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ABSTRACT

One of the most important and one of the most heavily studied ethnic networks in the world is overseas Chinese. However, almost all of the analysis on the economic dimensions of the overseas Chinese network has been about the effects of ethnic ties on the aggregate volume of trade or the effects of ethnic ties on foreign direct investment (FDI) at the country level. In this paper, we add to the large and important collection of literature on the subject by studying the profitability of foreign direct investments made by overseas Chinese in China. Our paper takes advantage of a large dataset—over 50,000 firms over a period of eight years—that is comprised of two types of foreign firms with investments in China—those owned by ethnic Chinese and those owned by non-ethnic Chinese. Against common perceptions, we find that ethnically Chinese firms in China do not outperform non-ethnically Chinese firms by a set of conventional profitability measures. We also find that the performance of ethnically Chinese firms deteriorates over time. One hypothesis explaining this result is that ethnically Chinese firms tend to under-invest in those firm attributes that may enhance long-term performance, such as human capital and technology (proxied by intangible assets in our paper). Indeed we do find evidence that ethnically Chinese firms invest far less in intangible assets and human capital as compared with non-ethnically Chinese firms of similar size, age, and other characteristics. In addition, within strata of matched firms based on their intangible assets and human capital, ethnically Chinese firms no longer display significant dynamic disadvantage relative to non-ethnic firms after controlling for other firm characteristics and fixed effects.

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1. Introduction

Economists and other social scientists have studied extensively the economic effects of the so-called "co-ethnic networks"—individuals and businesses linked by common ethnic ties. One of the most important and one of the most heavily studied ethnic networks in the world is overseas Chinese. In this paper, we add to the large and important collection of literature on the subject by studying the profitability of overseas Chinese firms, which have invested and maintained operations in China. So far almost all of the analysis on the economic dimensions of the overseas Chinese network has been about the effects of ethnic ties on the aggregate volume of trade or the effects of ethnic ties on foreign direct investment (FDI) at the country level. While these studies have revealed some important insights, we argue that a focus on the trade and FDI volumes at the country level misses some of the important dynamics about the effects of ethnicity on firms and their performance. In particular almost all the existing works do not explicitly study the ethnic effects across different ethnic networks. The most common approach is to compare trade and investment volumes within the same ethnic network but between countries with different degrees of ethnic ties.

Our paper takes advantage of a large dataset—over 50,000 firms over a period of eight years—that is comprised of two types of foreign firms with investments in China: those owned by ethnic Chinese and those owned by non-ethnic Chinese. Our paper thus explicitly compares performance across ethnic and non-ethnic Chinese networks. This level of empirical disaggregation

allows us to explore some deeper dynamics of the Chinese ethnic network. Compared with country-level studies, this disaggregated approach has the additional advantage of eliminating the effects of the macroeconomic environment, the economic policies, and the legal institutions that may confound with the impacts of ethnic ties and firm performance.

For the purpose of this paper, we define overseas Chinese investors as originating from three ethnically Chinese economies (ECEs)—Hong Kong, Macao and Taiwan (HMT). While this definition does not cover the entire universe of overseas Chinese investors, the coverage of investors is sufficiently encompassing. One factor to consider is that investments from other regions with a large overseas Chinese community are fairly small compared with investments from HMT. For example, the five countries of ASEAN, Singapore, Thailand, Indonesia, Malaysia and the Philippines, have the largest population of overseas Chinese in the world. In 1997, the year at the beginning of our dataset, these five ASEAN countries invested US$3.4 billion in China compared with US$24.3 billion invested by the three HMT ECEs in the same year. (In the rest of this paper, unless otherwise noted, we will use ECEs to denote Hong Kong, Macao and Taiwan only.)

The three ECEs have been the largest source of FDI in China. Between 1978 and 1999, ECEs supplied 59 percent of the entire stock of FDI. Not only is the absolute volume of ECE FDI large, ECE investments are present across a wide range of industries and geographic regions in China. According to one detailed study of the patterns of FDI in China, ECE investments are present in more Chinese industries and are more important to China's export production than similar ECE investments historically in Taiwan (Huang 2003). Thus, apart from the theoretical objective of demonstrating the ethnic effects on firm profitability, it is an empirically important

subject to explore the sources and the variances of firm profitability in accordance with their ethnic ties.

Against common business perceptions that ECE firms should perform better than non-ECE firms in China, we do not find much empirical evidence in support of an ethnic-advantage hypothesis. In fact, in our baseline regressions, we sometimes find that ECE firms in China weakly underperformed non-ECE firms after controlling for a large number of firm characteristics. Such performance differences, it should be noted, are not always robust or statistically significant. We also find evidence that while ECE firms hold some initial operating advantage over non-ECE firms, this advantage quickly deteriorates over time.

There are a number of potential explanations for our findings. One possibility is that ECE firms are less motivated by profit considerations as compared with non-ECE firms when investing in China. For example, they may favor investment locations based on cultural proximity rather than based on commercial promise. They may recruit relatives into the workforce rather than those based on skills and capabilities. This "hometown effect" for ethnically Chinese investors is noted to concentrate mostly in Guangdong and Fujian provinces. Our empirical findings are robust when we analyze the subsamples of Guangdong and Fujian firms and of the rest of the provinces. We are also able to show that the ethnic advantage of ECEs deteriorates most rapidly among those firms characterized as technologically-intensive or knowledge-intensive. Such a pattern is significant both statistically and economically, and robust to various specification checks. This suggests that the dynamic inefficiency of ECE is not explained by either the policy preference toward the ECEs or the altruistic investment motivation of the ECEs.

This finding is suggestive—although by no means conclusive—of the possibility that ECE firms may have under-invested in technology or human capital, those attributes will give the firm a longer-lasting operating advantage.[1] Indeed after controlling for a variety of firm characteristics, we found strong evidence that ECE firms do lag non-ECE firms in terms of investments in intangibles and human capital. Once the levels of investments in intangibles and human capital are matched between ECE firms and non-ECE firms, the ECE firms' dynamic disadvantage dissipates. There are other differences between ECE and non-ECE firms that may bear upon our findings. For example, ECE and non-ECE firms may differ in their propensities to engage in earnings management and transfer pricing. To the extent allowed by our data, we have designed our empirical strategy in order to minimize the influences from these sources.

The remainder of the paper is organized as follows. Section 1 presents the existing literature and theoretical framework that guide our empirical exploration. Section 2 introduces this unique dataset of over 50,000 foreign invested enterprises (FIEs) over a period of four years, giving a maximum number of observations of 200,000. Section 3 presents the model and the empirical results. In the fourth section, we present results from a battery of robustness tests (some discussed in the appendix to the paper). In our robustness tests we pay particular attention to the possibility that our findings are affected by transfer-pricing dynamics allegedly common among ECE firms. We carried out exhaustive tests and did not find transfer pricing to be a culprit of our major findings. The fifth section concludes the paper.

[1] Due to data limitations, we may not be able to rule out other explanations that might also be consistent with the empirical results.

2. Literature and Theoretical Framework

Does ethnicity pay? Specifically, do ethnically overseas Chinese firms outperform non-ethnically Chinese firms on conventional measures of business performance? In this section, we first discuss the theoretical frameworks that guide our empirical exploration. Our paper is related to two strands of academic literature. One strand of literature focuses on the specific economic and business effects and functions of what is known in the literature as "pre-existing relationships," including, although not limited to, ethnic ties. These effects or functions refer to the trust enhancement, information provisions, matching of buyers with sellers, and the acquisition or diffusions of new knowledge. The outcome of interest in this strand of literature is very similar to ours—performance of firms or of individuals. The second strand of the literature deals with what might be called "institutional" functions of ethnic ties. Those functions proximate those performed by a government and they have to do with contract enforcements and dispute resolutions. These institutional functions of ethnic ties arise in environments normally absent of well-developed legal institutions. While our paper is very close to this strand of literature in terms of our empirical interest, as already noted, this strand of literature focuses on economic phenomena of fairly aggregate nature (FDI and trade flows). Our paper is a synthesis of these two strands of economics literatures.

Economists have studied and demonstrated the informational functions of pre-existing relationships on financial transactions. For example, Burch, Nanda, and Warther (2005) find that a pre-existing underwriting relationship for repeat issuers of new securities leads to a lower fee. To single out the informational benefits of a pre-existing relationship, they show this effect to be true

only of common stock offers that are particularly prone to asymmetric information problems. Schenone (2004) shows that banking relationships with underwriters established before a firm's IPO ameliorate the asymmetric information problems associated with high IPO underpricing. This ameliorative effect is significant. A pre-IPO banking relationship with a prospective underwriter faced about 17 percent lower under-pricing than firms without such a pre-existing banking relationship. Hellmann, Lindsey, and Puri (2008) show that banks use venture capital investments to build lending relationships. Having a prior relationship with a company in the venture capital market increases the chances that a bank will subsequently grant a loan to that company. Companies can benefit from these relationships through more favorable loan pricing.[2]

Closer to the empirical focus of our paper is the research by economists who have studied the effects of ethnic and regional ties on business and financial transactions. Another similarity is that this body of research typically deals with situations in which formal legal institutions are relatively under-developed. For example, common ethnic ties have been found to facilitate trade credit extensions in developing countries (Fisman and Love 2003) as well as the more productive forms of financial transactions, such as the use of longer-term contracts over arm's-length contracts—checks rather than cash (Guiso, Sapienza, and Zingales 2004). Ethnic networks are also found to facilitate flows and diffusions of "complex knowledge" (such as science), not just

[2] More generally, financial economists have studied the impact of social networks on economic activities through knowledge acquisition and diffusion. A number of papers, such as Hong, Kubik, and Stein (2004), Ivkovic and Weisbenner (2007), Brown, Ivkovic, Smith, and Weisbenner (2008), and Cohen, Frazzini, and Malloy (2008), show that stock-market participation is influenced by social interactions, that households' and even professional money managers' portfolio-choice decisions seem to be substantially influenced by word-of-mouth communications with peers, and that social networks may be important mechanisms for information flows into asset prices.

transaction-specific information. Kerr (2005) concludes that ethnic scientific communities play an important role in international technology diffusion. Kalnins and Chung (2006) provide evidence from the U.S. lodging industry that Gujarati immigrant entrepreneurs benefit from their ethnic group's social capital when already-successful members are co-located in the same industry.

The informational asymmetry is a particularly acute problem when it comes to transactions across different geographic and political boundaries. For this reason, international trade economists have studied how ethnic ties may affect international trade and capital flows.[3] Ethnic networks consisting of immigrants and overseas residents serve to match the foreign/domestic buyers with domestic/foreign sellers. Therefore, ethnicity pays in the sense that ethnic members understand the characteristics of both home and foreign market characteristics better than non-ethnic members. The matching function of the co-ethnic ties is at the heart of a theoretical model developed by Casella and Rauch (2002). Rauch and Trindade (2002) developed a test for this informational function of co-ethnic networks. They found that the Chinese ethnic network exerted a particularly strong effect on trade in the differentiated product space. Because differentiated products do not have a ready reference price point, trading is particularly intensive in its information requirements. And the fact that the ethnic effects are particularly large in this product space is evidence of the informational advantage of ethnic ties. Tong (2005) extended this framework to FDI and showed that the ethnic effects were still present in developed countries with well-developed institutions. She thus drew the conclusion that the information functions of ethnic ties—as opposed to contract enforcement—were more important.

