

Empirical study on the impact of regional trade agreements on strengthening China's FDI

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Refereed paper presented at the ACESA 2006 Emerging China: Internal Challenges and Global Implications, Victoria University, Melbourne, 13-14 July 2006.

I am Tianshu Liu, a PhD candidate in RMIT University. I focus on empirical studies of the impact of regional trade agreements on China and Australia. My paper "Implication of trade creation and trade diversion effect on trade between RTAs and China and Australia" has been included in ACESA 2004 Conference Proceedings. The paper "Impact of regional trade agreements on commodity trade between China and Australia" has been presented in the conference "WTO, China, and the Asian Economies, IV: Economic Integration and Economic Development 2006".

Abstract

Regional trade and economic integration has affected FDI in host countries since it carries out trade and investment liberalisation process. Previous literature has focused on the impact of European Union and NAFTA on their members' FDI changes. This paper introduces regional trade agreements variables to study the impact of RTAs on the changes of FDI in China. Besides RTA variables economic factors that are related with location advantage are estimated to find their relationship with FDI changes. The results show that the formation and implementation of RTAs have an important impact on the changes of FDI in China. When FDI shares an important role in the economy development it is desirable to involve in regional economic integration as much as China can.

Key words: regional trade agreements foreign direct investment trade and investment liberalisation

JEL code: F02 F21

I. Introduction

Foreign direct investment, which is regarded as a more stable financial flow than other forms of financial instruments, has become one of important economic development factors in most countries. By establishing affiliates, multinational corporations not only provide substantial financial capital to host countries, but also introduce modern technology, advanced management and specialised production procedure that host countries can benefit from to stimulate their economy development.

MNCs usually choose to invest in specific host countries based on their national resources and other location advantages. The investment is then enlarged as a result of investment liberalisation around the world and in a regional level. Nowadays, as regional integration has strengthened up, foreign direct investment was increased within different regions. Empirical studies have shown this trend in European Union and other regional economic integrated areas. For example Graham and Wada (2000) find a rapidly rising annual stock of USA foreign direct investment in Mexico from 1989 to 1998 because of the on-scheduled inception of North America Free Trade Agreement.

Interest in the study of the impact of regional economic integration on foreign direct investment has grown rapidly in recent years. A few papers have focused on estimating the effects of regional economic integration on FDI, stating the possibility their members or other non-member countries redirect or strengthen their investment in these integrated areas. However these studies mainly concentrate on regions of European Union and NAFTA. Few studies have been done on specific countries including China. As such little evidence can be found that the inception of a RTA is a determinant of FDI in China.

Foreign direct investment has achieved great success since its entry into China. In recent years although the global inflows of foreign direct investment declined, China experienced an increase to USD\$53,505 million in 2003, which pushed China to become the world's largest FDI recipient in 2003 (UNCTAD, 2004), overtaking the traditional largest recipient of the world—the United States. The observed increase not only results from China's strong domestic economic growth but also from improvements in its investment environment under domestic economic reform and the implementation of regional economic integration. As regional economic integration has been regarded another factor in attracting foreign direct investment at a regional level, this paper studies “Under the current regional trade agreements what is the impact of RTAs on changes of foreign direct investment in China?”

Following the Introduction, the rest of this paper is organized as follows: Section 2 provides an overview of RTAs as a determinant of FDI and other economic factors; Section 3 introduces economic variables and RTA variables and constructs the model; Section 4 explains empirical results; the conclusions are given in Section 5.

II. Literature review

1. RTAs as a determinant of FDI

In comparison with the regulation and progress made by the World Trade Organization (WTO), regional economic and trade integration is considered as strengthening discrimination against outside countries increasingly. Although the discrimination should not reduce the

benefits for the outside countries that they have achieved in WTO, it does weaken the competitive ability of outside firms with inside firms. Thus it encourages, to some extent through incentive investment rules, outside firms to produce within the integrated area to maintain and enlarge their market shares and competitiveness (Buckley, Clegg, Forsans and Reilly, 2003).

