Two Essays on Foreign Direct Investment and Firms' Performance: Foreign Capital Inflow and Chinese Cross-border Mergers and Acquisitions

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Abstract

This thesis is organized into two chapters which constitute two independent working papers. The first chapter uses Chinese firm level data from 2001 to 2007 and applies a propensity score matching method combined with a difference-in-differences approach to examine the direct causal link between Inward Foreign Direct Investment and various aspects of Chinese firms' performance. I divide China into four economic regions and then subdivide the origin of foreign investment into HMT-investment (within the Greater China Area) and other foreign investment (outside the Greater China Area). The results indicate that the progress of the IFDI market in China is not evenly balanced within the four economic regions, while the different origins of foreign investment produce different effects. The only exception is the export sector, in which IFDI from all economies improves the export performance of a Chinese firm after it becomes a foreign-invested firm. The second chapter combines data from Chinese listed firms' annual reports, the Chinese stock market financial statements database and the Zephyr database from 2001 to 2015 to examine how acquirers' operating performance changes after cross-border M&A activities, and uses entrepreneurial orientation as a moderating factor to test whether or not firms' performance during cross-border M&A is affected by different degrees of entrepreneurial orientation. The results obtained for the whole sample show that the performance of Chinese listed firms is fluctuant after cross-border M&A within the sample years. It increases one year after the acquisition but drops two years later and then follows an increasing trend again. The moderating factor of entrepreneurial orientation is not significant for the sample as a whole. However, after dividing the sample into separate industry groups, it becomes clear that different industries have their own characteristics. For example, entrepreneurial orientation helps Chinese listed firms to adapt to the post-acquisition situation and even to improve their performance to some extent in the metal mining industry and the business services industry.

Keywords: Inward FDI; Propensity score matching; Difference-in-differences; Entrepreneurial orientation; Cross-border M&A; Firms' performance.

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Introduction

Foreign Direct Investment (FDI) is a special type of trade: it is a form of Multinational Enterprise (MNE) in which ownership "crosses" countries. Services or technologies travel between parent companies and subsidiaries across national borders. The term "direct" means the firm has the right to control its foreign subsidiaries. A domestic firm may use Greenfield investment, Brownfield investment, or M&A to invest in another country in order to become an MNE. By internalizing activities, MNEs potentially lower transaction costs, clarify property rights and allow non-codified "knowledge capital" that cannot be traded in the market to be exchanged freely across borders between a parent company and its foreign subsidiaries.

There are two main sorts of FDI. The first is Market Oriented or Horizontal, which occurs at the same stage of production and typically takes place between countries at a similar level of development (e.g. EU countries and the US) and is a substitute for trade. This type of FDI avoids artificial barriers (import tariffs) or the technical difficulties involved in importing, and/or the high cost of shipping. The second type is known as Cost Oriented or Vertical, which occurs across different stages of production and often between countries at different stages of development (e.g. developed and less developed countries such as the UK and India) and so is a complement to trade. The motivation here is mainly to take advantage of the lower costs available in different locations (for example, low labour costs in one country and low selling costs in another) (Dawson, 2006). In today's more interconnected and interdependent world, both horizontal FDI and vertical FDI exist within one country. Studies on FDI and its effect on a firm's operation mainly focus on two aspects: the linkage between inward FDI and a firm's operation in the host country; and the relationship between outward FDI and a firm's operation in the home country. Normally, each country can be both a home country and a host country and it can also have both inward FDI and outward FDI.

China is a transitional country where several types of FDI can be found: horizontal and vertical; as well as inward and outward. On the one hand, since the "Open Door" Economic Policy was introduced in 1979, China has undergone dramatic economic changes and has become a rapidly growing manufacturing base and exporting nation. Especially after China's accession to the World Trade Organization (WTO) in 2001, the process of opening up the Chinese economy received a further boost. Being the "workshop of the world" in the twenty-first century has enabled China to receive massively high levels of IFDI. For example, in 2002 China had IFDI of $53b (UNCTAD, 2003a), more than the USA's entire IFDI. On the other hand, China's OFDI is also increasing rapidly. According to the UNCTAD (2011), outflows from China increased by more than $10 billion and reached historical highs of $68 billion in 2010, exceeding Japanese OFDI for the first time. For instance, Haier has a marketing centre in New York and design and R&D centres in Los Angeles and Boston. Huawei has invested over $1 billion in R&D facilities and software centres worldwide, including locations in Germany, Japan and the US. Lenovo purchased IBM's PC

business for $1.75 billion and acquired the “Think” family group of products. Galanz has invested more than $20 million in a R&D centre in Seattle, Washington, while TCL hold a 67% stake in France’s Thomson following the merger between them.

Therefore, this thesis investigates the linkage between inward FDI and firms’ operation in China when it is the host country and the relationship between outward FDI and firms’ operation in China when it is the home country. Focusing particularly on China’s unique economic development situation and characteristics, the first chapter uses Chinese firm level data from 2001 to 2007 and the Propensity Score Matching (PSM) method combined with the difference-in-differences technique to study the direct causal relationship between inward FDI and Chinese firms’ performance within four different economic regions in China and subdivides the origin of foreign investment into HMT-investment (within the Greater China Area), and other foreign investment (outside the Greater China Area). The second chapter uses related data from 2001 to 2015 to examine the operating performance of Chinese listed firms in various industries which are involved in cross-border M&A activities, using entrepreneurial orientation as a moderating factor to test whether it affects results, based on the fact that most of the firms involved in Chinese cross-border M&A are publicly-listed companies occupying leading positions in the Chinese domestic market.

The thesis is structured as follows. Chapter 1 and Chapter 2 present my two independent working papers. The final part of the thesis summarizes the main conclusions of this work and suggests ideas for further research.

Chapter 1

Inward Foreign Direct Investment and Target Firm Performance: Evidence from Foreign Capital Inflow to Chinese Domestic Firms in Four Economic Regions

1.1. Introduction

Foreign Direct Investment (FDI) effectively makes ownership "cross" the home country and the host country, as services or technologies travel between parent companies and subsidiaries across national borders. When the impact of inward FDI (IFDI) on a host country is considered, it is often decomposed into direct and indirect effects. The direct effect of IFDI refers to its impact on the performance of FDI-recipient firms. The indirect effect refers to spillovers from affiliates of foreign multinationals to domestic firms in the host country, which means the externality that advanced technologies, management experience, human capital, and R&D associated with IFDI induces in the technological progress and productivity growth of the host country.

However, if there is no direct causal relationship between IFDI and firm performance, indirect spillover effects would not be credible. Moreover, as Harris and Robinson (2003) note, if foreign ownership *per se* is not associated with a productivity advantage, then it is difficult to see how IFDI can have a positive impact on overall productivity and thus growth in the host country. Therefore, it is important to evaluate the direct causal link between IFDI and firm performance which is also a precondition for spillover analyses, i.e., what the effects of IFDI are on the productivity, wages, export activity and innovation of the target firms. However, the endogeneity of foreign investment makes this question difficult to answer. For example, although Brian and Harrison (1999) find that foreign-owned firms are more productive than domestic firms in Venezuela, this positive "correlation" between productivity and a firm's share of foreign ownership does not necessarily indicate that the latter has a causal effect on the former. They are unable to distinguish whether this productivity advantage is due to foreign firms "cherry picking" highly productive domestic firms as targets, or whether these firms actually improve their performance after receiving the foreign capital inflow. Navaretti, Venables, and Barry (2004) also

provide evidence of the same phenomenon: in Chapter 7.3 of their book they stress that much empirical evidence supports a statistical association between foreign ownership and productivity but not a causal link. They also find that those studies which have conducted a more careful analysis of causality discovered that differences in productivity between the two groups of firms are smaller than in earlier correlative estimations and are often insignificant.

Chinese firms provide an interesting case study. On the one hand, since the "Open Door" economic policy was introduced in 1979, China has undergone dramatic economic changes and has become a rapidly growing manufacturing base and exporting nation. Particularly after China's accession to the World Trade Organization (WTO) in 2001, the process of opening up the Chinese economy received a further boost. As the "workshop of the world" in the twenty-first century, China has received massively high levels of IFDI. For example, in 2002 China had IFDI of $53b (UNCTAD, 2003a), more than the USA's total IFDI. On the other hand, before the economic reform in 1979, China's policy of centralized planning led to a unique pattern of industry development. Being an emerging economy, the speed of economic reform and growth rate is not evenly balanced across different regions of the country, which has made the financial and legal systems opaque and has led to a number of problems which cannot currently be resolved. Moreover, the dual economy is very obvious and various projects initiated by the Chinese government over the years have unfairly advantaged foreign firms by giving them preferential treatment and more favourable opportunities than domestic firms, e.g., the price of land for FDI-receiving firms is much lower than the market price and they can get tax exemptions on corporate income for the first few years of their investment in China.

In light of the situation described above, my contribution is to examine the direct causal link between Inward Foreign Direct Investment and Chinese firm performance within four different economic regions in China and subdivide the origin of foreign investment into HMT-investment (within the Greater China Area) and other foreign investment (outside the Greater China Area). I use the Propensity Score Matching (PSM) method combined with difference-in-differences analysis to study the direct causal relationship between inward FDI and Chinese firms' performance. I divide domestic firms into two categories using the same observable characteristics: the treatment group (firms receiving IFDI); and the control group (those that remain domestic firms), matching by the probability of being treated (propensity score). I then compare various aspects of firms' performance across the treatment group and the control group. If there is a positive effect, it means that IFDI has actually improved firm performance. An adverse effect means that foreign investors, whether intentionally or unintentionally, cause a worse performance in selected firms. If there is an insignificant effect, it indicates no causality which means that IFDI makes no difference to firm performance.

In the next section, I review the recent literature, mainly focusing on the direct effect of IFDI on Chinese firms, and discuss the study framework. I then discuss the background and provide an overview of the Chinese IFDI situation. Section 4 describes the data and the model and methodology used. Section 5 presents the empirical results, while conclusions are offered in the final section.

1.2. Literature review

Most of the literature finds positive results for the direct effects of IFDI. For example, using Indonesian data, empirical researchers find that firms with foreign ownership shares outperform firms that are purely domestically owned and these domestic firms benefit from spillovers from IFDI (Blomström & Sjöholm, 1999). FDI-receiving firms are consistently believed to be superior to locally-owned firms and there are several reasons for this. Firstly, foreign-owned firms have more advanced technological knowledge, superior and more efficient management structures, as well as access to international networks (Girma, Greenaway, & Wakelin, 2001). Moreover, employees in foreign firms may have higher quality skills and training, while these firms may also benefit from having more machinery and equipment per worker and greater technical efficiency (Buckley, Clegg, Zheng, Siler, & Giorgioni, 2007). However, studies of the effects of IFDI on Chinese firms have yielded weaker, partial or insignificant positive results, although some studies do support the notion that the productivity of foreign firms in China is significantly higher than that of domestic firms (see, for example, Zhou, Li, & David, 2002).

Using a panel of data covering five years from 1996 to 2001, Buckley, Clegg, and Wang (2006) investigate the impact of IFDI on the productivity of China's electronics industry and find that foreign-owned firms have played an unexpectedly weak role in this industry. Their finding suggests that labour productivity gains from IFDI are significant for certain, but not all, groups of firms in China's electronics industry. Meanwhile, they also find that the influence of IFDI on the host country's industry performance diminishes over time. The explanation provided is that the weak level of intellectual property protection in China discourages MNEs from undertaking significant technological development in the host country. A similar study tests the impact of IFDI on the productivity of China's automotive industry from 1995 to 1999 (Buckley et al., 2007). The researchers use the pooled ordinary least squares model (POLS) and a fixed effects model (FES) to measure the production function with labour productivity as the dependent variable. However, they find that IFDI plays a positive role in raising labour productivity in this industry and predict that MNEs transfer not only capital but also advanced technologies and managerial skills. It may be that the results of these two studies are slightly different because of the different contexts of the two industries, but they both have a common drawback in that they cannot separate direct and indirect effects empirically due to the limitations of the dataset they use, which causes the results to become blurred.

There are also a few studies that separate foreign investment into western investment (outside the Greater China Area) and overseas Chinese investment (Hong Kong, Macao and Taiwan) in order to analyse the direct effects on several aspects of firms' performance. For example, Ge and Chen (2008) find that firms with investment from within the Greater China Area are less likely to increase productivity compared to locally-owned firms and firms with IFDI from western

countries. Applying dynamic system GMM with firm fixed effects, Long (2012) uses lagged values of the right-hand side variables as instruments and allows for the lagged logarithm of real output of the firm as a dependent variable to be included among the regressors to estimate the production function by industry. These studies show that foreign-owned firms tend to be more productive, with western-invested firms having a greater advantage, and that all foreign-owned firms pay higher wages. However, they find that firms with foreign investment are unlikely to have introduced new products, regardless of the country of origin of that investment. Furthermore, firms with Hong Kong-Macao-Taiwanese investment but not western investment tend to export a greater proportion of their outputs. However, using more recent data and the OLS method, Wang, Buckley, Clegg, and Kafouros (2007) model the level of exports as a function of FDI, domestic investment, the exchange rate and the economic performance of the host country, and find that the differences between western MNEs and Hong Kong-Macao-Taiwanese MNEs regarding the impact of IFDI on Chinese exports are insubstantial.

From the literature discussed above, it can be seen that most researchers have limited their investigations to labour productivity or total factor productivity only. Moreover, the methods used in the studies described above are not robust enough to avoid the issue of endogeneity of foreign investment and therefore cannot determine whether it is a true causal effect of foreign share ownership or if it is just a consequence of foreign investors "cherry picking" the most productive firms as investment targets. In terms of state-of-the-art econometric methods, one or two studies were found that adopt the propensity score matching (PSM) method or other treatment effect method to explore the causal effect of having a foreign ownership share on Chinese firms.

Long (2012) uses the propensity score matching method to estimate the causal effect of foreign ownership share on Chinese firms' productivity. He uses total factor productivity (TFP) to represent firms' productivity and construct the predicted probability of a firm having overseas investment. He then limits the sample to firms with and without foreign investment that have similar propensity scores within the sample period. This leads to the conclusion that foreign investment does indeed improve productivity, but those investments that come from outside of the Greater China Area tend to lead to greater productivity. The limitation of this study is that it only discusses one aspect of firms' performance. In another paper by Girma, Gong, Görg, and Lancheros (2012), the researchers implement propensity score reweighted least squares estimation to evaluate the direct impact of the foreign ownership structure of IFDI projects on export performance and technology upgrading. They find strong effects on post-acquisition export activity for all types of ownership share. In addition, targets that are taken over with a less than 100 per cent foreign ownership share (but not wholly foreign-owned subsidiaries) experience increases in new product development and R&D upgrading. Furthermore, they show that the positive effects on exporting, new product development, and R&D are mainly attributed to investments made within the Greater China Area but not from the "rest of the world", which is in direct contrast to the finding of Long's paper.

Therefore, in this paper I also use propensity score matching method but in combination with the difference-in-differences method to estimate the direct causal effects of IFDI on various aspects of

Chinese firms' performance, rather than focusing solely on productivity, and the time period of my examination is the post-WTO period. I not only separate overseas investment into HMT investment and other foreign investment, but also discuss its direct effects within four regions of China respectively, which has not been done by any other researchers before.

1.3. IFDI in China

There have been several phases of IFDI development in China. The first period was from 1979 to 1983, which is regarded as the initial stage. China first began to attract foreign investment after the introduction of the "Open Door" policy. In July 1979, the central government published the Enterprise Laws of Chinese-Foreign Joint Ventures, and created four Special Economic Zones (SEZs) in Shenzhen, Zhuhai, Shantou and Xiamen in the provinces of Guangdong and Fujian. However, the preliminary experimental period did not attract much foreign investment because other countries were then unfamiliar with China's policy and the Chinese government had not yet announced a series of rules and regulations relating to it. The second stage lasted from 1984 to 1991 and is known as the gradual development stage. During this time, the Law for the Encouragement of Foreign Investment was promulgated in 1986 and the implementation of regulations was proclaimed in 1987. Hainan Island and 14 coastal cities were opened to FDI in 1984 and preferential income tax arrangements for Foreign Investment Enterprises (FIEs) were granted in the same year. In 1985, the Yangtze River (Changjiang) Delta, the Pearl River (Zhujiang) Delta and the South Fujian area became Open Export Zones (OEZs), followed by the Shandong and East Liaoning Peninsulas in 1987. Shanghai's Pudong New Area opened in 1989 and became known as a flagship Special Economic Zone (SEZ). The main source of IFDI during this gradual development period was from the Greater China Area (Hong Kong, Macao and Taiwan). From 1992 to 1994, IFDI development reached the High Speed Growth stage. After Deng Xiaoping's "South Tour" in 1992, China's economic reforms were accelerated. Investment from outside the Greater China Area increased rapidly from this time onwards. IFDI began to shift toward capital and technologically intensive industries. Around 60% of IFDI flowed into highly export-oriented and technology-intensive industry sectors. Meanwhile, market-seeking motives began to grow in importance. The target regions now cover both the Pearl River Delta and the Yangtze River Delta (Buckley, Clegg, Cross, & Tan, 2005; Long, 2012). Subsequently, from 1995 to 2000, the development of IFDI entered the Adjustment period. The Provisional Guidelines for Foreign Investment Projects took effect in 1995 and all FDI projects could then be classified into one of the following four categories: encouraged; restricted; prohibited; and permitted. The aims of this adjustment period were twofold. The first was to prepare for China's accession to the World Trade Organization (WTO) and the second was to use FDI to encourage development in the vast West region. Projects that could make use of the rich natural resources and relatively low labour costs in the Central and Northeast regions were strongly encouraged. Finally, China's accession to the WTO in 2001 meant that IFDI had reached the Steady Development stage. Lastly, the new Guiding Catalogue of Foreign Investment Projects, published in 2002, combined the previous IFDI project categories into three: encouraged; prohibited; and permitted.

Therefore, from the context discussed above, it can be seen that IFDI in China has several distinctive characteristics. Firstly, the sources of IFDI can be separated into two areas: FDI from the Greater China Area (Hong Kong-Macao-Taiwan); and FDI from outside the Greater China Area. Chinese domestic firms started to attract overseas ownership shares from the Greater China area initially because of the lesser cultural and geographical distances involved. Secondly, the motivations for different types of IFDI in China vary. On the one hand, China is seen as attractive mainly due to its cheap labour and rich resources. On the other hand, this kind of foreign investment, especially from outside the Greater China area, is seen as a way of facilitating entry into China's large domestic market. Thirdly, IFDI activities in China are guided and supported by government policies. China opened up its market from the coastal cities to the mainland and from east to west. Meanwhile, China implemented super-national treatment for foreign firms in order to attract overseas investment. This has meant that foreign firms can benefit from tariff exemptions and other fiscal subsidies. After China's accession to the WTO, although national treatment was also implemented, some free-trade ports such as the British Virgin Islands and Hong Kong still had a role to play as tax havens, which resulted in some "fake" foreign investment by domestic firms simply "round tripping" in order to take advantage of the special incentives offered to foreign investors. Fourthly, according to the Chinese National Bureau of Statistics (13th June 2011) and based on provincial development level, China can be divided into four economic regions: East; Northeast; Central; and West. The order in which IFDI was encouraged into the different regions is in line with the economic development situation of each region. As stated previously, the Eastern coastal area was the first to be opened to foreign investors and is the most developed area in the country. Since the Adjustment stage, related projects began to encourage foreign capital to move into the Central or Northeast regions which are full of natural resources and have cheaper labour costs, and finally foreign investment was encouraged to develop the vast and less-developed West region.

According to these characteristics, this paper focuses on the "Steady" development stage and uses Chinese firm level data from 2001 to 2007 to analyze the direct causal link between IFDI and various aspects of firms' performance. I separate overseas investment into Hong Kong-Macao-Taiwanese (HMT) investment and other foreign investment, discussing its effects in the four economic regions respectively.

1.4. Data, model and methodology

The dataset used in this study is China's Industrial Enterprise Statistics compiled by the China National Bureau of Statistics and Enterprise Association, which has performed several logistical tests to ensure the accuracy of the information and identify any illogical data spanning the period from 1998 to 2009. This dataset includes basic information and financial data for all non-listed firms with annual sales above 5 million RMB Yuan in 41 industries, and these companies account for 85-90 percent of total output in most industries.

