i>Colonial Population/10000</i> _{<i>f_{wc}</i>}	6893	0.091	0.592	0	6.347	City by Country
Country Characteristics of Foreign Partners						
<i>Colonizer</i> _{<i>f_w</i>}	7836	0.279	0.449	0	1	Country
<i>Civil Law Country</i> _{<i>f_w</i>}	7836	0.193	0.395	0	1	Country
<i>Common Law Country</i> _{<i>f_w</i>}	7836	0.811	0.391	0	1	Country
City Characteristics of Chinese Partners						
<i>Colonized</i> _{<i>c</i>}	7836	0.482	0.500	0	1	City
<i>Civil Law Colonial City</i> _{<i>c</i>}	7836	0.435	0.496	0	1	City
<i>Common Law Colonial City</i> _{<i>c</i>}	7836	0.295	0.456	0	1	City
<i>Chinese Population 1921/10000</i> _{<i>c</i>}	6893	32.64	46.896	0	150	City
Sector Characteristics of Joint Ventures						
<i>Contract Intensity</i> _{<i>i</i>}	6447	0	0.189	-0.410	0.347	Sector
<i>External Financing</i> _{<i>i</i>}	6447	0	0.343	-0.855	0.555	Sector
<i>Service Products</i> _{<i>i</i>}	7271	0.113	0.316	0	1	Sector
<i>Differentiated Products</i> _{<i>i</i>}	7271	0.448	0.497	0	1	Sector
<i>Standardized Products</i> _{<i>i</i>}	7271	0.439	0.496	0	1	Sector

Table 3 continued

Control Variables						
	Obs	Mean	Std. Dev.	Min	Max	Level
$GDP_{fwt} * GDP_{ct}$	7836	19.579	2.066	12.218	24.563	Province by Country by Year
$GDP\ per\ Capita_{fwt}$ $* GDP\ per\ Capita_{ct}$	7836	1.637	1.051	-2.858	3.962	Province by Country by Year
$Distance_{fwc}$	7836	7.495	1.248	5.021	9.884	City by Country
$Economic\ centrality_{ct}$	7836	0.109	0.146	0.001	1.020	City by Year
$Open\ City_{ct}$	7836	0.758	0.428	0	1	City by Year
$Agglomeration\ by\ Country_{f_wct}$	7836	6.494	3.581	0	12.098	City by Country by Year
$Agglomeration\ by\ Industry_{f_i ct}$	7836	4.419	3.536	0	11.667	City by Country by Year
$Graduates_{ct}$	7836	1.964	0.513	0.526	3.671	Province by Year
$Roads\ per\ Capita_{ct}$	7836	1.682	1.099	-2.537	3.609	Province by Year
$Average\ Wage_{ct}$	7836	7.976	0.682	5.962	9.275	Province by Year

