Institutional Difference and FDI Location Choice: Evidence from China

Che, Yi and Du, Julan and Lu, Yi and Tao, Zhigang

26 February 2017

Institutional Difference and FDI Location Choice: Evidence from China*

Yi Che,[a] Julan Du,[b] Yi Lu,[c] and Zhigang Tao[d]

[a] Shanghai Jiao Tong University

[b] Chinese University of Hong Kong

[c] National University of Singapore

[d] University of Hong Kong

First Draft: June 2013

This Draft: February 2017

Abstract

Rest upon an extensive data set on Foreign Invested Enterprises (FIEs) in China, we investigate the role of institutional difference in determining the locational choice of foreign direct investment (FDI). Estimation results using firm-level discrete choice model suggest that FIEs from source countries that are more remote institutionally from the Chinese mainland exhibit a higher degree of sensitivity toward regional economic institutions in their choice of FDI location. Furthermore, we find that FIEs coming from countries with better institutions than China are more sensitive to institutional difference. Interestingly, we find that the deterrent effct of institutional distance on FDI entry is mitigated for FIEs coming from countries with more ethnic Chinese in their overall populations.

*This paper is a revision of and updates Yi Che's Ph.D. thesis (second chapter, 2013) in University of Hong Kong. A previous version of this paper was circulated with the title: "institutional difference and FDI location choice." We thank Jiahua Che, Larry Dongxiao Qiu, Zheng Michael Song, and Wen Zhou for comments and suggestions which substantially improved the paper. Yi Che gratefully acknowledges financial support from the Shanghai Pujiang Program (16PJC048).

Keywords: Institutional Difference; FDI Location Choice; China

JEL Codes: F23; P16

1 Introduction

Foreign direct investment (FDI) is one of the driving forces behind the growth of many developing economies around the world. China is an excellent example. Since 1978, it has attracted more than US$500 billion FDI (China Statistical Yearbook, 2005), and the World Bank (1997) has credited FDI as a key factor to China's economic growth during this period. It is not surprising that governments of many developing economies give top priority to attracting FDI and show tremendous interests in understanding what helps lure FDI.

Much of the international and urban economics literature focuses on costs of business operations, market potentials, and agglomeration economies as the determinants of FDI. Like the choice of any investment, however, the incentive for multinationals to directly invest in those developing economies depends on their expected returns. In those economies, investment returns depend critically on the protection of property rights. Thus, an important research question is to investigate the impacts of economic institutions on FDI location choice by multinationals.

While China is a unitary state with uniform de jure laws across the country, it is characterized by substantial regional disparity in economic institutions, i.e., the de facto property rights protection exhibits wide variations across regions. This offers an ideal setting to examine the impacts of economic institutions on FDI location choice. From a data set of 6,288 U.S. multinationals investing in various regions in China for the period of 1993-2001, Du, Lu and Tao (2008) find that U.S. multinationals prefer to invest in those regions that have better protection of intellectual property rights, lower degree of government intervention in business operations, lower level of government corruption, and better contract enforcement.

The detrimental impacts of poor economic institutions in deterring investments, however, may differ among multinationals from different source countries/regions. For example, foreign-invested enterprises (FIEs) from the countries/areas that are institutionally close to the host country may easily apply their experience in dealing with bureaucrats and government agencies in their home countries to coping with bureaucrats and government entities in different regions of the host country. In contrast, FIEs from the countries/areas that are institutionally remote from the host country may find it difficult to maintain frequent contacts with bureaucrats and government agencies in the host country because their experience with home governments cannot provide a useful guide to their endeavor in the host country. Therefore, institutional proximity can facilitate the adaptation of FIEs to institutions in the host country. For example, China invested 1.5 percent of its capital in U.S. while invest 17.9 percent to Africa and Latin America and 71.9 percent in Asia in 2010.

Actually, China is a country whose inward FDI comes from a rich variety of source countries. For example, FDI in China comes from about 150 countries/areas in 2001, including England whose institutional environment is radically different from that of China and Korea which is institutionally much closer to China. Thus we investigate the interactions between the quality of economic institutions in China's various regions and those of FDI source countries/regions in determining FDI location choice in China. In particular, we address the issue of whether FDI from different source countries/areas exhibits different sensitivities to the economic institutions of host regions based on the degree of difference in institutions between home and host countries.

Even when two source countries have similar institutional distance to China, FIEs from the two countries may have different abilities to adapt to the local business environment in China. We investigate two potential sources of this difference. One is the relative size of ethnic Chinese network in the source country and the other is the cultural distance between the FDI source country and China. These two aspects could be interrelated to some extent. For instance, Singapore has a very high proportion of ethnic Chinese in its population (about 75%) and its mainstream culture is fairly close to the Chinese culture. Although Singapore has followed British institutions and thus has a quite large institutional distance from China, the large ethnic Chinese network and cultural proximity are expected to enable FIEs from Singapore to cope easily with the Chinese business environment.

Nevertheless, for most FDI source countries, the ethnic Chinese network accounts for a rather small proportion of the overall population in the source country, and it is unlikely to shape or affect much the mainstream culture of the source country. In addition, some countries such as Japan and Korea are fairly close to China in culture, but they have a very small proportion of ethnic Chinese. Thus, the ethnic Chinese network and the cultural distance are two distinct aspects.

In this study, we further explore how institutional distance interacts with ethnic Chinese network and cultural distance in shaping the FDI location choice in China. In particular, we examine whether a large ethnic Chinese network and cultural similarity could reduce the sensitivity of FDI location choice toward regional institutional variations even for FIEs from institutionally distant source countries/areas. It is conjectured that a large ethnic Chinese network can spread information and knowledge about China's business environment and informal institutions, and can make FIEs more likely to hire ethic Chinese employees to facilitate their exploration of China's market and establishment of connections with local businesses and governments. At the same time, cultural similarity between the FDI source country and China could allow FIEs, no matter having many ethnic Chinese employees or not, to understand quickly China's business environment and adapt relatively easily to local culture and business practices and relatively easily overcome the institutional barriers to FDI. Thus, we expect that both a large ethnic Chinese network and cultural proximity could mitigate the negative impacts of institutional distances on FDI entry.