[3] For a comprehensive literature review, see Rauch (2001).

The second strand of the literature deals with what might be called the "institutional" functions of a relationship. These functions, covering contract enforcement and dispute resolution, proximate those performed by a government. The institutional functions of a relationship arise in environments that are normally lacking in well-developed legal institutions, and it has been argued that they can serve as a substitute for the formal legal institutions[4]. For example, Guiso, Sapienza, and Zingales (2004) exploit social capital differences within Italy. They find that in high-social-capital areas, households are more likely to use checks, to invest more in stock and less in cash, to have greater access to institutional credit, and to make less use of informal credit. The effect of social capital is stronger among less-educated people and where legal enforcement is weaker. Allen, Qian, and Qian (2005) observe that financing channels and corporate governance mechanisms based on reputation and relationships are an important alternative to a formal legal and financial system in supporting the growth of the private sector in China.

The works of Grief (1989; 1993) are the most explicit efforts to model the institutional functions of ethnic ties. According to him, ethnic ties sustain trade agency relationships through a collective punishment mechanism. In his model, although information shortage plagued the long-distance trade during the medieval era, it did not cripple the agency arrangement. This is because Maghribi traders relied on a collective punishment mechanism that excluded an opportunistic agent from future dealings with all the members of the trading network. The crucial ingredient in this story is the ethnic homogeneity of the Maghribi traders. Grief provides documentary evidence that

[4] There is also a vast literature on how legal origins and legal institutional in general affects economic activities and growth. See, for example, the survey paper by La Porta, Lopez-de-Silanes, and Shleifer (2008). The literatures on the impacts of formal and informal institutional arrangements complement each other.

Maghribi traders, who had the most developed form of this mechanism, thrived more than other traders.

While many studies stress the positive effects of ethnic ties in facilitating trade and investment flows, we should point out that a number of studies have sounded a more cautionary note—that ethnic ties can actually be inefficient in certain circumstances. We will briefly summarize this literature here and argue that the ambiguous predictions from this literature review suggest a need to resolve the issue empirically.

A key feature of co-ethnic network is the idea of privilege—insider knowledge and preferential information enjoyed by the members of the network to the exclusion of the non-members (Casella and Rauch 2002). To draw empirical implications of ethnic ties we need to consider explicitly both the inclusive nature as well as the exclusive nature of co-ethnic ties.

There are two ways to think about this issue. One is the possibility that the gains accruing to the members of the network are achieved at the expense of the non-members. In their model, Casella and Rauch (2002) theorize that transacting through ethnic networks entails distributional implications. Anonymous and formal markets remain under-developed when a large share of economic transactions occurs among related agents of a network. The specific mechanism in their model is human capital allocation. Casella and Rauch call it "a lemon effect:" Ethnic groups tie up a disproportionate share of productive human capital, leaving the rest of the society with less productive members.[5]

[5] Casella and Rauch use this reasoning to explain why the mainstream society may bear grudges against ethnic minorities.

The above reasoning raises questions about the economy-wide implications of ethnic ties but there are also firm-level and efficiency implications. It is theoretically possible that ethnic ties can lead to less optimal outcomes for the members of the network as well. This implication is hinted at by Casella and Rauch, although their model did not explicitly explore this possibility. A quote from their paper is highly suggestive: "Li Ka-shing calls the boys before he calls the brokers." While Casella and Rauch are mainly concerned about the exclusionary effects on the brokers in their model, another plausible scenario is that Li Ka-shing—one of the most prominent businessmen in Hong Kong—was ill advised by "the boys"—the friends and relatives related to Li Ka-shing but who do not have objectively sound business expertise. Here the effect of the network is the exclusion of capable human capital. This theorizing about the ethnic networks is consistent with the criticisms that economists have on family firms (Bertrand et al. 2002, Bae et al. 2002, Chang 2003, Coff 1999, and Baek et al. 2006), especially in emerging economies (La Porta et al. 2000).

Some economists, while demonstrating the positive contributions toward information provision, nevertheless argue that ethnic networks can lead to dynamic inefficiencies. Grief (1994) argues that there is an efficiency loss with the mechanism adopted by Maghribi traders to curb opportunism. The ethnic networks have an inward bias in that it is cheaper for insiders to trade than for outsiders. So theoretically there is a potential for the ethnic networks to divert trade as opposed to creating trade. The efficiency loss due to a tightly knit network has long been recognized by non-economists. In a famous paper, Granovetter (1973), a sociologist, shows that loose networks are more efficient in generating useful information on job search as compared with tight networks. The reason is that tight networks are less likely to generate truly new and useful information. Although

Granovetter does not focus on ethnic networks per se, one can argue that ethnic networks are among the tightest networks in the world and therefore would suffer from the liabilities in his framework.

We will turn to empirical analysis later in the paper to examine whether common ethnic ties promote or reduce firm profitability in the Chinese context. It should be noted here that field research, however, has uncovered substantial evidence that overseas Chinese businesses have often recruited heavily from their ancestral hometowns and immediate families, thus limiting themselves to a narrow base of human capital. These businesses retain their related managers and workers even if they are unproductive in an objective sense because this is viewed as "an obligation" to their home regions (Smart and Smart 1993). If this effect is pervasive enough, ethnically Chinese firms may earn lower returns on their invested capital because they are matched with trustworthy but incompetent human capital.

Field research also uncovers evidence that ECE firms tend to invest in a limited set of geographic locations. They have invested heavily in their own home regions with an explicit purpose of benefiting the local economies and the local residents.[6] One way to think about their investment projects is that they are a form of donation to their ancestral villages. These "altruistic" investment motivations, while perfectly aligned with the utility functions of the overseas Chinese investors, may not show up as profitable projects by the conventional benchmarks. To demonstrate these

[6] Evidence uncovered by Ezra Vogel in his research on Guangdong province shows that many of the Hong Kong firms return to do business in their ancestral home regions. Half of the export-processing contracts in the Dongguan region of Guangdong were with former Dongguan residents now living in Hong Kong (Vogel 1989 , p. 176).

phenomena as systematic or pervasive beyond these anecdotal accounts requires an empirical demonstration on the basis of a large-scale dataset, a task to which we turn next.

3. FDI Data and Measures

As noted before, we define overseas Chinese investors as those originating in three ECEs—Hong Kong, Macao, and Taiwan.[7] This definition of ECEs follows conventional classification used in the official Chinese statistical survey, which constitutes our data source. Unfortunately, the dataset does not contain additional information about the exact source of the FDI. For example, we do not know whether an ECE investment is from Hong Kong or from Macao. Between 1978 and 1999, the ECEs supplied 59 percent of the entire stock of FDI in China. Not only is the absolute volume of ECE FDI large, ECE investments are present across a wide range of industries and geographic regions in China. We are fully aware of the various imperfections in our classification of ethnic FDI due to the limitation of our data. For example, China also receives FDI investments from other regions with a large overseas Chinese community, although the volumes of such FDI are fairly small compared with investments from Hong Kong, Macao, and Taiwan. Chinese immigrants in Europe, America and Japan could potentially be behind the FDI investments from those regions into China.

In addition, we could not completely rule out the possibility that a portion of FDI originating from Hong Kong, Macro and Taiwan could potentially contain an element of truly non-

[7] Politically, China takes over sovereign rights to Hong Kong and Macao in 1997 and 1999, respectively. However, economically, these regions still enjoy almost complete independency. International agencies such as the World Bank and International Monetary Fund routinely classify these regions as separate economic identities from mainland China, and calculate FDI and trade volume accordingly.

ethnical investments. These three ECEs, especially Hong Kong, can be used by multinational corporations as legal domiciles. That said, we are confident that the majority of FDI from Hong Kong, Macro and Taiwan comprises investments made by ethnic Chinese firms and entrepreneurs. In addition, to the extent that our classification of ethnic and non-ethnic FDI is imperfect, this bias should work against us finding any significant differences in the performance of ethnic and non-ethnic FDI.

The informational function of ethnic ties leads to a straightforward prediction that ECE firms should outperform non-ECE firms. If the ethnic ties lead to a better matching of capabilities and knowledge between ethnically Chinese foreign investors and Chinese investors, then ethnic businesses should command an operating premium compared with those firms outside the network. One feature that our dataset lends readily to is an empirical test based on this logic. Of the total population of FIEs, in the dataset, approximately 58,089 are joint ventures. We single out joint ventures for emphasis because joint ventures require ongoing communication and co-management between foreign and Chinese investors. If the ECE joint ventures are better matched than non-ECE joint ventures, we should expect to see higher operating margins.

3. 1. Study Design and Data

To test the null hypothesis that ECE-originating FDI does not outperform non-ECE FDI in China, one would ideally conduct a randomized experiment for these two types of FDI in China. In this experiment, the treatment would consist of FDI by ethnically Chinese overseas investors; particularly those based in Hong Kong, Macao, and Taiwan, and would randomly be assigned to

companies in China. The remaining companies would take on FDI by other foreign investors. The experimenter would then follow up on these two groups of companies over time and compare the mean performance of the companies in the two groups after a few years post-FDI entry. Similar to most economic research questions, we can at best approach this with observational studies instead of randomized experiments. We managed to procure very comprehensive data—the Chinese Industry Census (CIC) for the years 1998 to 2005—compiled by the National Bureau of Statistics (NBS) in China. To our knowledge, the CIC is the most detailed database on Chinese industrial firms and it is well suited for exploring ethnic variance in performance.

The dataset contains detailed financial data for each of the entire population of the FDI firms in China with sales in excess of 5 million yuan (roughly US$600,000) for each of the census years between 1998 and 2005. The detailed company information and panel structure allow us to properly handle the potential endogeneity of FDI by origin. To give an example, certain industries are more productive and may attract more ECE investors because they possess more innate knowledge about these industries. This correlation between the productivity of the industry to which a company belongs and whether the company adopts ECE FDI could cause an upward bias in the coefficient estimate of the ECE-FDI treatment variable. We mitigate this potential bias by controlling for the industry dynamics at a very disaggregated level. The industry codes in the CIC are at the four-digit level, detailed to the level of product groupings, such as "leather shoes" as opposed to "shoes." The panel structure helps eliminate any time-invariant firm-specific effects and the study of a large number of firms and sectors makes our results generalizable.