Table 4: Data Sources

Variables	Data Sources
<i>Colonial Tie</i> _{f_{wc}}	Yan (1955); Fei (1992); Worldstatesmen.org
<i>Civil Law Country</i> _{f_w}	JuriGlobe--World Legal System. URL: http://www.juriglobe.ca/eng/index.php
<i>Common Law Country</i> _{f_w}	JuriGlobe--World Legal System. URL: http://www.juriglobe.ca/eng/index.php
<i>Sphere of Influence Tie</i> _{f_{wc}}	MacMurray (1921)
<i>Colonial Firm/100</i> _{f_{wc}}	Chinese Maritime Customs Historical Material: 1859-1948 (Zhongguo Jiu Haiguan Shiliao: 1959-1948). Estimated Chinese Population at Ports and Number of Foreign Firms and Residents on the 21th December 1891,1901,1911,1921
<i>Colonial Population/10000</i> _{f_{wc}}	Chinese Maritime Customs Historical Material: 1859-1948 (Zhongguo Jiu Haiguan Shiliao: 1959-1948). Estimated Chinese Population at Ports and Number of Foreign Firms and Residents on the 21th December 1891,1901,1911,1921
<i>Chinese Population 1921/10000</i> _{c}	Chinese Maritime Customs Historical Material: 1859-1948 (Zhongguo Jiu Haiguan Shiliao: 1959-1948). Estimated Chinese Population at Ports and Number of Foreign Firms and Residents on the 21th December 1891,1901,1911,1921
<i>Contract Intensity</i> _{i}	Nunn (2007)
<i>External Financing</i> _{i}	Rajan and Zingales (1998)
<i>Service Products</i> _{i}	Giannetti, Burkart and Ellingsen (2011)
<i>Differentiated Products</i> _{i}	Giannetti, Burkart and Ellingsen (2011)
<i>Standardized Products</i> _{i}	Giannetti, Burkart and Ellingsen (2011)
<i>GDP</i> _{f_{wt}}	Maddison <i>Historical Statistics for the World Economy</i> : 1-2003 AD
<i>GDP</i> _{ct}	CSMAR Solution, Regional Database of China, URL: http://www.gtarsc.com/Home/Index#
<i>GDP per Capita</i> _{f_{wt}}	Maddison <i>Historical Statistics for the World Economy</i> : 1-2003 AD
<i>GDP per Capita</i> _{ct}	CSMAR Solution, Regional Database of China, URL: http://www.gtarsc.com/Home/Index#
<i>Distance</i> _{f_{wc}}	Calculated based on the latitude and longitude of cities from Google Earth Pro. 7.1
<i>Open City</i> _{ct}	Guide for China's Opening up, 1992. (Zhongguo Duiwai Kaifang Zhinan, Guo wu yuan Tequ ban gong shi, Yunnan People Express, 1992)
<i>Agglomeration by Country</i> _{f_{wct}}	Calculated based on the data from the Ministry of Foreign Trade and Economic Cooperation
<i>Agglomeration by Industry</i> _{f_{ict}}	Calculated based on the data from the Ministry of Foreign Trade and Economic Cooperation
<i>Road per Capita</i> _{ct}	CSMAR Solution, Regional Database of China, URL: http://www.gtarsc.com/Home/Index#
<i>Graduates</i> _{ct}	CEIC, China Economic & Industry Data Database, URL: http://www.ceicdata.com/en/countries/china
<i>Average Wage</i> _{ct}	CEIC, China Economic & Industry Data Database, URL: http://www.ceicdata.com/en/countries/china

Table 5: Spheres of Influence

Colonial Power	Province
France	Guangdong, Guangxi, Yunnan
Germany	Shandong
Japan	Fujian, Liaoning, Jilin, Shandong
Russia	Heilongjiang, Inner Mongolia, Jilin, Liaoning, Xinjiang
United Kingdom	Anhui, Guangdong, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang

Table 6: The Colonial Tie Effect

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie	1.387*** [3.51]	1.444*** [3.42]	1.421*** [3.39]
Open City	1.492*** [7.41]	1.318*** [7.14]	1.194*** [3.81]
Agglomeration by country	1.066*** [4.39]	1.053*** [3.73]	1.064*** [5.60]
Agglomeration by industry	1.065*** [14.10]	1.049*** [10.67]	1.061*** [13.93]
Distance	0.506*** [-13.96]	0.507*** [-14.57]	0.511*** [-13.20]
Economic centrality	3.132*** [5.06]	7.927*** [9.17]	6.213*** [8.16]
GDP of source country	1.294** [1.97]	1.054 [0.38]	0.916 [-0.66]
*GDP of host province			
GDP per capita of source country	0.473*** [-4.34]	0.42*** [-3.37]	0.473*** [-3.89]
*GDP per capita of host province			
Roads per capita	1.569** [2.28]	1.012 [0.05]	0.879 [-0.50]
Graduates	1.838*** [7.60]	2.110*** [9.45]	2.030*** [7.08]
Average wage	0.377** [-2.15]	0.476*** [-3.05]	0.963 [-0.12]
Log pseudolikelihood	-29,604	-31,824	-30,708
Observations	721,845	1,606,380	869,096

* significant at 10%; ** significant at 5%; *** significant at 1%. z-statistics in brackets reflect tests of the hypotheses that the estimated coefficients are different from 1. Standard errors used for z-statistics reflect clustering on country. City fixed effects are included in all regressions. In Dataset 1, the alternative cities in each year include only those cities that had concluded joint ventures in the year. In Dataset 2, the alternative cities include those cities that had concluded joint ventures at any time in 1979-1996 (205 alternative cities in each year). In Dataset 3, the alternative cities include those in data set 1 plus the cities that were open in the year if the open city had concluded joint ventures at any time in 1979-1996.