There are 101 variables in this dataset, which are the same for each year, while the number of firms per year varies from a low of 165,104 in 1998 to a high of 422,213 in 2009. Using the province ID, firms can be divided into four economic regions. According to a project undertaken by the Chinese National Bureau of Statistics on 13th June 2011, the East region[1] occupies 9.5% of the total national land; the Central region[2] occupies 10.7% of the total national land; the West region[3] accounts for 71.5% of the total national land; and finally the Northeast region[4] occupies 8.2% of the total national territory. From Table 1.1, it can be seen that the East region is the most developed area with the largest proportion of both population and GDP and the highest per capita GDP in 2008. The West occupies the largest area of national land but has the lowest per capita GDP in 2008, which indicates that the Western region is still the least developed area in China. The Northeast is the smallest region but is rich in natural resources, while the Central region's development is at a middling level, like its geographical location, but it is also important as a bridge between the Eastern coastal area and the Western region, through which to encourage development in the West. As the four regions represent different economic levels and nowadays different regions rather than different provinces will have different policies such as Rise of Central China Plan for Central area, the western development strategy for West area and so on, the causal effects for each of these four regions are analyzed separately. As the whole sample is too large, it is in vain for me to use Stata to test the result as a whole, this paper only focuses on regional differences in the response of different outcomes to changes in ownership.

Table 1.1. Basic information for four regions in China

Region	The proportion of national land	The proportion of China's population	The proportion of GDP in 2008	Per capita GDP (RMB Yuan)
East	9.5%	36.7%	54.3%	37,000
Central	10.7%	27.1%	19.3%	17,803
West	71.5%	27.9%	17.8%	15,973
Northeast	8.2%	8.3%	8.6%	25,872

Source: Chinese National Bureau of Statistics 2008

The Registration Type code in this dataset classifies domestic firms (code: 100-190), enterprises with investment from Hong Kong, Macao and Taiwan (code: 200-240), and other foreign-invested firms (code: 300-340), which makes it easy to subdivide the origin of foreign investment into HMT investment and investment from outside the Greater China Area. Moreover, as the registration type has to be changed and reported at the time when a domestic firm becomes a foreign-invested firm, I was able to use the change of code for each firm to define changes in IFDI: for instance, a firm may have no foreign investment in the initial year but becomes a foreign-invested firm in later years. Therefore, the treatment equals to 1 when a domesticaly-owned firm is acquired by a foreign company in a year among 2002 to 2007 and then stays as a foreign-invested firm.

[1] East region includes Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujiang, Shandong, Guangdong, and Hainan.
[2] Central region includes Shanxi, Anhui, Jiangxi, Henan, Hunan and Hubei.
[3] West region covers Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang.
[4] Northeast region includes Liaoning, Jilin and Heilongjiang.

In this sample, I use the period from 2001 to 2007 to analyze the direct causal effects of IFDI on Chinese firms' performance, subdivided by regions and origin of foreign investment after accession to the WTO and before the Subprime Crisis in 2008. The number of observations for each region and the number of firms which changed ownership during the period 2001 to 2007 are shown in Table 1.2. Consistent with the information in Table 1.1, the East region is the most developed region and the first to open its market to foreign investors; thus, the East region has the largest number of firms and the largest number of participant firms changing to foreign ownership during the period 2001 to 2007 in this dataset. The situation for the Central region falls somewhere in the middle of this trend and it has an almost equal proportion of participants receiving HMT investment and other foreign investment. Participants in the West and Northeast regions receive more foreign investment from outside the Greater China Area, which is contrary to the results for the Eastern and Central regions. This may because the West and Northeast regions are relatively further away from Hong Kong, Macao and Taiwan. Consequently, it is not surprising that the Northeastern region has the smallest number of observations and participants receiving IFDI as this is the smallest region, but it still has a higher proportion of firms receiving IFDI than the Western region, since the latter is the least developed region.

Table 1.2. Observations for four regions 2001-2007

Region	Number of observations	Participants experiencing changes in IFDI	Participants receiving HMT investment	Participants receiving other foreign investment
East	147,427	2,820	1,453	1,367
Central	37,635	424	215	209
West	32,377	415	179	236
Northeast	19,518	269	94	175

Note: 'Participants experiencing changes in IFDI' is subdivided into those receiving HMT investment and those receiving other foreign investment.

The goal of this paper is to test whether a firm directly improves its performance when it receives IFDI. If high performance plants are chosen by foreign investors as acquisition targets, the ownership status becomes endogenous and thus a simple least squares estimation will be invalid. Therefore, I use a propensity score matching method to match treated and controlled observations on the estimated probability of being treated. The advantages of PSM over regression are, firstly, that regression is largely related to dimensionality. If I add observable characteristics each time, I partition my data into bins and need enough observations for each value to estimate it precisely. Secondly, the assumption of a regression function is always linear and therefore it is likely to project functions into areas with no observations. Moreover, assumptions regarding disturbance are more restrictive under regressions: $E[\varepsilon_i|X,F]=0$, which means the disturbance needs to have a conditional expected zero value at every observation. However, PSM only needs $E[\varepsilon_i|X,F=f]=E[\varepsilon_i|X,F=0]$, which means the disturbance of the treated group and the control group need to have the same conditional expected value.

In this study, the propensity score is the predicted probability of a firm changing from a domestic firm to a foreign-invested firm (changes in IFDI), conditional on covariates. Therefore, those

Chinese firms which remain domestic firms during the period 2001 to 2007 in the sample are members of the control group, and those acquired by foreign investors during the same period are participants in the treatment group. I then subdivide the treated group into an HMT-investment group and another foreign investment group. I not only compare various aspects of firms' performance across the control group and the treated group, but also across the control group and the two sub-treated groups separately.

Under the Conditional Independence Assumption, propensity score matching is used to control the selection bias by restricting the comparison to differences within carefully selected pairs of firms with similar observable pre-acquisition characteristics. However, given the potential problem that PSM cannot calculate and eliminate unobservable differences between the treated and the control group, the difference-in-differences method is combined with PSM in this study under the assumption that unobserved factors have a constant influence on the outcome.

Firstly, I evaluate a logit model of the binary outcome of a firm receiving IFDI, with observable pre-acquisition firm characteristics as explanatory variables. All the explanatory variables (except for age) are lagged by one previous year (definitions of explanatory variables are provided in Table 1.3). I then use predicted values from the logit model to generate propensity scores for all the treated and control group members and use Nearest Neighbour Matching[5] to match propensity scores between the treated group and the control group, between the HMT investment group and the control group, and between the other foreign investment group and the control group. Finally, I estimate the average treatment effect on the treated (ATT) of each outcome variable from the matching difference-in-differences analysis (definitions of the outcome variables are shown in Table 1.5). PSM-DiD estimators are used to report the average difference in the outcomes between the matched pairs of firms, and the net of the initial difference in the pre-acquisition period. The combined ATT equations can be written as follows ("t" stands for the acquisition year and "Y" is various outcome variables)[6]:

$$(1)\quad ATT_t = \frac{1}{n}\sum_1^n\left(Y_t^{treated} - Y_t^{control}\right) - \frac{1}{n}\sum_1^n\left(Y_{t-1}^{treated} - Y_{t-1}^{control}\right)$$

$$(2)\quad ATT_{t+1} = \frac{1}{n}\sum_1^n\left(Y_{t+1}^{treated} - Y_{t+1}^{control}\right) - \frac{1}{n}\sum_1^n\left(Y_{t-1}^{treated} - Y_{t-1}^{control}\right)$$

$$(3)\quad ATT_{t+2} = \frac{1}{n}\sum_1^n\left(Y_{t+2}^{treated} - Y_{t+2}^{control}\right) - \frac{1}{n}\sum_1^n\left(Y_{t-1}^{treated} - Y_{t-1}^{control}\right)$$

$$(4)\quad ATT_{t+3} = \frac{1}{n}\sum_1^n\left(Y_{t+3}^{treated} - Y_{t+3}^{control}\right) - \frac{1}{n}\sum_1^n\left(Y_{t-1}^{treated} - Y_{t-1}^{control}\right)$$

[5] Nearest Neighbour Matching: $C(P_i)=\min_j|P_i-P_j|$, which means the absolute difference between the estimated propensity scores for the control and treated groups is minimized, and the members of the control group are matched to the treated members based on the closest propensity score. Therefore, the next neighbour's weight is set to 1.

[6] These equations are calculated based on the definitions of the Average Treatment Effects on the Treated and difference-in-differences methods. The average treatment effects on the treated (ATT) in this paper is defined as the difference between the mean outcome of all firms receiving FDI and the mean outcome of the same group of firms had they not become foreign-invested firms: $ATT_{PSM} = E[Y^f-Y^0 \mid F=f]=E[Y^f \mid F=f]- E[Y^0 \mid F=f]$. The difference-in-difference (DiD) method is a tool that can be used to estimate treatment effects comparing pre- and post-treatment differences in the outcome of a treatment and a control group. Thus $ATT_{DiD,PSM} = E[Y_{t+i}^f-Y^f_{t-1} \mid F=f] - E[Y_{t+i}^0-Y^0_{t-1}|F=f] = E[Y_{t+i}^f-Y_{t+i}^0|F=f] - E[Y^f_{t-1}-Y^0_{t-1}|F=f]$.

The chosen explanatory variables are based on Matthias Arnold and Javorcik (2009) study. I not only focus on a firm's productivity (here I use labour productivity) but also on other aspects of a firm to make sure that all the pre-acquisition characteristics of a firm are controlled in the logit model, including the firm's size (i.e. total assets and revenue), the firm's quality (i.e. labour productivity) and the potential benefits a firm may receive (i.e. subsidies) after acquisition (summary statistics of the pre-acquisition characteristics are shown in Table 1.4)[7]. From the results of the logit model (see Tables 1.6.1-1.6.2), we can see that different origins of foreign investment produce different results and that each of China's economic regions has its own unique situation. One thing that the firms have in common is that foreign investors do show preferences for cherry picking. It is clear that younger, exporting firms of larger sizes are more likely to be the target of acquisition by foreign investors regardless of the origin of that foreign investment and of regional economic conditions, although there are differences in the pre-acquisition characteristics of foreign firms in other respects. These logit results also indicate the predicted probability of becoming an acquisition target (the propensity score), which is the basis for the matching procedure. The outcome variables are chosen from the target's pre-acquisition characteristics but they do not have the same definitions. In order to test the direct effects of changes in IFDI, all the outcome variables are defined as the differences between each variable in the pre-acquisition year and the acquisition year; and then one year, two years and three years after acquisition, respectively. Therefore, the ATT results from the difference-in-differences analysis on the matched sample indicate the initial direct motivation for acquisition behaviour and also the causal links between the different kinds of foreign investment and firm performance in the four economic regions after the acquisition year.

[7] Nominal values of labour productivity, total assets and revenue are deflated using the producer price indices and nominal values of wages are deflated using consumer price indices obtained from the China Statistical Yearbook with 2001 as the base year.

Table 1.3. Definitions of explanatory variables

Variable	Definition	Explanation
Labour productivity	Log of lagged labour productivity	The ratio of yearly total industry value to the annual employment of this firm.
Total assets	Log of lagged total assets	Value of economic resources owned or controlled by this company, including all property, creditors' rights and other rights.
Wage	Log of lagged year's average wages payable	The ratio of yearly total wages to the annual employment of this firm.
Revenue	Log of lagged main operating revenue	The total revenue of the firm gained by doing main business.
Age	Firm age	Firm age since setting up.
Subsidy	Dummy variable of lagged subsidy revenue	Including the refund of value-added tax collected and lump-sum subsidy given by the government. Dummy variable equal to 1 if the firm receives subsidy and0 otherwise.
New product	Dummy variable of lagged new products	Dummy variable equal to 1 if the firm has developed a new product and 0 otherwise.
Export	Dummy variable of lagged export delivery	Dummy variable equal to 1 if the firm exports, and 0 otherwise.
Investment	Dummy variable of lagged long term investment	Firm's investment in productive fixed assets including inward and outward investment. Dummy variable equal to 1 if the firm has long term investment and 0 otherwise.

Table 1.4. Summary statistics of pre-acquisition characteristics

	East region		Central region		West region		Northeast region	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Labour productivity	5.34	1.02	5.05	1.14	4.94	1.16	5.16	1.15
Total assets	9.67	1.39	9.60	1.47	10.02	1.57	9.74	1.53
Wage	2.57	0.96	2.22	0.94	2.42	1.03	2.42	1.08
Revenue	10.02	1.24	9.83	1.36	9.91	1.54	9.83	1.36
Age	19.11	10.01	21.46	13.22	22.33	13.56	20.10	12.62
Subsidy	0.09	0.29	0.06	0.23	0.09	0.28	0.07	0.26
New product	0.18	0.38	0.22	0.41	0.20	0.40	0.17	0.37
Export	0.19	0.39	0.11	0.31	0.11	0.31	0.13	0.34
Investment	0.10	0.30	0.11	0.31	0.14	0.35	0.09	0.29

Table 1.5. Definitions of outcome variables

Variable	Definition	Explanation
Labour productivity	The differences in log labour productivity in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	The ratio of yearly total industry value to the annual employment of this firm.
New product	The differences in dummy new products in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	Dummy variable equal to 1 if the firm has developed a new product and 0 otherwise.
Export	The differences in dummy export in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	Dummy variable equal to 1 if the firm exports, and 0 otherwise.
Wage	The differences in log year's average wages payable in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	The ratio of yearly total wages to the annual employment of this firm.
Subsidy	The difference in dummy subsidy in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	Including the refund of value-added tax collected and lump-sum subsidy given by the government. Dummy variable equal to 1 if the firm receives subsidy and 0 otherwise.
Investment	The difference in dummy long term investment in the pre-acquisition year and in the acquisition year, and one year, two years, and three years after acquisition respectively.	Firm's investment in productive fixed assets including inward and outward investment. Dummy variable equal to 1 if the firm has long term investment and 0 otherwise.

A necessary condition is that causal treatment effects are only defined in the region of common support: $0 < Pr(t = 1|X) < 1$. That is, firms with the same value of the covariates, X, should have a positive probability of receiving and not receiving FDI. Hence, an important step is to check the region of common support (the overlap) between the treatment group and the control group. This ensures that any combination of characteristics observed in the group of acquired firms can also be observed among the group of domestic firms. In this paper, I use Nearest Neighbour Matching (NN matching) to test the average treatment effects on the treated (ATT) of each outcome variable. Based on Caliendo and Kopeinig (2008) study, ATT is sufficient to ensure the existence of potential matches in the control group, and NN matching handles the common support problem

very well because, with NN matching, only the closest neighbour is used; thus I need not worry about common support conditions which can also be seen from propensity score distributions before and after matching (shown in Appendix 1.A).

In addition, I provide a balancing-test to check whether the propensity score matching is able to balance the distribution of relevant variables both in the treatment group and the control group. I use two approaches and the balancing-test results are displayed in Appendix 1.B. According to Caliendo and Kopeinig (2008), the first approach is a two-sample t-test which is used to check if there are significant differences in covariate means for both groups. After matching, the covariates should be balanced in both groups and no significant differences should be found. Another method I use is to re-estimate the propensity score for the matched sample (only for participants and matched non-participants) and compare the pseudo-R^2s before and after matching. Because no systematic differences in the distribution of covariates between both groups are expected after matching and a pseudo-R^2 only has meaning when compared to another pseudo-R^2 of the same type, using the same data and predicting the same outcome (Guo & Fraser, 2014), regardless of the results obtained before matching, the pseudo-R^2s after matching should be relatively low, and lower than before matching. The balancing-test results are satisfied and indicate that matching on the score has been successful. Hence, at each propensity score, acquired and non-acquired firms are comparable on all observable characteristics.

Table 1.6.1.Logit results of predicting foreign investments in East region and Central region

	East region			Central region		
	All	HMT	Other	All	HMT	Other
Labour	-0.125***	-0.124***	-0.124***	-0.183***	-0.133	-0.226**
productivity	(0.0262)	(0.0366)	(0.0375)	(0.0645)	(0.0916)	(0.0906)
Total assets	0.0997***	0.0622*	0.138***	0.236***	0.131	0.340***
	(0.0252)	(0.0349)	(0.0364)	(0.0580)	(0.0824)	(0.0814)
Wage	-0.0254	0.0211	-0.0753	-0.0631	-0.0326	-0.0962
	(0.0356)	(0.0495)	(0.0509)	(0.0878)	(0.124)	(0.123)
Revenue	0.186***	0.167***	0.203***	0.216***	0.218**	0.200**
	(0.0306)	(0.0426)	(0.0440)	(0.0725)	(0.104)	(0.101)
Age	-0.0427***	-0.0340***	-0.0535***	-0.0400***	-0.0324***	-0.0472***
	(0.00321)	(0.00414)	(0.00503)	(0.00608)	(0.00852)	(0.00866)
Subsidy	-0.286***	-0.345***	-0.226***	-0.0460	-0.470*	0.230
	(0.0589)	(0.0843)	(0.0821)	(0.163)	(0.280)	(0.204)
New	-0.155***	-0.127**	-0.184***	-0.106	-0.286*	0.0594
product	(0.0461)	(0.0635)	(0.0669)	(0.116)	(0.167)	(0.162)
Export	0.501***	0.404***	0.605***	0.598***	0.640***	0.557***
	(0.0425)	(0.0589)	(0.0613)	(0.118)	(0.168)	(0.167)
Investment	0.143**	0.174**	0.110	-0.360**	-0.343	-0.393*
	(0.0557)	(0.0772)	(0.0801)	(0.150)	(0.223)	(0.205)
No. of obs.	581,733	581,733	581,733	137,723	137,723	137,723

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1.6.2. Logit results of predicting foreign investments in West region and Northeast region

	West region			Northeast region		
	All	HMT	Other	All	HMT	Other
Labour	-0.0269	-0.313***	0.194**	0.0810	0.0875	0.0744
productivity	(0.0628)	(0.0961)	(0.0802)	(0.0748)	(0.127)	(0.0925)
Total assets	0.246***	-0.0186	0.444***	0.0834	-0.0111	0.133
	(0.0585)	(0.0888)	(0.0760)	(0.0729)	(0.122)	(0.0906)
Wage	-0.0170	0.235*	-0.223**	0.0303	-0.178	0.144
	(0.0868)	(0.133)	(0.112)	(0.103)	(0.170)	(0.128)
Revenue	0.150**	0.303***	0.0243	0.232***	0.281*	0.201*
	(0.0687)	(0.105)	(0.0880)	(0.0866)	(0.148)	(0.106)
Age	-0.0380***	-0.0296***	-0.0448***	-0.0311***	-0.0308**	-0.0313***
	(0.00606)	(0.00860)	(0.00864)	(0.00758)	(0.0133)	(0.00923)
Subsidy	0.0684	-0.000316	0.127	-0.352*	-0.273	-0.391
	(0.134)	(0.218)	(0.171)	(0.204)	(0.350)	(0.250)
New	-0.192	-0.0591	-0.288*	0.249*	0.306	0.212
product	(0.117)	(0.173)	(0.160)	(0.141)	(0.238)	(0.174)
Export	0.560***	0.662***	0.477***	0.561***	0.482**	0.603***
	(0.114)	(0.169)	(0.155)	(0.138)	(0.237)	(0.170)
Investment	-0.181	-0.401*	-0.0296	0.354**	0.346	0.359*
	(0.135)	(0.223)	(0.171)	(0.172)	(0.299)	(0.210)
No. of obs.	124,988	124,988	124,988	75,285	75,285	75,285

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

1.5. Empirical results

Using data from the period 2001 to 2007, I estimate the average treatment effect on the treated (ATT) of the following six aspects of firms: labour productivity; new product development; export; wage; subsidy; and investment. I divide the Chinese firms into four regions: East; Central; West; and Northeast, and subdivide the origin of foreign investment for each region into HMT-investment (Greater China area) and other foreign-investment (outside the Greater China area).

With matching results for changes in IFDI (Table 1.7.1-Table 1.7.4), it can firstly be seen that, in the East region, foreign investments have significant positive effects on exports and average wages but a significant negative effect on long term investment in the acquisition year. The export advantage of acquired Chinese domestic firms is 3.44% over the control group in the year of acquisition, and the wage advantage of acquired Chinese domestic firms is 3.99% over the control group in the acquisition year. However, foreign acquisition has a 1.43% disadvantage for acquired

Chinese domestic firms compared with the control group. One year later the positive effect on exports is still significant at the 10% level, with a 2.12% advantage for acquired Chinese domestic firms, but the effect on average wages becomes insignificant, and the effect on long term investment is significantly negative at the 5% level with a 2.47% disadvantage for acquired Chinese firms. Two years later, only the effect on long term investment is significant at the 5% level and it has a 2.47% lower effect on long term investment for acquired Chinese firms. Three years later, the effect on export becomes significantly positive at the 1% level again, with a 3.36% advantage for acquired Chinese firms and the effect on long term investment is still significantly negative at the 10% level with a 1.78% disadvantage. Meanwhile, we also find that foreign investment has a significantly positive effect on labour productivity at the 10% level with an 8.39% advantage for acquired Chinese firms compared with the control group. After subdividing foreign investments, we find that investment from the Greater China Area (HMT-investment) only has significant effects in the acquisition year: the export advantage for acquired Chinese domestic firms is 3.87% more than the control group at the 1% significance level and the average wage advantage of acquired Chinese firms is 3.66% greater than the control group at the 10% significance level. However, no significant effects are observed one year, two years and three years after the acquisition. Investments coming from outside of the Greater China Area have positive effects on labour productivity and new products at the 10% significance level in the acquisition year: the labour productivity advantage of acquired Chinese firms is 4.28% and the new product advantage of acquired Chinese firms is 3% more than the control group. Meanwhile, the export advantage of acquired Chinese firms is 5.82% greater than other Chinese domestic firms in the control group at the 1% significance level. This finding is similar to Long (2012) observation that foreign investment improves productivity and that investments coming from outside of the Greater China Area are more productive. In addition, the finding regarding the effect on new products supports that of Girma et al. (2012). However, we find that one year later, the effects on labour productivity and new products become insignificant, but the effect on exports is still significantly positive at the 10% level with a 3.34% advantage over the control group. At the same time, the subsidy advantage of acquired Chinese firms is 3.25% more than the control group at the 10% level. Two years later, only the effect on exports remains significantly positive at the 10% level with a 3.25% advantage over the control group. Three years later, the effect on exports becomes more significantly positive at the 1% level with a 5.65% advantage over the control group.