Similarly, whether a company receives ECE FDI or not might also be endogenous to the company's own productivity. The best we can do then is to control for crucial company characteristics, such as the number of years since incorporation, size, leverage, and labor-intensiveness, in the regression models. In particular, these variables help capture the observed and correlated latent company experience and productivity advantages or disadvantages. In the set of benchmark regression models with only four key variables and industry and province dummies, there is enough flexibility to add non-linear terms of the key covariates to overcome the limitations of the OLS linear assumptions. We are re-assured that the main findings of our paper are robust to these considerations.

3.2. Data Description and Selection of the Variables

Source and Nature of the Data

The dataset contains detailed information about each company's identity, address, industry classification, incorporation year, employment, hierarchical level to which the company answers (regional, provincial, town-level, etc.), registration type (ECE, domestic, foreign, joint venture, or joint cooperative), three main products in the order of relative importance, and production capacities for these three products, respectively. The dataset also includes the assets, both the year-end level and the change within the year, ownership rights, contractual and actual investments, sales, profits, and exports and imports. In addition, there are detailed records of the breakdown of contractual and actual equity capital among the investment sources, such as investments from

domestic firms, ECE investors, and other foreign investors. Each company's intangible assets, total capital, capital depreciations, and new outputs are also recorded.

The Chinese standard of industrial classification (CSIC), modified in 1988, was adapted from the International Standard of Industrial Classification (ISIC). The CSIC in our dataset is at the four-digit level. For instance, the automobile industry is further classified into the truck, van, car, mini-van, special automobile, automobile body, and automobile part and equipment manufacturing industries. Such a detailed industrial classification allows us to control for technology and other dynamics at the near product level. This level of control is critical in our exercise. Industry classifications at the customary two-digit level are often too broad and unable to capture the intra-industry characteristics of the technology. Our empirical implementation minimizes both the inter-industry and intra-industry differences in technology and other characteristics, as well as the correlations between these characteristics and the ethnic characteristics of the investors.

That said, we note a number of caveats with our dataset. Though the industrial censuses were carefully conducted, the dataset contains some errors. We checked and corrected such errors as best as we could. For instance, some industry codes contain less than four digits, often times because the first zero number is omitted. These are apparently reporting errors, and we looked up these companies' main products, which are reported in the dataset, in the industrial classification codebooks, and we filled in the industry codes to which these products should belong. Similarly, some of the province codes are mistyped or missing, and we corrected them by referencing the address of the companies and the codebook. Although we tried our best to clean the data and ensure that the different variables yield consistent information, there may be remaining

inconsistencies that we were not able to detect. In addition, we also performed robustness analyses within each industry, as reported in the Appendix.

Measures of Performance

Given our primary focus on testing whether foreign direct investments from different ethnic origins (in particular ECEs versus non-ECEs) have different consequences on a firm's performance, the key is to select appropriate performance measures and control covariates that are appropriate for our sample. Since the majority of the observations in our database are non-listed firms, we do not have information about the market value of equity or assets and we cannot rely on stock market-based performance measures. We focus instead on standard operating performance measures to study whether ECE FDI outperforms non-ECE FDI: return on assets (Desai, Foley, and Hines 2004a , Joh 2003), return on equity (Desai, Foley, and Hines, 2004b , Nissim and Ziv 2001), and net margins (Joh 2003, Lambkin 1988, Lu and Beamish 2001). Intuitively, these are the total profits normalized by total assets, total equity ownership rights, and total sales, respectively. To be specific, we define Return on Assets as profits divided by beginning-of-year assets. Since we do not have the beginning-of-year assets directly, we compute them as the end-of-year assets minus the profits (which we implicitly assume to accrue as assets for the next year). We define Return on Equity as the ratio between profits and ownership rights, and we define net margin as the ratio between profits and sales.

To account for the possibility that managers might engage in earnings management to hide the true performance of their firms, and that ECE firms and non-ECE firms might engage in different levels of earnings management activities, we further adjusted our performance measures to

account for the fact that they might be subject to earnings management.[8] We report the empirical results using these adjusted measures of firm performance. In unreported tests, we confirm that the results are qualitatively similar when we use the unadjusted measures of performance.

Furthermore, due to the fact that the distributions of ratio variables are conducive to outliers, we winsorized the data at the 1 percent and 99 percent levels. Such winsorizing is increasingly used in the empirical finance and accounting literature, such as in Brav and Lehavy (2003) and Durnev and Kim (2005).

Control Variables

Following the literature, we included a company's total assets, leverage, and age as the main control variables, together with the set of firm, industry, and province dummy controls. The value of total assets is mainly used to control for the company's size. We plotted the histograms of these variables and generated a log term of the total assets variable so that the distribution of the log variable better approximates a normal distribution and better suits the linear regression assumptions. Given that China is abundant in labor resources and capital resources are comparatively scarce, we additionally controlled for the labor-intensiveness of the firm in the regression model. We measured labor-intensiveness by capital-paid-in divided by the number of workers. This can be a useful control if ECE and non-ECE firms differ in terms of the labor intensity of their production.

[8] To be specific, we followed Teoh, Welch, and Wong (1998) to calculate the discretionary accrual of a firm, and we adjusted the earnings numbers accordingly. These adjusted earnings numbers might be substantially different from the unadjusted numbers, and the deviations do not necessarily cancel out over time for the same firm. The detailed procedure for adjusting for discretionary accrual may be obtained from the authors.

We calculated a company's leverage by subtracting the equity ownership rights from the end-of-year assets and dividing this difference by the end-of-year assets.[9] The age of a company is defined as the number of years it has been in operation up to the survey year (e.g., 1998) minus the incorporation year. This variable helps to capture the variations in production and management experiences and potential differences in the life-cycle stages of firms that can be a crucial determinant of performance. The long survival of a company in the market can also act as a selection control for productive companies. One particular dynamic that this variable controls for is the so-called "first-mover advantage." To the extent that ECE investors entered China earlier than other investors, there might be a potential correlation between ECE ethnicity and first-mover advantage. In our empirical implementation, as we will detail later, the company age effect is independent of the ECE effect.

Although not included in the benchmark model, we have compiled an exhaustive list of other covariates to better control for the potential confounding effects on performance. The standard measure of size is the size of total assets, but because we include total assets in calculating the ROA, we also tried the alternative measure for the size of companies as given in the CIC. The CIC divides all the firms into large, medium, and small categories. Our findings are robust to control for this alternative measure of firm size. The influence a foreign investor exerts on management decisions is usually proportional to the fraction of equity held by the foreign investor. We have a measure of foreign ownership given by the percentage fraction of foreign equity—whether ECE or

[9] Essentially, we try to measure Debt/Total_Asset by (Total_Asset – Equity)/Total_Asset.

non-ECE—of total equity. In many studies, exports are used as a proxy measure of firm-level productivity (Qian 2007). We use export values as a share of total sales to control for the company-specific productivity level. An additional benefit is that this may also address transfer-pricing concerns.

Transfer pricing may affect performance of FDI firms and the differentials between ECE and non-ECE FDI firms. By its covert nature, transfer pricing is intrinsically hard to detect and measure, but some researchers have used the values of foreign trade as a proxy for the transfer-pricing dynamics (Desai et. al. 2004). We follow the same procedure here. For this purpose, we generated two variables: the difference in exports and imports as a fraction of total output, and the ratio of exports to total sales. (As an additional test, we performed similar procedures on a separate dataset comprising all FDI firms in 1995. The results are qualitatively similar to those generated from the CIC.)[10] We generated a dummy variable, POLHCHY, which is the position of the Chinese joint-venture partners in the Chinese political hierarchy. In China, firms are regulated by nine different levels of the government, e.g., central government, provincial government, city and county government, and so forth. We created this variable with the idea that ECE and non-ECE investors may systematically differ in terms of their levels in the regulatory hierarchy. In our empirical implementation, we added a control on POLHCHY and experimented with different cutoff values for POLHCHY. Our empirical findings are unaffected by these specification checks.

[10] The results are available from the authors upon request.

4. Empirical Models and Results

In Table 1.A, we present summary statistics of the main variables used in the regression models in the Appendix. The dataset covers companies in 31 provinces from 1998 to 2005. The average employment level in the census of companies is 311 headcounts, with a standard deviation of 697. The employees enjoy an average wage of 15,611.93 yuan and mean fringe benefits of 489.07 yuan. The companies are relatively young in age, with a mean of approximately six years and a standard deviation of four years. There is a wide range among the companies in terms of exports, capital, and performance. On average, firms in the CIC hold 982 million yuan in total assets and 451 million yuan in equity, leverage half of the assets, and earn a profit of 58 million yuan. The average sales value among these companies is 681 million yuan, and one-third of the sales are exported. The companies are not very labor-intensive, with a mean labor-intensiveness (defined as the labor-capital ratio) of 0.14 and a standard deviation of 0. 20. That is, on average the firms have one worker for every 10,000 yuan of capital (roughly US$1,200 based on the exchange rates during our sample period).

[Insert Table 1.A around here.]

To get a general sense of how the ECE firms differ from the non-ECE firms, we tabulated the summary statistics for these two samples of firms separately in Table 1.B. Over the full sample, the ECE firms have a slightly lower average performance than the non-ECE firms, as measured by three alternative proxies including net margin, ROA, and ROE. The two camps of enterprises engage in almost identical levels of discretionary accrual and leverage, and comparable levels of transfer pricing (to the best that we could approximate). On average, the ECE firms are less labor-

intensive and are about one year older than the non-ECE firms. As compared to the ECEs, the non-ECE firms are larger in size, as reflected by the higher mean values of exports, sales, equity, and total assets. They also own more intangibles, offer higher wages and fringe benefits, and earn higher total profits.

[Insert Table 1.B around here.]

We set out to test the hypothesis that FDI firms that are owned and managed by people of the same ethnic origin are more profitable than FDI firms with ethnically diverse owners and managers. This is built on the core hypothesis in the literature on the economic effects of ethnicity. Because joint ventures require the most intensive form of communications and mutual trust, we estimate our models mainly for this subsample of companies, and test for possible differential effects on firm performance among the ECE and non-ECE FDI firms. We repeat the analysis on the non-joint-venture subsample to check for the robustness of the results and to note any potential different patterns. We then explore potential mechanisms for any performance implications of the ECE investments.

Since the status of the ECEs remains the same for each firm over the sample period and we do not have any information on the firms prior to the inception of ECE status, a selection model would not be appropriate here. In light of the differences between ECEs and non-ECEs as noted in Table 1.B, we controlled for as many relevant characteristics as observed in the dataset through a combination of semi-parametric stratifications and panel analyses.