Using an extensive firm-level dataset on FIEs in China, we employ discrete choice model developed by McFadden (1974) to examine the factors determining the locational choices of FDI. Our empirical analysis shows that FIEs from source countries that are more remote institutionally from the Chinese mainland exhibit a higher degree of sensitivity toward regional economic institutions in their choice of FDI location.

One possible challenge to the results is that Independence of Irrelevant Alternative (IIA) condition could be violated in the conditional logit model framework. However, by excluding regions possibly being "outliers" does not change our results. Moreover, nested logit and mixed logit estimation, which relax IIA condition to some extent, are very similar to the baseline results.

Interestingly, we also detect a pattern of asymmetric sensitivity toward institutional quality, i.e., FIEs coming from countries with better institutions than China are more sensitive to institutional difference and there is no effect of institutional difference on FIEs from countries with worse institutions than China. This may be because FIEs from countries with worse institutions are endowed with the knowhow to deal with government expropriation (e.g., corruption) in a poor intuitional environment like that of China. Therefore, statistically there is no effect of institutional difference on location choice of these firms.

Institutional distance could also cast differentiated impacts on location choice by Joint Ventures (JVs) and Wholly-owned Enterprises (WOEs). Depending on whether FIEs come from institutionally close or distant countries/areas, we expect that JVs and WOEs from different source countries exhibit different sensitivities to the variation in regional economic institutions in location choice. More specifically, if WOEs are more sensitive to regional institutions than do JVs, this differentiation will be more salient for FDI coming from more institutionally distant source countries/areas. In the empirical analysis, we do find that WOEs exhibit stronger responses to regional economic institutions in location choice than JVs do when they come from sources that are more institutionally remote from China.

The deterrent effect of institutional distance on FDI entry is mitigated for FIEs coming from the source countries with the above-sample-mean proportion of ethnic Chinese in their overall populations, and this effect is significant only for WOEs and foreign-majority-owned joint ventures. This suggests that the information sharing about Chinese business environment and the hiring of ethnic Chinese employees brought about by the presence of a high ethnic Chinese network could potentially facilitate the adaptation of FIEs to the institutional environment in China. Some dimensions of cultural proximity produce similar results, but different dimensions of cultural distance do not produce consistent results.

There are several existing studies that use host country institutions to explain the influential "Lucas Paradox" (Alfaro, Kalemli-Ozcan, and Volosovych, 2008; Papaioannou, 2009). However, they do not include institutional difference between the host and source countries in the regression, which could be the essence in explaining "Lucas Paradox". In contrast, work by Habib and Zurawicki (2002), Darby, Desbordes, and Wooton (2010), Aleksynska and Havrylchyk (2013) do examine the effect of institutional difference on FDI capital flows. Nevertheless, our paper makes a first attempt to investigate the effect of institutional difference on FDI location choice within the largest developing country. Furthermore, this study serves as the first attempt to explore whether ethnic Chinese network or cultural proximity help mitigate the negative impacts of institutional distance on FDI entry. Broadly speaking, by emphasizing the influence of institutional difference in the context of China, our paper contribute to the literature investigating the determinants of FDI location choice (Head, Ries, and Swenson, 1995; Wei, 2000; Head and Mayer, 2004).

The rest of the paper is organized as follows. Section 2 introduces our empirical strategy. Section 3 describes the data and variables. Section 4 lays out the empirical results. Section 5 concludes the paper.

2 Estimation Strategy

2.1 A Discrete Choice Model of Location Choice

To model the location choice of foreign multinationals in China, we use the discrete choice framework (Train, 2003). Specifically, assume that the perceived profit of foreign multinational n (from country c) can make by investing in region j at time t has the following linear deterministic function

$$\pi_{jt}^{n} = \mathbf{X}_{jt}^{\prime}\boldsymbol{\beta}_{nt} + \gamma_{nt} R_{jt} + \varepsilon_{jt}^{n}, \tag{1}$$

where $\mathbf{X}_{jt}$ is a vector of regional time-varying characteristics, such as size of the market, infrastructure, education, government policies, agglomeration degree, etc; R_{jt} is our regressor of interest, the regional measure of institutional quality; and ε_{jt} is a random shock to firm profit.

Multinational n chooses to invest in region i among all alternatives if and only if the potential profit earned in region i is the highest , i.e.,

$$P_i^n = Prob\left(\pi_{it}^n > \pi_{kt}^n \forall k \neq i\right), \tag{2}$$

where $k, i \in J$ and J is the set of all potential alternatives (i.e., in our setting, regions in China); and P_i^n is the probability of multinational n choosing region i. Assume in the baseline estimation that ε_{jt} is independently, identically distributed with the Type I extreme value function (i.e., $F(\varepsilon) = e^{-e^{-\varepsilon}}$). The probability function (2) can then be simplified as

$$P_i^n = \frac{e^{\mathbf{X}_{it}'\boldsymbol{\beta}_{nt}+\gamma_{nt}R_{it}}}{\sum_{j\in J} e^{\mathbf{X}_{jt}'\boldsymbol{\beta}_{nt}+\gamma_{nt}R_{jt}}}, \tag{3}$$

and coefficients $\{\boldsymbol{\beta}_{nt}, \gamma_{nt}\}$ can be estimated by using the maximum likelihood method.