Secondly, in the Central region, foreign investments have a significantly positive effect on exports at the 1% level with a 13.8% advantage over the control group, but a significantly negative effect on labour productivity at the 5% level with a 10.3% disadvantage in the acquisition year. One year later, only the effect on exports is significant at the 10% level and it has a 6.76% advantage over the control group. Two years later, the export effect becomes insignificant and only the effect on subsidies is significantly positive at the 10% level with a 4.8% advantage for acquired Chinese firms. Three years later, no significant effects are found. After subdividing foreign investments, the investment from the Greater China Area (HMT-investment) has a significantly positive effect on exports at the 1% level with a 10.7% advantage over the control group. One year later, the effect on new products becomes significantly positive at the 10% level with a 10.2% advantage. The potential export advantage of acquired Chinese firms is 16% greater than the control group at the 1%

significant level. Two years later, neither the effects on new products nor exports remains significant, but acquired Chinese domestic firms gain a possible 6.42% subsidy advantage over the control group. Three years later only the effect on exports becomes significant again at the 10% level with a 9.09% possibility of an advantage. Investment from outside of the Greater China area has a significantly positive effect on exports at the 1% level with a 12.8% possibility of an advantage over the control group in the acquisition year. The effect on exports remains significantly positive one year, two years and three years later, although with slightly different significance levels and possibilities of advantage. Moreover, in the third year after acquisition, the possibility of acquired firms receiving a subsidy advantage becomes 7.22% higher than the control group at the 10% significance level.

In the West region, the effect on labour productivity in the acquisition year is negatively significant, as is the case for the Central region. The labour productivity disadvantage of acquired firms is 7.68% compared with the control group at the 10% significance level. Meanwhile, the possibility of receiving a long term investment disadvantage is 5.06% at the 5% significance level. The effect on exports is positive and significant at the 5% level with a 5.9% difference. However, no significant effects are discovered for the first, second and third years after the acquisition. Regarding investment from the Greater China area, the effect on labour productivity is also significantly negative at the 1% level with a 17.3% disadvantage in the acquisition year. The effect on new products is significantly negative at the 5% level with a 9.2% disadvantage which supports Long (2012) findings. The effect on exports is positively significant at the 5% level with a 7.47% advantage, which is similar to the results obtained for other regions and other types of foreign investment. However, one year later, no significant effects are found. Two years later, the effect on labour productivity becomes negatively significant again at the 10% level with a 22.9% disadvantage. Three years later, all the effects become insignificant. Investment from outside the Greater China Area only has a significantly positive effect on exports at the 5% level with a 6.57% advantage in the acquisition year. One year later, the effect on exports becomes insignificant but a significantly negative effect on labour productivity is observed at the 10% level with a 13.2% disadvantage. Two years later, no significant effects are discovered and three years later, the effect on labour productivity becomes negatively significant again at the 5% level with a 38.6% disadvantage.

In the Northeast region, only exports are likely to experience significant effects. In the acquisition year, foreign investment gives acquired Chinese domestic firms an 8.47% export advantage at the 1% significance level. However, there are no significant effects on any aspects of firm performance in the first and second year after acquisition. Three years later, the effect on exports is again significantly positive at the 10% level with a 7.63% advantage. Investment from the Greater China Area produces similar results in the acquisition year. The export advantage of acquired firms is 11.1% over the control group at the 1% significance level, and one year later, this benefit becomes 13.6% at the 5% significance level. Two years later, the effect on exports becomes insignificant but the average wage becomes significantly positive at the 5% level with a 37.3% advantage. Three years later, all the effects become insignificant. Investment from outside the Greater China Area only has significant effects in the acquisition year. The export advantage is

8.54% over the control group at the 5% significance level while the average wage advantage is 13.2% over the control group at the 10% significance level.

Therefore, different regions have different results based on their individual economic development situation, and the effects of different types of foreign investment are not always the same. However, there is one similarity. Regardless of the region and the type of foreign investment, foreign acquisition has significant positive effects on export delivery in China, which is in line with Girma et al. (2012) finding that there are effects on export activity, post-acquisition, for all types of ownership share. However, we also find that this effect fluctuates when we observe it over several years. The effects on the average wage in different regions and the effects of different types of foreign investment are then found to be positive, although not always significant, which is in line with the existing findings of other papers in the literature. In addition, we find that the acquisition target firm in some economic regions of China gains an advantage from receiving subsidies compared with other domestic firms which do not have foreign investment. However, the significant effect on long term investment is always negative.

Potential explanations for these findings are as follows. Firstly, this study uses a sample from 2001 to 2007 which equates to the initial Steady Development Stage of attracting IFDI after China's accession to the WTO. Driven by the process of globalization, investors from the Greater China area were attracted by the low labour costs in mainland China, which means that HMT-investment is labour-intensive and export-oriented. Although investors outside the Greater China Area were largely driven by the desire to gain market access during the early stages of IFDI development and their main purpose was to facilitate entry into China's large domestic market, the situation changed after accession to the WTO because the Chinese Government lost its power to discriminate between different kinds of foreign investment. Meanwhile, the policy of allowing the exchange rate to depreciate also stimulated exports. Therefore, significant and positive effects on exports are discovered for every region, regardless of the origin of foreign investment. Secondly, as the most developed and the first region in China to open its market to IFDI, it is unsurprising that the East region benefits most significantly from the effects of IFDI. Conversely, as the least developed area, the effects in the West region are relatively weaker than for other regions. Thirdly, because the technological differences between mainland Chinese firms and HMT firms are likely to be smaller, there is less potential for productivity improvement in target firms acquired by investors from the Greater China area. Meanwhile, as there are differences in the cultural and management systems between mainland China and other areas, the results for the less developed region show a significantly negative effect on labour productivity. In contrast, other foreign investment from outside the Greater China area is relatively more likely to improve productivity; this is in line with the finding for the East region which is the most developed area and has the largest number of samples. Fourthly, because of the lax and ineffective intellectual property protection in China as well as its cheap labour, foreign investors are discouraged from transferring technology, except mature kinds of technology, which involves less innovation and results in more labour-intensive production methods. Hence, the significant effect on new product development is minimal and even negative in the West region. Fifthly, by paying higher wages, foreign-invested firms can manage to attract higher quality skilled labour, a phenomenon which is apparent from the results.

Moreover, it is the policy in some developed regions to try to encourage more western foreign investment which can be seen from the results regarding the effects on subsidies. The negative effect on long term investment suggests that foreign investment leads to a restructuring of target firms during the first few years after acquisition, but this negative effect tends to diminish and even become insignificant with the passage of time.

Table 1.7.1. Matching results of changes in IFDI in East region

		Labour productivity	New product	Export	Wage	Subsidy	Investment	No. of matched pairs
All	Acquisition year	-0.00108	-0.00116	0.0344***	0.0399**	0.0120	-0.0143*	5,178
		(0.0171)	(0.0106)	(0.00871)	(0.0158)	(0.00963)	(0.00751)	
	1 year later	-0.00485	-0.00811	0.0212*	0.0249	0.0154	-0.0247**	
		(0.0267)	(0.0125)	(0.0126)	(0.0222)	(0.0108)	(0.0100)	
	2 yearslater	0.0243	0.000772	0.0182	0.0126	0.0104	-0.0228**	
		(0.0408)	(0.0123)	(0.0126)	(0.0339)	(0.0106)	(0.0105)	
	3 years later	0.0839*	-0.000386	0.0336***	0.0303	0.00966	-0.0178*	
		(0.0486)	(0.0123)	(0.0121)	(0.0398)	(0.0104)	(0.0107)	
HMT	Acquisition year	0.00239	0.0126	0.0387***	0.0366*	0.0104	-0.00818	2,688
		(0.0240)	(0.0151)	(0.0122)	(0.0218)	(0.0138)	(0.0101)	
	1 year later	-0.00214	0.00818	0.00446	0.0110	0.00893	-0.00446	
		(0.0345)	(0.0179)	(0.0171)	(0.0318)	(0.0152)	(0.0134)	
	2 years later	0.0558	0.0156	0.00149	0.0466	-0.000744	0.00670	
		(0.0572)	(0.0177)	(0.0173)	(0.0467)	(0.0145)	(0.0143)	
	3 years later	-0.0296	0.0104	0.0141	0.0789	0.0112	0.0171	
		(0.0762)	(0.0173)	(0.0167)	(0.0512)	(0.0142)	(0.0148)	
Other	Acquisition year	0.0428*	0.0300*	0.0582***	0.0465	0.0197	-0.00428	2,490
		(0.0242)	(0.0161)	(0.0128)	(0.0378)	(0.0149)	(0.0110)	
	1 year later	-0.0214	0.00257	0.0334*	-0.00908	0.0325*	-0.00685	
		(0.0365)	(0.0191)	(0.0192)	(0.0512)	(0.0173)	(0.0154)	
	2 years later	0.0594	0.0154	0.0325*	0.0428	0.0111	-0.00942	
		(0.0560)	(0.0186)	(0.0189)	(0.0856)	(0.0168)	(0.0162)	
	3 years later	0.0136	0.0163	0.0565***	0.0120	0.0137	0.00257	
		(0.0716)	(0.0186)	(0.0183)	(0.0632)	(0.0166)	(0.0162)	

Note: The outcomes are observed for the given time period and followed by the average treatment effect on the treated (ATT), with the default robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 1.7.2. Matching results of changes in IFDI in Central region

		Labour productivity	New product	Export	Wage	Subsidy	Investment	No. of matched pairs
All	Acquisition year	-0.103**	0.0423	0.138***	-0.0508	0.0366	-0.0141	750
		(0.0446)	(0.0358)	(0.0271)	(0.0687)	(0.0250)	(0.0198)	
	1 year later	0.0388	0.0451	0.0676*	-0.0429	0.0254	-0.00563	
		(0.0624)	(0.0403)	(0.0373)	(0.0808)	(0.0275)	(0.0285)	
	2 years later	-0.0993	0.0107	0.0160	0.0682	0.0480*	0.00800	
		(0.0999)	(0.0390)	(0.0352)	(0.0717)	(0.0273)	(0.0278)	
	3 years later	0.101	0.0310	0.0310	-0.0143	0.0282	-0.0169	
		(0.117)	(0.0369)	(0.0358)	(0.100)	(0.0265)	(0.0299)	
HMT	Acquisition year	-0.0400	-0.0160	0.107***	0.00660	-0.0321	0.0160	374
		(0.0607)	(0.0438)	(0.0378)	(0.0644)	(0.0337)	(0.0233)	
	1 year later	0.0187	0.102*	0.160***	0.0425	0.0535	-0.0214	
		(0.0987)	(0.0538)	(0.0505)	(0.0782)	(0.0344)	(0.0338)	
	2 years later	-0.0745	0.0642	0.0749	0.0807	0.0642**	0.00535	
		(0.147)	(0.0527)	(0.0487)	(0.108)	(0.0269)	(0.0359)	
	3 years later	-0.00653	0.0695	0.0909*	-0.101	0.0267	0.00535	
		(0.182)	(0.0502)	(0.0483)	(0.163)	(0.0287)	(0.0374)	
Other	Acquisition year	-0.0251	-0.0500	0.128***	0.0117	0.0556	0.0389	376
		(0.0619)	(0.0486)	(0.0352)	(0.0569)	(0.0414)	(0.0318)	
	1 year later	-0.124	0.0611	0.106**	0.0761	0.0611	0.0333	
		(0.101)	(0.0551)	(0.0518)	(0.0959)	(0.0432)	(0.0407)	
	2 years later	-0.0370	0.0667	0.161***	0.142	0.0444	0.0389	
		(0.157)	(0.0531)	(0.0528)	(0.170)	(0.0429)	(0.0396)	
	3 years later	-0.0961	0.0111	0.117**	-0.170	0.0722*	0.0167	
		(0.194)	(0.0515)	(0.0486)	(0.180)	(0.0416)	(0.0412)	

Note: The outcomes are observed for the given time period and followed by the average treatment effect on the treated (ATT), with the default robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 1.7.3. Matching results of changes in IFDI in West region

		Labour productivity	New product	Export	Wage	Subsidy	Investment	No. of matched pairs
All	Acquisition year	-0.0768*	-0.0197	0.0590**	-0.00572	0.0281	-0.0506**	712
		(0.0420)	(0.0283)	(0.0232)	(0.0657)	(0.0290)	(0.0220)	
	1 year later	-0.0785	-0.0112	0.0140	0.203	-0.0337	-0.0421	
		(0.0606)	(0.0352)	(0.0325)	(0.131)	(0.0298)	(0.0291)	
	2 years later	-0.154	-0.0197	0.0393	0.0170	-0.00281	-0.0225	
		(0.0992)	(0.0362)	(0.0340)	(0.149)	(0.0289)	(0.0316)	
	3 years later	0.0564	-0.0112	0.0393	0.0465	-0.0140	-0.0337	
		(0.124)	(0.0361)	(0.0356)	(0.0999)	(0.0294)	(0.0308)	
HMT	Acquisition year	-0.173***	-0.0920**	0.0747**	-0.0808	0.00575	-0.0230	314
		(0.0649)	(0.0454)	(0.0335)	(0.0724)	(0.0359)	(0.0304)	
	1year later	-0.0777	-0.0115	0.0255	0.0746	-0.0402	-0.0115	
		(0.101)	(0.0520)	(0.0398)	(0.0739)	(0.0393)	(0.0390)	
	2 years later	-0.229*	-0.0115	-0.0172	-0.181	-0.0172	-0.0115	
		(0.124)	(0.0533)	(0.0402)	(0.160)	(0.0402)	(0.0445)	
	3 years later	-0.104	0.0287	0.0230	-0.00389	-0.0115	0.00575	
		(0.143)	(0.0529)	(0.0422)	(0.137)	(0.0430)	(0.0441)	
Other	Acquisition year	-0.0551	0.00939	0.0657**	-0.0849	0.00939	-0.0235	398
		(0.0585)	(0.0364)	(0.0294)	(0.0543)	(0.0399)	(0.0308)	
	1 year later	-0.132*	-0.00469	0.0235	-0.125	0.0235	-0.00469	
		(0.0793)	(0.0418)	(0.0434)	(0.0866)	(0.0444)	(0.0402)	
	2 years later	0.0329	0.0282	0.0469	0.0819	0.0235	0.0235	
		(0.114)	(0.0426)	(0.0465)	(0.116)	(0.0454)	(0.0423)	
	3 years later	-0.386**	-0.00469	0.0423	-0.0384	-0.0376	-0.0188	
		(0.176)	(0.0418)	(0.0467)	(0.128)	(0.0425)	(0.0426)	

Note: The outcomes are observed for the given time period and followed by the average treatment effect on the treated (ATT), with the default robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 1.7.4. Matching results of changes in IFDI in Northeast region

		Labour productivity	New product	Export	Wage	Subsidy	Investment	No. of matched pairs
All	Acquisition year	0.0781	0.00424	0.0847***	0.133	0.0297	-0.0127	502
		(0.0601)	(0.0383)	(0.0319)	(0.119)	(0.0321)	(0.0244)	
	1 year later	0.0992	-0.0169	0.00847	-0.0147	0.0508	0.00424	
		(0.108)	(0.0430)	(0.0434)	(0.167)	(0.0322)	(0.0383)	
	2 years later	0.204	-0.0127	0.0212	0.0139	0.0637	-0.0127	
		(0.147)	(0.0423)	(0.0410)	(0.228)	(0.0324)	(0.0397)	
	3 years later	0.00822	-0.0254	0.0763*	0.0615	0.0018	0.00847	
		(0.187)	(0.0421)	(0.0423)	(0.137)	(0.0318)	(0.0390)	
HMT	Acquisition year	0.110	0.0247	0.111***	0.0293	-0.0575	0.0123	174
		(0.102)	(0.0578)	(0.0390)	(0.223)	(0.0524)	(0.0409)	
	1 year later	-0.0802	0.0370	0.136**	0.119	0.0864	0.0123	
		(0.161)	(0.0729)	(0.0624)	(0.235)	(0.0529)	(0.0617)	
	2 years later	0.255	-0.0247	0.0864	0.373**	0.0123	0.0123	
		(0.262)	(0.0698)	(0.0724)	(0.145)	(0.0478)	(0.0641)	
	3 years later	0.103	-0.0370	0.0988	-0.310	0.0123	0.0247	
		(0.254)	(0.0686)	(0.0711)	(0.233)	(0.0478)	(0.0629)	
Other	Acquisition year	-0.00474	-0.0183	0.0854**	0.132*	-0.0122	-0.0366	328
		(0.0745)	(0.0468)	(0.0349)	(0.0715)	(0.0431)	(0.0310)	
	1 year later	0.0438	0.0305	-0.0671	0.117	-0.0122	-0.00610	
		(0.116)	(0.0499)	(0.0539)	(0.0830)	(0.0404)	(0.0444)	
	2 years later	-0.125	0.0305	0.0305	-0.228	-0.0244	-0.0183	
		(0.133)	(0.0506)	(0.0541)	(0.187)	(0.0365)	(0.0452)	
	3 years later	0.00120	0.00610	0.0671	0.120	-0.0244	-0.0366	
		(0.172)	(0.0506)	(0.0518)	(0.203)	(0.0365)	(0.0455)	

Note: The outcomes are observed for the given time period and followed by the average treatment effect on the treated (ATT), with the default robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

1.6. Conclusion

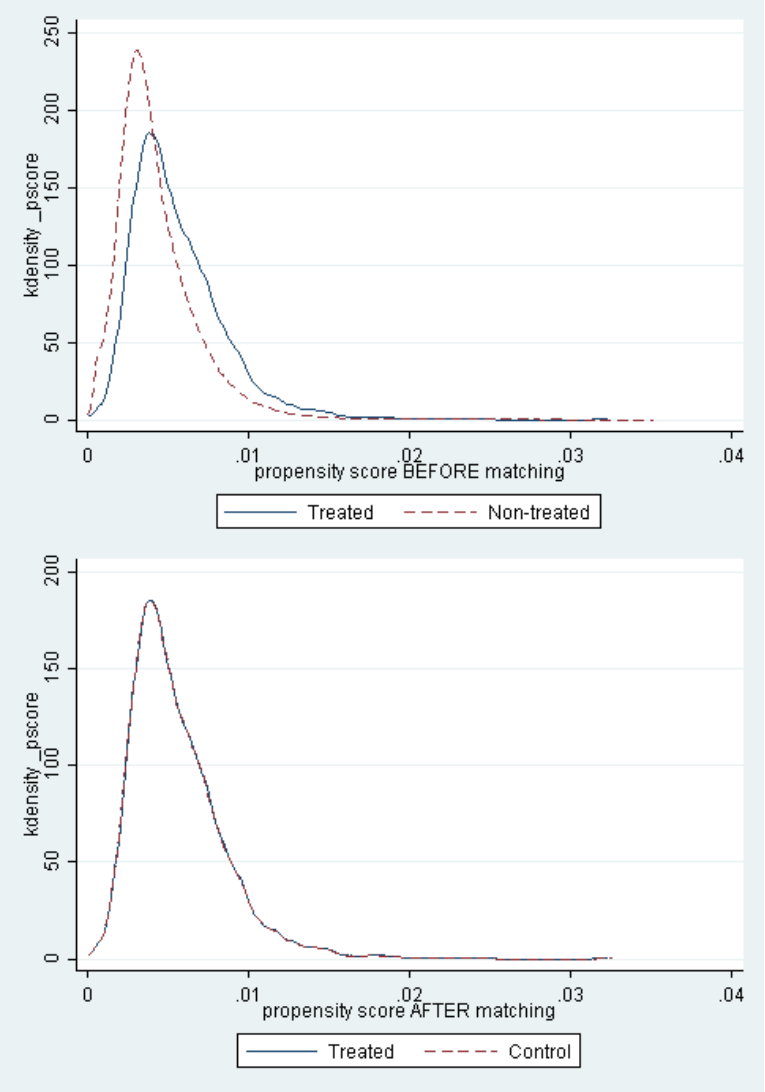
Using China's Industrial Enterprise Statistics dataset, this paper analyzed the direct causal link (rather than the association) between IFDI and Chinese firms' performance. The goal of this paper was to examine whether IFDI actually improves a target firm's performance or whether foreign investors just cherry pick Chinese domestic firms as potential acquisition targets. I tested the changes brought about by IFDI and the initial differences between the pre-acquisition year and the year of acquisition and the differences between the pre-acquisition year and one year, two years and three years after the acquisition. I found that the effect results fluctuate when they are examined over a period of several years. To identify the causal relationships and avoid the

endogeneity of foreign investment, I used the propensity score matching method combined with difference-in-differences analysis. After describing the development of IFDI in China, I focused on the initial period known as the Steady Development Stage and therefore chose the sample from 2001 to 2007 to estimate the direct effects of IFDI after accession to the WTO and before the Subprime Crisis in 2008. I not only separated foreign investment into HMT-investment and other foreign investment, but also discussed its direct effects on four economic regions in China, respectively, which has not been done by any other researchers before, to see whether regions with different levels of economic development have distinctive results.