4.1. Testing the Static Effects of the ECEs

The benchmark model to test the two camps of theories on ethnicity and firm performance is a year-, company-, and province-fixed effects regression model carried out in the samples of joint-venture (JV) companies and non-JV companies separately:

$$\text{Performance}_{it} = \beta 0*\text{ECE}_{it} + \beta 1*\text{logassets}_{it} + \beta 2*\text{leverage}_{it} + \beta 3*\text{labor-Intensiveness}_{it} + \beta 4*\text{age}_{it} + \beta 5*\text{ProvDum}_{i} + \beta 6*\text{FirmDum}_{i} + \beta 7*\text{YearDum}_{t} + \varepsilon_{it} \quad (1)$$

where $\text{Performance}_{it}=\{\text{netmargin}_{it}, \text{ROE}_{it}, \text{ROA}_{it}\}$, ε_{it} is the regression residual, and β's are the coefficients on the respective covariates. The main variable of interest is $\beta 0$.

The results are reported in Table 2.A. There are negative and mostly insignificant or marginally significant coefficients on ECE for the regressions at all three measures of performance. This implies that after controlling for all the company and province effects and the set of traditional covariates, there is no robust and significantly positive relation between ECE investments and a company's performance. If anything, there seems to be a negative association between ECE investment and firm performance, especially for the non-JV sample. This finding provides some initial evidence that contradicts the theoretical conjecture, based on the informational and knowledge advantages of co-ethnic networks, that ECE firms outperform their non-ECE counterparts. The coefficients on labor-intensiveness are positive and significant at the 1 percent level for the three performance measures in the JV sample, but less significant (and still positive) for the non-JV sample. The coefficient on age is insignificant for the JV sample and negative and marginally significant for the non-JV sample, and log assets are positive and significant for the JV sample but negative and mostly significant for the non-JV sample. The "Leverage" variable takes on

positive coefficients that are significant at the 1 percent level for the specifications with the three alternative performance measures and in both the JV and non-JV samples.

[Insert Table 2.A around here]

It is sometimes conjectured that ECE firms engage in more transfer-pricing activities than non-ECE firms. Transfer pricing refers to the practice of under-reporting profits by either under-invoicing exports or over-invoicing imports. ECE firms are suspected to deploy this practice more frequently because many ECE firms engage in export-processing operations. By its underground nature, it is very difficult to measure transfer pricing precisely. Since transfer pricing is usually practiced by under-reporting exports, we define the first proxy as the exports as a ratio of the total output.[11] Our regression shows that this transfer-pricing proxy does not correlate with ECE significantly, after controlling for the set of relevant covariates in the JV sample (coefficient = -.0005, se= .003, and t-stat= -0.17, Column 1 in Table 2.B).

We then regressed the three performance measures on the ECE indicator, the transfer-pricing proxy, the political hierarchy level to which the company answers,[12] and the set of traditional controls as specified in Model 1. Upon adding the transfer-pricing control, the coefficients on the ECE indicator did not change in terms of magnitude and sign from those reported in Table 2.A. To preserve space, only the results for the ROA specifications are tabulated in Table 2.B.

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[11] Ideally, we would want to also include controls to address imports, but our full dataset does not give the import level for the entire sample. For the 1998-2001 subsample, we do have import data. We re-did our transfer-pricing tests for those years by proxying the transfer pricing as exports *and* imports, and the results are qualitatively similar.

[12] Specifically, a set of dummy variables are generated from this categorical variable of hierarchy and are included as the regressors.

We also generated an alternative proxy for measuring transfer pricing, namely, exports as a fraction of total sales, to check on the robustness of the results. Bearing in mind the potential differences between the completely domestic companies and the firms that export, we stratified the dataset into the group that targets only the domestic market, voluntarily or involuntarily (no demand for exports), and the four other groups according to the remaining quartile values of the export-sales ratio variable. Within each stratum, we repeated the regression of the performance measures on the transfer-pricing variable and the set of controls. These analyses yielded negative and statistically insignificant coefficients on the ECE indicator. In another set of unreported robustness checks, we also replaced the transfer-pricing proxy by the ratio variable of exports as a share of sales in the regression analysis within each stratum. This yielded inconsistent ECE coefficient signs and significance levels.

We initiated these transfer-pricing tests to address the concern that the lower accounting performance among ECE firms was driven by transfer pricing rather than by the operations of ECE firms. If so, the ECE coefficients should be very sensitive to the inclusion of a transfer-pricing variable. That is not the case. After the control, the ECE dummy is never positive and significant. In fact, in all the specifications, the ECE coefficient is negative and insignificant.

[Insert Table 2.B around here]

Discussion of Alternative Explanations of the Static Effect of the ECEs

There are a variety of reasons we can think of that potentially explain our findings. We discuss several of them, including non-profit-maximization motivations, a "trial and error" approach of ECE investment, and complacency caused by lack of competition.

Field research uncovers evidence that ECE firms invested heavily in their own home regions with the explicit purpose of benefiting the local economies and the local residents.[13] Along with their investment projects, they often donated to schools and hospitals. These "altruistic" investment motivations, although perfectly aligned with the utility functions of the overseas Chinese investors, may not lead to profitable investment projects by conventional benchmarks. If that is the reason for the observed lower performance of ECE FDI, then it might appear that these "hometown investments" by ECEs would have a lower "hurdle rate." It would not be surprising that when measured by the usual performance measures, the ECE investments appear to be less profitable. If this is the explanation for our findings on the static effect of ethnicity on performance, then it will likely be a larger problem for the provinces of Guangdong and Fujian, home to the ancestors of most overseas Chinese. In addition, if an altruistic investment motive is behind the observed pattern, there is no a priori reason why the pattern should change over time as the firm ages.

[13] Evidence reported by Ezra Vogel in his research on Guangdong province of China shows that many Hong Kong firms return to do business in their ancestral home regions. He notes that in the late 1980s half of the export-processing contracts in the Dongguan region of Guangdong were with former Dongguan residents living in Hong Kong (Vogel 1989, p. 176).

Another possible explanation is that the lower performance of ECE investment is an indication of a "trial-and-error" approach taken by some ECE investors. It has been observed that investments from Hong Kong, Macao, and Taiwan in mainland China tend to be smaller. For example, Huang (2003) reports that Hong Kong firms that invested in China are smaller than Hong Kong firms that invested in other countries. In our sample, on average the ECEs tend to be smaller than the non-ECEs. It is theoretically possible that ECE investors aim to use some of these small-scale investments as pilot projects to test the water, so as to accumulate experience for larger projects later on. The cultural proximity might enable and even encourage some of the ECE investors to take such a trial-and-error approach with small experiments because even if the investments fail, they might not be too detrimental to the relationship, particularly if there is already a strong pre-existing relationship. If the pilot projects succeed, they could then be used as a base to build a large capacity. In a sense, this investment approach is akin to the purchase of a call option: although it might expire out of money from time to time, it allows the flexibility for bigger follow-up investments. If this is the reason for our findings thus far, then when focusing on the larger FDI made by the ECE and non-ECE investors, the effect that we observe should disappear.

Another more complicated explanation deals with the complacency that might arise due to the "edge" that a closely knit social network might initially provide. In other words, the initial advantage (or lower hurdle to entry) enjoyed by ECE investors might cause some investors to enter for the "wrong" reason. For example, the cultural proximity enjoyed by ECE investors might lower the fixed costs of setting up the FDI, thus allowing some more marginal projects to be profitable in earlier years. However, if these ECE investors fail to build a sustainable production capacity, then,

over time, as the non-ECE investors overcome the higher hurdles of cultural barriers and catch-up, the ECE investors will lose their edge. Similarly, if an overseas Chinese investor only recruits his friends and family in the management of his firm, the costs of operations might be lower initially, as there is less asymmetric information and fewer agency problems, but this choice limits the firm to a narrow human-capital base. Over time, such a limitation in human capital may matter, particularly for businesses that rely heavily on managerial expertise and technology. A key feature of a co-ethnic network is the idea of privilege—insider knowledge and preferential information enjoyed by members of the network, are the exclusion of non-affiliated but potentially capable human capital (Casella and Rauch 2002). This theorizing about ethnic networks closely resembles criticisms that economists have leveled on family firms (Bertrand et al. 2002, Bae et al. 2002, Chang 2003, Coff 1999, and Baek et al. 2006), especially in the emerging economies (La Porta et al. 2000). It generates the prediction that the performance of ECEs might deteriorate further over time, compared to that of non-ECEs.

We next turn to the tests on the dynamic effects of ECEs to try to differentiate the various scenarios.

4.2. Testing the Dynamic Effects of ECEs

The above discussion gives rise to different predictions about how the comparative advantages of ECEs change over time. To examine the dynamic effects of ECE investment on firm performance, we generated the interaction variables between the ECE indicator and firm age (ECE*Age).

$$\text{Performance}_{it} = \beta_0 * \text{ECE} * \text{Age}_{it} + \beta_1 * \text{ECE}_{it} + \beta_2 * \text{Age}_{it} + \beta_3 * \text{leverage}_{it} + \beta_4 * \text{labor-intensiveness}_{it} + \beta_5 * \text{logassets}_{it} + \beta_6 * \text{YearDum}_t + \beta_7 * \text{ProvDum}_i + \beta_8 * \text{FirmDum}_i + \varepsilon_{it} \quad (2)$$

A positive and significant coefficient on β_0 would indicate that ECE firms enjoy increasingly higher operational advantages. Conversely, a negative and significant coefficient on the interaction term would indicate that over time, compared to the non-ECE firms, the performance of ECE firms becomes worse. The regression results for the above tests are shown in Table 3. The results do indeed show negative β_0's, statistically significant at the 1 percent level using the three alternative performance measures (Row 1 in Table 3). In addition, β_1 appears negative, and significantly so in some specifications. For example, in the regression reported in Table 3 for the joint-venture sample, the coefficient on the ECE*age Interaction term is -0.0239, with a t-statistics of -3.87, and the coefficient on the ECE dummy is -0.0103, with a t-statistics of -1.37 in the regression with ROA as the performance measure. This suggests that ECE FDI initially has a small and statistically insignificant disadvantage in performance, but the disadvantage intensifies over time. The increasing ECE disadvantage shown in our data may be reconciled with the theories that predict the dynamic inefficiencies of ethnic ties in Section 1. These ethnic ties point to the potential limitations of human capital and other shortsighted or non-profit-maximizing investment behavior. We are able to directly test these suggested underlying mechanisms in the next section, using the rich data at hand.

[Insert Table 3 around here]

We performed various robustness checks to the baseline regression results. It is entirely possible that the ECE and non-ECE firms differ on many other important dimensions, and our linear control on these characteristics may be insufficient to fully absorb the impact of these differences in characteristics on the dynamic pattern of firm performance. To better address this possibility, we took advantage of the degree of freedom endowed by the rich dataset to perform a regression analysis with higher order controls on the control variables, but we did not find a qualitatively different pattern. We also directly addressed the potential impact of transfer pricing on the observed dynamic pattern by directly controlling both the ratio of exports to total sales and our measure of transfer pricing. The main results of the regression analysis remain unchanged. In fact, in most specifications, adding these additional controls further strengthens the results that show that there is a dynamic inefficiency of ECE investments. We report one version of the robustness-check results in Table 4.