Table 7: Changing Effects Over Time

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial tie	2.346*** [3.27]	2.621*** [4.27]	2.116*** [3.44]
Time trend * colonial tie	0.961** [-2.51]	0.956*** [-3.64]	0.970** [-2.55]
Log pseudolikelihood	-29,599	-31,818	30,705
Observations	721,845	1,606,380	869,096

* significant at 10%; ** significant at 5%; *** significant at 1%. z-statistics in brackets reflect tests of the hypotheses that the estimated coefficients are different from 1. Standard errors used for z-statistics reflect clustering on country. City fixed effects are included in all regressions, as are all the control variables listed in Table 6. In Dataset 1, the alternative cities in each year include only those cities that had concluded joint ventures in the year. In Dataset 2, the alternative cities include those cities that had concluded joint ventures at any time in 1979-1996 (205 alternative cities in each year). In Dataset 3, the alternative cities include those in data set 1 plus the cities that were open in the year if the open city had concluded joint ventures at any time in 1979-1996.

Table 8: Sphere of Influence

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie	1.392*** [3.50]	1.450*** [3.46]	1.428*** [3.44]
Sphere of Influence	0.930 [-0.43]	0.903 [-0.67]	0.902 [-0.67]
Log pseudolikelihood	-29,604	-31,823	-30,707
Observations	721,845	1,606,380	869,096

Notes: See Table 7

Table 9: Colonial Tie and Legal Origins

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.536*** [5.06]	1.623*** [4.77]	1.588*** [4.78]
Colonial Tie (Common Law)	1.255 [1.52]	1.289 [1.60]	1.275 [1.53]
Log pseudolikelihood	-29,602	-31,821	-30,705
Observations	721,845	1,606,380	869,096

Notes: See Table 7

Table 10: Colonial and Non-Colonial Legal Ties

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.700*** [7.34]	1.767*** [6.92]	1.740*** [7.26]
Colonial Tie (Common Law)	1.146 [1.11]	1.145 [1.09]	1.142 [1.06]
Non-colonial Civil-law Tie	1.440*** [2.80]	1.431*** [2.85]	1.438*** [2.84]
Non-colonial Common-law Tie	0.834*** [-2.59]	0.805*** [-2.99]	0.813*** [-2.89]
Log pseudolikelihood	-29,579	-31,796	-30,681
Observations	721,845	1,606,380	869,096

Notes: See Table 7

Table 11: Legal-colonial Ties and Contract Intensity

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.792*** [9.14]	1.874*** [8.31]	1.845*** [8.37]
Colonial Tie (Common Law)	1.240* [1.70]	1.208 [1.45]	1.215 [1.52]
Non-colonial Civil-law Tie	1.463*** [3.32]	1.457*** [3.43]	1.461*** [3.32]
Non-colonial Common-law Tie	0.786*** [-3.08]	0.743*** [-3.50]	0.752*** [-3.40]
Contract Intensity	1.448	1.495	1.534
*Colonial Tie (Civil Law)	[0.81]	[1.02]	[1.08]
Contract Intensity	1.968***	2.112***	2.087***
*Colonial Tie (Common Law)	[3.66]	[4.69]	[4.61]
Contract Intensity	1.356	1.422	1.430
*Non-colonial Civil-law Tie	[0.52]	[0.60]	[0.61]
Contract Intensity	1.562***	1.599***	1.547***
*Non-colonial Common-law Tie	[3.34]	[3.45]	[3.43]
Log pseudolikelihood	-24,614	-26,376	-25,474
Observations	607,035	1,321,635	722,489