Note that the focus of this paper is to investigate the differential impacts of institutional quality on the location choice of foreign multinationals from different source countries. To reduce the number of estimates, we make two simplifications. First, we assume that other regional determinants $\mathbf{X}_{jt}$ have the same impacts on all foreign multinationals, regardless of where they come from, i.e., $\boldsymbol{\beta}_{nt} \equiv \boldsymbol{\beta}$. Second, we assume that the value of regional institutional quality in China varies across foreign multinationals with the institutional quality levels in their home countries, i.e.,

$$\gamma_{nt} \equiv \gamma M_{ct}, \tag{4}$$

where M_{ct} is the institutional quality in foreign multinational n's home country c. Later we will relax this assumption by allowing a random part in the taste variation across multinationals from different countries, i.e.,

$$\gamma_{nt} \equiv \gamma M_{ct} + \mu_{ct}, \tag{5}$$

where μ_{ct} is a random variation.

2.2 Identification

The identification assumptions in estimating equation (3) are: (1) the error term ε_{jt}^n is independently and identically distributed, or the *Independence from Irrelevant Alternatives (IIA) condition*; and (2) the error term ε_{jt}^n follows a Type I extreme value distribution. To check whether the IIA condition holds in our setting and whether our results are sensitive to the Type I extreme value distribution, we discuss in the following several robustness checks that have been used in the literature.

First, we saturate the baseline equation with region-specific constant λ_j. Train (1986) shows that including alternative-specific constant allows to estimate equation (3) in the presence of some forms of IIA violation. In studying the effect of industrial grouping on FDI location choice, Blonigen, Ellis, and Fausten (2005) include the alternative-specific constant to control for the potential violation of the IIA condition.

Second, we estimate equation (3) for several sub-samples. A corollary of the IIA condition is that estimates from a sub-set of all alternatives should be similar to that from the full set. Head, Ries, and Swenson (1995) and Blonigen, Ellis, and Fausten (2005) use this robustness check in their study of the effect of agglomeration and industrial grouping on FDI location choice, respectively.

Third, we relax the assumption of the IIA condition by allowing the correlation among some alternatives but not the others. Specifically, we assume that foreign multinationals partition China into several super-regions (called nests) and the IIA condition holds for regions in the same super-region but not for those across super-regions. In other words, foreign multinationals first choose a super-region and then a region within that super-region to invest. This framework is referred to as the nested logit model and has been widely used in the literature as a check on the IIA condition (see, for example, Head and Mayer, 2004; Dean, Lovely, and Wang, 2009).

Finally, we estimate a more flexible model, namely the mixed logit model, which allows the error term ε_{jt}^n to follow any distribution (the relaxation of the identification assumption (2)), any arbitrary correlation among ε_{jt}^{n} (the relaxation of the identification assumption (1)), and the potential randomness in the taste variation (equation (5)). Specifically, the mixed logit model decomposes ε_{jt}^{n} into a part containing all the correlation and heteroskedasticity (and following any type of distribution) and the other part taking i.i.d. Type I extreme value. This method has now been increasingly used in the literature, see, for example, Bhat (1998), Revelt and Train (1998), and Brownstone and Train (1999).

3 Data and Variables

Our data come from a large dataset of Foreign Invested Enterprises (FIEs) in China, compiled by the *China National Bureau of Statistics*. This dataset contains 150,602 FIEs in 2001, accounting for 74.44% of the total 202,306 FIEs in China as reported by the *China Statistical Yearbook 2002*. Among them, 141,668 enterprises are engaged in the manufacturing sector, covering 75.45% of the total number of foreign manufacturing enterprises in China in 2001.

We focus on the 1993-2001 period as the information about our key explanatory variable (i.e., the measure of institutional quality) is not available before 1993 and the FDI flow into China took off only since 1992. After deleting those FIEs without registration dates and involving individual foreign investors, we are left with 31,574 manufacturing FIEs from 123 countries in the world. With just one year data, we follow the common practice in the literature to retrieve information on the time and location each FIE made its investment by using the reported registration year and location in 2001 (see also Blonigen, Ellis, and Fausten, 2005). However, the cost of doing this is that we implicitly assume there is no change in the location after the investment. To check whether our results are sensitive to this data limitation, we later estimate a sub-sample of FIEs that invested in 2001, for which we should have the precise information about their locations.

The regressors of interest in this paper are the institutional quality of different regions in China and that of home countries of each FIE. To measure institutional quality in China's regions[1], we resort to the dataset of *Survey of China's Private Enterprises*,

[1]Since property rights protection is the most important aspect of economic institutions (North, 1990),

conducted jointly by the United Front Work Department of the Central Committee of the Communist Party of China, the All China Industry and Commerce Federation, and the China Society of Private Economy at the Chinese Academy of Social Sciences in 1995, 1997, 2000, and 2002. Following the recent literature on institutions (e.g., Johnson, McMillan, and Woodruff, 2002; Cull and Xu, 2005), we measure regional institutional quality by the average percentage of revenue spent on extralegal payments to the government (*Tan Pai* in Chinese) of all private firms in that region. This is expected to be a proxy measure of the severity of government expropriation in the region.

In order to measure institutional quality, especially government exproriation of property rights, of home country of FIEs so as to match the corresponding measure for China's regions, following Acemoglu, Johnson and Robinson (2001) and Acemoglu and Johnson (2005), we utilize Polity IV's index on the constraint on the executive. Since we are more concerned about the expropriation behavior of the state, a higher level of constraint on the executive in the country indicates better property rights protection. In Polity IV project, the index of the constraint on executive ranges from 1 to 7 with a higher value indicating more constraints on the executive.

The key regressor in our regressions is constructed as the product of the home country institutional quality of FIEs and the property rights protection index of different regions in China. A larger value of this product indicates higher institutional distance between the home country institutional quality and regional institutional quality in China. Thus, a negative and significant estimated coefficient indicates a higher degree of sensitivity of FIE location choice to regional institution variation in China for an FIE from a source country/area that is institutionally more distant from China.