By comparing the direct effects of changes resulting from IFDI on each of the outcome variables, I found that the progress of the IFDI market in China is not evenly balanced across the four economic regions. The most developed region has already adopted a trend of shifting from labour-intensive FDI to technology-intensive and market-seeking FDI, but other regions, especially the less developed West region, are still at the early stages of attracting IFDI. Consequently, policy makers need to tailor their strategies to attract IFDI based on each region's specific economic development conditions and the origin of foreign investment. The only exception is in the policy area of export promotion, in which case IFDI from all economies should be equally welcomed in each region.

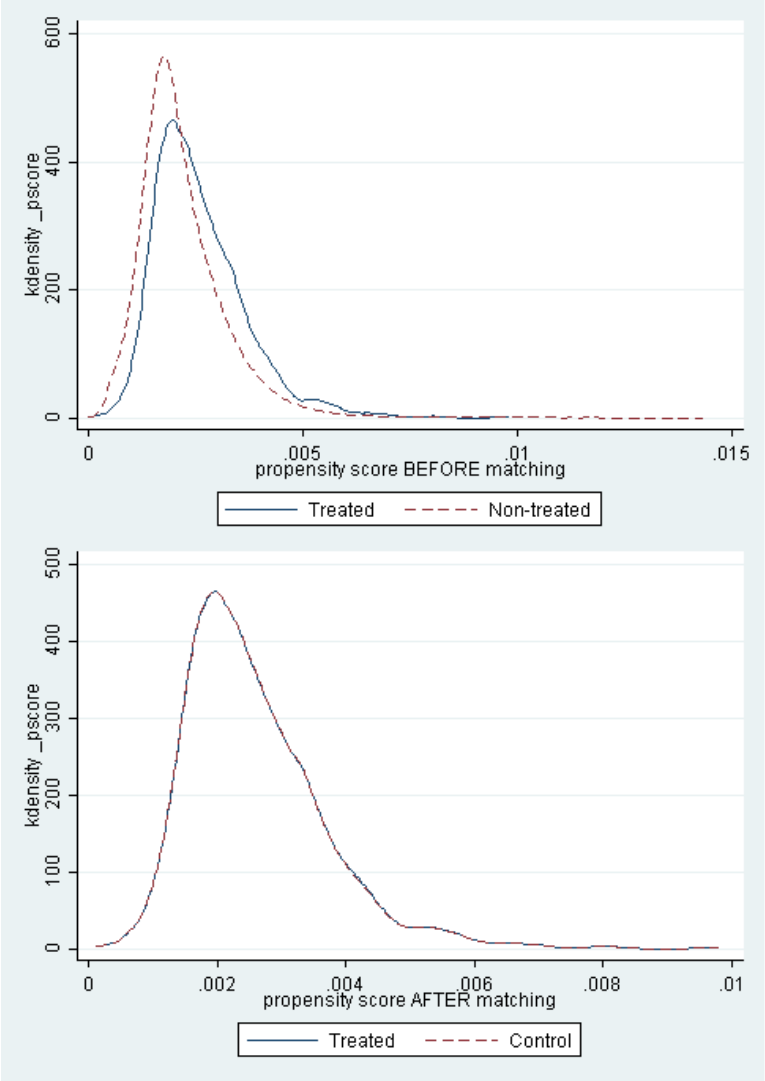
Appendix 1.A. The common support Test

Fig. 1.A.1.Propensity score distribution in the East region with all kinds of foreign-investment as treated variable



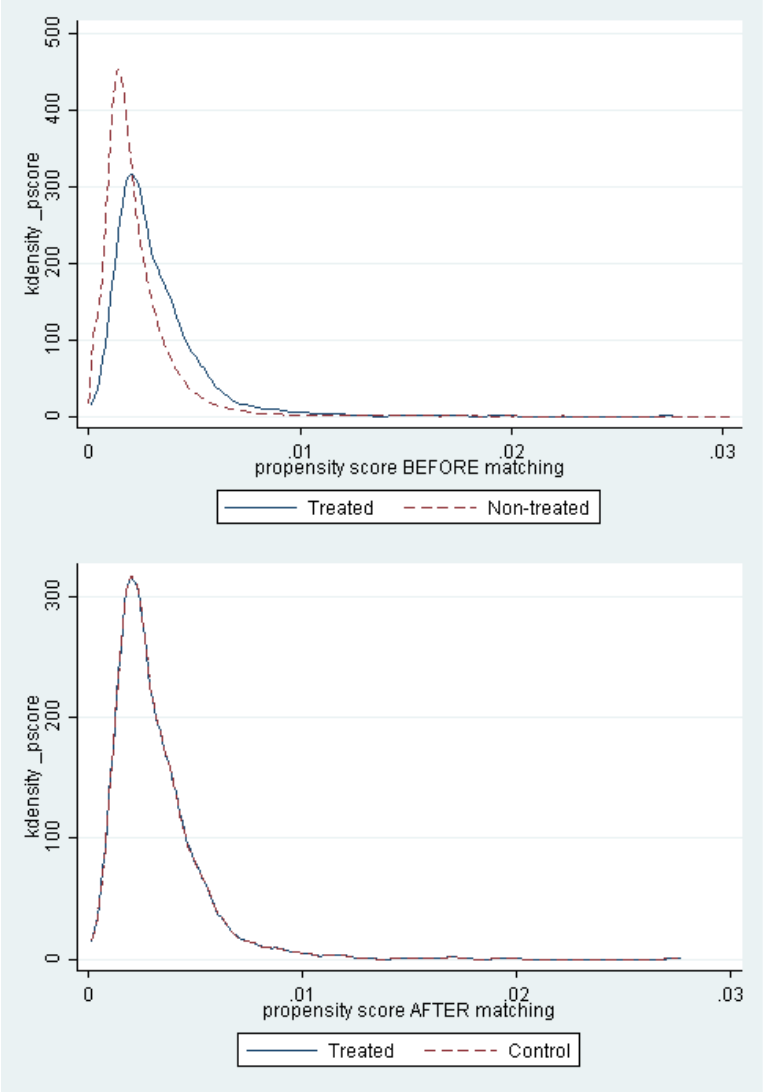
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.2. Propensity score distribution in the East region with HMT-investment as treated variable



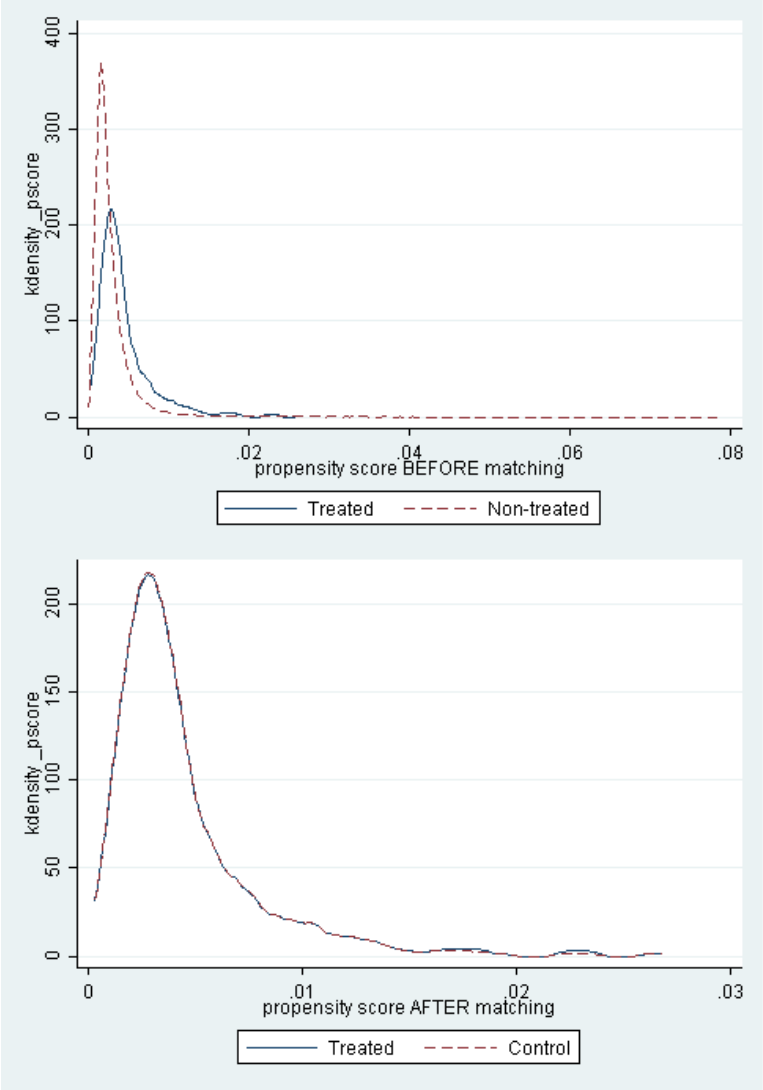
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.3. Propensity score distribution in the East region with other-foreign-investment as treated variable



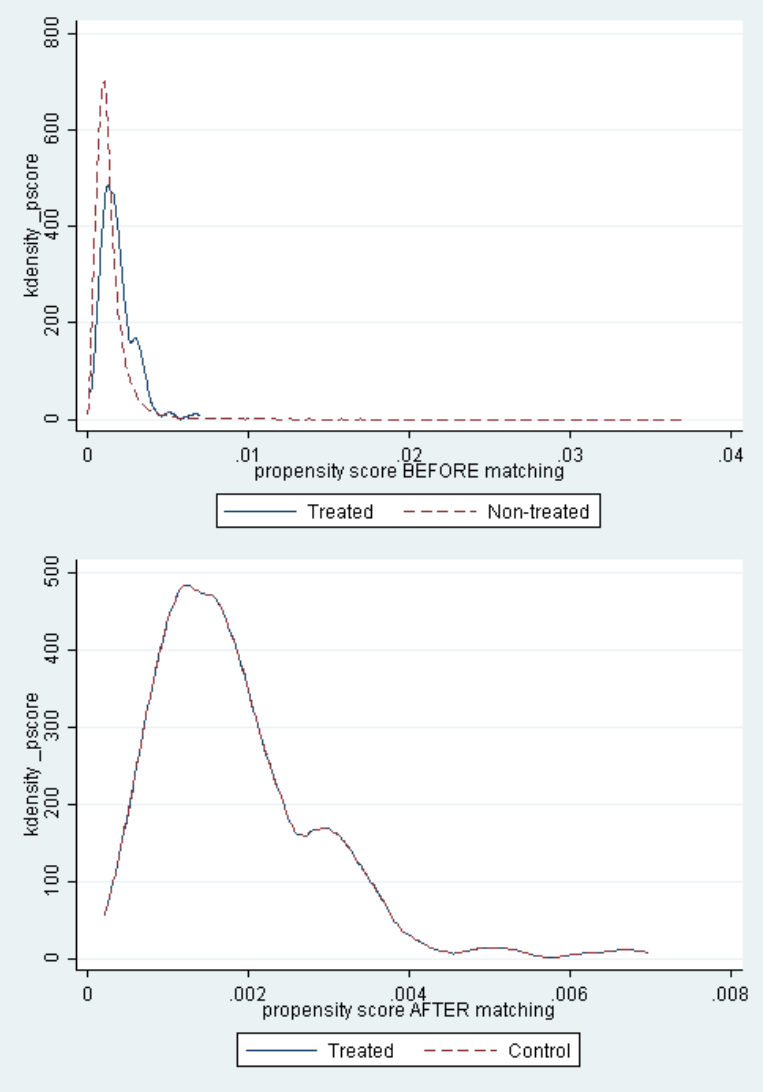
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.4.Propensity score distribution in the Central region with all kinds of foreign-investment as treated variable



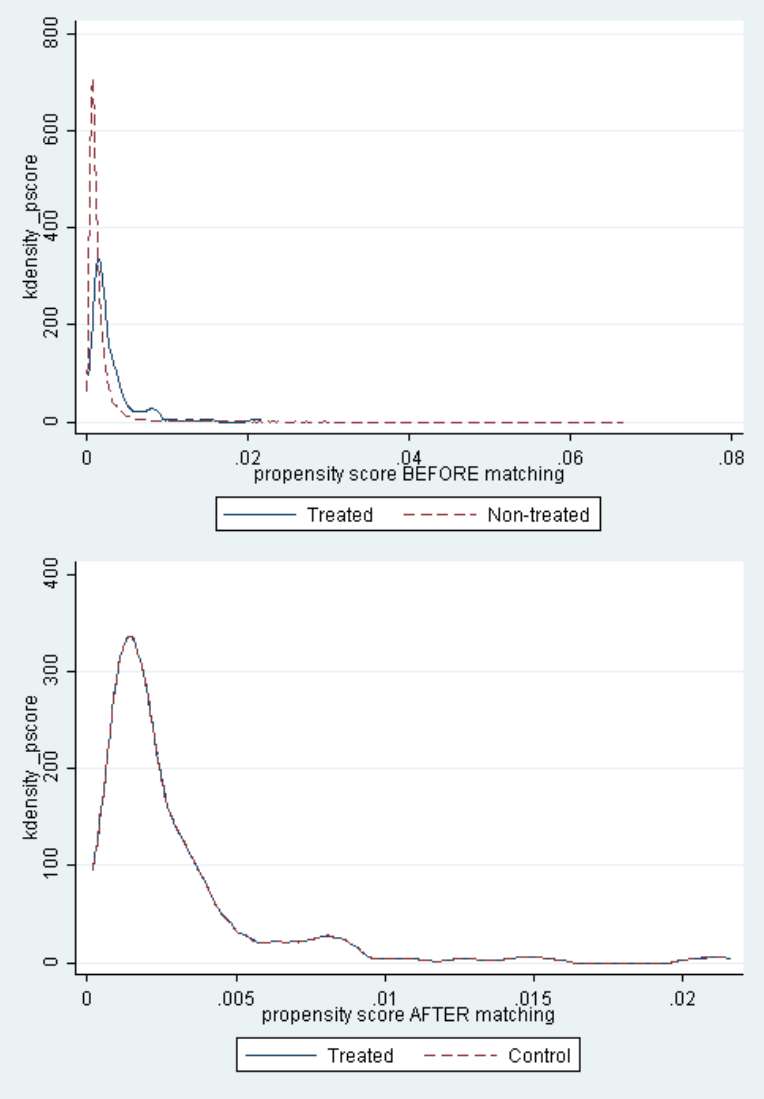
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.5.Propensity score distribution in the Central region with HMT-investment as treated variable



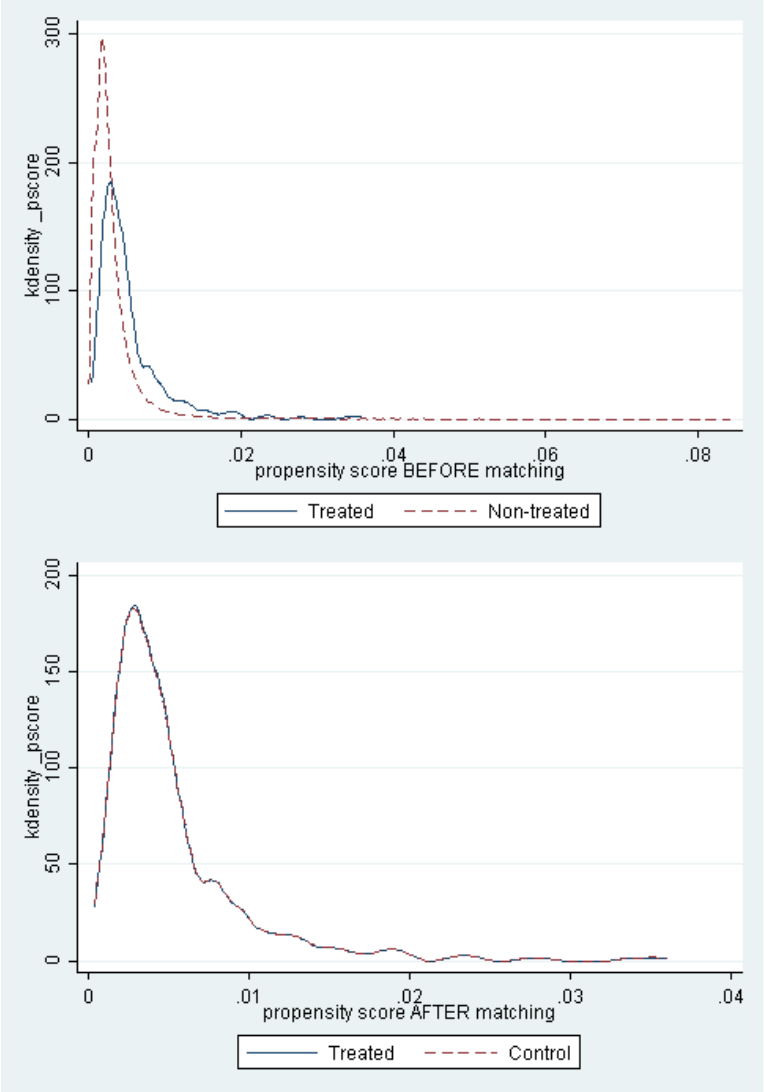
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.6. Propensity score distribution in the Central region with other-foreign-investment as treated variable



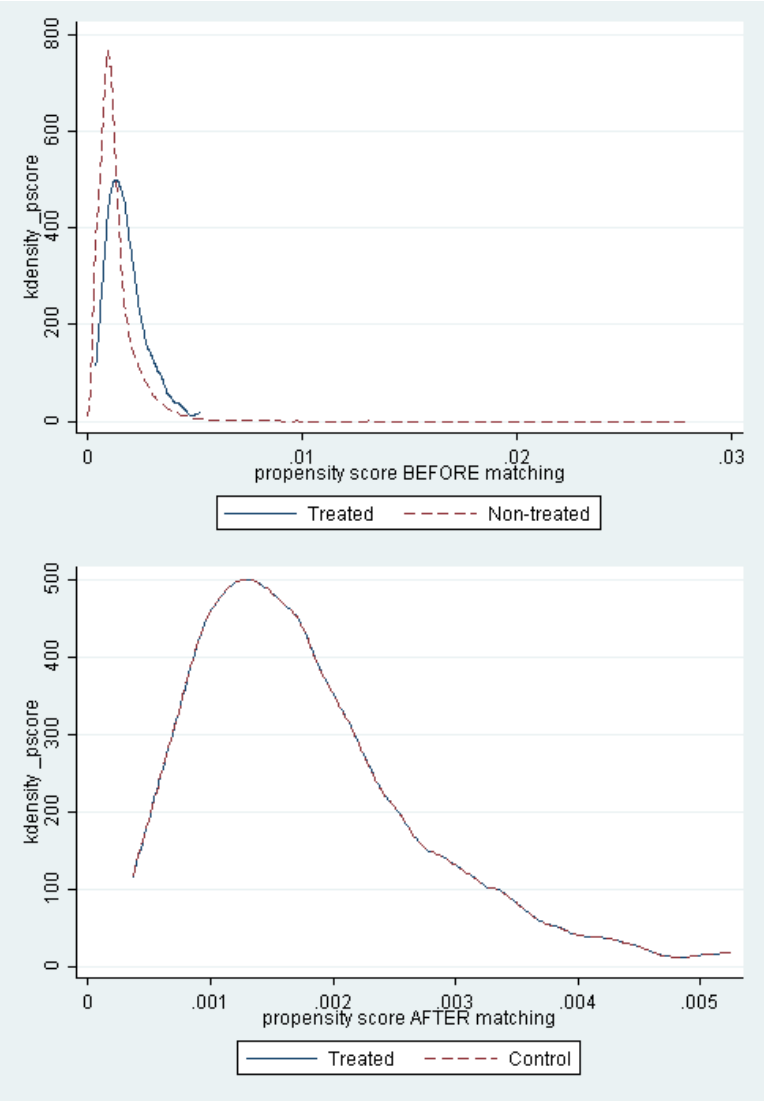
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.7.Propensity score distribution in the West region with all kinds of foreign-investment as treated variable