[Insert Table 4 around here]

There are still negative coefficients on ECE that interacted with the year or ECE interacted with age respectively. These findings were significant at the 1 percent level for the three performance measures. The coefficients on the squared terms of age and labor-intensiveness are negative and significant. In addition, the coefficients on the squared log assets are all opposite the signs on the linear terms, indicating potential concavity in their relationship with performance. Overall, qualitatively the results of the ECE effects are the same as those reported in the previous tables.

4.3. Exploring the Mechanism for the ECE Effects

We probe into the mechanism for the declining advantage of ECEs over the past years. As reasoned in Section 3.1, one potential explanation for our findings so far is that ECE investors are myopic and do not build sustainable capacity. This would be reflected in their lower average intangible assets, lower human capital, and lower maintenance of production capacity. To examine this hypothesis, we first conducted a regression analysis on the intangible assets or average wage level by regressing these on a variety of firm characteristics and an ECE dummy.

Intangible assets as defined in our data very closely resemble accounting treatments in the United States, including patented and non-patented technology and know-how, brand name and trademarks, royalties, various types of licensed rights and franchise rights, and goodwill. The Chinese accounting standard also allows for the amortization of the intangible assets in a fashion that closely resembles that of the United States. The intangibles exhibit positive and significant time trends over the sampled years for the non-ECE firms, netting out the firm- and province-fixed effects, indicating that our average non-ECE firms are spending heavily to build up their intangible assets over time. This is not true for the ECE firms.

Our regression results, summarized in Table 5, confirm that the ECE firms in our sample significantly under-invest in intangible assets and human capital compared to the non-ECE firms, controlling for other firm characteristics. In particular, the ECE indicator carries negative and highly significant coefficients in regressions with intangibles or wages as alternative response variables, controlling for year-, industry-, and province-fixed effects.

[Insert Table 5 around here]

We further demonstrate how the differences in intangibles and human capital between the ECE and non-ECE investors may link with the differences in their performance. We first stratified the dataset into six subsamples by the value of the intangibles: the first subsample contains firms that have zero intangibles and the five other subsamples contain five subsamples of firms based on the quintiles of intangibles to which these firms belong. The first subsample consists of a little more than 40 percent of the companies, with almost an even split between the ECE and non-ECE firms; the latter five subsamples approximately account for about 60 percent of the sample, with 22,252 ECE and 39,495 non-ECE firms, respectively, roughly evenly distributed among the five quintiles. For each of the performance measures, we regressed the performance measure on the ECE indicator variable, ECE and age interaction term, firm age, and a variety of the control variables used in Table 2, controlling for the province, industry, and year dummies.

Table 6 presents the summary of the regression coefficients on the ECE*age interaction terms and the corresponding t-statistics. As can be seen, for each of the strata of the data where firms have relatively similar levels of intangible investments, the ECE*age coefficients become statistically insignificant. In fact, they become positive for lower levels of the intangible investments. Combined with the earlier evidence that when regressing intangibles on ECE*age and the set of usual controls in the whole sample, ECE*age is negative and statistically significant at the 1 percent level. Also, ECE firms engage in significantly fewer intangible investments. The new results present strong evidence that the intangibles are the underlying mechanism (or at least an important factor) for the diminishing ECE advantages that we discovered earlier.

[Insert Table 6 around here.]

We then examine the theory that predicts an efficiency loss in ethnic ties due to non-expertise-based employment. Wages are widely used to proxy for worker productivity in labor economics. We therefore stratified the sample according to the quintiles of wage levels to test whether ECE firms still experience a dynamic disadvantage when compared with non-ECE firms with a similar level of average wages. Table 7 summarizes the regression coefficients for ECE*age for the regression analysis across the five quintiles of average wages, three performance measures, and for both the JV and non-JV subsamples. The results imply that the ECEs' inferior human capital investments—possibly arising from either the trust in human resources exclusively within the local ethnic network or from the lack of incentives to invest in non-cultural business expertise—are an important underlying mechanism driving down the ethnic advantage over time.

[Insert Table 7 around here.]

The fact that the dynamic inefficiency of ECE dissipates when we compare ECE firms of similar technology and knowledge intensity offers convincing evidence that the overall dynamic inefficiency of ECE is not driven by policy development, which would have affected all the ECE firms the same way over time.

5. Other Robustness Checks

We performed additional tests to check the robustness of our results and also to rule out several alternative explanations of our findings. We first experimented with including higher-order terms and deploying quantile (LAV) and Huber regressions. We then conducted tests for various

alternative explanations of our findings. Some other robustness checks were also performed, but, to preserve space, these are detailed in the Appendix.

5. 1. Quantile Regressions and Huber Regressions

To avoid the potential biases from outlier data points, we carried out bootstrap quantile regressions and robustness regressions analyses. Unlike the OLS regression, a quantile regression models a Least Absolute Value (LAV) distribution and minimizes absolute loss instead of squared loss function, and the robustness regression models a Huber distribution. The regression estimates resulting from both these alternative models are less affected by outliers. The magnitudes and statistical significance of the coefficient estimates remain similar.

5. 2. Checking the Sensitivity of the Effect on Leverage

We conducted various sensitivity analyses by adding the control covariates one by one, and the results are robust. The coefficient significance levels do not change significantly, and even the magnitudes change very little. We report a series of results in one such sensitivity analysis. As a result, we eliminated the "leverage" variable (and its higher order terms, if any) from the regressions for all the results. There is a very high relationship between leverage and firm performance, but we do not know exactly why this is the case. It might be, for example, that firms that are more profitable have an easier time obtaining loans. Tables A.1 – A.3 confirm that this leverage effect does not drive our results. Our findings are not sensitive to either including or excluding the leverage effect.

[Insert Tables A.1 – A.3 about here]

5.3. Ruling out Alternative Explanations

Some may conjecture that the empirical patterns might also be explained by the preferred policy treatment that ECE firms receive initially. When the policy becomes more non-discriminatory over time, the advantages of ECE firms dwindle. A careful historical review suggests that the policy has been uniformly non-discriminatory for all FDI since the early 1990s. Although FDI might receive preferred treatment over domestic investments, there is no explicit policy preference for ECE-based FDI over non-ECE-based FDI during the sample period.

It may be difficult to rule out the possibility that some "implicit" benefits are given to ECE firms, especially in the provinces of Guangdong and Fujian, where relatives of many of the ECE investors reside. One way to address this is to test whether the empirical patterns we document differ depending on whether a firm is in Guangdong and Fujian. If policy preference plays a role, then it is possible that the ECEs in these places will outperform the others.

Another motivation for a separate test on the subsample of firms in Guangdong and Fujian provinces is to address the concern that non-profit-maximizing motives might explain some of the investments made by overseas Chinese with relatives residing in Guangdong and Fujian. It is theoretically possible that, if the goal of some ECE investing in Guangdong and Fujian is for such "altruistic" reasons, then they would exhibit different performance patterns from those non-ECE investments, and that could affect our comparison of ECE and non-ECE investment performance.

However, if that is the case, it is difficult to imagine that a similar effect will also be observed for firms in the rest of the country.

We therefore repeated all the analyses on two subsamples. One subsample included firms in Guangdong and Fujian provinces only, and the other subsample excluded these two provinces. Tables A.4 – A.5 display the main results for the first subsample. The results are again robust in that the ECEs exhibit significant dynamic inefficiencies in their performance compared to the non-ECEs, as illustrated by the negative and highly significant coefficients on the interaction between ECE and age in the regressions of the three performance dependent variables (Table A.5). Stratification analyses based on intangibles and wages again explain away such inefficiency within each stratum. That is, ECEs perform just as profitably, if not better, than non-ECEs when they have similar levels of intangibles and human capital. The results for the second subsample are qualitatively the same.

In sum, the observed patterns still exist when we focus on the two subsamples – Guangdong and Fujian – and the rest of the provinces. We are more certain that such a pattern is not explained by either the policy preference toward the ECEs or the altruistic investment motivation of the ECEs. We can rule out the "hometown effect" or the "policy preference to ECE effect" to explain our empirical findings.

[Insert Tables A.4 – A.5 about here]

5.4. Test Based on the Subsample of Large FDI

As explained above, one remaining possibility is that smaller FDI is more likely used to conduct pilot studies and to enable a "learning-by-doing" FDI approach. It is possible that ECE firms are more likely to engage in these trial-and-error types of investments because the cultural proximity enables them to conduct such pilot studies at lower fixed costs. If so, then the performance of the smaller FDI may be contaminated with this alternative motivation for FDI.

To address this concern without having any information on the investors or their decisions to enter the Chinese market, we tested whether the empirical pattern still holds for large firms. We included tests for the subsample of all firms (both ECEs and non-ECEs) that are above the median size in the sample. We define the median firm size across all firms (both ECEs and non-ECEs) for each year and then selected the above-median subsample.

The empirical results from this semi-parametric control of firm size, which is a key factor whereby the ECEs and non-ECEs differ, are encouragingly robust. As Tables A.6 – A.7 show, all the findings convey the same qualitative intuitions as earlier. Although ECE has an insignificant relationship with the performance measures pooled across all eight years, its interaction with the age variable carries negative and significant coefficients in Table A.7. This dynamic inefficiency of ECEs among the large firms is estimated to be even stronger than that among the entire sample of firms, both in magnitude and level of statistical significance. Stratification analyses reveal similar evidence of under-investment in intangibles and human capital as the culprit for ECE dynamic inefficiencies.

[Insert Tables A.6 – A.7 around here]

5. 5. Tabulations for Checking Alternative Stories

Consider the following: if non-ECE foreign investors are very reluctant to form joint ventures, they may request a higher certainty of performance before committing to a joint venture. Otherwise they would rather remain as a wholly-owned foreign enterprise. In contrast, ECE investors, who are culturally similar to the Chinese, are more open to the joint-venture idea and are less selective in choosing investment thresholds. If that scenario holds, there may be a systematic difference in the levels of performance by ECE-JVs and non-JVs as well as by non-ECE-JVs and non-ECE-non-JVs. We tabulated the levels of performance by the ECE-JVs, ECE-non-JVs, non-ECE-JVs, and non-ECE-non-JVs, but did not find significant differences in the levels of the net margin across groups. The JV firms tend to have lower mean levels of ROE and ROA compared to the wholly foreign-owned enterprises. This result contradicts the story laid out at the beginning of this section.

We also tested the idea that the ECE effect shows up not in the mean levels of performance but in the variance levels. For example, ECE firms may face lower investment risks even though their performance is lower. One explanation might be their cultural aversion to risks. To test any differences in the variance levels of profits, after controlling for everything else, we implemented the following procedure: 1) regress the performance on the full control variables, 2) tabulate the residual of the regression, which is the performance left unexplained by all the control factors, along the lines of ECE versus non-ECE, and calculate the means, standard errors, and higher moments of the residuals. The results indicate almost identical higher moments (variance, skewness, and kurtosis) of

the residual net margin and ROA across the ECE and non-ECE groups, and small differences of the ROE.