Notes: See Table 7

Table 12: Legal-colonial Ties and External Financing

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.810*** [9.58]	1.895*** [8.80]	1.868*** [8.94]
Colonial Tie (Common Law)	1.240* [1.69]	1.208 [1.44]	1.215 [1.50]
Non-colonial Civil-law Tie	1.468*** [3.25]	1.464*** [3.37]	1.469*** [3.28]
Non-colonial Common-law Tie	0.784*** [-3.15]	0.741*** [-3.57]	0.750*** [-3.46]
External Financing	1.077	1.106	1.094
*Colonial Tie (Civil Law)	[0.28]	[0.44]	[0.39]
External Financing	1.286***	1.334***	1.334***
*Colonial Tie (Common Law)	[4.89]	[5.03]	[5.00]
External Financing	0.970	0.999	0.984
*Non-colonial Civil-law Tie	[-0.10]	[-0.00]	[-0.06]
External Financing	1.366***	1.338***	1.333***
*Non-colonial Common-law Tie	[11.51]	[11.78]	[10.29]
Log pseudolikelihood	-24,613	-26,377	-25,475
Observations	607,035	1,321,635	722,489

Notes: See Table 7

Table 13: Service Products, Colonial and Non-Colonial ties

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.608*** [6.65]	1.643*** [6.13]	1.635*** [6.41]
Colonial Tie (Common Law)	1.124 [0.99]	1.069 [0.56]	1.090 [0.72]
Non-colonial Civil-law Tie	1.386*** [2.76]	1.359*** [2.70]	1.374*** [2.71]
Non-colonial Common-law Tie	0.758*** [-4.08]	0.707*** [-4.73]	0.719*** [-4.59]
Service Product	2.817***	3.285***	2.978***
*Colonial Tie (Civil Law)	[5.23]	[5.93]	[5.43]
Service Product	1.402**	1.837***	1.669***
*Colonial Tie (Common Law)	[2.36]	[4.17]	[3.73]
Service Product	2.498***	2.752***	2.607***
*Non-colonial Civil-law Tie	[3.53]	[4.23]	[4.04]
Service Product	2.030***	2.461***	2.307***
*Non-colonial Common-law Tie	[11.33]	[12.58]	[12.20]
Log pseudolikelihood	-27,411	-27,431	-28,413
Observations	673,265	1,490,555	810,592

Notes: See Table 7

Table 14: Standardized Products, Colonial and Non-Colonial ties

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.896***	1.969***	1.949***
	[5.42]	[5.98]	[6.25]
Colonial Tie (Common Law)	1.226	1.237	1.236
	[1.38]	[1.47]	[1.44]
Non-colonial Civil-law Tie	1.480**	1.480**	1.491**
	[2.37]	[2.46]	[2.51]
Non-colonial Common-law Tie	0.983	0.963	0.963
	[-0.25]	[-0.52]	[-0.53]
Standardized Product	0.783	0.774	0.773*
*Colonial Tie (Civil Law)	[-1.38]	[-1.62]	[-1.67]
Standardized Product	0.895	0.847***	0.862***
*Colonial Tie (Common Law)	[-1.59]	[-4.08]	[-2.74]
Standardized Product	0.978	0.955	0.954
*Non-colonial Civil-law Tie	[-0.15]	[-0.31]	[-0.32]
Standardized Product	0.690***	0.661***	0.673***
*Non-colonial Common-law Tie	[-14.92]	[-15.66]	[-15.87]
Log pseudolikelihood	-27,431	-29,463	-28,445
Observations	673,265	1,490,555	810,592

Notes: See Table 7

Table 15: Differentiated Products, Colonial and Non-Colonial ties

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie (Civil Law)	1.666*** [5.38]	1.740*** [5.49]	1.701*** [5.35]
Colonial Tie (Common Law)	1.187 [1.35]	1.206 [1.28]	1.201 [1.33]
Non-colonial Civil-law Tie	1.578*** [3.96]	1.562*** [3.99]	1.563*** [3.85]
Non-colonial Common-law Tie	0.834*** [-2.68]	0.818*** [-2.88]	0.820*** [-2.87]
Differentiated Product	1.031	1.010	1.034
*Colonial Tie (Civil Law)	[0.17]	[0.06]	[0.21]
Differentiated Product	0.968***	0.911***	0.932***
*Colonial Tie (Common Law)	[-2.83]	[-2.62]	[-3.82]
Differentiated Product	0.843	0.842	0.854
*Non-colonial Civil-law Tie	[-1.22]	[-1.25]	[-1.14]
Differentiated Product	1.021	0.976	0.987
*Non-colonial Common-law Tie	[1.30]	[-1.12]	[-0.60]
Log pseudolikelihood	-27,448	-29,484	-28,464
Observations	673,265	1,490,555	810,592