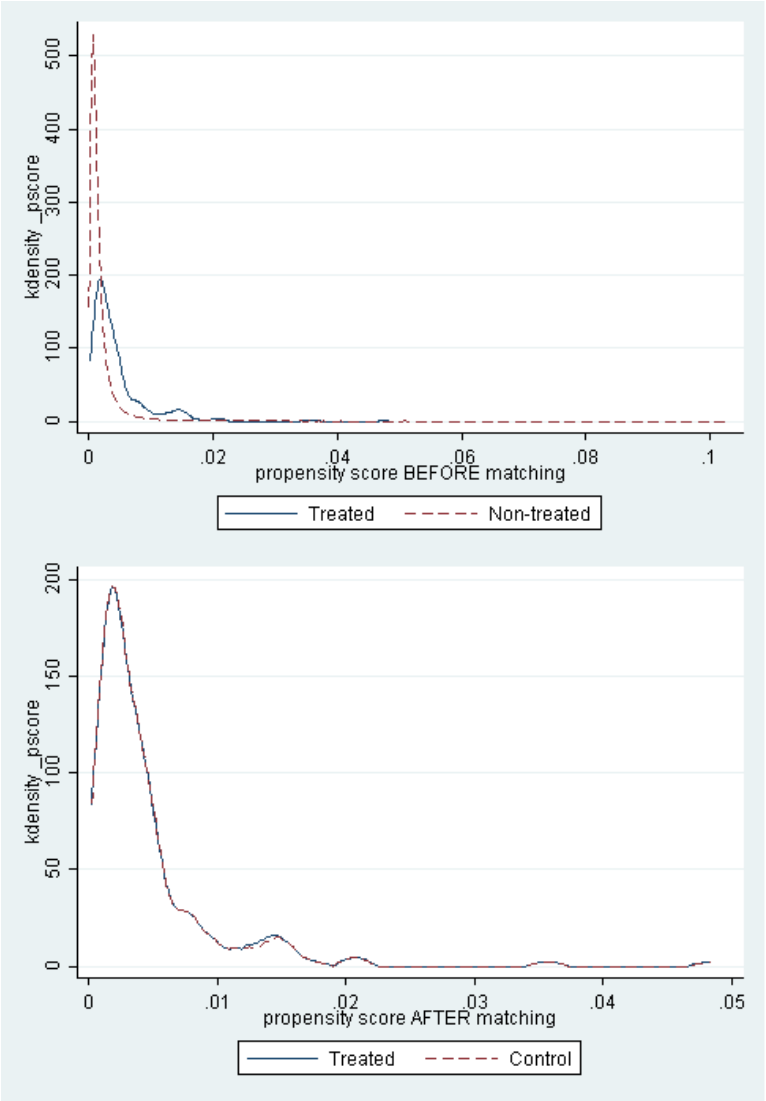
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.8.Propensity score distribution in the West region with HMT-investment as treated variable



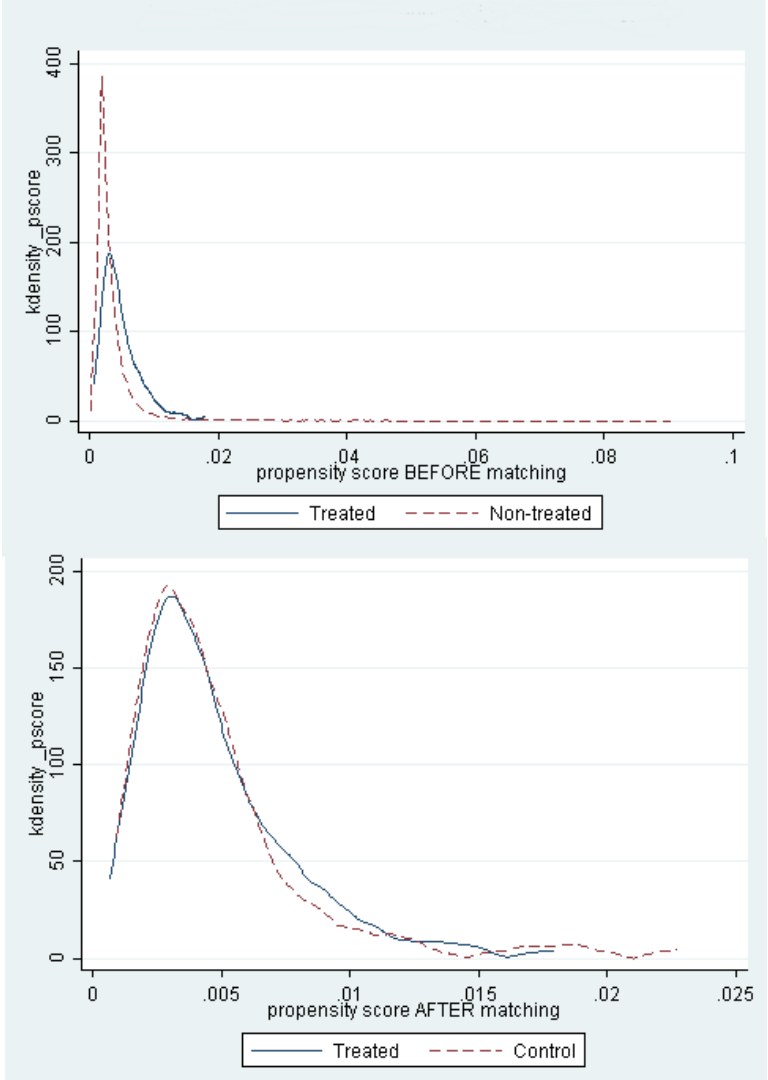
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.9. Propensity score distribution in the West region with other-foreign-investment as treated variable



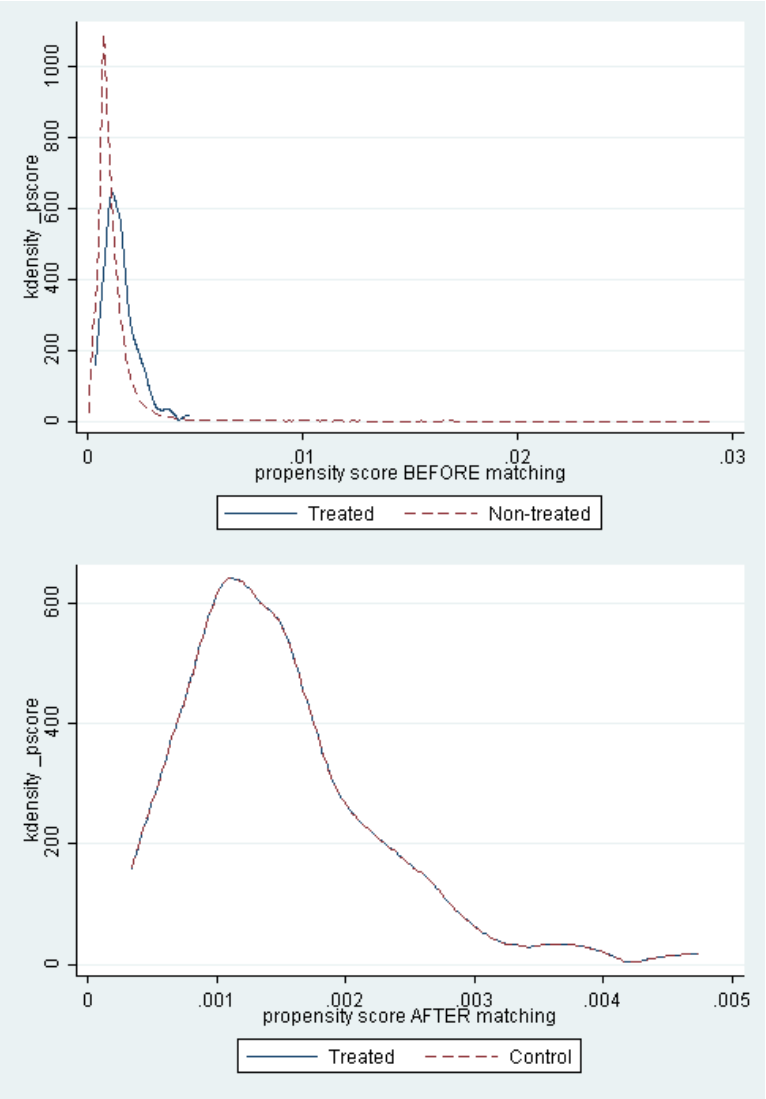
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.10. Propensity score distribution in the Northeast region with all kinds of foreign-investment as treated variable



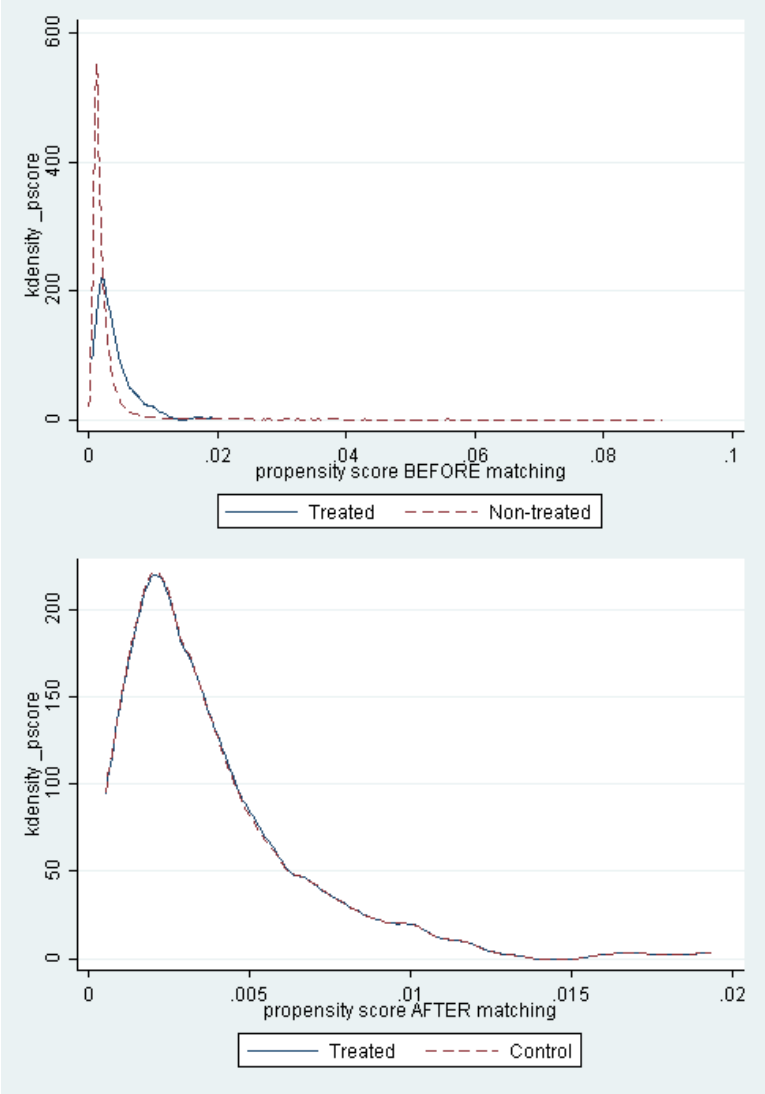
Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.11.Propensity score distribution in the Northeast region with HMT-investment as treated variable



Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Fig. 1.A.12. Propensity score distribution in the Northeast region with other-foreign-investment as treated variable



Note: Visual inspection suggests that the densities of the propensity scores are very similar and almost identical after Nearest Neighbour matching. The plot also reveals a clear overlapping of the distributions.

Appendix 1.B. Balancing tests

Table 1.B.1.Logit results on the matched sample in East region and Central region

	East region			Central region		
	All	HMT	Other	All	HMT	Other
Labour productivity	0.0230	-0.0283	-0.00511	0.0547	-0.0122	-0.0579
	(0.0361)	(0.0506)	(0.0533)	(0.0865)	(0.127)	(0.125)
Total assets	0.00145	0.0104	-0.0159	0.0725	0.0149	0.0943
	(0.0352)	(0.0485)	(0.0499)	(0.0846)	(0.118)	(0.122)
Wage	-0.00472	-0.0678	0.00586	0.0397	0.00818	0.0352
	(0.0481)	(0.0676)	(0.0673)	(0.114)	(0.179)	(0.182)
Revenue	-0.000771	0.0342	0.0334	-0.153	0.0381	-0.0373
	(0.0426)	(0.0592)	(0.0609)	(0.104)	(0.152)	(0.143)
Age	0.00216	0.00728	0.00522	-0.00152	0.00632	-0.000806
	(0.00412)	(0.00547)	(0.00661)	(0.00838)	(0.0130)	(0.0118)
Subsidy	-0.0201	-0.0664	0.0372	-0.105	-0.0489	-0.0189
	(0.0847)	(0.119)	(0.117)	(0.228)	(0.407)	(0.283)
New product	0.0473	-0.0376	0.000190	-0.0360	-0.114	0.130
	(0.0653)	(0.0896)	(0.0941)	(0.157)	(0.236)	(0.228)
Export	0.00888	0.0182	0.00696	0.201	-0.0849	-0.331
	(0.0592)	(0.0831)	(0.0849)	(0.163)	(0.236)	(0.232)
Investment	0.104	-0.102	-0.0291	0.270	0.155	-0.0253
	(0.0803)	(0.108)	(0.112)	(0.228)	(0.359)	(0.308)
No. of obs.	5,178	2,688	2,490	750	374	376
Pseudo R^2 Unmatched	0.0222	0.0138	0.0285	0.0393	0.0254	0.0528
Matched	0.000603	0.00139	0.000398	0.00459	0.00321	0.00642

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1.B.2.Logit results on the matched sample in West region and Northeast region

	West region			Northeast region		
	All	HMT	Other	All	HMT	Other
Labour productivity	0.0382	0.00963	-0.0413	-0.0674	0.162	-0.127
	(0.0864)	(0.125)	(0.121)	(0.106)	(0.175)	(0.128)
Total assets	-0.0485	0.0398	0.0973	0.0280	0.122	0.0221
	(0.0873)	(0.128)	(0.111)	(0.105)	(0.154)	(0.132)
Wage	0.00481	-0.0167	0.00699	-0.0259	-0.0852	0.273
	(0.0903)	(0.119)	(0.171)	(0.150)	(0.276)	(0.186)
Revenue	0.0583	-0.0804	-0.0878	0.0510	-0.125	-0.0104
	(0.105)	(0.162)	(0.130)	(0.121)	(0.187)	(0.153)
Age	0.00947	-0.00609	0.00637	-0.00160	-0.00605	-0.00157
	(0.00954)	(0.0133)	(0.0125)	(0.0112)	(0.0210)	(0.0120)
Subsidy	0.150	0.0600	0.300	-0.157	0.306	0.588
	(0.205)	(0.349)	(0.254)	(0.282)	(0.534)	(0.407)
New product	0.0580	-0.226	0.000877	0.0482	-0.0885	-0.0499
	(0.172)	(0.250)	(0.228)	(0.203)	(0.325)	(0.249)
Export	-0.0961	0.0348	-0.103	-0.153	-0.0537	-0.265
	(0.168)	(0.246)	(0.228)	(0.192)	(0.325)	(0.238)
Investment	0.0581	0.308	-0.0431	-0.162	0.0234	0.177
	(0.198)	(0.339)	(0.243)	(0.233)	(0.428)	(0.301)
No. of obs.	712	314	398	502	174	328
Pseudo R^2 Unmatched	0.0471	0.0291	0.0724	0.0419	0.0260	0.0477
Matched	0.00375	0.00465	0.00556	0.00311	0.00918	0.0155

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1.B.3. t-test on the matched sample in the East region with all kinds of foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.4048	5.4186	0.4682	0.6397
Total assets	10.1148	10.0753	-0.9435	0.3455
Wage	2.5347	2.5314	-0.1794	0.8577
Revenue	10.4575	10.425	-0.8660	0.3865
Age	17.5311	17.3447	-0.9357	0.3495
Subsidy	0.1383	0.1359	-0.2515	0.8014
New product	0.280	0.2675	-1.0123	0.3115
Export	0.4952	0.4926	-0.1831	0.8547
Investment	0.1839	0.1840	0.0140	0.9888
No. of obs.	2589	2589		

Table 1.B.4. t-test on the matched sample in the East region with HMT-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.3782	5.3671	-0.2741	0.7840
Total assets	10.0125	9.9855	-0.4910	0.6235
Wage	2.5300	2.5545	0.9736	0.3303
Revenue	10.3639	10.3356	-0.5773	0.5638
Age	17.8586	17.4658	-1.3470	0.1781
Subsidy	0.1272	0.1313	0.3173	0.7510
New product	0.2857	0.2851	-0.0367	0.9707
Export	0.4658	0.4545	-0.5869	0.5573
Investment	0.1838	0.1925	0.5803	0.5618
No. of obs.	1344	1344		

Table 1.B.5.t-test on the matched sample in the East region with other-foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.4334	5.4176	-0.3631	0.7165
Total assets	10.2253	10.1984	-0.4296	0.6675
Wage	2.5397	2.5338	-0.2161	0.8289
Revenue	10.5586	10.5206	-0.6762	0.4990
Age	17.1775	17.1516	-0.0975	0.9224
Subsidy	0.1502	0.1449	-0.3706	0.7110
New product	0.2739	0.2689	-0.2788	0.7804
Export	0.5269	0.5209	-0.2981	0.7656
Investment	0.1839	0.1836	-0.0232	0.9815
No. of obs.	1245	1245		

Table 1.B.6. t-test on the matched sample in the Central region with all kinds of foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.2096	5.1836	-0.3228	0.7469
Total assets	10.3704	10.3588	-0.0970	0.9227
Wage	2.2390	2.2200	-0.3580	0.7205
Revenue	10.5482	10.6080	0.5619	0.5743
Age	18.2747	18.2507	-0.0348	0.9723
Subsidy	0.1307	0.136	0.2146	0.8302
New product	0.4053	0.4091	0.1045	0.9168
Export	0.3653	0.3307	-0.9959	0.3196
Investment	0.192	0.1627	-1.0510	0.2936
No. of obs.	375	375		

Table 1.B.7. t-test on the matched sample in the Central region with HMT-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.2161	5.2387	0.1138	0.9094
Total assets	10.0635	9.9301	-0.8480	0.3970
Wage	2.2311	2.2068	-0.3556	0.7223
Revenue	10.3602	10.2590	-0.7418	0.4586
Age	18.2567	17.6898	-0.6137	0.5398
Subsidy	0.0802	0.0749	-0.1928	0.8472
New product	0.3636	0.3850	0.4263	0.6701
Export	0.3476	0.3636	0.3232	0.7467
Investment	0.1604	0.1283	-0.8813	0.3787
No. of obs.	187	187		

Table 1.B.8.t-test on the matched sample in the Central region with other-foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.2032	5.2462	0.3862	0.6996
Total assets	10.6757	10.5467	-0.7521	0.4525
Wage	2.2468	2.2424	-0.0666	0.9470
Revenue	10.7353	10.7080	-0.1774	0.8593
Age	18.2926	18.0479	-0.2487	0.8037
Subsidy	0.1809	0.2021	0.5231	0.6012
New product	0.4468	0.4415	-0.1035	0.9176
Export	0.3830	0.4521	1.3592	0.1749
Investment	0.2234	0.2128	-0.2491	0.8034
No. of obs.	188	188		

Table 1.B.9.t-test on the matched sample in the West region with all kinds of foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.3539	5.3487	-0.0562	0.9552
Total assets	11.0019	10.8541	-1.1937	0.2330
Wage	2.4977	2.4799	-0.3673	0.7135
Revenue	10.9012	10.8303	-0.6124	0.5405
Age	18.8424	18.4676	-0.5548	0.5792
Subsidy	0.1964	0.2047	0.2872	0.7741
New product	0.3023	0.2927	-0.2909	0.7712
Export	0.3721	0.3782	0.1762	0.8602
Investment	0.2584	0.2513	-0.2263	0.8210
No. of obs.	356	356		

Table 1.B.10.t-test on the matched sample in the West region with HMT-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.0078	4.9401	-0.4772	0.6336
Total assets	10.4465	10.4181	-0.1621	0.8713
Wage	2.4549	2.4177	-0.4804	0.6313
Revenue	10.4645	10.4717	0.0449	0.9642
Age	19.4253	18.7931	-0.7216	0.4710
Subsidy	0.1552	0.1379	-0.4535	0.6504
New product	0.3161	0.3448	0.5684	0.5701
Export	0.3966	0.3908	-0.1094	0.9129
Investment	0.1839	0.2011	0.4068	0.6844
No. of obs.	157	157		

Table 1.B.11.t-test on the matched sample in the West region with other-foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.6435	5.6527	0.0828	0.9341
Total assets	11.4555	11.3642	-0.5513	0.5817
Wage	2.5327	2.5406	0.1167	0.9072
Revenue	11.2580	11.2662	0.0522	0.9584
Age	18.3662	17.8679	-0.6087	0.5430
Subsidy	0.2300	0.1792	-1.2973	0.1952
New product	0.2911	0.2877	-0.0758	0.9396
Export	0.3521	0.3679	0.3388	0.7349
Investment	0.3192	0.3019	-0.3859	0.6998
No. of obs.	199	199		

Table 1.B.12.t-test on the matched sample in the Northeast region with all kinds of foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.5832	5.5395	-0.4158	0.6778
Total assets	10.5676	10.5352	-0.2170	0.8283
Wage	2.4631	2.4824	0.3002	0.7642
Revenue	10.7540	10.7055	-0.3575	0.7208
Age	18.4223	18.4064	-0.0198	0.9842
Subsidy	0.1195	0.1355	0.5344	0.5933
New product	0.3625	0.3506	-0.2790	0.7804
Export	0.4143	0.4422	0.6304	0.5287
Investment	0.2430	0.2590	0.4110	0.6813
No. of obs.	251	251		

Table 1.B.13.t-test on the matched sample in the Northeast region with HMT-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.5152	5.6990	1.0321	0.3036
Total assets	10.3208	10.1796	-0.5821	0.5612
Wage	2.3336	2.3074	-0.2671	0.7897
Revenue	10.5478	10.5018	-0.2315	0.8172
Age	18.2299	18.6552	0.3546	0.7234
Subsidy	0.1149	0.0805	-0.7629	0.4466
New product	0.3678	0.4023	0.4650	0.6425
Export	0.3793	0.4138	0.4625	0.6443
Investment	0.2184	0.2069	-0.1842	0.8541
No. of obs.	87	87		

Table 1.B.14.t-test on the matched sample in the Northeast region with other-foreign-investment as treated variable

explanatory variable	Treated group mean	Control group mean	t-test	p-value
Labour productivity	5.6186	5.6426	0.1873	0.8515
Total assets	10.7559	10.5906	-0.8728	0.3834
Wage	2.5319	2.4435	-1.1598	0.2470
Revenue	10.8635	10.7923	-0.4072	0.6841
Age	18.5244	18.1524	-0.3252	0.7452
Subsidy	0.1220	0.0671	-1.7010	0.9551
New product	0.3598	0.3110	-0.9340	0.3510
Export	0.4329	0.4817	0.8850	0.3768
Investment	0.2561	0.2073	-1.0455	0.2966
No. of obs.	164	164		

Chapter 2

Do Chinese Listed Firms' Cross-border M&As Improve the Operating Performance of Acquirers Based on the Moderating Effect of Entrepreneurial Orientation?