The way that an RTA affects its inside region investment can be divided into two parts: indirectly affects FDI flows through trade liberalisation process; and directly affects FDI flows through investment liberalisation under the rules of the RTA (Worth, 1998; Blomstrom, Kokko and Globerman, 1998; Blomstrom and Kokko, 1997). While trade liberalisation can diminish inside regional tariffs and non-tariff barriers to form a free trade area and an enlarged intra-regional market to attract more FDI inflows from outsiders, it can also reduce FDI to the region because of exports preference to FDI if external trade barriers are lowered as well. Thus trade liberalisation can cause regional FDI inflows from outsiders to increase or decrease according to their trade strategies.

Investment restriction relief provides a more attractive market for MNCs. Blomstrom and Kokko (1997) and Worth (1998) state that RTAs can affect investment in industry and country level. From the view of industries MNCs would not change their level of investment in a host country when they possess an ownership advantage or an internalization advantage which does not decrease significantly by the formation of regional economic integration. From the view of countries, location advantages hold the balance in investment decisions. When regional countries set up an integrated economic relationship, countries with better location advantages will attract more FDI aimed at serving the regional market, while countries with weaker advantages will encounter less FDI inflows. It is worst if some of their existing FDI flows out of the countries as MNCs relocate their production to the most competitive country within the region.

When considering advantages that MNCs will consider in their investment decision, regional integration often affects location advantages rather than ownership and internalization advantages. In the analysis of the impact of NAFTA and Canada-USA FTA on European, Canadian and Japanese firms' investment strategies in North America, Buckley, Clegg, Forsans & Reilly (2003) point out that the changed location attractiveness is one of the primary advantages a regional trade agreement has provided. An RTA can encourage a firm in or out of a region to divert its investment from outside the region to inside the region. They further ascertain that economies of scale can be achieved under this location strategy, which enables a firm to better using local resources and gaining market access.

Besides location advantages a regional trade agreement can affect MNCs' global strategies. It is believed that a multinational corporation may obtain a multi-domestic strategy in investing and operating in each country although they may focus on global market. This strategy has been changed to a regional strategy while regional trade agreements are booming around the world (Buckley et al., 2003). Firms then devote themselves to develop a new regional integrated market. Graham and Wada (2000) point out that through their comparisons among total sales of USA affiliated firms in Mexico to USA, Mexico and other countries from 1991, the USA MNCs tend to take advantage of establishing business in Mexico in order to serve the whole North American market rather than Mexico domestic market when they expected that a North American free trade area could be formed.

2. Literature review on economic determinants of FDI

Factors that affect the direction of foreign direct investment to different countries and regions are categorised largely to political influences and economic ones. With respect to political determinants, many multinational enterprises tend to invest in countries with a stable political environment, which enables them to reduce investment risks of being nationalised without proper compensation or have to disinvestment because of frequent government changes and policy changes. While most FDI are directed into developed countries, political factors are considered more important by firms producing in developing host countries than in developed countries. Many researchers find this fact in their early 1960s to 1980s studies (Schneider and Frey, 1985; Hong, Jones and Song, 1999; Tuman and Emmert, 2004; Brada, Kutan and Yigit, 2005).

From the last decade of twentieth century more emphasis is put on economic determinants of FDI. Ownership-location-internal (OLI) advantages framework has been treated as a main theory that states the dominant determinants for multinational corporations to invest in countries other than their home countries. It comprises three major factors which a multinational corporation will consider before it goes into direct investment abroad: ownership advantages, location advantages and internalisation advantages (Dunning, 1980; Dunning, 1998).

Ownership advantages usually include some special factors a firm possesses over its domestic and foreign competitors to enable it to invest abroad. An MNC with world prestige and brand power is easily accepted in host countries. It therefore can minimise its marketing and promoting costs by setting up a new production factory in an unfamiliar foreign country.

Firms prefer investing in one country to another based on the host country's specific location. Most of the time they try to avoid tariff barriers the host country imposes on imported goods; additionally they focus on the host country's internal market or its periphery markets for their local products; they also pursue cheaper local labour, capital, resources and other factors compared with their home countries' factors to cut down production and selling costs. These location advantages explain why FDI flows to some particular areas and countries. Usually location advantages comprise many factors that are related to host countries' abundant natural resources, lower priced product inputs, higher trade barriers and easy market access. Each host country may involve one or more of the above, depending on what an MNC considers the most important.