6. Conclusion

Using a comprehensive dataset of FDI firms in China, we explore the question of whether ethnicity enhances firm performance. We demonstrate empirically that ethnic firms do not automatically command a performance advantage over non-ethnic firms. We also find that over time, compared to non-ethnic firms, the performance of ethnic firms deteriorates. Our results suggest that under-investment in intangible assets and human capital could be the reason of the observed differences in the performance patterns over time. Overall, our results reject the naïve extrapolation of the existing evidence that, since a pre-existing relationship facilitate economic activities; ethnic firms will necessarily perform better.

It should be noted that our study focuses only on data from China and thus is not a demonstration of a *prevalence* of under-performance of ethnically-linked economic activities. That said, our findings cast some doubt on the simple notion that ethnic ties, while facilitating transactions, necessarily lead to better performance (as measured by profitability). To the extent that a substantial portion of FDI in many countries, particularly in developing economies, is comprised of ethnically-linked FDI, our results shed useful light on the overall patterns of ethnically-linked activities. Ethnic ties belong to one specific category of relationships which economists have studied beyond the question of FDI. We hope that our paper also contributes to this broader literature.

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Appendix: Other Robustness Checks

In this Appendix, we perform additional robustness checks.

A. Clustered Regressions and Other Measures for Avoiding Outliers

In empirical studies, one needs to be very careful about potential outliers that can drive results in a particular direction. Taking advantage of our large dataset, we can afford to employ various robustness checks. One involves truncating outliers, as we did for the ratio variables like ROE, ROA, and net margin. The second round of checking involves dropping industries that contain fewer than three companies in the specifications with industry-fixed effects. In these models, the results for industries with only one company are essentially point estimates and are susceptible to outliers. Alternative random effects models are tested and results remained robust. It is nonetheless worth checking the robustness of the results in a sample consisting of industries with more regular company numbers. To our comfort, the results remain unchanged. In a third round of checks, we employed regression analyses with standard errors clustered at the industry level to check for robustness, but this did not alter the results in any significant way either.

Although controlling for industry effects detailed at the four-digit level helps to remove any potential sector-specific factors, it might be too fine a breakdown to reveal other interesting patterns. We therefore also conducted robustness checks using three-digit classifications of industries. Again, the results were robust.

B. Sensitivity Analyses

We added more control variables than those defined in the data section to the benchmark model one at a time in the first round of analyses, and then adding controls one by one in a subsequent round of analyses.[14] These variables include ownership categories (such as TVE or PE), exports as a fraction of sales, exports to ECEs or non-ECEs, various specifications of the political hierarchy levels of the Chinese partnership firms, and measures of firm size. We also included a group of interaction variables: between the ECE dummy and the exports-sales ratio, between the ECE dummy and various political hierarchy level dummies, between the ECE dummy and ownership types (TVE or PE), and between the ECE dummy and various size dummies. All these regression specifications yield similarly negative and statistically significant coefficients on ECE*Year and ECE*Age.

C. Stratification Analyses

For some Chinese firms, especially credit-constrained small-scale private firms, forming joint ventures may be a mechanism to obtain financing. It is possible that small private enterprises have different incentives, as compared with other firms, to seek joint-venture partners. To the extent that small Chinese private firms seek out ECE firms for alliances, ECE and non-ECE firms may vary in their performance. We carried out regressions on the whole sample and on the TVE subgroup, controlling for the private enterprise indicator variable (PE). The variable PE and the stratification analyses did not change the existing coefficients in a statistically significant manner.

[14] The results are robust to the order of the variable additions.

D. **Residual Analyses**

Controlling for intangibles or wages does not mask the significant effects on ECE*time. To allow for non-linear relationships, we tried specifications with the spline of the intangibles or wages. We implemented a two-step procedure: first regressing the net margin on the spline of the intangibles and the spline of wages, fixed assets/depreciation, the regular set of company controls, and fixed effects. We then regressed the residuals from the first regression on the ECE indicator and the set of regular controls we used in our main specifications. The ECE effect netting out the intangibles, wages, and other controls are substantially smoother. The only anomaly is 1998, with a positive ECE effect.

E. Analyses within Each Industry

We also obtained the regression coefficient estimates on the ECE indicator variable with the three alternative performance outcomes within each industry. No systematic pattern prevailed: both positive and negative ECE effects are found in both high-tech and low-tech industries. The two industries for which we found large positive ECE coefficients are the vinegar industry and the mini-car industry. We also conducted robustness analyses using more-aggregated industry codes at the three-digit level instead of at the four-digit level, and the directions and significance levels of the coefficients on the ECE indicator and on the interaction variables were robust.

F. Other Performance Measures and Seemingly-Unrelated-Regressions (SUR)

To check the robustness of the profits reported in the CIC, we also repeated the analyses using all the different profits recorded in the database. The analyses were also used to calculate our performance measures: net margin, ROA, and ROE. The different profit variables include operating profits (*yinye liren*), production profits, and total taxable profits. To avoid potential correlations among errors across specifications, we used the SUR system. Although the regressions using different profit indicators lead to different coefficient magnitudes, similar qualitative conclusions on the ECE dynamic inefficiency follow those reported in the main text.

G. Difference-in-Difference-in-Difference Analyses

Another major piece of analysis that we conducted was the difference-in-difference-in-difference (DDD) model.

$$\text{Performance}_{it} = \beta 0*\text{ECE}_{it}*\text{Year}_t*\text{Wage}_{it}+\beta 1*\text{ECE}_{it}*\text{Wage}_{it} +\beta 2*\text{ECE}_{it}*\text{Year}_t +\beta 3*\text{Wage}_{it}*\text{Year}_t+ \beta 4*\text{ECE}_{it}+ \beta 5*\text{logassets}_{it} +\beta 6*\text{leverage}_{it} +\beta 7*\text{labor-intensiveness}_{it} +\beta 8*\text{Wage}_{it}+\beta 9*\text{age}_{it}+\beta 10*\text{YearDum}_t+\beta 11*\text{ProvDum}_i +\beta 12*\text{IndDum}_{it}+\varepsilon_{it} \quad (4)$$

where we added the three-way interaction among the ECE indicator, the year trend, and the intangible variables (ECE*year*wage) to model (2). The coefficient of interest here is β0 on the three-way interaction variable in model (4). The estimated β0 can be expressed as follows:

$$\widehat{\beta} = (\bar{y}_{ECE,\,I,\,t} - \bar{y}_{ECE,\,I,0}) - (\bar{y}_{nonECE,\,I,\,t} - \bar{y}_{nonECE,\,I,0}) - (\bar{y}_{ECE,0,\,t} - \bar{y}_{ECE,0,0})$$

where y refers to performance measures, subscripts I and t refer to intangibles and year, respectively, and ECE or non-ECE take their usual meanings as defined in this paper. The DDD estimate starts with the time change in average performance for the firms with intangible assets in the ECE group and then nets out the change in mean performance for the firms with above-median wage levels (human capital proxy) in the non-ECE group, as well as the change in mean performance for the firms with below-median wage levels in the ECE group. The advantage of this method is that it controls for two kinds of potentially confounding trends: changes in performance over time for firms with intangible assets across the ECE and non-ECE groups for reasons that have nothing to do with their ECE status, and changes in the performance of all ECE firms with similar human capital (possibly due to other reasons associated with intangible assets that affect performance but are unrelated to ECE status). The DDD estimator is positive and significant at the 5 percent or 10 percent levels, and the coefficient on ECE*year is negative. These illustrate the following: The ECE advantage diminishes over time, and a firm's investments in intangibles (including R&D, advertising, brand-building, etc.) ameliorate the diminishing patterns in ECE advantages (i.e., make it less negative or even positive).

Table 1.A: Summary Statistics for Variables Used In Empirical Analysis

Variable	Number of Obser	Mean	Std. Dev	Min	Max
Net Margin	270610	0.33	0.52	-1	1
ROA	270610	0.35	0.50	-1	1
ROE	270610	0.37	0.59	-1	1
ECE	270610	0.55	0.50	0	1
Discretionary Accrual	270610	0.01	0.21	-1.63	1.23
Log(assets)	270610	10.24	1.36	0	17.61
Age	270610	5.95	3.84	0	25
Labor-intensiveness	270610	0.14	0.20	0	0.89
Leverage	270610	0.49	0.24	0	0.9996102
Transfer Pricing	270610	0.46	0.59	0	82.34
JV	270610	0.57	0.50	0	1
Relationship	270610	72.87	21.94	10	90
Export	270610	23261.50	43695.31	0	196800
Sales	270610	68055.93	124171.40	400	690500
asset_total	270610	98166.05	516892.30	1	44700000
worker	270610	310.53	696.72	0	94149
equity	270610	45069.14	258910.70	1	22900000
Intangible	270610	1899.69	5151.18	0	31265
Wage	270610	15.61	11.95	0.70	60
profit_total	270610	5799.15	70069.47	-1005665	11400000
benefit	270610	489.07	3126.42	-9255	496651
Year	270610	2002.19	2.28	1998	2005

Note: The political hierarchy level of a firm refers to the political party the firm answers to. This variable takes on value 10 if the firm answers to the central government, to 20 if provincial-level, to 40 if regional level, 50 if county-level, 61 if street-level, 62 if town-level, 63 if village-level, 71 if residential-association level, 72 if village-association level, and 90 otherwise. The employment variable refers the number of persons employed in a firm. Export, capital, intangibles, total assets, equity, sales, profits, and wage are all variables as recorded in the original database. We generated the age variable by subtracting the firm's incorporation year from the year of the data. We calculated netmargin by profits divided by sales netting out discretionary accrual*assets/sales. ROA is return on assets and is defined as profits divided by the difference between total assets and profits, netting out discretionary accrual*assets/(assets-profits). ROE is return on equity and is defined as profits divided by equity, discretionary accrual*assets/equity. Labor-intensiveness is the capital/labor ratio. The leverage variable is defined as total assets subtract shareholder equity and then divided by total assets. Joint venture dummy takes value of one if the firm is a joint venture corporation, and zero otherwise. In the database, the variable "register type" identifies the firm's ownership. Foreign-affiliated firms have register type values between 200 and 340, with ECEs between 200 and 240 and joint ventures being 210 and 310. Transfer pricing is defined as (exports-imports)/(total outputs).