2.1. Introduction

During a period of over thirty years of reform and openness, China has attracted a large number of Multinational Corporations and a huge amount of Inward Foreign Direct Investment (IFDI) from various countries and regions. Particularly after China's accession to the World Trade Organization (WTO) in 2001, the process of opening up the Chinese economy received a further boost. For example, in 2002 China had IFDI of $53b (UNCTAD, 2003a), more than the USA's total IFDI.

Recently, Outward Foreign Direct Investment (OFDI) from multinational companies in developing countries has increased rapidly. According to UNCTAD (2013), these developing economies generated almost one third of global FDI outflow, continuing a steady upward trend. As a large, developing country, China is no exception to this trend. In 2008 global FDI fell by around 20%, while outward FDI from China nearly doubled (Davies, 2009). According to UNCTAD (2011), outflows from China increased by more than $10 billion and reached historical highs of $68 billion in 2010, exceeding Japanese OFDI for the first time. As an important mode of entry into OFDI, the cross-border merger and acquisition (CBM&A) activities of Chinese firms have also increased over recent years. Based on information from the Global Cross-border Merger & Acquisition Report by UNCTAD (2013), Chinese CBM&A increased from $1.194 billion in 2002 to $37.11 billion in 2012 with an average annual growth rate of 41%, covering 172 countries and regions of five continents. Most of the firms involved in Chinese CBM&A were publicly-listed companies occupying leading positions in the domestic market. For example, Lenovo purchased IBM's PC business for $1.75 billion and acquired the "Think" family group of products, while the merger between the TV and DVD operations of TCL and France's Thomson means that TCL now hold a 67% stake in the company.

Despite the rapid increase in the amount of CBM&A, there have been many cases of Chinese CBM&A failure. For instance, after the merger between the TV and DVD operations of TCL and France's Thomson, they set up a joint venture company, TTE, but a serious integration problem after the merger exerted continuing heavy losses on the TCL group. Luedi (2008) examined 56

cases of Chinese firms' CBM&A from 1995 to 2007 and found that 56% of Chinese CBM&A failed to create value. Therefore, Cross-border M&A activities are risky and complicated. Particularly in the case of CBM&A in developing countries like China who prefer to make deals with developed countries, it is useful to study the performance of Chinese firms after undertaking CBM&A activities and the key factors that affect the results.

Although Chinese firms have now gained considerable experience in CBM&A activities, many firms are still wary of undertaking CBM&A activities due to the challenges and difficulties that they may face. Companies have to make a detailed survey of target firms' financial and business operations, study the regional environment of the target firms' location and familiarize themselves with any relevant law regulations. All of these require good decision-making skills, financial strength, and experience of M&A transactions and market operation from the acquirers. Compared to non-listed firms, Chinese listed firms have an advantage in terms of these abilities, which is why Chinese listed firms account for the majority of CBM&A activities. Thus this paper uses data on Chinese listed firms.

Unlike multinational companies (MNEs) from developed countries, the international operations of Chinese enterprises are still in their infancy. As their technological level and competitive ability still lag behind those of western countries, Chinese MNEs need to pay more attention to sustainable technological innovation and investment in order to improve their business performance and maintain rapid growth. According to Williams and Lee (2009), the definition of entrepreneurial orientation encompasses internal R&D orientation which equates to technological innovation, and external asset growth orientation which represents investment; thus the entrepreneurial orientation (EO) indicator is used as a moderating factor to examine whether or not it will help Chinese MNEs to improve their operating performance. A study on EO by Lumpkin and Dess states that entrepreneurial orientation can bring new opportunities and enhanced economic performance to international enterprises, making it easier for these positive, proactive MNEs to gain competitive advantages within the field of international operations because they are more willing to innovate and take risks in order to capitalize on potential expansion and profit opportunities (Lumpkin & Dess, 1996).Thus, it is of interest to test whether EO can improve the performance of Chinese listed firms after CBM&A activities.

Therefore, this paper examines the operating performance of Chinese listed firms which are involved in CBM&A activities, and uses entrepreneurial orientation as a moderating factor to test whether it will affect the results. As well as testing firms comprising the whole sample from 2001 to 2015, this paper also explores subsample firms in different industry groups.

2.2. Literature Review

2.2.1. CBM&A activities and the performance of acquirers

There are two methods which are used to analyze the performance of acquirers. One involves using event-study methodology to calculate cumulative abnormal returns (CARs) of listed firms around a CBM&A announcement. The assumption of this method is that the capital market is mature and the stock market is very efficient, so that stock returns of the listed firm surrounding the CBM&A announcement day represent the value of the firm's future cash flow and an absence of restrictions on arbitrage. The event time window used in this method is very short, usually covering a few days before and after the announcement of a CBM&A deal. Therefore, after calculating the CARs of each firm's CBM&A event, cross-sectional data is used in regression models and this is known as the short term effect of CBM&A activities.

The earliest paper to use this methodology that I found considers the strategic motivation and performance of Chinese cross-border M&A activities of 27 deals in the Shanghai and Shenzhen stock markets using data from 2000 to 2004 (Boateng, Qian, & Tianle, 2008). The researchers find that CBM&As by Chinese firms are motivated by market development and indeed create value for Chinese acquiring firms. A more recent study uses data from 2000 to 2011 to examine the value creation for Chinese listed firms involved in CBM&A activities and highlights the relationship between the cultural distance and the acquirers' market valuation (Li, Li, & Wang, 2016). The independent variable is cultural distance and the moderating variables are: acquirer size; acquisition experience; same industry; and financial advisor. This study finds that CBM&A creates value for the Chinese acquirer's shareholders but cultural distance is negatively related to the extent of this value creation, and firms with greater absorptive capacity are better equipped to overcome the difficulties caused by cultural differences.

The other method involves using some key financial indicators (such as return on equity, return on assets, net income, earnings per share) to evaluate firms' performance. By examining the financial indicators of companies before and after the CBM&As, we can assess how their business performance changes. The data used in this method is the annual data of each firm, so it is panel data and is known as the long term effect of CBM&A activities. As the datasets used in this paper are annual panel datasets, and because the Chinese capital market is still not efficient, i.e., stock prices are subject to manipulation and public policies are frequently changing, which means that stock prices cannot represent the change in shareholders' value and stand for the company's performance, I use financial indicators to examine the long term performance of Chinese listed firms involved in CBM&A activities. This method may also have drawbacks, but the influence of financial manipulation is only temporary and thus the real impact of CBM&A will eventually be reflected in the long term financial statements of the firm.

However, the literature shows complex findings for acquirers' financial performance after CBM&A activities. For example, Changqi and Ningling (2010) use a sample of data for Chinese firms from 2000 to 2006 to measure cross-border mergers and acquisitions performance, and they use the increase in rate of return on assets (ROA) as the dependent variable. The sample includes 91 Chinese acquirers, of which 61 are Chinese listed firms. The independent variables are: pre-acquisition performance; free cash flow; proportion of state-owned shares; and organizational age, and they use an industry dummy as the control variable. After employing a multivariable linear regression model, they find that pre-acquisition performance and proportion of state-owned shares has a positive impact on the performance of acquiring companies. By contrast, Mei (2009) examines 36 samples of cross-border acquisitions undertaken by Chinese listed firms during the period 2000 to 2007, and finds that the profit-making capability of Chinese listed firms drops after the CBM&A occurs. In addition, the financial performance of these firms does not improve in the short-term after the CBM&A, although it improves slightly but not significantly in the second and third year after the CBM&A. Meanwhile, he finds that the financial performance of Chinese listed companies in the mechanical industry is better than those in the information industry and household electrical appliances industry after a CBM&A.

Using data from British firms, Dickerson, Gibson, and Tsakalotos (1997) examine CBM&As undertaken by British enterprises and find that there is no significant improvement in British acquirers' rates of profit. After comparing UK enterprises that had engaged in CBM&A activities with other domestic firms, they find that the former yield a lower rate of return than enterprises which had only undertaken internal investment activities. Similarly, by studying 471 American corporations, Ravenscraft and Scherer (2011) find that their financial results after CBM&A are poor.

Some scholars have examined acquirers in more than one country at the same time. By testing over a longer time period from 1981 to 1998, Gugler, Mueller, Yurtoglu, and Zulehner (2003) use financial accounting data from various developed countries (the US, the UK, Japan, Australia, New Zealand, Canada, etc.) to compare enterprises which had engaged in CBM&A activities with other firms that did not undertake CBM&A activities. The results showed that one to five years after CBM&As, the profits of these firms increased but their sales decreased. After subdividing the acquirers into small and large firms, they find that the profits of both types increased significantly, but large firms' sales clearly decreased while small firms' sales increased. They claim that this is because small firms achieve economies of scale and scope after CBM&As, while large firms enhance their market power and improve the extent of their monopoly through CBM&As.

Therefore, the results of the post CBM&A operating performance are ambiguous. Based on Martynova and Renneboog (2008) study which concludes that using cash-flow-based metrics yields positive returns but earning-based methods result in a negative performance in the case of CBM&As, I decided to use information and data from Chinese listed firms for the period 2001 to 2015 to test the performance of those involved in CBM&A activities to see which studies would be supported.

2.2.2. Entrepreneurial Orientation and the performance of acquirers

Entrepreneurial orientation is an important concept connected with entrepreneurship which was first clarified by Lumpkin and Dess (1996). Entrepreneurial orientation (EO) describes how entry into a new market is undertaken, that is, the processes, practices and decision-making activities that lead to companies entering new or established markets with new or existing services or goods via internal corporate venturing. Williams and Lee (2009) developed a new typology of multinational corporations' (MNCs) entrepreneurial orientation based on a two-dimensional view: longer-term technological development and shorter-term asset growth, which opened up the entrepreneurial orientation continuum of MNCs. Thus EO is a continuous variable which always plays an important role in a firm's performance and internationalization.

Knight (2001) studies the relationship between small and medium enterprises' (SMEs) performance and international entrepreneurial orientation. He finds that EO could help firms to prepare their international strategy much more effectively. When resources are relatively scarce, enterprises are more likely to improve their technical and strategic ability, which plays a positive role in the promotion of enterprises' international business performance. In addition, Wiklund and Shepherd (2003) suggest that knowledge-based resources (i.e. ability to discover and exploit opportunities) are positively related to firm performance and that EO enhances this relationship. Additionally, Jantunen, Puumalainen, Saarenketo, and Kyläheiko (2005) explore the effect of EO and firms' reconfiguring capabilities on international performance based on survey data from 217 manufacturing and service organizations in Finland. The results indicate that a firm's entrepreneurial behaviour combined with its reconfiguring capabilities has a substantial effect on international performance and constitutes a potential source of competitive advantage. However, another study on 98 international enterprises based in America shows that EO can improve a firm's performance but there was an upper limit to how much. Excessive pursuit of a high level of international EO does not necessarily ensure that enterprises can achieve a better performance (Zahra & Garvis, 2000).

Based on the literature discussed above, I use a two-dimensional method to measure Chinese listed firms' entrepreneurial orientation and set it as a moderating variable to test whether, and if so how, a firm's degree of entrepreneurial orientation affects its performance through CBM&A deals.

2.2.3. Other factors that may affect the performance of acquirers

Firstly, an enterprise's organizational characteristics are widely believed to be an important influence on the outcome of learning and knowledge exchange, which in turn affects an international firm's strategies. Therefore, this suggests that the age, size and degree of internationalization of an acquirer may affect the impact of the firm's performance.

Older firms tend to rely on the existing development pattern and get used to a path-dependent way of making decisions, which prevents them from exploring new technologies, new markets and innovating in general (Ahuja & Morris Lampert, 2001). However, younger firms are more likely to adopt aggressive strategies, exploring new business opportunities and absorbing new ideas. Thus, the younger the company, the more likely it will be to get involved in CBM&A activities. Therefore, I use an acquirer's age as the first control variable in the models.

The size of a Multinational Corporation (MNC) is a double-edged sword. On the one hand, the larger the corporation, the more likely it is to be exposed to multiple opportunities which can form the basis of new entrepreneurial initiatives. On the other hand, larger and more diverse MNCs will have a reduced capability to implement efficient procedures for coordinating knowledge flows and combinations, and response times may be too long to keep pace with changes in markets (Hedlund, 1986). Therefore, an acquirer's size is used as the second control variable.

Normally a firm with a higher degree of internationalization will have more experience of international business. However, a firm that has too many business networks with different countries has to spend more time smoothing internal knowledge coordination in order to operate effectively. The more international an MNC is, the more time it needs to spend on coordination. Eriksson, Johanson, Majkgard, and Sharma (1997) show that the degree of internationalization is positively associated with the cost of collecting, transferring and decoding knowledge from overseas locations. Conversely, a less internationalized firm would be more eager to explore a new country and to view global expansion as an economic and strategic opportunity, rather than a costly risk (Shenkar & Luo, 2008). Thus, the top management team in a less internationalized firm may also affect the performance of an acquirer. Consequently, the degree of internationalization is used as the third control variable.

Secondly, we consider how corporate governance may affect a firm's performance and strategy. The top management team in an MNC is the main component of corporate governance. High level managers' ideas, skills, experience, personal preferences and ability to implement change will affect a firm's strategy. In this paper, I use two characteristics (age and shared ownership) of the top management team (TMT) as the fourth and fifth control variables.

Based on the learning theory, older managers find it more difficult to absorb new ideas and new information and they tend to be more risk averse and behaviourally rigid with regard to strategic decision-making (Hambrick & Fukutomi, 1991). By contrast, younger managers prefer to undertake venture investment and are less likely to worry about failure. Hence, the older the top management team (TMT), the more likely it is that the MNC will be more conservative.

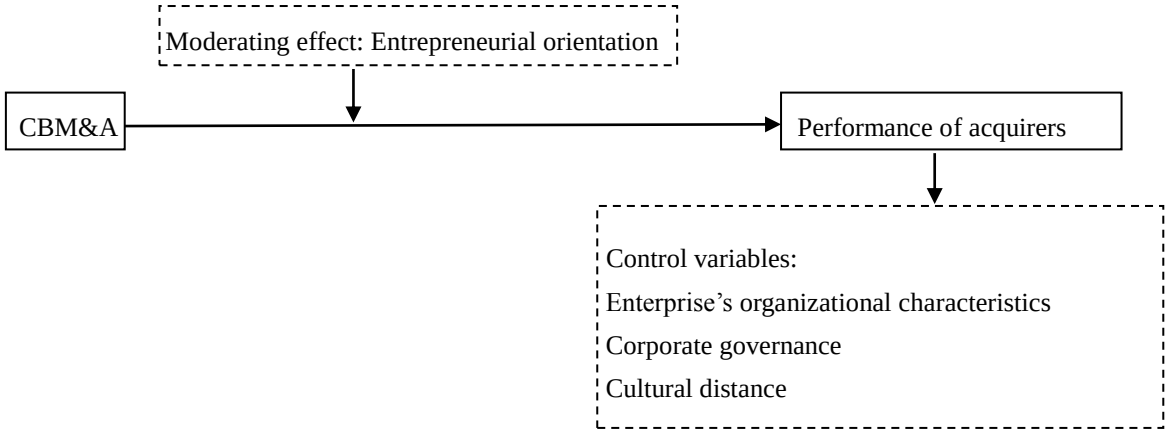
From principal-agent theory we know that top managers need to be stimulated by risk income in order to prompt them to make decisions which will enhance a firm's profit maximization. Giving top managers a larger stake in productivity can bring their private interests into alignment with the company's interests which will then constitute part of an internal entrepreneurial climate (Jensen & Murphy, 1990). Hence, the greater the degree of shared ownership allowed by a TMT in an

MNC, the more it will encourage increased participation in exploiting new opportunities and adopting a relatively aggressive strategy to improve the firm's international business performance.

Finally, cultural distance is usually cited as an obstacle to learning in CBM&A activities (Datta & Puia, 1995). Because of the communication costs, cultural difference makes it more difficult to share information and exchange knowledge between the acquirer and the target enterprise. Therefore, the degree of cultural proximity will influence the success of a firm's international business. Hence, cultural distance is the final control variable.

Thus, based on all the studies discussed above, the research framework of this paper is summarized in Figure 2.1.

Fig. 2.1. Research framework



2.3. Data and Methods

2.3.1. Sample and data

I combine three datasets in the study. The first dataset is the CSMAR China Stock Market Financial Statements Database, which is one of the most authoritative databases of Chinese listed firms. All the information about the firms was obtained from the Shanghai and Shenzhen stock exchange reports. I collected data from 2001 to 2015 comprising firms' financial balance sheet, profit statement and cash flow statement. The cross-border M&A information about each Chinese listed firm is taken from the Zephyr database. The target firms are located in different countries and their M&A activities cover different industry sectors such as high-tech, low-tech and service industry. And finally the information about organizational characteristics and corporate governance are taken from Chinese listed firms' annual reports from 2001 to 2015.

Based on the datasets, from 2001 to 2015, there were 202 completed CBM&A deals by Chinese listed firms (table 2.1). According to the standard dataset by the United Nations Conference on

Trade and Development (UNCTAD), the acquirers held a stake of more than 10% in the target firm in each completed deal. Some firms were involved in more than one deal during this period, and therefore there were 145 Chinese listed firms in total involved in Cross Border M&A activities. There are 39 target regions in total, of which the first five are Germany, Hong Kong, the US, Singapore and Canada (Fig. 2.2). Under the US Standard Industrial Classification (SIC), target firms can be divided into 36 industries according to a two-digit SIC code. The top six industries cover 57% of the total sample (Fig.2.3) including Industrial and Commercial Machinery and Computer Equipment (15%), Electronic and Other Electrical Equipment and Components (15%), Chemicals and Allied Products (10%), Primary Metal Industries (6%), Business Services (6%) and Transportation Equipment (5%).