In this study, we also examine whether ethnic Chinese networks and cultural proximity can mitigate the negative impacts of institutional distance on FDI location choice. To gauge the size of ethnic Chinese networks, we use the data on the ethnic Chinese population and overall population of FDI source countries in 1990 from Poston, Mao, and Yu (1994) and Rauch and Trindade (2002). We calculate the relative size of ethnic

we use property rights protection and institutions interchangeably in the paper.

Chinese networks, i.e., the proportion of ethnic Chinese in the overall population in each FDI source country.

At the same time, we use Hofstede's dimensions of culture index to assess the cultural distance between FDI source countries and China. This culture index is a quite popular measure of cultural proximity of different countries. It examines several dimensions of culture such as power distance, collectivism vs. individualism, femininity vs. masculinity.

Ethnic Chinese networks and cultural distance are interrelated to some extent, but they are largely two distinct aspects. Cultural distance index focuses on the fundamental and mainstream culture of FDI source countries. A large ethnic Chinese networks might narrow cultural distance between the FDI source country and China (e.g., the case of Singapore). Nonetheless, for most FDI source countries, the fraction of ethnic Chinese in the overall population is rather small. The ethnic Chinese community can hardly change the mainstream culture of the FDI source country. For example, average percentage of Chinese in foreign countries is 2.4 and percentage of Chinese in U.S. and England is only 0.66 and 0.22 respectively. Interestingly, Japan is a case with small ethnic Chinese network (0.12 percent) but close to Chinese culture: absolute difference of power distance to China is only 1 while average difference of power distance of foreign countries to China is 19.

To alleviate the concern of omitted variable bias, we include a number of control variables that potentially correlate with both institutions and FIEs' decision on location. Following Head, Ries, and Swenson (1995), Blonigen, Ellis, and Fausten (2005), and Liu, Lovely, and Ondrich (2010), we include agglomeration which is proxied by $\frac{N_{irct}}{T_{ict}}$ where N_{irct} is number of FIEs in 4 digit industry i of region r and country c in year t and T_{ict} is number of FIEs in industry i of country c in year t. We expect that FIEs are more likely to locate in regions with more "similar" firms to enjoy informational and manufacturing advantages. In addition, we also include controls of infrastructure (Debaere, Lee, and Paik, 2010), regional education (Du, Lu, and Tao, 2008), regional GDP[2] (Head and Mayer, 2004), and the existence of special economic zones or economic and technological

[2]A proxy for market potential.

development zones in the region (Du, Lu, and Tao, 2012).

Table 1 reports summary statistics of variables used in the regression. The key variable of interest, institutional difference, ranges from 0 to 0.213 with a standard deviation of 0.033 and other variables are within reasonable range. Since our dependent variable and institutional difference are at firm-region-country-year level, their observation number is 915646. All other variables are at region-year level, their observation number is thus 29*9=261.

In the sample, we also find some stylized facts in supporting our story. For example, FIEs coming from U.S. whose institutional quality is 7 in 2001, invested 84.8% of their capital in eastern provinces[3] whose institutional quality is widely considered as sound in China. In contrast, for FIEs coming from Pakistan whose institutional quality is 1 in 2001, only 26.4% of their capital are invested in Eastern provinces.

4 Estimation Results

4.1 Main Results

Table 2 reports our main estimation results from equation (3). All standard errors are robust to arbitrary heteroskedasticity.

Column 1 presents the estimation results that includes the regional government expropriation index in China but does not incorporate institutional difference. It shows that the estimated coefficient of the variable government expropriation is negative and highly statistically significant, i.e., -10.787 with a standard error of 2.755. Clearly, government expropriation deters FDI entry. This is consistent with the earlier findings that FIEs choose to make investment in regions with good institutions (Du, Lu, and Tao, 2008). In particular, if we reduce the level of government expropriation of Anhui to that of Shanghai in year 2001, the probability of FIEs' choosing Anhui as the location of their investment would increase by 0.008.

In column 2, we replace regional institutions with our key regressor of institutional

[3] Eastern provinces include Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan.

difference in the regression. We find that the effect of regional institutional quality on location choice of FIEs is negatively and significantly moderated by institutional quality of FIEs' home country. More specifically, a typical FIE is less likely to locate in a region when the institutional difference between this region and the FIE's home country is large. According to the estimate of -1.652 (s.e.=0.414), for a Pakistan firm located in Beijing, if the institutional quality of home country increase from Pakistan to U.S., this would decrease the probability of that firm located in Beijing by 0.47.

In addition, it seems that the regression results for most of the control variables make economic sense. For example, FIEs are more likely to locate in regions with a higher degree of concentration of "similar" firms, better infrastructure, a pool of better educated workers, higher market demand and more favorable policies regarding foreign direct investment.

4.2 Robustness Check

In Tables 3 and 4, we perform a number of robustness checks on our main results.

In column 1 of Table 3, we add region-specific constant to our baseline regression model. Note that time invariant variables Special Economic Zone and Economic and Technological Development Zone are omitted due to perfect multicollinearity. Although the magnitude of the estimated coefficient of institutional difference drops by approximately 25%, the addition of region-specific constant has little effect on the sign and significance of estimated coefficient of institutional difference.

As a check for IIA assumption, we conduct several subsample analyses in columns 2-5 of Table 3. Column 2 reports regression results of a subsample without FIEs in regions with the lowest three entries (i.e., Qinghai, Ningxia, and Gansu) and column 3 reports results without observations in regions with top three entries (i.e., Shandong, Jiangsu, and Shanghai). It appears that excluding FIEs in regions serving as "outliers" does not change our main results qualitatively.

One potential concern in Table 2 is that northeastern provinces in China (i.e., Heilongjiang, Jilin, and Liaoning) may have received state resources as stipulated by the national strategy of economic development because of the agglomeration of state-owned enterprises in heavy industry in these regions. Therefore these provinces may not be location choices equivalent to other regions for FIEs. However, in column 4, the estimation results excluding northeastern regions are very similar to our main results.