Table 1.B: Summary Statistics for Variables Across the ECE and non-ECE Subsamples

	non-ECE					ECE				
Variable	Number of Observations	Mean	Std. Dev	Min	Max	Number of Observations	Mean	Std. Dev	Min	Max
Net Margin	122826	0.33	0.51	-1	1	147784	0.32	0.52	-1	1
ROA	122826	0.36	0.49	-1	1	147784	0.34	0.50	-1	1
ROE	122826	0.38	0.58	-1	1	147784	0.36	0.60	-1	1
ECE	122826	0.00	0.00	0	0	147784	1.00	0.00	1	1
Discretionary Accruel	122826	0.01	0.20	-1.63	1.17	147784	0.01	0.21	-1.62	1.23
Log(assets)	122826	10.38	1.44	0	17.41	147784	10.11	1.27	0.69	17.61
Age	122826	5.51	3.75	0	25	147784	6.31	3.87	0	25
Labor-intensiveness	122826	0.17	0.22	0	0.89	147784	0.11	0.16	0	0.89
Leverage	122826	0.49	0.24	0	1.00	147784	0.50	0.24	0	1.00
Transfer Pricing	122826	0.44	0.56	0	82.34	147784	0.47	0.62	0	76.65
JV	122826	0.60	0.49	0	1	147784	0.54	0.50	0	1
Relationship	122826	71.63	23.52	10	90	147784	73.90	20.47	10	90
Export	122826	25184.53	46706.96	0	196800	147784	21663.24	40955.89	0	196800
Sales	122826	80941.58	142652.40	400	690500	147784	57346.44	105202.50	400	690500
asset_total	122826	125921.30	633914.60	1	36500000	147784	75098.15	392530.70	2	44700000
worker	122826	308.09	753.34	0	94149	147784	312.56	645.88	0	52100
equity	122826	58543.89	321567.80	1	22900000	147784	33870.03	191128.90	1	19200000
Intangible	122826	2522.74	6065.42	0	31265	147784	1381.86	4173.87	0	31265
Wage	122826	17.56	13.25	0.7	60	147784	13.99	10.47	0.7	60
profit_total	122826	8332.88	94022.45	-963799	11400000	147784	3693.31	40414.07	-1005665	4538144
benefit	122826	647.02	4153.84	-9255	496651	147784	357.80	1876.16	-1496	190179
Year	122826	2002.38	2.26	1998	2005	147784	2002.03	2.29	1998	2005

Note: variables are as defined in Table 1.A.

Table 2.A: The Relationship between ECE Designation and Firm Profitability

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy	-0.0111	-0.0140	-0.0116	-0.0228	-0.0217	-0.0199
	-1.42	-1.91	-1.2	-2.13	-2.12	-1.59
Log(assets)	0.0171	0.0131	0.0745	-0.0297	-0.0299	-0.0029
	3.28	2.62	12.08	-4.98	-5.13	-0.43
Firm Age	0.0007	-0.0001	0.0001	-0.0049	-0.0052	-0.0055
	0.48	-0.06	0.03	-1.93	-2.16	-1.89
Labor Intensiveness	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000
	2.79	4.37	2.37	1.4	2.9	1
Leverage	0.3595	0.3701	0.6434	0.3688	0.3938	0.6122
	25.14	26.95	37.51	23.99	26.13	33.56
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3790	0.4024	0.2559	0.3084	0.3159	0.2111
Number of observation	153,588	153,588	153,588	116,987	116,987	116,987

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table 2.B: The Relationship among ECE Designation, Transfer Pricing, and Firm Profitability

	Dependent Variable						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Transfer Pricing	ROA					
Sample Selection Criterion	full JV sample	full JV sample	JV firms with zero exports	quartile 1 export/sales ratio	quartile 2 export/sales ratio	quartile 3 export/sales ratio	quartile 4 exoirt/sales ratio
ECE dummy	-0.0077	-0.0141	-0.0010	-0.0113	-0.0081	-0.0061	-0.0127
	-0.34	-1.92	-0.08	-1.60	-1.40	-1.09	-1.47
export/sales		-0.0064		0.2280	0.0083	0.0558	0.0006
		-0.86		5.51	0.33	1.41	0.23
Log(assets)	-0.0076	0.0132	0.0138	0.0262	-0.0170	-0.0416	-0.0268
	-0.46	2.64	1.54	5.56	-6.80	-16.17	-5.42
Firm Age	0.0015	-0.0001	-0.0024	-0.0197	-0.0222	-0.0287	-0.0277
	0.92	-0.08	-0.95	-17.41	-22.37	-32.60	-17.04
Labor Intensiveness	0.0000	0.0001	0.0001	-0.0001	0.0000	0.0000	0.0000
	-0.81	4.39	3.35	-5.97	-2.32	1.40	-0.57
Leverage	0.0043	0.3703	0.3670	0.0357	0.0428	0.1350	0.0861
	0.10	26.94	15.30	2.42	3.18	11.95	3.97
Hierarchy Fixed Effec	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects?	Y	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y	Y
Province Fixed Effect	Y	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.4527	0.4026	0.4192	0.2905	0.3182	0.3127	0.3396
Number of observatio	153,588	153,588	69,376	20,393	21,444	33,008	9,367

Note: The dependent variables are the difference in exports and imports, as a ratio of total outputs, in column (1), and ROA in other columns. Columns 1 and 2 are regressions for the whole ample, and columns 3 through 7 are for the five subsamples according to the export/sales levels (zero exports and quartiles 1 to 4 for positive export/sales levels). T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table 3: The Relationship between ECE Designation, ECE Firm Age Interaction and Firm Profitability

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy * Firm Age	-0.0233	-0.0239	-0.0214	-0.0332	-0.0322	-0.0323
	-3.57	-3.87	-2.72	-3.79	-3.83	-3.2
ECE dummy	-0.0074	-0.0103	-0.0083	-0.0243	-0.0233	-0.0214
	-0.93	-1.37	-0.85	-2.29	-2.29	-1.72
Log(assets)	0.0167	0.0126	0.0741	-0.0304	-0.0306	-0.0036
	3.19	2.53	12	-5.1	-5.26	-0.53
Firm Age	0.0031	0.0024	0.0022	-0.0009	-0.0014	-0.0016
	1.85	1.47	1.11	-0.33	-0.52	-0.52
Labor Intensiveness	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000
	2.82	4.41	2.4	1.5	3.01	1.1
Leverage	0.3598	0.3704	0.6436	0.3708	0.3958	0.6142
	25.16	26.98	37.53	24.1	26.25	33.64
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3791	0.4025	0.2560	0.3086	0.3161	0.2112
Number of observation	153,588	153,588	153,588	116,987	116,987	116,987

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table 4: Robustness check on The Relationship between ECE Designation, ECE firm age interaction and Firm Profitability

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy * Firm Age	-0.0339	-0.0346	-0.0318	-0.0553	-0.0535	-0.0515
	-5	-5.34	-3.93	-5.66	-5.67	-4.73
ECE dummy	0.0001	-0.0032	-0.0008	-0.0170	-0.0162	-0.0142
	0.01	-0.43	-0.09	-1.6	-1.6	-1.15
Log(assets)	-0.5286	-0.4310	-0.4122	-0.4594	-0.4004	-0.3799
	-8.31	-8.42	-8.64	-10.47	-9.37	-7.81
Firm Age	-0.0811	-0.0796	-0.0808	-0.1239	-0.1196	-0.1198
	-29.44	-30.58	-25.56	-32.78	-32.87	-28.13
Labor Intensiveness	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0001
	0.74	-0.1	-1.78	-0.8	-0.96	-1.99
Leverage	0.1847	0.2020	0.0400	0.2151	0.2400	0.0861
	4.29	4.95	0.81	4.91	5.63	1.7
Log(assets)^2	0.0282	0.0230	0.0252	0.0236	0.0205	0.0208
	9.33	9.45	10.99	11.11	9.99	8.85
Firm Age^2	0.0051	0.0050	0.0050	0.0090	0.0087	0.0087
	34.01	34.66	30.09	37.33	36.98	34.3
Leverage^2	0.1849	0.1762	0.6224	0.1453	0.1458	0.5537
	4.45	4.52	12.01	3.24	3.33	9.86
Labor Intensiveness^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.03	1.55	2.57	0.62	1.42	1.87
Export	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	-4.39	-1.75	-1.21	-7.64	-6.7	-4.67
Transfer Pricing	-0.0001	-0.0026	-0.0026	-0.0031	-0.0008	-0.0009
	-0.02	-0.38	-0.39	-0.51	-0.18	-0.15
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Political Hierarchy FE?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.4004	0.4236	0.2731	0.3498	0.3560	0.2421
Number of observation	153,588	153,588	153,588	116,987	116,987	116,987

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions using ECE*year interaction terms, and columns 4 through 6 are regressions using ECE*firm age interaction terms. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table 5: the relation between ece and intangibles average wage

	Dependent Variable			
	(1)	(2)	(3)	(4)
	Intangible		Average Wage	
	JV sample	Non-JV sample	JV sample	Non-JV sample
ECE Dummy	-511.07	-166.40	-1.54	-2.32
	-8.72	-4.04	-9.57	-12.41
Log(assets)	1824.04	1636.84	1.44	0.87
	18.32	20.26	13.9	12.5
Labor Intensiveness	3.91	2.75	0.01	0.02
	13.04	11.1	18.08	25.9
Leverage	-526.19	-308.37	-0.20	2.46
	-5.82	-4.78	-0.77	14.85
Firm Age	-72.86	-18.08	0.17	0.16
	-11.84	-2.95	8.27	14.19
Year Fixed Effects?	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y
Adjusted R-squared	0.3547	0.3203	0.3129	0.2926
Number of observation	153,588	116,987	153,588	116,987

Note: The dependent variables are the intangibles. Columns 1 through 3 are regressions using ECE*year interaction terms, and columns 4 through 6 are regressions using ECE*firm age interaction terms. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table 6: Regression Coefficients of ECE*Age Term, for Various Intangible Quintiles

Panel A: JV Sample

	Dependent Variable		
Intangible Quintile	Net Margin	ROA	ROE
Intangible = 0	0.0041	0.0066	0.0085
	1.05	1.7	1.62
Intangible Quintile = 1	0.0110	0.0051	0.0109
	0.99	0.43	0.79
Intangible Quintile = 2	0.0090	0.0027	0.0062
	0.86	0.27	0.46
Intangible Quintile = 3	0.0020	-0.0026	0.0034
	0.17	-0.24	0.24
Intangible Quintile = 4	-0.0028	-0.0043	-0.0073
	-0.26	-0.47	-0.61
Intangible Quintile = 5	-0.0165	-0.0168	-0.0172
	-1.42	-1.48	-1.39

Panel B: Non-JV Sample

	Dependent Variable		
Intangible Quintile	Net Margin	ROA	ROE
Intangible = 0	0.0195	0.0204	0.0246
	3.34	3.51	3.68
Intangible Quintile = 1	0.0333	0.0310	0.0418
	2.35	2.17	2.18
Intangible Quintile = 2	0.0219	0.0264	0.0360
	1.56	1.83	2.18
Intangible Quintile = 3	0.0180	0.0137	0.0156
	1.58	1.28	1.16
Intangible Quintile = 4	-0.0023	0.0007	-0.0044
	-0.22	0.07	-0.38
Intangible Quintile = 5	0.0007	-0.0017	0.0017
	0.05	-0.14	0.12

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. T-statistics based on clustered standard errors are below the coefficient estimates. Regressions control for year, industry and province fixed effects.