Table 2.1.Number of deals completed in each year

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	9	7	8	4	9	15	14	14	19	18	22	33	29

Fig. 2.2.Number of CBM&A deals by Chinese listed firms with each target region

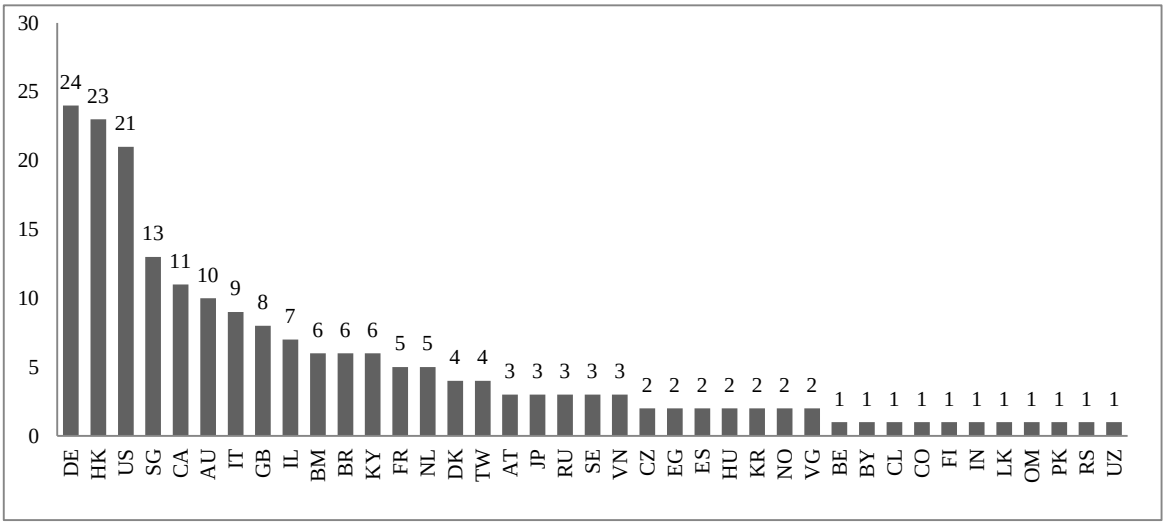
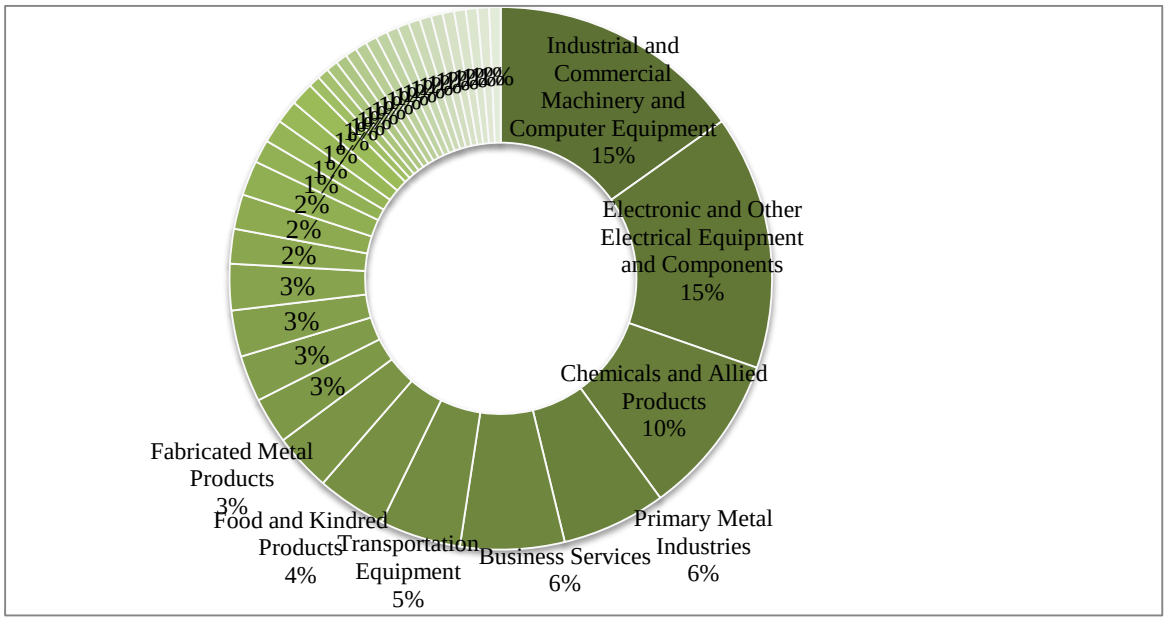


Fig. 2.3. The distribution of target industries



2.3.2. Variables and models

As discussed in section 2, the assumption of the 'event study' methodology (which is known as short term study) is that the capital market is mature and the stock market is very efficient and the dataset used is cross-sectional data, however the Chinese capital market is still not efficient, i.e., stock prices are subject to manipulation and public policies are frequently changing, which means that stock prices cannot represent the change in shareholders' value and stand for the company's performance, I use an accounting analysis method to examine the long term performance of Chinese listed firms involved in CBM&A activities. Based on the datasets I get, the financial indicator I use is return on equity (ROE) which has been widely used as the main index with which to judge the performance of a firm, especially for listed firms. Moreover, in the Chinese security market, ROE is used as one of the criteria to determine whether a firm should be specially treated or allowed to issue additional stock.

> Return on Equity (ROE) = Net Income /Average Shareholders' Equity, which tells shareholders how efficiently their money is being utilized. In other words, ROE measures the efficiency of a firm's own capital operation and reflects the shareholders' equity return level.

Firstly I test the average trends of ROE based on the completed deal year (Figure 2.4). I divide the firms into groups by the year in which CBM&A activity happened and observe the trends for the three years prior to the CBM&A (T-1, T-2 and T-3), the year of the CBM&A (T0), and three years after the CBM&A (T1, T2 and T3).

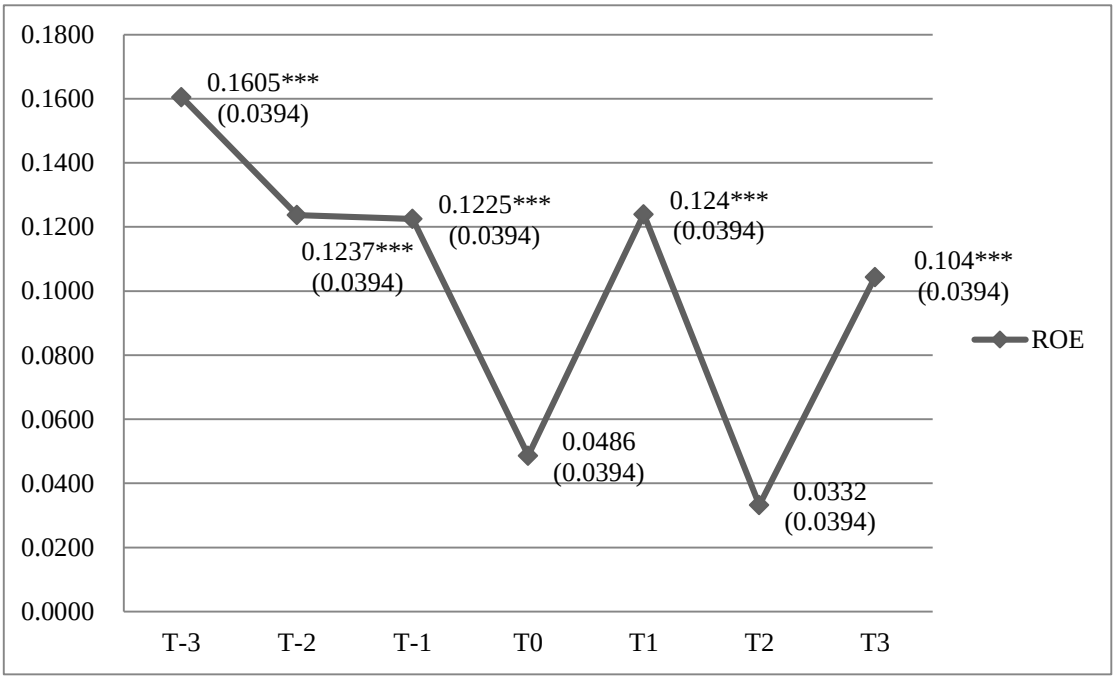
I apply a regression to levels of ROE three years before and three years after the CBM&A occurs. The regression model is shown below, in which MA is a dummy variable and MA is equal to 1 if the firm engages in CBM&A activity in a year. MA_{t+i} is a dummy variable and it is equal to 1 if the year is i years after the CM&A event year (such as $MA_{t+3,}$ MA_{t+2} and MA_{t+1}). Similarly, MA_{t-i} is a dummy variable and it is equal to 1 if the year is i years before the CBM&A event takes place (such as $MA_{t-3,}$ MA_{t-2} and MA_{t-1}). The coefficients of this model are shown in Figure2.4 which illustrates the average ROE trends. Most of these coefficients are significant except the results of MA and MA_{t+2} (standard errors and significant levels of regression results are also shown in Figure 2.4). The descriptions of the variables are provided in Table 2.2.

$$ROE=b_1MA_{t+3} + b_2MA_{t+2} + b_3 MA_{t+1} + b_4MA + b_5MA_{t-1} + b_6MA_{t-2} + b_7MA_{t-3} + \xi_i$$

Table 2.2. Descriptions of ROE CBM&A dummy variables

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	364	0.1024	0.284732	-2.88385	2.075581
MA_{t+3}	364	0.1428	0.3504	0	1
MA_{t+2}	364	0.1429	0.3504	0	1
MA_{t+1}	364	0.1429	0.3504	0	1
MA	364	0.1429	0.3504	0	1
MA_{t-1}	364	0.1429	0.3504	0	1
MA_{t-2}	364	0.1429	0.3504	0	1
MA_{t-3}	364	0.1429	0.3504	0	1

Fig. 2.4. Average ROE trends of sample deals



Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From the graph above it can clearly be seen that the average ROE declined from T-1 to T0. We can see that in the first year after a CBM&A, the average ROE increased slightly. Then, in the second year after a CBM&A, the average ROE declined gradually. Three years after a CBM&A, the average ROE increased to higher than the rate that it was in the acquisition year. This phenomenon suggests that listed firms will take two years to adjust after a CBM&A takes place and will then improve their performance.

Next, paired sample t-tests and Wilcoxon sign-rank tests are conducted (Table 2.3), based on Barber and Lyon (1996) study. A paired sample t-test is used to discover whether the means of the normally distributed interval variables in two time periods (such as before and after CBM&A) differ from one another. The Wilcoxon sign-rank test is the non-parametric version of a paired

sample t-test, which releases the assumption that the difference between two paired variables is interval and is normally distributed.

Table 2.3. ROE paired sample t-test and Wilcoxon sign-rank test

	Paired Differences					
Paired samples	Mean	Std. Err.	Std. Dev.	t	Sig.(2-tailed) of t-test	Wilcoxon's p
T0 – T-3	-0.1119	0.0603	0.4347	-1.856	0.0692*	0.3121
T0 – T-2	-0.0751	0.0539	0.3892	-1.3911	0.1702	0.0699*
T0 – T-1	-0.0739	0.0540	0.3896	-1.3674	0.1775	0.0461**
T1− T0	0.0753	0.0756	0.5453	0.9958	0.3240	0.2474
T2 – T0	-0.0153	0.0301	0.2173	-0.5110	0.6116	0.1528
T3 – T0	0.0557	0.0723	0.5217	0.7701	0.4448	0.0309**
T1− T-3	-0.0365	0.0508	0.3662	-0.7201	0.4748	0.1777
T1− T-2	0.0002	0.0375	0.2709	0.0062	0.9951	0.0323**
T1− T-1	0.0014	0.0363	0.2619	0.0396	0.9686	0.0212**
T2− T-3	-0.1273	0.0683	0.4927	-1.862	0.0682*	0.0743*
T2− T-2	-0.0905	0.0616	0.4442	-1.4686	0.1481	0.0053***
T2− T-1	-0.0892	0.0629	0.4539	-1.4182	0.1622	0.0150**
T3 – T-1	-0.0182	0.0342	0.2465	-0.5310	0.5977	0.0021***
T3 – T-2	-0.0194	0.0353	0.2543	-0.5488	0.5855	0.0080***
T3 – T-3	-0.0562	0.0499	0.3599	-1.1250	0.2659	0.0582*

*** p<0.01, ** p<0.05, * p<0.1

The results show that significant changes in ROE reflect the efficiency of a firm's own capital operation and the shareholders' equity return level. More significant results of changes in ROE under the Wilcoxon sign-rank test are displayed in Table 3, which indicates that the difference between two paired variables is not interval and normally distributed. This result is consistent with Barber and Lyon (1996) study, which finds that the Wilcoxon signed-rank test is more powerful than parametric t-statistics when detecting operating performance. Therefore, we can conclude that CBM&A activities can have a significant impact on some aspects of a listed firm's financial performance but the effect is fluctuant and the firm needs time to adjust after CBM&A activities have taken place. Moreover in our case, the effect of CBM&A on the listed firms' Return on Equity is not guaranteed to be ultimately positive in the years after a CBM&A.

Therefore, I establish regression models using the firms' ROE as a dependent variable to test whether CBM&A activities will have effects on firms' operating performance after CBM&A activities. The independent variable is a dummy variable called PMA, which is equal to 1 at the time when the CBM&A takes place and during the periods after this event, but is 0 otherwise.

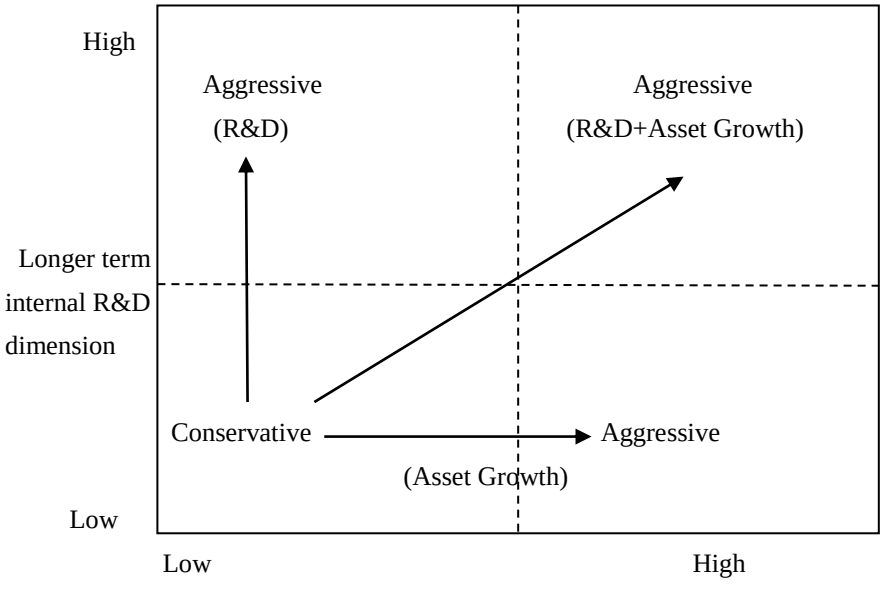
The control variables include the acquirer's age (AGE), the acquirer's size (SIZE), degree of internationalization (INT), the age of the top management team (TMTA), stock option (TMTSO), and cultural proximity (GCS). The acquirer's age is calculated as the year when the CBM&A was completed minus the year of establishment. The acquirer size is calculated as the natural logarithm

of the firm's total assets. The degree of internationalization is the proportion of overseas business revenue divided by the total annual main business revenue. The TMT age is the average age of the top management team. The stock option is obtained by dividing the number of shares owned by the TMT by the total number of shares that the company holds at the end of the financial year. Finally, although the Cultural Difference index (CD index) created by Kogut and Singh (1988) is commonly used by scholars, this method has been criticized in recent years (Shenkar, 2001, 2012). Because durable social connections and networks are not included in the CD indexes. Hence, I use the Greater China plus Singapore Dummy (GCS) to control for cultural proximity based on the study by Li et al. (2016). Cultural proximity is coded as 1 if the target company is located in the Confucian cultural circle, and 0 otherwise. Therefore, the initial regression model is:

$$ROE_{it} = a + b_0PMA_{it} + b_1AGE_{it} + b_2SIZE_{it} + b_3INT_{it} + b_4TMTA_{it} + b_5TMTSO_{it} + b_6GCS_{it} + \xi_{it}$$

I then add the moderating variable, entrepreneurial orientation (EO), under the condition that entrepreneurship is currently a hot topic in China's economy. According to Williams and Lee (2009), one way to pursue entrepreneurship is through internal corporate venturing and, in this regard, it is important for the company's R&D department to identify new business opportunities. Another way of pursuing entrepreneurship in an MNC is to exploit its "deep pockets", which means taking advantage of external investment opportunities. Therefore, the notion of multinational corporations' (MNCs) entrepreneurial orientation can be applied through two dimensions, and activities in this area can take the MNC in new directions, although it will involve entrepreneurial risks. The two dimensional EO space is shown in Figure 2.5. If we set the longer term internal R&D dimension as the Y-axis and the shorter term external asset growth dimension as the X-axis, we can then divide MNCs into four types based on combinations of the EO dimensions. The arrows indicate the increasing risk and depth of resource allocation to entrepreneurship, which can be categorized as follows: conservative MNCs; internal R&D aggressive MNCs; external asset growth aggressive MNCs; and mixed aggressive MNCs.

Fig. 2.5. Two dimensional typology of Multinational Corporations' entrepreneurial orientation

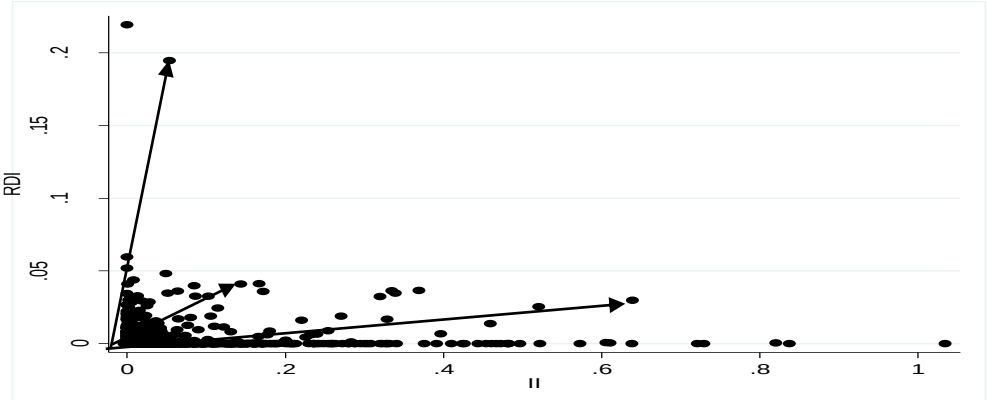


Therefore, the internal R&D direction which emphasizes longer term proprietary technology development is defined as R&D intensity (R&D spending as a ratio of sales). The external asset growth direction which focuses on shorter term investments is defined as investment intensity (the sum of investment activities on the cash flow statement as a ratio of sales). Then, in the two-dimensional space, the Euclidean distance is used to calculate the EO intensity of the Chinese listed firm's investment position from the origin (0, 0). I treat (0, 0) as the most conservative position, i.e., the closer the firm is to (0, 0), the more conservative it is, and the further the firm is from the origin (0, 0), the more aggressive it is. One thing needs to be pointed out is that although the EO definition is completed by using this method to measure, this method cannot figure out the different structures of RDI and II of different companies. For example, if the first company's position is (1,0) which means RDI=1 and II=0, and the second company's position is (0,1) which means RDI=0 and II=1, by using Euclidean distance to measure EO, they can get the same degree of EO. But actually the structure of them are different. I will try to improve the measurement of EO in my further studies. In this paper however, let us continue to use the normal measurement of EO to finish the following analyses.

$EO_i=\sqrt{RDI^2+II^2}$; (RDI means Research & Development intensity; II means investment intensity.)

I plot a scatter gram of the R&D intensity (RDI) and Investment intensity (II) of the Chinese listed firms in the whole sample from 2001 to 2015, in which each black dot refers to each firm's EO position in a specific year (Fig. 2.6). Therefore, the linear distance between each dot and the origin (0, 0) is this firm's EO intensity in one year of the sample. It can be seen that most of the Chinese listed firms in the sample are relatively conservative because most of them are clustered near the origin point, and a firm which has a relatively high Investment intensity (II) has a low R&D intensity (RDI) and vice versa because most of the dots are close to the X-axis or Y-axis. For the sample as a whole, 4.09% of firms are internal R&D aggressive (II is equal to 0), 56.86% are external asset growth aggressive (RDI is equal to 0), 14.23% are mixed aggressive (both RDI and II are not equal to 0) and 24.82% are extremely conservative (both RDI and II are equal to 0). As the RDI and II of each firm change in subsequent years, the firm's type of entrepreneurial orientation also changes. In other words, a firm could be extremely conservative in 2001 and then become internal R&D aggressive in 2002 but go on to become external asset growth aggressive in 2005 and mixed aggressive some years later.