Notes: See Table 7

Table 16: Effect of Historical Western Presence

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie	1.305*** [3.87]	1.345*** [3.87]	1.327*** [3.96]
Colonial Firms/100	1.058*** [3.93]	1.063*** [5.06]	1.063*** [4.86]
Colonial Population/10,000	1.159*** [5.23]	1.154*** [5.36]	1.152*** [5.29]
Log pseudolikelihood	-25,949	-27,905	-26,857
Observations	601,596	1,344,135	718,140

Notes: See Table 7

Table 17: Effect of Historical Western and Chinese Presence

Dependent Variable: Location of Joint Venture			
	Dataset 1	Dataset 2	Dataset 3
Colonial Tie	1.308*** [3.73]	1.313*** [3.77]	1.312*** [3.64]
Colonial Firms/100	1.032*** [5.54]	1.012*** [2.63]	1.012** [2.32]
Colonial Population/10,000	1.168*** [14.39]	1.140*** [10.29]	1.164*** [14.87]
Chinese Population 1921/10,000	1.004*** [8.28]	1.006*** [8.73]	1.005*** [9.50]
Log pseudolikelihood	-26,452	-28,964	-27,546
Observations	601,596	1,344,135	718,140
City Fixed Effect	No	No	No

Notes: As for Table 7, except for the non-inclusion of city fixed effects.

Table 18: Mechanisms of Persistence: Dataset 1

Dependent Variable: Location of Joint Venture						
Mechanism	Variables operationalizing mechanism	Variables	1	2	3	4
Human capital relevant to institutions: city-country effects	Colonial legal human capital	Colonial Tie (Civil Law)	1.486*** [3.72]	1.643*** [4.66]	1.459** [2.47]	1.659*** [3.51]
		Colonial Tie (Common Law)	1.096 [0.88]	1.449*** [3.61]	1.137 [1.32]	1.552*** [4.34]
		Non-colonial Civil-law Tie	1.446*** [3.31]	1.667*** [3.65]	1.397** [1.96]	1.652*** [3.42]
		Non-colonial Common-law Tie	0.675*** [-5.77]	0.741*** [-3.94]	0.720*** [-3.37]	0.810** [-2.05]
Cognizance in the broader population: cultural affinity or inherited human capital	Interaction of product type and colonial and legal ties	Differentiated Product	1.163	1.208	1.088	0.937
		*Colonial Tie (Civil Law)	[0.80]	[1.02]	[0.37]	[-0.30]
		Differentiated Product	1.049	0.730***	1.081	0.678***
		*Colonial Tie (Common Law)	[1.17]	[-3.97]	[0.93]	[-3.11]
		Service Product	3.050***		2.409***	
		*Colonial Tie (Civil Law)	[5.10]		[2.76]	
		Service Product	1.437**		0.884	
		*Colonial Tie (Common Law)	[2.19]		[-0.43]	
		Differentiated Product	0.922	0.762	0.892	0.730*
		*Non-colonial Civil-law Tie	[-0.54]	[-1.37]	[-0.63]	[-1.95]
		Differentiated Product	1.255***	1.122***	1.288***	1.108*
		*Non-colonial Common-law Tie	[18.02]	[2.60]	[17.18]	[1.79]
Human capital relevant to institutions: input-sector effects	Interaction of input requirements and colonial and legal ties	Service Product	2.396***		2.624***	
		*Non-colonial Civil-law Tie	[2.95]		[2.98]	
		Service Product	2.280***		1.902***	
		*Non-colonial Common-law Tie	[12.71]		[9.11]	
		Contract Intensity		1.224		1.485
		*Colonial Tie (Civil Law)		[0.53]		[0.79]
		Contract Intensity		2.555***		1.888***
		*Colonial Tie (Common Law)		[5.06]		[4.67]
		External Financing		0.847		1.127
		*Colonial Tie (Civil Law)		[-0.89]		[1.35]
		External Financing		1.379**		1.972***
		*Colonial Tie (Common Law)		[2.01]		[4.37]
Contract Intensity		1.912		1.8		
*Non-colonial Civil-law Tie		[0.96]		[0.87]		
Contract Intensity		1.191		1.182		
*Non-colonial Common-law Tie		[0.92]		[1.04]		
External Financing		1.096		1.138		
*Non-colonial Civil-law Tie		[0.28]		[0.45]		
External Financing		1.187***		1.286***		
*Non-colonial Common-law Tie		[2.77]		[4.14]		
Culture, possibly not human capital	Size of colony	Colonial Firm/100			1.033** [2.18]	1.029** [1.98]
		Colonial Population/10,000			1.152*** [4.67]	1.161*** [4.33]
Log pseudolikelihood			-27,404.6	-24,584.5	-24,134.5	-21,791.3
Observations			673,265	606,542	563,872	512,777