Another related concern is that western regions[4] in China are typically underdeveloped and they are more likely to be settled by minority groups which naturally change the political environment to some extent. Consequently, western regions might not be similar choices for FIEs too. Yet, column 5 shows that eliminating western regions of China has little effect on our main results.

Column 6 presents estimation results for nested logit model where IIA assumption is relaxed. In nested logit model, we divide China into 4 super regions. The first super-region includes Beijing, Tianjin, Hebei, Shanxi, and Inner Mongolia; the second super-region includes Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, and Shandong; the third-super region includes Henan, Hubei, Hunan, Guangdong, Guangxi, Hainan, Sichuan, Guizhou, and Yunnan; and the fourth super-region includes Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Heilongjiang, Jilin, and Liaoning. We can imagine that FIEs first decide on entering which super-region and then choose a region to locate their investment within that super-region. Again, the nested logit model regression results are very similar to our baseline results.

Following the recent literature (Chang and Lusk, 2011), column 7 reports the estimation results using mixed logit model which relaxes the distribution assumption of the error term. Obviously, the estimated coefficient on institutional difference is still negative and highly significant, -1.653 (s.e.=0.352).

In our base sample, we assume that after an FIE chooses a region to invest in year t, it stays in that region to year 2001. Although it seems to be reasonable, change of FIE location after entry still occurs occasionally. In column 1 of Table 4, we restrict our regression analysis to the sample of FIEs that entered China in year 2001 so that we have the precise location information on FIEs. Actually, the negative effect of the institutional

[4] Western regions include Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.

difference on FIE location choice remains statistically significantly negative and becomes even larger in magnitude.

As the last robustness check, in column 2 of Table 4, we exclude FIEs from countries with less than 10 entries over the 1993-2001 period. Again, estimation results are very similar to those reported in Table 2.

4.3 Understanding the Impacts of Institutional Distance

So far we have observed that institutional distance raises the sensitivity of FDI location choice to regional institution variation. We conjecture that the enhanced sensitivity of FIEs from institutionally distant countries stems from the lack of skill and knowhow of these FIEs to deal with predatory local government officials in China. If this is the underlying reason, we expect that this pattern should be more concentrated in the group of FIEs from source countries that are institutionally better than China, and the pattern should be more salient for wholly-owned FIEs than for joint ventures.

Firstly, we examine the differences in the sensitivity between FIEs coming from institutionally better and those from institutionally worse source countries. It is conceivable that FIEs from the source countries whose governments are more predatory than those of China should find it easy to deal with local govenrments in China by using similar strategies and tactics from their business operations in their home countries. Hence, FIEs from countries with weaker property rights protection may be naturally not sensitive to local government expropriation in China.

To investigate this issue, we create two dummy variables indicating whether institutional quality of home country of FIEs is higher or lower than that of China and interact these two dummies with institutional difference. The two variables are denoted as positive institutional distance and negative institutional distance, respectively. We expect that there are no significant effects of institutional difference on FIE location choice for FIEs coming from countries with worse institutions than those of China, and there are negative and significant effects of institutional difference for FIEs from countries having better institutions than those of China's. Estimation results in column 1 of Table 5 indicate that this is indeed the case. Only the variable Positive Institutional Difference produces statistically significant and negative impacts on FDI location choice. This corroborates our conjecture that the effects of institutional distance on FIE location choice stem from the lack of knowledge and experience of FIEs to deal with predatory local bureaucrats in the host country.

Secondly, we examine another possible heterogeneous response, i.e., if FIEs can find a local partner to form a joint venture, joint venture firms should be less sensitive to institutional difference than FIEs having entered China as wholly owned enterprises. This is because local partners are more familiar with local institutional environment and probably have many connections with local bureaucrats so that they would help FIEs to alleviate the entry cost created by institutional difference. Columns 2 and 3 report results for joint ventures and wholly owned enterprises, respectively. Consistent with our conjecture, we find that only wholly owned FIEs exhibit statistically significant responses to institutional distance, whereas joint venture firms do not display significant sensitivity to institutional distance.

4.4 Ethnic Chinese Networks and Institutional Distance

In Table 7, we examine the sensitivity of FIE location choice toward regional institution strength in two groups of source countries, i.e., those with above mean proportion of ethnic Chinese population and those with below mean one. The results show clearly that the estimated coefficient of institutional distance is statistically significant and negative only in the group of source countries with below-mean fraction of ethnic Chinese population. In other words, only FIEs from the group of source countries having relatively small ethnic Chinese networks display statistically significant sensitivity toward regional government expropriation in their business location choice.

Moreover, we further examine the heterogeneous responses of different types of FIEs from source countries with below-mean and above-mean ethnic Chinese networks toward regional institution variation. We divide the sample of FIEs into wholly-owned FIEs and joint ventures. In some regressions, we further partition joint ventures into foreign-majority-owned joint ventures (foreign ownership share is more than 70%) and foreign-minority-owned joint ventures (foreign ownership share is less than 30%). Table 7 presents the regression results. Clearly, no type of FIEs produces statistically significant estimated coefficients for institutional distance in the group of source countries with above-mean ethnic Chinese networks. In contrast, in the group of source countries with below-mean ethnic Chinese networks, wholly-owned FIEs and foreign-majority-owned joint ventures display significant sensitivity toward regional institution variation, while FIEs of other types do not produce significant results.

Combining these two groups of results, we can observe that the presence of a large ethnic Chinese network can spread information on Chinese business environment, and familiarize the business community in the source country with Chinese culture, practices and informal institutions. FIEs in source countries with a high ethnic Chinese network are also more likely to hire ethnic Chinese employees to help explore the Chinese market, build up business connections and establish connections with local government officials. These factors all facilitate FIEs to overcome the barriers to business expansion generated by institutional distance.