Evidence from Cantwell (1987) and Dunning & Robson (1987) indicates that MNCs used to focus on minimizing relative production costs through their multi-country production sites and various lower priced input factors. While cost reduction is still one goal of MNCs' investment decision, more and more attention has been changed to the market power of a host country in recent years. The host country's market size and market growth rate have been proved to be crucial factors in attracting FDI (Beer and Cory, 1996; Worth, 1998; Tian and Shan, 1999). The bigger the market is and the faster the market grows, the more FDI is expected to flow in. Worth (1998) also points out that serving a foreign market better is more important than other reasons for a firm choosing to invest in a foreign country, i.e. to cut off paying more tariff duties and to take advantage of lower labour and capital prices.

The internalisation factor explains FDI flows from the internal advantage of a firm. Usually a firm exists by its own advantages over others, such as registered brands power, patents and

managerial secrets. These powers make a firm capable of competing with other firms in domestic or world market. When a firm decides to enlarge its overseas market, investing directly in a targeted market is a better way compared to licensing or patenting activities. It is easier and more effective for a firm to use better its internal power to control the desired market.

III. Research methodology

1. Variables

Foreign direct investment is considered the dependent variable based on the research question. Compared with direct investment flow, direct investment stock is regarded as a better indicator to capture FDI's role in creating economic activity (Graham and Wada, 2000). Therefore the stock of foreign direct investment is used as the dependent variable in this paper.

Several economic indicators are examined to explain changes of FDI for particular countries in different periods. The host country's relative and absolute GDP and GDP growth rate are two of them (Blomstrom et al., 1998; Worth, 1998). These factors are partly influenced by trade liberalisation process and affect a region's FDI inflows. Other factors, such as gross fixed capital formation, population, distance between two countries, exports, import tariffs, interest rate and wages, can affect the degree of FDI flows to some extent. These factors are consistent with the FDI determinants that are discussed in Section 2, while most of them are related to location advantage of a host country.

GDP is used to control for host country's market size. The host country's changes of income level in a period show a country's current and future buying capacity which MNCs pursue to produce and sell more products and services. In a regional area, trade liberalisation can push a country's fragmented domestic market into a larger integrated regional market; thus the targeted investment market size is increased in both GDP terms and territory size. The higher the host country's GDP, the greater the FDI inflows into the host country. GDP growth rate, in addition, can be utilised to measure a market growth rate. In a fast growing market, more national income and personal income is expected and thus an improvement in the country's and personal consuming ability. This growing aggregate demand will require more investments and accordingly stimulate FDI (Beer and Cory, 1996; Culem, 1988). GDP and GDP growth rate have a positive correlation with FDI; hence positive regression coefficients are expected.

Population is used to measure the absolute country size. Countries with large population are considered to be more self sufficient in investing; therefore a negative correlation is expected between population and FDI. On the other hand a populous host country will support more product consumption. In this case a positive correlation may occur.

Gross fixed capital formation is the capital expenditure on fixed assets before deducting capital consumption. More gross fixed capital formation means a country puts more money into its industrial development such as machinery and equipment in addition to residential construction and transport infrastructure (Beer and Cory, 1996). As foreign investors would look for existing or future plant or transport facilities to minimise their business starting costs, it is expected to be positively related with FDI.

Distance between two countries is considered a crucial factor that affects a country's exports as it can increase product transportation cost; then the total cost will be pushed up to hinder the sale of the product. It has a similar effect on the allocation of FDI. It is clear that an MNC has to arrange more funds to pay off the costs of operating an overseas affiliate when the host country is farther from its main headquarters in the home country, such as local capital raising costs, domestic resources obtaining costs, local employees and employees from headquarter costs, communication costs, understanding local laws costs, adopting language and cultural difference costs, exchange rate changes costs (Brenton, Mauro and Lucke, 1999). In this case FDI will have a negative relationship with distance, i.e. the further the host country is from the home country, the less FDI will it attract. However considering cutting trade costs FDI is preferred to exports when distance between host and home countries rises. MNCs would like to serve their overseas markets by establishing affiliates rather than by exporting when they face a more distant market. Therefore a positive relationship may occur between FDI and distance.

Labour cost is one of the most important factors an MNC considers when it seeks to invest in a developing country. Firms try to find cheaper labour and cut their production cost. Thus lower wages will attract more FDI than higher wages. It is negatively related with FDI and a negative coefficient is expected.