* significant at 10%; ** significant at 5%; *** significant at 1%. z-statistics in brackets reflect tests of the hypotheses that the estimated coefficients are different from 1. Standard errors used for z-statistics reflect clustering on country. City fixed effects are included in regressions 1 and 2. All the control variables listed in Table 6 are included in all regressions. In Dataset 1, the alternative cities in each year include only those cities that had concluded joint ventures in the year.

Table 19: Mechanisms of Persistence: Dataset 2

Dependent Variable: Location of Joint Venture						
Mechanism	Variables operationalizing mechanism	Variables	1	2	3	4
Human capital relevant to institutions: city-country effects	Colonial legal human capital	Colonial Tie (Civil Law)	1.522***	1.751***	1.513***	1.763***
			[3.84]	[5.04]	[2.63]	[3.71]
		Colonial Tie (Common Law)	1.043	1.443***	1.099	1.528***
			[0.35]	[2.97]	[0.92]	[3.87]
		Non-colonial Civil-law Tie	1.408***	1.662***	1.343*	1.642***
		[3.19]	[3.81]	[1.74]	[3.47]	
		Non-colonial Common-law Tie	0.630***	0.698***	0.686***	0.776**
			[-6.39]	[-4.61]	[-3.86]	[-2.52]
Cognizance in the broader population: cultural affinity or inherited human capital	Interaction of product type and colonial and legal ties	Differentiated Product	1.157	1.159	1.074	0.911
		*Colonial Tie (Civil Law)	[0.87]	[0.81]	[0.35]	[-0.43]
		Differentiated Product	1.050***	0.699***	1.063	0.668***
		*Colonial Tie (Common Law)	[6.54]	[-16.21]	[1.42]	[-8.77]
		Service Product	3.546***		2.393***	
		*Colonial Tie (Civil Law)	[6.15]		[2.85]	
		Service Product	1.883***		1.043	
		*Colonial Tie (Common Law)	[4.22]		[0.15]	
		Differentiated Product	0.933	0.762	0.907	0.721**
		*Non-colonial Civil-law Tie	[-0.46]	[-1.40]	[-0.54]	[-2.09]
		Differentiated Product	1.253***	1.130**	1.280***	1.120*
		*Non-colonial Common-law Tie	[15.35]	[2.35]	[13.85]	[1.82]
		Service Product	2.657***		2.742***	
		*Non-colonial Civil-law Tie	[3.51]		[3.26]	
		Service Product	2.762***		2.204***	
		*Non-colonial Common-law Tie	[14.00]		[10.63]	
Human capital relevant to institutions: input-sector effects	Interaction of input requirements and colonial and legal ties	Contract Intensity		1.296		1.442
		*Colonial Tie (Civil Law)		[0.72]		[0.67]
		Contract Intensity		2.790***		1.795***
		*Colonial Tie (Common Law)		[4.81]		[3.34]
		External Financing		0.894		1.183*
		*Colonial Tie (Civil Law)		[-0.68]		[1.89]
		External Financing		1.467***		2.014***
		*Colonial Tie (Common Law)		[3.29]		[8.16]
		Contract Intensity		1.976		1.85
		*Non-colonial Civil-law Tie		[1.02]		[0.89]
		Contract Intensity		1.24		1.182
		*Non-colonial Common-law Tie		[1.08]		[1.01]
		External Financing		1.121		1.206
		*Non-colonial Civil-law Tie		[0.36]		[0.71]
		External Financing		1.145**		1.235***
		*Non-colonial Common-law Tie	[2.36]		[3.48]	
Culture, possibly not human capital	Size of colony	Colonial Firm/100			1.037***	1.034***
					[2.84]	[2.66]
		Colonial Population/10,000			1.148***	1.153***
					[4.80]	[4.43]
		Log pseudolikelihood	-29,417.3	-26,345.9	-25,926.7	-23,364.3
		Observations	1,490,555	1,320,610	1,254,045	1,125,345