4.5 Cultural Distance and Institutional Distance

Finally, we examine whether the proximity in mainstream culture between the FDI source country and China can mitigate the negative impacts of institutional distance on FIE location choice. For each culture index, we divide the sample into two subsamples: the subsample of FDI source countries with low cultural distance (i.e., the difference in culture index value is smaller than the mean value), and the subsample of FDI source countries with high cultural distance (i.e., the difference in culture index value is larger than the mean value). Then, we carry out regressions to investigate the significance of the sensitivity of FIE location choice toward regional institution differences.

Table 8 presents the regression results. Basically we do not observe consistent results. For some indices such as femininity vs. masculinity, the regression results show that only FIEs from the group of FDI source countries with high cultural distance with China exhibit significant sensitivity toward regional institution variation. Nonetheless, for indices such as individualism vs. collectivism and power distance, we obtain opposite results.

These results suggest that the proximity in mainstream culture could hardly produce knowhow and skill to overcome the negative effects of institutional distance on FDI entry.

5 Conclusion

FDI is considered as one of the driving forces behind the growth miracle of China. In this paper, we investigate whether FIEs are more likely to locate in China's regions whose institutional quality are similar to their home countries.

Using an extensive firm-level dataset on FIEs in China, we employ the framework of conditional logit model developed by McFadden (1974) to examine the effect of institutional difference on locational choices of FDI. Our empirical results show that FIEs are less likely to locate in China's regions whose institutional difference is large to their home countries. We also document that this relationship is not driven by outliers and is robust to different model specifications.

Interestingly, we find that FIEs from countries with worse institutions than China are not sensitive to the institutional difference between China's regional intuitional quality and source countries' institutional quality. Moreover, we find that institutional difference play no role if FIEs could find a local partner to form a joint venture enterprise. Furthermore, we find that ethnic Chinese networks and cultural proximity could partially mitigate the negative effect of institutional difference on locational choices of FDI.

Since FIEs are more likely to locate in countries/regions whose institutional quality is similar to their home country, the finding of our paper suggests that if policy makers intend to attract FDI to their country/region, they should pay much more attention to FIEs coming from countries whose institutional quality is similar to the institutional quality of their own country/region. Providing favorable taxes or lowering license barrier for FIEs coming from countries whose instructional differences to the host country/region are small may be possible instruments.

References

[1] Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review*, 91(5): 1369-1401.

[2] Acemoglu, Daron and Simon Johnson. 2005. Unbundling Institutions. *Journal of Political Economy*, 113(51): 949-995.

[3] Aleksynska, Mariya and Olena Havrylchyk. 2013. FDI from the South: The Role of Institutional Distance and Natural Resources. *European Journal of Political Economy*, 29: 38-53.

[4] Bhat, Chandra R. 1998. Analysis of Travel Mode and Departure Time Choice for Urban Shopping Trips. *Transportation Research B*, 32(6): 361-371.

[5] Blonigen, Bruce A., Christopher J. Ellis, and Dietrich Fausten. 2005. Industrial Groupings and Foreign Direct Investment. *Journal of International Economics*, 65: 75-91.

[6] Brownstone, David and Kenneth Train. 1999. Forecasting New Product Penetration with Flexible Substittution Patterns. *Journal of Econometrics*, 89: 109-129.

[7] Chang, Jae Bong and Jayson L. Lusk. 2011. Mixed Logit Models: Accuracy and Software Choice. *Journal of Applied Econometrics*, 26: 167-172.

[8] Cull, Robert and Lixin Colin Xu. 2005. Institutions, Ownership, and Finance: the Determinants of Profit Reinvestment among Chinese Firms. *Journal of Financial Economics*, 77: 117-146.

[9] Darby, Julia, Rodolphe Desbordes, and Ian Wooton. 2010. Does Public Governance Always Matter? How Experience of Poor Institutional Quality Influences FDI to the South. CESifo Working Paper NO. 3290.

[10] Debaere, Peter, Joonhyung Lee, and Myungho Paik. 2010. Agglomeration, Backward and Forward Linkages: Evidence from South Korean Investment in China. *Canadian Journal of Economics*, 43(2): 520-546.

[11] Du, Julan, Yi Lu, and Zhigang Tao. 2008. Economic Institutions and FDI Location Choice: Evidence from US Multinationals in China. *Journal of Comparative Economics*, 36: 412-429.

[12] Du, Julan, Yi Lu, and Zhigang Tao. 2012. Institutions and FDI Location Choice: The Role of Cultural Distances. *Journal of Asian Economics*, 23: 210-223.

[13] Dean, Judith M., Mary E. Lovely, and Hua Wang. 2009. Are Foreign Investors Attracted to Weak Environmental Regulations? Evaluating the Evidence from China. *Journal of Development Economics*, 90(1): 1-13.

[14] Habib, Mohsin, and Leon Zurawicki. 2002. Corruption and Foreign Direct Investment. *Journal of International Business Studies*, 33(2): 291-307.

[15] Head, Keith, John Ries and Deborah Swenson. 1995. Agglomeration Benefits and Location Choice: Evidence from Japanese Manufacturing Investments in the United States. *Journal of International Economics,* 38: 223-247.

[16] Head, Keith and Thierry Mayer. 2004. Market Potential and the Location of Japanese Investment in the European Union. *Review of Economics and Statistics*, 86(4): 959-972.

[17] Johnson, Simon, John McMillan, and Christopher Woodruff. 2002. Property Rights and Finance. *American Economic Review*, 92(5): 1335-1356.

[18] Liu, Xuepeng, Mary E. Lovely, and Jan Ondrich. 2010. The Location Decisions of Foreign Investors in China: Untangling the Effect of Waves using a Control Function Approach. *Review of Economics and Statistics*, 92(1): 160-166.