Export is a good proxy for estimating a home country's market share in a host country. Vernon (1966) points out that an MNC may invest in its export market to diminish threats from other investors and strengthen its foreign market share. The more exports it has the more capital it will tend to invest in the destination market. Thus a positive coefficient is expected between exports and FDI.

As a factor to measure capital costs, a lower interest rate encourages firms to raise funds at a low cost. Those funds will be invested accordingly in another country with higher interest rates (Beer and Cory, 1996). It is advantageous for MNCs to diversify their funds sources from their home countries or elsewhere around the world where they can borrow cheaper. Therefore there is a positive relationship between interest rates and changes in FDI.

Traditionally, a country's higher tariff rate will make a firm pay more for its exports to the host country and decrease the competitiveness of its export goods. It then may seek a way to produce in the host country instead of exporting to minimise its trade cost (Schmitz and Bieri, 1972). If the host country's tariff rate is diminished a multinational corporation will choose to export instead of investing directly into the targeted market. In this context the level of tariff rate is expected to be positively related with FDI.

However more recent empirical tests divide the effect of tariff rate into two different relationships with FDI: a negative relationship with vertical FDI versus a positive relationship with horizontal FDI. The multinational corporations involved in vertical FDI specialise their production process in different affiliates in each host country. The intermediate products from these affiliates are then assembled or undergo further production in another particular host country. Lower priced products are pursued by parent companies and their affiliates to minimise total products costs. In this instance multinational corporations would invest in a country with lower tariff rate in order to get low cost semi-finished imported inputs (Chantasawat, Fung, Lizaka and Siu, 2004). Hence a negative relationship is expected between the level of tariff rate and FDI. In contrast the purpose of a horizontal FDI is to decrease the cost to enter a foreign market. In comparing the higher costs between exporting

and operating affiliates, MNCs tend to invest in a country with higher tariff rate and acquire benefits from economies of scale by serving the host country market (Chantasawat et al., 2004; Brainard, 1997; Carr, Markusen and Maskus, 2001). In this case the tariff rate is positively related with FDI.

In this paper average tariff rate is introduced instead of normal tariff rate to measure the degree of host country's tariff barriers to capture its overall tariff protection. It is calculated by dividing tariff duties of the host country by its total imports for a given period (Husted and Melvin, 2001). It should be noted that here the host country's total imports are used instead of only taxed goods; hence the tariff rate calculated should be lower than the imposed (normal) one.

Openness is defined as the ratio of sum of exports and imports to GDP, and measures the degree of general trade restrictions of a host country. The higher the number, the more open the observed country is, and hence the more FDI the country attracts. Therefore a positive relationship between openness and FDI is expected. However when a multinational corporation is seeking to enter a host country market but has difficulty exporting to it because of low openness of the host country, it may choose to enter by investing directly instead of exporting which would give a negative relationship (Chantasawat et al., 2004).

Although regional trade agreements can affect FDI flows in ways through many factors such as eliminating trade barriers, more incentive policies attracting FDI, it is not sufficient to just include those variables discussed above. Thus RTAs themselves are introduced into the model to capture policy changes when regional integration happens. As the impact of regional trade agreements on China's FDI changes is studied in this paper, RTAs that are highly related with China's economic relationship are introduced and analysed. There are five RTAs included in this paper: Canada-USA Free Trade Agreement (CUSFTA), European Union (EU), Association of Southeast Asian Nations (ASEAN), Australia-New Zealand Closer Economic Relations Trade Agreement (CER), and Asia-Pacific Economic Cooperation (APEC).

The alternative hypothesis for RTA dummy variables is that a specific regional economic agreement has attracted significantly greater FDI inflows to the region from extra and intra regional countries. Thus these RTA variables are expected to be positively related with inward FDI. In this paper the coefficients are expected larger than zero to explain the fact that APEC regional economic integration has resulted in a greater level of inward FDI into China. Other RTAs, including EU, CUSFTA, ASEAN and CER, are expected to be negatively related with China FDI inflows.

Country dummies are introduced in the regression to capture specific country effects when they are China's FDI sources. A positive sign will indicate that the specific country has preference for investing in China despite its member or non-member status. If the specific country reduces its investment in China as a result of an RTA membership a negative sign will be expected. Year dummies are estimated in the period analysis to study whether there is an effect that different years have on the changes of foreign capital invested in China.