Fig. 2.6.Scattergram of two dimensional EO of Chinese listed firms for the whole sample



According to the study by Sharma, Durand, and Gur-Arie (1981), a moderating variable is one which specifies the magnitude and/or form of the relationship between a dependent variable and an independent variable. A moderating variable can be developed by two characteristics: whether it is related to the dependent variable; and whether it interacts with the independent variables. Therefore, the regression model with variable EO is:

$ROE_{it} = a + b_0PMA_{it} + b_1EO_{it} + b_2EO_{it} * PMA_{it} + b_3AGE_{it} + b_4SIZE_{it} + b_5INT_{it} + b_6TMTA_{it} + b_7TMTSO_{it} + b_8GCS_{it} + \xi_{it}$

2.4. Results

Table 2.4 shows summary statistics of the variables taken from the annual dataset. The panel comprises the number of sample firms multiplied by the number of years after they became listed until 2015. Table 2.5 represents the correlation matrix of the independent variables, moderating variables and control variables. Entrepreneurial orientation was found to be positively correlated with the top management team's stock option (0.0517), which was consistent with the finding in the literature that giving top managers a larger stake in productivity prompts them to make more ambitious decisions in order to maximize a firm's profit. As the correlations between variables were not high (<0.35) for this dataset, according to previous studies of collinearity (Mason & Perreault Jr, 1991), multicollinearity is not a problem for the independent, moderating and control variables used here, and therefore need not be a major concern for this study.

Table 2.4.Summary of variables

Variables	Obs.	Mean	Std. Dev	Min	Max
ROE	1567	0.0860	0.3098	-2.8838	5.7999
PMA	1567	0.4627	0.4988	0	1
EO	1567	0.0411	0.0920	0	1.0336
Acquirer Age	1567	12.8086	5.3528	1	32
Acquirer Size	1567	8.1525	1.4973	1.0986	13.0032
Degree of Internationalization	1567	0.2094	0.2730	0	1
TMT Age	1567	47.9567	3.9363	33.4	60
TMT Stock Option	1567	0.0399	0.1144	0	0.8942
Greater China plus Singapore Dummy	1567	0.0874	0.2826	0	1

Table 2.5.Correlations between independent variables

	PMA	EO	Acquirer Age	Acquirer Size	Degree of INT	TMT Age	TMTSO	GCS
PMA	1							
EO	0.0411	1						
Acquirer Age	0.3489*	-0.01	1					
Acquirer Size	0.2676*	-0.0114	0.0336	1				
Degree of Internationalization	0.1402*	-0.0157	0.0104	0.0814*	1			
TMT Age	0.1882*	0.0423	0.3284*	0.2087*	-0.1078*	1		
TMT Stock Option	-0.01	0.0517*	-0.0646*	-0.1071*	0.0375	-0.1646*	1	
Greater China plus Singapore Dummy	0.3336*	0.0252	0.1783*	-0.0138	0.1187*	0.0887*	0.0156	1

Note: Correlations in magnitude with an asterisk * are significant at the $p \leq 0.05$ level of confidence.

Using annual data from 2001 to 2015 to test the total effects of Chinese listed firms' operating performance after CBM&A, I find that the total effect of ROE is significantly negative, and, after adding the moderating variable EO, the result does not change much. Therefore, the moderating effect generated by entrepreneurial orientation (EO) is not significant. As stated in the literature review, the findings regarding post CBM&A operating performance are ambiguous, and Martynova and Renneboog (2008) study concludes that using cash-flow-based metrics produces positive returns but earning-based methods results in a negative performance in the case of CBM&As. Thus, the negative effects on Return on Equity (ROE) in column (1) and (2) of Table 2.6 support their conclusion, based on the fact that ROE showed the earnings of a corporation raised from shareholders.

Table 2.6.Total effects of operating performance and abnormal performance after CBM&As

	(1)	(2)	(3)	(4)
Variables	ROE	ROE	aROE	aROE
PMA	-0.0728***	-0.0813***	-0.0724***	-0.0809***
	(0.0183)	(0.0195)	(0.0183)	(0.0195)
EO		-0.0854		-0.0864
		(0.125)		(0.125)
PMA_EO		0.204		0.206
		(0.170)		(0.170)
Acquirer Age	-0.00108	-0.000990	-0.00110	-0.00101
	(0.00163)	(0.00163)	(0.00163)	(0.00163)
Acquirer Size	0.0177***	0.0177***	0.0177***	0.0176***
	(0.00557)	(0.00558)	(0.00557)	(0.00558)
Degree of	-0.0712**	-0.0730**	-0.0714**	-0.0732**
Internationalization	(0.0292)	(0.0293)	(0.0292)	(0.0293)
TMT Age	0.000723	0.000608	0.000723	0.000608
	(0.00218)	(0.00218)	(0.00218)	(0.00218)
TMT Stock Option	0.0896	0.0906	0.0889	0.0899
	(0.0691)	(0.0693)	(0.0691)	(0.0693)
Greater China plus	0.0528*	0.0524*	0.0528*	0.0524*
Singapore Dummy	(0.0295)	(0.0295)	(0.0295)	(0.0295)
Constant	-0.0390	-0.0305	-0.125	-0.116
	(0.103)	(0.103)	(0.103)	(0.103)
Observations	1,567	1,567	1,567	1,567
R-squared	0.021	0.021	0.020	0.021

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results of the control variables from two regressions also show some of the factors that affect firms' CBM&A performance. From a corporate governance perspective, the acquirer size is significantly positively related to ROE, which means that a larger firm performs better than small and medium-sized enterprises (SMEs) in CBM&A activities. It is also true that the Chinese listed firms which are involved in, and do well in, cross-border M&A activities are large firms such as Lenovo. The degree of internationalization is significantly negatively associated with ROE, which means that the more international businesses a firm has, the more difficult it is for obvious beneficial effects on the firm's performance to be apparent. This finding backs up the study by Eriksson et al. (1997), mentioned in the literature review, which finds that a higher degree of internationalization results in higher costs associated with overseas businesses. The results obtained for the degree of internationalization provides the insight that the success of CBM&A activities does not depend on how many deals a firm makes, but how much effort it puts into a single target. Finally the results of the GCS dummy indicate that it is true that a higher level of

cultural proximity helps firms to create greater value after cross-border M&As.

In order to test whether the results are affected by the stock market, I define abnormal ROE based on Barber and Lyon's (1996) study on detecting abnormal operating performance. The abnormal ROE of firm i in year t, $aROE_{it}$, is defined as ROE_{it} minus expected performance, $E(ROE_{it})$: $aROE_{it}=ROE_{it} - E(ROE_{it})$, where $E(ROE_{it})=\hat{\alpha}_i + \hat{\beta}_i ROE_{mt}$ and ROE_{mt} is the average ROE for each year for the market as a whole. Therefore, $aROE_{it}=ROE_{it}- (\hat{\alpha}_i + \hat{\beta}_i ROE_{mt})$. From columns (3) and (4) of Table 2.6 it can be seen that the total effects of abnormal ROE do not differ much from the results for ROE.

I then divide all the sample data into different industry groups using the US two-digit SIC codes and run the two regression models to explore Chinese listed firms' CBM&A activities in more detail. I find that not all of the results for the industry sectors are the same as the effects for the sample as a whole. For example, the moderating effects of entrepreneurial orientation are significant within some industries. Table 2.7.1 and Table 2.7.2 display the firms' results by different industry groups which have significant moderating effects; those which produce the same results as the sample as a whole or which have no significant effects are excluded.

It can be seen that, regardless of whether the dependent variable is ROE or abnormal ROE, the results for the two kinds of models are similar, while different industries have their own characteristics. In the metal mining and the business services industries, the effect of the moderating variable entrepreneurial orientation (EO) is overall significantly negative for operating performance. However, after CBM&A has taken place, the interaction with the independent variable has a significantly positive effect on the firm's performance. This means that, after acquisition, a firm with a higher degree of entrepreneurial orientation improves its performance post-CBM&A to some extent. In other words, after this kind of firms become international firms, those which have a good and higher sense of entrepreneurial orientation will improve their business performances. For example, after Didi Taxi company acquired Uber China, the new service products helped the post-acquired Didi company's performance improved much. In the security and commodity brokers, dealers, exchanges and services industry and the real estate industry, the interaction of entrepreneurial orientation (EO*PMA) is not significant, but EO is significantly positively related to firms' operating performance, which means that a higher degree of entrepreneurial orientation can improve Chinese listed firms' performance in the long run and does not interact with CBM&A activities. In the primary metal industry, entrepreneurial orientation is not related to firms' performance and the interaction with PMA is significantly adverse, because it is a primary industry which is different from other industries. This indicates that entrepreneurial orientation weakens a firm's operating performance after CBM&A in this industry, and that CBM&A has no effect on a firm's operation in this industry either.

Table 2.7.1. Results for different industry groups which have significant moderating effects (Metal mining industry, Primary Metal industry and Business Services industry)

	Metal Mining		Primary Metal Industry		Business Services	
Variables	ROE	aROE	ROE	aROE	ROE	aROE
PMA	-0.112***	-0.113***	-0.00522	-0.00456	-0.0364	-0.0362
	(0.0259)	(0.0254)	(0.0218)	(0.0217)	(0.0227)	(0.0227)
EO	-1.462**	-1.457**	0.126	0.119	-0.845***	-0.841***
	(0.563)	(0.552)	(0.286)	(0.285)	(0.225)	(0.224)
PMA_EO	1.256*	1.263*	-1.350***	-1.353***	0.986***	0.984***
	(0.705)	(0.691)	(0.358)	(0.358)	(0.259)	(0.259)
Acquirer Age	0.00327	0.00326*	-0.00674***	-0.00681***	-0.00473**	-0.00470**
	(0.00195)	(0.00192)	(0.00166)	(0.00165)	(0.00214)	(0.00214)
Acquirer Size	0.0147	0.0152	0.0180***	0.0180***	0.00545	0.00552
	(0.0205)	(0.0201)	(0.00546)	(0.00545)	(0.0113)	(0.0113)
Degree of Internationalization	-0.0739	-0.0715	0.00118	0.000755	-0.154*	-0.156*
	(0.0793)	(0.0778)	(0.0420)	(0.0419)	(0.0845)	(0.0845)
TMT Age	-0.0116***	-0.0115***	-0.00561**	-0.00565**	-0.00486	-0.00482
	(0.00259)	(0.00254)	(0.00221)	(0.00221)	(0.00343)	(0.00343)
TMT Stock Option	103.3***	100.8***	-0.102	-0.100	0.135**	0.135**
	(34.34)	(33.69)	(0.140)	(0.140)	(0.0647)	(0.0647)
Greater China plus Singapore Dummy	-0.0385	-0.0363	0.0111	0.0124	0.00257	0.00363
	(0.0405)	(0.0398)	(0.0450)	(0.0449)	(0.0419)	(0.0418)
Constant	0.533***	0.441**	0.278**	0.195*	0.406**	0.317
	(0.188)	(0.185)	(0.116)	(0.116)	(0.191)	(0.190)
Observations	58	58	108	108	77	77
R-squared	0.623	0.630	0.501	0.504	0.362	0.362

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2.7.2. Results for different industry groups which have significant moderating effects
(Real Estate industry and Security and Commodity Brokers, Dealers, Exchanges and Services industry)

	Security And Commodity		Real Estate	
Variables	ROE	aROE	ROE	aROE
PMA	-0.143	-0.140	0.260	0.262
	(0.112)	(0.112)	(0.562)	(0.561)
EO	0.705**	0.702**	1.776*	1.772*
	(0.304)	(0.305)	(0.964)	(0.963)
PMA_EO	-0.413	-0.444	-17.71	-17.50
	(2.632)	(2.641)	(115.3)	(115.2)
Acquirer Age	0.0269**	0.0267**	0.0204	0.0203
	(0.0103)	(0.0103)	(0.0196)	(0.0196)
Acquirer Size	0.00253	0.00264	-0.0626	-0.0617
	(0.0289)	(0.0290)	(0.109)	(0.109)
Degree of Internationalization	-0.0950	-0.0856	-1.093***	-1.092***
	(1.053)	(1.057)	(0.356)	(0.356)
TMT Age	-0.0532***	-0.0529***	-0.0205	-0.0205
	(0.0160)	(0.0161)	(0.0237)	(0.0236)
TMT Stock Option	102.8*	101.3*	-4.056	-4.022
	(55.40)	(55.58)	(4.302)	(4.298)
Greater China plus Singapore Dummy	0.118	0.118	-0.349	-0.350
	(0.146)	(0.146)	(0.827)	(0.827)
Constant	2.237***	2.139**	1.071	0.979
	(0.806)	(0.808)	(1.223)	(1.222)
Observations	50	50	45	45
R-squared	0.342	0.338	0.288	0.288

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The control variable, acquirer age, is positively related to firms' performance in the metal mining industry, but only the effect on abnormal ROE is significant at the 10% level of confidence and the coefficient is very small (0.0033, which is nearly equal to zero), so the effect can be ignored. In the security and commodity industry, the acquirer age is positively related to firms' performance too, and the effects on both models are significant, which means that older firms are better at dealing with CBM&A activities and are more experienced at improving their firm's performance. However, in the primary metal industry and business services industry, the coefficients for acquirer

age are significant and negative in both models, but are smaller than 0.007, which means that relatively younger firms have more incentives to improve their acquisition performance but the effect is not strong. In the primary metal industry, acquirer size is significantly positive in terms of performance, which is consistent with the results for the sample as a whole. The results for internationalization in the real estate industry and the business services industry are consistent with those of the sample as a whole too, which is significantly negative for firms' performance. Those industries which have significant results for the top management team's age are all negative regarding the performance, and those which have significant results for the top management team's stock option are all positive in performance terms, which means that in these industries a younger top management team or a management team with a larger share of stock options will help to improve the acquisition performance. These findings are consistent with those of previous studies.

Overall, firms in different industries have their own characteristics. Although the results for the whole sample show that CBM&A activities cannot improve firms' operating performance within the sample periods, entrepreneurial orientation can have positive effects or positive interaction with CBM&A activities in some industries, which may help acquirers to get used to the new post-acquisition situation, and ultimately improve their performance. Given that most Chinese firms' CBM&A deals are made with developed countries (Fig. 2.2), the ensuing adjustment and learning process is bound to be long.

2.5. Discussion and conclusion

After combining Chinese listed firms' annual reports, and the Chinese stock market financial statements database and the Zephyr database from 2001 to 2015, this paper examined how acquirers' operating performance changed after cross-border merger &acquisition activities (CBM&As), and used entrepreneurial orientation (EO) as a moderating factor to test whether or not firms' performance during cross-border mergers & acquisitions was affected by differing degrees of entrepreneurial orientation. The results for the sample as a whole showed that the trends in the performance of Chinese listed firms were fluctuant after cross-border merger & acquisitions within the sample years. Performance increased one year after the acquisition but dropped two years later and then followed an increasing trend, and the moderating factor of entrepreneurial orientation was not significant for the entire sample. After the sample was divided into different industry groups, it became clear that different industries had their own characteristics. For example, entrepreneurial orientation helped Chinese listed firms to adjust to the post-acquisition situation and even to improve their performance to some extent in the metal mining industry and the business services industry. When I substituted ROE with abnormal ROE, the results showed little change.

One suggestion that can be made for the benefit of Chinese firms' cross-border M&A is that although the Chinese government are encouraging domestic firms to "go out" and acquire

overseas companies, they need to reconsider whether a firm can cope with the issues involved, before taking action, in terms of the distinctive features of the industry sector in which it operates, as well as the firm's organizational characteristics and corporate governance characteristics. Moreover, they need to think about the cultural distance with the target company and to be aware of the adjustment period after a cross-border merger & acquisition. Entrepreneurial orientation is a strong motivation which combines two aspects that firms are keen to pursue: research & development orientation; and investment orientation. However, whether or not entrepreneurial orientation will have a positive moderating effect is dependent on a firm's own operating situation and industry environment. Therefore, Chinese firms need to be cautious and thorough when they are making decisions about overseas M&As, especially when the target enterprise is in a developed country. They also need to be well prepared for the adjustment period after the cross-border M&A deal has been done, when the operating performance is fluctuant.

Possible plans for further study are as follows. Firstly, I will try to use suitable instrumental variables to test and control the potential endogeneity of a merger decision or the potential endogeneity of entrepreneurial orientation. Secondly, as I have mentioned in the section of definition of entrepreneurial orientation, I will modify the measurement of entrepreneurial orientation by not only using the Euclidean distance, but also running my regressions with R&D and investment intensity entering separately. Thirdly, I would like to use cross-sectional data to test the short term effect of CBM&A with a moderating variable of entrepreneurial orientation, although I stated that the Chinese capital market was still not efficient so the stock prices of Chinese listed firms could not represent a firm's performance very accurately. Therefore, I would use daily stock returns of Chinese listed firms which are involved in CBM&A activities to calculate the cumulative abnormal return (CAR) of each firm and use it as a dependent variable to test a few days before and after the announcement of a CBM&A, so as to examine the moderating effect caused by entrepreneurial orientation in the short term. Another way in which the current study could be modified, would be to try using other financial indicators of firms' operating performance, such as return on assets (ROA), to test existing models, although the return on equity (ROE) used in this paper is the most suitable index for the Chinese security market, as previously stated.

Conclusion and Further Study

This thesis explored two directions of foreign direct investment (FDI) in China. The first was inward foreign direct investment (IFDI) from other countries to China as the host country, and the second was outward foreign direct investment (OFDI) to other countries from China, where China is the home country.

More specifically, the two independent chapters make two key contributions. The first chapter focused on the Steady Development stage of receiving FDI and used Chinese firm level data from 2001 to 2007 to analyze the direct causal link between IFDI and various aspects of firms' performance. By using a state-of-the-art econometric method, in this case propensity score matching combined with a difference-in-differences approach to control the endogeneity of the sample, I separated foreign investors into HMT-investment (within the Greater China Area) and other foreign investment (outside the Greater China Area) to estimate the average treatment effect on the treated (ATT) of six aspects of the firms in the sample: labour productivity; new product development; export; wage; subsidy; and investment caused by IFDI. I tested the changes caused by IFDI and the initial differences between the pre-IFDI year and the year in which IFDI is received, and the differences between the pre-IFDI year and one year, two years and three years after receiving IFDI for each firm. I then subdivided the whole sample into four economic regions to test subsample effects, which has not previously been done by other researchers in the field. The results indicated that the progress of the IFDI market in China is not evenly balanced across the four economic regions. The most developed region is already following the trend of switching from labour-intensive FDI to technology-intensive and market-seeking FDI, but the other regions, especially the West, are still in the early stages of attracting IFDI. Therefore, policy makers need to tailor their strategies to attract IFDI, depending on the economic development conditions of each region and the origin of foreign investment. The only exception is with regard to export promotion, in which case IFDI from all economies should be equally welcomed into each region.

Secondly, given that the Chinese government encourages Chinese corporations to "go out" and acquire foreign companies, and based on the fact that Chinese firms which are involved in outward FDI are mainly listed firms, the second chapter tried a very new method which almost no other researchers have previously attempted. I combined Chinese listed firms' annual reports, the China stock market financial statements database and the Zephyr database from 2001 to 2015 to test how acquirers' operating performance changed after cross-border merger &acquisition activities (CBM&As), and used entrepreneurial orientation (EO), which combines research & development orientation and investment orientation, as a moderating factor. Moreover, the control variables considered three important aspects that may affect CBM&A decisions, namely: an enterprise's organizational characteristics; corporate governance; and cultural distance. After analyzing the whole sample effect and the effects for different industry groups, this chapter found that although

there is no obvious trend in terms of improving operating performance three to five years after CBM&As and that a high degree of entrepreneurial orientation does not have a positive moderating effect on the whole sample, this is not the case in some specific industries. In the metal mining industry and the business services industry, entrepreneurial orientation can help Chinese listed firms to adjust to the post-acquisition situation and tends to improve performance to some extent. Therefore, before making a decision about cross-border M&A, Chinese firms need to consider the specific features of the industry in which the firm operates, the enterprise's organizational characteristics, corporate governance characteristics and the cultural distance with the target firm. Entrepreneurial orientation, which combines research & development orientation and investment orientation, may have a positive moderating effect in terms of improving a firm's operating performance after CBM&A, but it also depends on the firm's own internal features, as a result of which it could even have a detrimental effect on performance.

This thesis represents a first step towards gaining a better understanding of the causal effects of FDI. In the case of the first chapter, the next step would be to subdivide the sample into different industries and then subdivide Chinese domestic firms into state-owned enterprises (SOE) and private firms to see whether this would yield any new findings. Building on the second chapter, a further study could be undertaken using cross-sectional data to test the short term effect of CBM&A with a moderating variable of entrepreneurial orientation and then try to use other financial indicators of a firm's operating performance, such as return on assets (ROA), to test existing models. Moreover, I will modify the measurement of entrepreneurial orientation by not only using the Euclidean distance, but also running my regressions with R&D and investment intensity entering separately. After that, a further topic related to foreign direct investment and firms' operation could be investigated by discussing whether there are financial constraints, and if so whether these constraints have an impact on firms' investment and innovation, and whether FDI alleviates these financial constraints on companies and improves firms' investment and innovation.

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