[19] Papaioannou, Elias. 2009. What Drives International Financial Flows? Politics, Institutions, and Other Determinants. Journal of Development Economics, 88: 269-281.

[20] Poston, Dudley L., Jr., Michael Xinxiang Mao, and Mei-Yu Yu. 1994. The Global Distribution of the Overseas Chinese Around 1990. *Population and Development Review*, 20(3): 631-645.

[21] Rauch, James E. and Vitor Trindade. 2002. Ethnic Chinese Networks in International Trade. *Review of Economics and Statistics*, 84(1): 116-130.

[22] Revelt, David and Kenneth Train. 1998. Mixed Logit with Repeated Choices: Households' Choices of Appliance Efficiency Level. *Review of Economics and Statistics*, 80(4): 647-657.

[23] Train, Kenneth E. 2003. Discrete Choice Methods with Simulation. New York: Cambridge University Press.

[24] Train, Kenneth E. 1986. Qualitative Choice Analysis: Theory, Econometrics, and Application to Automobile Demand. Cambridge: MIT Press.

[25] Wei, Shang-jin. 2000. Local Corruption and Global Capital Flows. *Brookings Papers on Economic Activity*, 2, 303-354.

Table 1: Summary Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
FDI Entry Dummy	915646	0.034	0.182	0	1
Regional Institutions	261	0.006	0.004	0	0.030
Institutional Difference	915646	0.035	0.033	0	0.213
Agglomeration	261	0.034	0.074	0	1
Highway Density	261	5.378	0.851	2.821	6.865
Education	261	4.556	4.506	0.8	40.651
Log of GDP	261	7.299	0.983	4.421	9.176
Special Economic Zone	261	0.375	0.485	0	1
Economic and Technological Development Zone	261	0.548	0.499	0	1

Table 2: Main Results

	(1)	(2)
Institutions	-10.787***	
	(2.755)	
Institutional Difference		-1.652***
		(0.414)
Agglomeration	9.302***	9.303***
	(0.057)	(0.057)
Highway Density	0.126***	0.126***
	(0.020)	(0.020)
Education	0.031***	0.031***
	(0.002)	(0.002)
Log of GDP	0.273***	0.273***
	(0.016)	(0.016)
Special Economic Zone	0.215***	0.215***
	(0.028)	(0.028)
Economic and Technological Development Zone	0.473***	0.473***
	(0.034)	(0.034)
Number of Choices	29	29
Number of Firms	31574	31574
Observations	915646	915646

Notes: Robust standard errors are in parenthesis. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 3: Robustness Checks

	(1) Adding Region-specific Constant	(2) No Regions with Lowest Three Entries	(3) No Regions with Top Three Entries	(4) No Northeastern Regions	(5) No Western Regions	(6) Nested Logit	(7) Mixed Logit
Institutional Difference	-1.115**	-1.625***	-2.537***	-3.359***	-2.226***	-0.847***	-1.653***
	(0.463)	(0.409)	(0.604)	(0.495)	(0.434)	(0.241)	(0.352)
Agglomeration	9.284***	9.283***	13.551***	9.620***	8.922***	7.162***	9.303***
	(0.059)	(0.057)	(0.139)	(0.069)	(0.055)	(0.062)	(0.055)
Highway Density	-0.041	0.083***	0.156***	0.277***	0.181***	0.048***	0.126***
	(0.086)	(0.019)	(0.025)	(0.025)	(0.032)	(0.014)	(0.024)
Education	0.006	0.031***	0.023***	0.019***	0.043***	0.010***	0.032***
	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Log of GDP	0.312	0.222***	0.290***	0.275***	0.188***	0.103***	0.273***
	(0.192)	(0.017)	(0.022)	(0.018)	(0.017)	(0.010)	(0.018)
Special Economic Zone		0.252***	0.140***	0.195***	0.413***	0.056***	0.215***
		(0.028)	(0.036)	(0.031)	(0.034)	(0.016)	(0.027)
Economic and Technological Development Zone		0.429***	0.343***	0.414***	0.271***	0.120***	0.473***
		(0.032)	(0.040)	(0.038)	(0.040)	(0.018)	(0.035)
Number of Choices	29	26	26	26	19	29	29
Number of Firms	31574	31452	18603	27646	29823	31574	31595
Observations	915646	817752	483678	718796	566637	915646	916255
Log Pseudo Likelihood	-35079	-35179	-16670	-27773	-31608	-34134	-141632

Notes: Robust standard errors are in parenthesis. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 4: Additional Results

	(1) Firms in 2001	(2) No Countries with Less than 10 Entries
Institutional Difference	-3.552***	-1.652***
	(1.041)	(0.414)
Agglomeration	8.122***	9.301***
	(0.121)	(0.057)
Highway Density	-0.204***	0.126***
	(0.054)	(0.020)
Education	0.037***	0.031***
	(0.003)	(0.002)
Log of GDP	0.313***	0.273***
	(0.042)	(0.016)
Special Economic Zone	0.083	0.215***
	(0.201)	(0.028)
Economic and Technological Development Zone	0.881***	0.473***
	(0.199)	(0.034)
Number of Choices	29	29
Number of Firms	5156	31377
Observations	149524	909933
Log Pseudo Likelihood	-6170	-35558

Notes: Robust standard errors are in parenthesis. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 5: Heterogeneous Responses

	(1)	(2) Joint Venture	(3) Wholly Owned
Positive Institutional Difference	-1.645***		
	(0.416)		
Negative Institutional Difference	-2.185		
	(36.868)		
Institutional Difference		0.088	-4.655***
		(0.521)	(0.684)
Agglomeration	9.303***	9.717***	8.757***
	(0.057)	(0.077)	(0.083)
Highway Density	0.126***	0.042*	0.252***
	(0.020)	(0.025)	(0.032)
Education	0.031***	0.033***	0.029***
	(0.002)	(0.003)	(0.003)
Log of GDP	0.272***	0.399***	0.117***
	(0.016)	(0.022)	(0.024)
Special Economic Zone	0.215***	0.057	0.455***
	(0.028)	(0.036)	(0.047)
Economic and Technological Development Zone	0.474***	0.293***	0.791***
	(0.034)	(0.041)	(0.059)
Number of Choices	29	29	29
Number of Firms	31574	19070	12504
Observations	915646	553030	362616
Log Pseudo Likelihood	-35561	-21407	-13977