2. Model

In recent years a small quantity of literature has been produced that discusses host countries' location advantages (Brenton et al., 1999; Beer and Cory, 1996; Egger and Pfaffermayr, 2004; Balasubramanyam, Sapsford and Griffiths, 2002; Ho, 2004; Velde and Bezemer, 2004;

Maurer, 2003; Buckley, Clegg, Forsans and Reilly, 2001; Buckley et al., 2003). These models usually focus on host country's market size, labour cost, capital cost and trade cost. Some of them concentrate their studies on the impact of RTAs on FDI upon basic determined FDI factors (Brenton et al., 1999; Buckley et al., 2001; Buckley et al., 2003; Velde and Bezemer, 2004; Egger and Pfaffermayr, 2004). The following model, which will be analysed in this paper, takes the economic factors that focus on firm's location interest, as used by the above authors, and introduces RTA variables to capture how China related regional economic integration can affect China's FDI stocks. The model is estimated on bilateral FDI on annual stock data for China, using total panel data regression and three period regressions.

The following equation studies China's FDI stocks from other countries and region for the period 1985-2003.

$$\begin{aligned} \ln FDI_{CHNt} = & \alpha + \beta_1 \ln GDP_{CHNt} + \beta_2 GDPG_{CHNt} + \beta_3 \ln POP_{CHNt} + \beta_4 \ln GROSS_{CHNt} \\ & + \beta_5 \ln DIST_{CHN-i} + \beta_6 WAGE_{CHNt} + \beta_7 \ln INTEREST_{CHNt} + \beta_8 \ln EXPORT_{(i-CHN)t} \\ & + \beta_9 \ln TARIFF_{CHNt} + \beta_{10} \ln OPENNESS_{CHNt} + \beta_{11} EU_{it} + \beta_{12} CUSFTA_{it} \\ & + \beta_{13} ASEAN_{it} + \beta_{14} CER_{it} + \beta_{15} APEC_{(i-CHN)t} + \beta_{16} APEC_{it} + \sum_{i=17}^{32} COUNTRY_i + \mu_t \end{aligned}$$

In this equation, China (CHN) is FDI host country, and i stands for home country or region. FDI_{it} is the value of China's foreign direct investment stocks from country i during period t . GDP_{CHNt} is gross domestic product of China during period t and $GDPG_{CHNt}$ is annual percent growth rate of China GDP in year t . POP_{CHNt} is population of China in year t . $DIST_{CHN-i}$ is the distance between capital cities of China and its FDI source countries or region. $WAGE_{CHNt}$ denotes China wages at time t . $EXPORT_{(i-CHN)t}$ stands for country i 's exports to China in year t . $INTEREST_{CHNt}$ is China's interest rate in year t . $GROSS_{CHNt}$ is China's gross fixed capital formation at time t . $TARIFF_{CHNt}$ is China's average tariff rate. $OPENNESS_{CHNt}$ means the opening degree of China economy to the outside world.

Five RTA dummy variables are introduced into the equation to measure preferential relationships between China and country i , which could stimulate FDI flows. EU_{it} has the value of one if country i is a member of Europe Union at time t and zero otherwise. $CUSFTA_{it}$, $ASEAN_{it}$ and CER_{it} are defined similarly. $APEC_{(i-CHN)t}$ means both country i and China are members of APEC in year t . It has the value of one if the observed country and China are APEC members at the same time and zero otherwise. Furthermore $APEC_{it}$ is introduced into the equation to capture a country's membership in APEC while China is not. It will take the value of one if the observed country is a member of APEC while China is not, and zero otherwise.

Besides the above variables α is an intercept, and μ_t is the error. β_s are coefficients of different variables of which are used to explain the effect of independent variables on FDI dependent variable. $\beta_{17} - \beta_{32}$ represent country effect.

3. Data source

China's FDI stocks are collected from series of *China Statistical Yearbook (1986-2004)* from 1985 to 2003. They are foreign capital used by China in 10 000 US Dollars. As the accounting method used is not consistent in all years, the sum of foreign direct investment and other investment is used in years 1985 and 1992-1996. China FDI from Hong Kong and Macao is added together, but because Hong Kong accounts for 90 percent of the total, explanation of results is only for Hong Kong. All the FDI data are adjusted by using respective GDP deflator to diminish seasonal influences.