* significant at 10%; ** significant at 5%; *** significant at 1%. z-statistics in brackets reflect tests of the hypotheses that the estimated coefficients are different from 1. Standard errors used for z-statistics reflect clustering on country. City fixed effects are included in regressions 1 and 2. All the control variables listed in Table 6 are included in all regressions. In Dataset 1, the alternative cities in each year include only those cities that had concluded joint ventures in the year.

Table 20: Mechanisms of Persistence: Dataset 3

Dependent Variable: Location of Joint Venture							
Mechanism	Variables operationalizing mechanism	Variables	1	2	3	4	
Human capital relevant to institutions: city-country effects	Colonial legal human capital	Colonial Tie (Civil Law)	1.505*** [3.80]	1.700*** [4.95]	1.480** [2.54]	1.704*** [3.65]	
		Colonial Tie (Common Law)	1.062 [0.54]	1.452*** [3.40]	1.109 [1.07]	1.532*** [4.30]	
		Non-colonial Civil-law Tie	1.419*** [3.11]	1.644*** [3.63]	1.357* [1.76]	1.624*** [3.26]	
		Non-colonial Common-law Tie	0.643*** [-6.26]	0.706*** [-4.47]	0.698*** [-3.77]	0.784** [-2.43]	
	Cognizance in the broader population: cultural affinity or inherited human capital	Interaction of product type and colonial and legal ties	Differentiated Product	1.173 [0.97]	1.193 [1.00]	1.1 [0.48]	0.943 [-0.28]
			Differentiated Product	1.051** [2.07]	0.698*** [-5.86]	1.076 [1.07]	0.670*** [-3.82]
			Service Product	3.237*** [5.64]		2.358*** [2.74]	
			Service Product	1.712*** [3.58]		1.004 [0.01]	
Differentiated Product		0.941 [-0.41]	0.783 [-1.23]	0.915 [-0.50]	0.746* [-1.80]		
Differentiated Product		1.248*** [14.82]	1.133** [2.53]	1.281*** [13.98]	1.123* [1.92]		
Service Product		2.527*** [3.40]		2.649*** [3.15]			
Service Product		2.584*** [13.73]		2.106*** [10.27]			
Human capital relevant to institutions: input-sector effects	Interaction of input requirements and colonial and legal ties	Contract Intensity		1.311 [0.75]		1.488 [0.73]	
		Contract Intensity		2.766*** [5.89]		1.856*** [4.82]	
		External Financing		0.856 [-0.91]		1.136 [1.48]	
		External Financing		1.469*** [2.61]		2.013*** [5.16]	
		Contract Intensity		1.959 [1.01]		1.856 [0.90]	
		Contract Intensity		1.193 [0.93]		1.158 [0.93]	
	External Financing		1.076 [0.23]		1.138 [0.48]		
	External Financing		1.147** [2.30]		1.239*** [3.58]		
	Culture, possibly not human capital	Size of colony	Colonial Firm/100			1.037*** [2.65]	1.033** [2.46]
			Colonial Population/10,000			1.146*** [4.74]	1.152*** [4.36]
	Log pseudolikelihood			-28,407.5	-25,445.0	-24,966.3	-22,504.2
	Observations			810,592	721,929	673,003	606,220

* significant at 10%; ** significant at 5%; *** significant at 1%. z-statistics in brackets reflect tests of the hypotheses that the estimated coefficients are different from 1. Standard errors used for z-statistics reflect clustering on country. City fixed effects are included in regressions 1 and 2. All the control variables listed in Table 6 are included in all regressions. In Dataset 1, the alternative cities in each year include only those cities that had concluded joint ventures in the year.