Notes: Robust standard errors are in parenthesis. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 6: Ethnic Chinese Networks and Institutional Difference

	(1) Ethnic Chinese is above sample mean	(2) Ethnic Chinese is below sample mean
Institutional Difference	-0.943	-1.673***
	(1.771)	(0.425)
Agglomeration	10.287***	9.162***
	(0.175)	(0.061)
Highway Density	0.283***	0.106***
	(0.067)	(0.021)
Education	0.007	0.035***
	(0.007)	(0.002)
Log of GDP	0.184***	0.284***
	(0.050)	(0.017)
Special Economic Zone	0.027	0.242***
	(0.085)	(0.030)
Economic and Technological Development Zone	0.310 ***	0.499***
	(0.098)	(0.036)
Number of Choices	29	29
Number of Firms	5612	25962
Observations	162748	752898
Log Pseudo Likelihood	-3673	-31856

Notes: Robust standard errors are in parenthesis. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 7: Ethnic Chinese Networks and Institutional Difference: JV, WOE, Majority and Minority

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ethnic Chinese is above sample mean				Ethnic Chinese is below sample mean			
	JV	WOE	Majority	Minority	JV	WOE	Majority	Minority
Institutional Difference	0.042	-2.767	0.828	0.328	0.095	-4.698***	-3.093***	-0.446
	(2.248)	(2.885)	(2.566)	(3.069)	(0.535)	(0.701)	(0.641)	(0.806)
Agglomeration	10.686***	9.746***	9.585***	11.517***	9.580***	8.610***	8.743***	9.332***
	(0.237)	(0.256)	(0.230)	(0.458)	(0.082)	(0.088)	(0.084)	(0.130)
Highway Density	0.118	0.556***	0.575***	-0.032	0.032	0.216***	0.307***	-0.188***
	(0.081)	(0.120)	(0.114)	(0.120)	(0.026)	(0.033)	(0.034)	(0.036)
Education	0.013	-0.002	0.003	0.009	0.035***	0.033***	0.037***	0.036***
	(0.010)	(0.011)	(0.010)	(0.013)	(0.003)	(0.003)	(0.003)	(0.004)
Log of GDP	0.387***	-0.017	0.046	0.238**	0.401***	0.137***	0.167***	0.430***
	(0.070)	(0.068)	(0.064)	(0.121)	(0.023)	(0.026)	(0.024)	(0.037)
Special Economic Zone	-0.228**	0.444***	0.312**	-0.398**	0.098**	0.457***	0.487***	0.136**
	(0.108)	(0.142)	(0.124)	(0.185)	(0.038)	(0.049)	(0.046)	(0.064)
ETDZ	0.159	0.437***	0.492***	0.460**	0.311***	0.848***	0.780***	0.204***
	(0.121)	(0.168)	(0.148)	(0.212)	(0.044)	(0.064)	(0.061)	(0.069)
Number of Choices	29	29	29	29	29	29	29	29
Number of Firms	3404	2208	2596	1277	15666	10296	11982	5925
Observations	98716	64032	75284	37033	454314	298584	347478	171825
Log Pseudo Likelihood	-2145	-1495	-1832	-717	-19243	-12463	-14132	-7631

Notes: Robust standard errors are in parenthesis. JV and WOE denote joint venture enterprises and wholly-owned enterprises respectively. Majority is joint venture enterprises whose foreign ownership share is larger than 70%. Minority is joint venture enterprises whose foreign ownership share is less than 30%. ETDZ is Economic and Technological Development Zone. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.

Table 8: Cultural Distance and Institutional Difference

	(1)	(2)	(3)	(4)	(5)	(6)
	Masculinity Difference		Individualism Difference		Power Distance Difference	
	Above mean	Below Mean	Above Mean	Below Mean	Above Mean	Below Mean
Institutional Difference	-3.670***	-0.544	-0.913	-2.194***	-0.004	-1.657***
	(0.697)	(0.519)	(0.590)	(0.585)	(32.179)	(0.415)
Agglomeration	9.556***	9.207***	10.655***	8.600***	58.173***	9.299***
	(0.096)	(0.071)	(0.104)	(0.067)	(1.907)	(0.057)
Highway Density	0.176***	0.109***	0.231***	0.030	-0.001	0.125***
	(0.035)	(0.024)	(0.034)	(0.024)	(3.154)	(0.020)
Education	0.020***	0.036***	0.013***	0.044***	0.00004	0.032***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.434)	(0.002)
Log of GDP	0.313***	0.249***	0.279***	0.259***	-0.00008	0.272***
	(0.029)	(0.020)	(0.026)	(0.021)	(1.569)	(0.016)
Special Economic Zone	0.210***	0.215***	0.068	0.350***	1.284	0.216***
	(0.049)	(0.0350	(0.042)	(0.039)	(2.582)	(0.028)
ETDZ	0.554***	0.442***	0.264***	0.681***	1.806	0.474***
	(0.061)	(0.041)	(0.050)	(0.047)	(2.174)	(0.034)
Number of Choices	29	29	29	29	29	29
Number of Firms	10971	19843	13973	16841	58	30756
Observations	318159	575447	405217	488389	1682	891924
Log Pseudo Likelihood	-12138	-23223	-14812	-20378	-11	-35381

Notes: Robust standard errors are in parenthesis. ETDZ is Economic and Technological Development Zone. *** significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 5 percent level.