Table 7: Regression Coefficients of ECE*Age Term, for Various Average Wage Quintiles

Panel A: JV Sample

	Dependent Variable		
Average Wage Quintile	Net Margin	ROA	ROE
Average Wage Quintile = 1	-0.0002	-0.0054	0.0007
	-0.02	-0.59	0.06
Average Wage Quintile = 2	0.0180	0.0191	0.0257
	2.09	2.39	2.43
Average Wage Quintile = 3	0.0085	0.0123	0.0160
	0.99	1.52	1.61
Average Wage Quintile = 4	0.0094	0.0097	0.0103
	1.45	1.61	1.33
Average Wage Quintile = 5	-0.0100	-0.0092	-0.0105
	-1.97	-1.88	-1.68

Panel B: Non-JV Sample

	Dependent Variable		
Average Wage Quintile	Net Margin	ROA	ROE
Average Wage Quintile = 1	0.0111	0.0152	0.0238
	0.9	1.16	1.48
Average Wage Quintile = 2	0.0262	0.0238	0.0300
	2.18	1.99	1.91
Average Wage Quintile = 3	0.0166	0.0165	0.0195
	1.68	1.71	1.64
Average Wage Quintile = 4	0.0170	0.0180	0.0236
	2.31	2.55	2.55
Average Wage Quintile = 5	0.0214	0.0222	0.0262
	3.4	3.6	3.53

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. T-statistics based on clustered standard errors are below the coefficient estimates. Regressions control for year, industry and province fixed effects.

Table A.1: The Relationship between ECE Designation and Firm Profitability Without Controlling for Leverage

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy	-0.0117	-0.0147	-0.0127	-0.0215	-0.0204	-0.0185
	-1.4941	-2.0003	-1.3151	-2.0079	-1.9945	-1.4783
Log(assets)	0.0445	0.0413	0.1234	0.0018	0.0037	0.0494
	8.7921	8.5119	20.561	0.3166	0.6782	7.5595
Firm Age	0.0006	-0.0002	-0.0002	-0.0044	-0.0047	-0.0048
	0.3676	-0.1647	-0.1042	-1.7287	-1.9376	-1.6483
Labor Intensiveness	0	0	-0.0001	0	0	-0.0001
	0.0907	1.0041	-2.4082	-1.1362	-0.2762	-3.1729
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Hierarchical Relationship FE	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3790	0.4024	0.2559	0.3084	0.3159	0.2111
Number of observation	153,588	153,588	153,588	116,987	116,987	116,987

Note: The dependent variables are the three measures of firm performance. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table A.2: The Relationship between ECE Designation, ECE Firm Age Interaction and Firm Profitability Without Controlling for Leverage

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy * Firm Age	-0.0213	-0.0221	-0.0185	-0.02	-0.0184	-0.01718
	-3.3062	-3.613	-2.3899	-2.2865	-2.199	-1.74
ECE dummy	-0.0083	-0.0113	-0.0098	-0.0225	-0.0213	-0.0191
	-1.0519	-1.5082	-1.0087	-2.1099	-2.0952	-1.5322
Log(assets)	0.0441	0.0409	0.1231	0.0015	0.0035	0.0493
	8.7096	8.4226	20.4885	0.2616	0.6266	7.528
Firm Age	0.0028	0.002	0.0017	-0.002	-0.0025	-0.0033
	1.636	1.2588	0.8417	-0.7296	-0.9589	-1.0601
Labor Intensiveness	0	0	-0.0001	0	0	-0.0001
	0.117	1.038	-2.387	-1.0845	-0.2201	-3.1401
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Hierarchical Relationship FE	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3791	0.4025	0.2560	0.3086	0.3161	0.2112
Number of observation	153,588	153,588	153,588	116,987	116,987	116,987

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table A.3: Regression Coefficients of ECE*Age Term Without Controlling for Leverage, for Various Intangible Quintiles

Panel A: JV Sample

	Dependent Variable		
Intangible Quintile	Net Margin	ROA	ROE
Intangible = 0	0.0045	0.007	0.0094
	1.1543	1.8044	1.7917
Intangible Quintile = 1	0.0111	0.0051	0.0109
	0.988	0.4295	0.7796
Intangible Quintile = 2	0.0103	0.0035	0.0092
	0.9897	0.3408	0.6956
Intangible Quintile = 3	0.0041	-0.001	0.007
	0.3656	-0.0986	0.5192
Intangible Quintile = 4	-0.0021	-0.0037	-0.0061
	-0.1913	-0.4016	-0.5115
Intangible Quintile = 5	-0.0155	-0.0162	-0.0163
	-1.356	-1.4356	-1.3199

Panel B: Non-JV Sample

	Dependent Variable		
Intangible Quintile	Net Margin	ROA	ROE
Intangible = 0	0.0199	0.0208	0.0252
	3.4706	3.6272	3.8751
Intangible Quintile = 1	0.0352	0.0327	0.045
	2.4691	2.2849	2.3418
Intangible Quintile = 2	0.0241	0.0283	0.0389
	1.77	2.0234	2.4336
Intangible Quintile = 3	0.0201	0.0155	0.0181
	1.8101	1.4873	1.385
Intangible Quintile = 4	0.0003	0.0029	-0.0011
	0.028	0.3061	-0.0977
Intangible Quintile = 5	0.0023	-0.0002	0.0035
	0.1754	-0.0161	0.2421

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. T-statistics based on clustered standard errors are below the coefficient estimates. Regressions control for year, industry and province fixed effects.

Table A.4: The Relationship between ECE Designation and Firm Profitability for the Guangdong and Fujian Subsample

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy	-0.0139	-0.0165	-0.0117	-0.0217	-0.0196	-0.0153
	-1.1151	-1.3889	-0.7756	-1.6198	-1.5039	-0.9641
Log(assets)	0.0181	0.0104	0.0418	-0.0227	-0.0275	-0.021
	2.056	1.2044	4.0435	-3.0026	-3.7104	-2.3935
Firm Age	0.0002	-0.0012	-0.0005	-0.0062	-0.0062	-0.0063
	0.062	-0.3782	-0.1371	-1.8	-1.8732	-1.603
Labor Intensiveness	0	0	0	0.0001	0.0001	0.0001
	0.885	1.2669	0.3591	1.9882	3.202	2.0447
Leverage	0.3165	0.3595	0.5834	0.3644	0.3987	0.603
	13.4521	15.6757	20.4777	18.7909	20.834	26.0783
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3790	0.4024	0.2559	0.3084	0.3159	0.2111
Number of observation	43,741	43,741	43,741	60,060	60,060	60,060

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table A.5: The Relationship between ECE Designation, ECE Firm Age Interaction and Firm Profitability in the Guangdong and Fujian Subsample

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy * Firm Age	-0.033	-0.035	-0.0353	-0.0292	-0.0271	-0.0329
	-2.5581	-2.8139	-2.2895	-2.2092	-2.1312	-2.1917
ECE dummy	-0.0021	-0.004	0.0009	-0.0192	-0.0172	-0.0125
	-0.1566	-0.3093	0.0528	-1.4134	-1.3048	-0.7774
Log(assets)	0.0177	0.01	0.0414	-0.0231	-0.0278	-0.0213
	2.0112	1.1555	4.0028	-3.0468	-3.7531	-2.4357
Firm Age	0.0051	0.004	0.0047	-0.0016	-0.0019	-0.0011
	1.2898	1.0726	1.0784	-0.3873	-0.4786	-0.2331
Labor Intensiveness	0	0	0	0.0001	0.0001	0.0001
	0.9076	1.2975	0.3825	1.9975	3.213	2.0551
Leverage	0.3168	0.3598	0.5836	0.3653	0.3995	0.604
	13.4644	15.693	20.4941	18.8252	20.8624	26.1042
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3791	0.4025	0.2560	0.3086	0.3161	0.2112
Number of observation	43,741	43,741	43,741	60,060	60,060	60,060

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table A.6: The Relationship between ECE Designation and Firm Profitability for the Subsample of Firms Whose Size is Above Median Each Year

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy	0.0008	-0.0066	-0.012	-0.0094	-0.0091	-0.0111
	0.0709	-0.6879	-0.9149	-0.715	-0.7611	-0.7363
Log(assets)	0.0694	0.0512	0.1294	-0.0308	-0.0339	-0.0001
	7.9781	6.4388	13.0188	-2.9764	-3.524	-0.0069
Firm Age	-0.0018	-0.0016	-0.0014	-0.0053	-0.0065	-0.0067
	-0.8406	-0.8022	-0.5528	-1.5662	-2.1255	-1.7856
Labor Intensiveness	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	2.0987	3.3414	2.1061	2.0638	3.4565	1.4914
Leverage	0.4469	0.3628	0.6545	0.4273	0.3588	0.5977
	19.4255	18.0177	24.533	17.0859	15.9378	21.1609
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3790	0.4024	0.2559	0.3084	0.3159	0.2111
Number of observation	77,731	77,731	77,731	57,547	57,547	57,547

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.

Table A.7: The Relationship between ECE Designation, ECE Firm Age Interaction and Firm Profitability in the Subsample of Firms Whose Size is Above Median Each Year

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Joint Venture Sample			Non-Joint Venture Sample		
	Net Margin	ROA	ROE	Net Margin	ROA	ROE
ECE dummy * Firm Age	-0.0427	-0.0411	-0.0443	-0.0465	-0.0447	-0.0488
	-4.7646	-5.1304	-4.2476	-4.0476	-4.2589	-3.7984
ECE dummy	0.0088	0.0011	-0.0037	-0.0083	-0.0081	-0.01
	0.7854	0.1091	-0.279	-0.6316	-0.6729	-0.66
Log(assets)	0.069	0.0508	0.129	-0.032	-0.035	-0.0013
	7.9231	6.3828	12.9715	-3.0914	-3.6469	-0.1154
Firm Age	0.0025	0.0026	0.0032	-0.0001	-0.0014	-0.0012
	1.0968	1.2574	1.1766	-0.0169	-0.4383	-0.3052
Labor Intensiveness	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	2.176	3.4368	2.1876	2.1982	3.615	1.6338
Leverage	0.4476	0.3635	0.6552	0.4321	0.3633	0.6026
	19.4665	18.0761	24.57	17.2433	16.1269	21.3068
Year Fixed Effects?	Y	Y	Y	Y	Y	Y
Firm Fixed Effects?	Y	Y	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-squared	0.3791	0.4025	0.2560	0.3086	0.3161	0.2112
Number of observation	77,731	77,731	77,731	57,547	57,547	57,547

Note: The dependent variables are the three measures of firm performance as defined in Table 1. A. Columns 1 through 3 are regressions for the joint venture sample, and columns 4 through 6 are for the non-joint venture sample. T-statistics based on standard errors clustered at the firm level are below the coefficient estimates.