GDP, gross fixed capital formation, GDP deflator and GDP growth rate are collected from United Nations database. The first two are measured at constant 1990 prices in millions of US Dollars. Population data are collected from International Financial Statistics CD-ROM (IMF, 2005) in millions. Distance between any two capital cities is obtained from *Direct-Line Distances* (Fitzpatrick and Modlin, 1986) in kilometres.

The average real wage index (preceding year equals 100) is collected from *China Statistical Yearbook (1986-2004)*. It is adjusted by urban residents' consumer price index, reflecting relative changes of employees' real wage. A country's total exports and imports are collected from *Direction of Trade Statistics* of International Monetary Fund (1986-2004) in millions of US Dollars. Exports are adjusted by using export countries' GDP deflator. Data for import duties of developed countries are collected from OECD database in millions of US Dollars. Import duties of China are obtained from *China Statistical Yearbook (1986-2004)*. Interest rates for each country are collected from *International Financial Statistics* CD-ROM of International Monetary Fund (2004). The lending rates are selected to represent the cost of capital raising. It is adjusted for inflation by GDP deflator.

IV. Empirical results

Most of the previous literature has analysed the effects of some of the above variables by using cross-section data. They are estimated using comparisons among countries in different RTAs in one period. Only a few have examined over time. This paper will first examine the model variables by applying the panel data method to capture effects of economic variables and RTA variables. Pooled least squares method is utilised in the regression with and without fixed effects and country variables. Then the models are estimated according to the inception year of different RTAs for three sub-periods, i.e. period 1985-1988, period 1989-1991 and period 1992-2002.

The results of regressing economic variables with additional RTA variables and some country variables are reported in Tables 1-4. Regression 1 includes economic variables only; Regression 2 is estimated upon economic variables with fixed effects; Regression 3 involves economic variables plus RTA variables; and Regression 4 takes country variables besides economic variables and RTA variables. All the regressions are estimated with data availability. Variables are omitted from some equations because severe multicollinearity prevented the model from being estimated.

1. Results for economic variables and RTA variables

Table 1 shows the results of the impact of economic variables and RTA variables on China FDI changes. The coefficients of all economic variables are statistically significant at 1, 5 or 10 percent level, except the coefficients of distance in Regressions 2, 3 and 4. The coefficients of GDP and GDP growth are all positive as expected. As China is the fastest growing country

in the last twenty years in the world, lots of MNCs enter China trying to acquire a greater share in this new market and enjoy the fast growth rate. Population has a negative impact on the changes of FDI stocks. Its coefficients are always negative, indicating China's large population provides a huge market demand for products promoted investment from domestic firms.

Unexpectedly gross fixed capital formation has a negative coefficient in all regressions. In the last two decades China has concentrated on infrastructure construction in transport, communication, environment and others, which has set up a solid groundwork for foreign firms to produce and develop their products. Eastern cities with a sound investment atmosphere attracted more FDI these years. The negatively signed coefficients obtained in this equation might not reflect these facts.

Wages in China has an unexpected positive sign in all regressions with the coefficient significant at the same time. It seems foreign firms responded positively to a higher wage rate, but the fact should be noticed that although China's average real wage has been increasing 6.3 percent per annum the nominal wage is still much lower than that of other developed countries and some East and Southeast Asian countries and regions. Thus a positively signed coefficient does not show a decrease in FDI inflows.

The expected positive coefficient is found for interest rate in all regressions; they are statistically significant at 1 percent level all the time. Firms which encounter higher costs in raising funds in China tend to borrow in the world financial market and then put the funds into their Chinese affiliates to minimise capital costs.

Exports is found to be positively related with China's FDI, while the tariff rate is found negatively related with FDI stocks changes in China and the coefficients are all statistically significant at 5 or 1 percent level, and openness has significant negative coefficient in the four regressions. The results are consistent with the above results of market size and market growth. China is ranked one of the fastest growing economies in the world in the last two decades. As a result the disposable personal income of Chinese has increased dramatically which provides them with higher buying ability for domestic and imported goods and services. The higher consumption capability also provides an opportunity for firms to expand their production and factory construction. Multinational corporations are lured to enter this enlarged market and its periphery markets. But as China is more restricted in its imports and is not as open as developed countries it is a better way to serve Chinese market through direct investment.

The results of RTA dummies are shown in Regressions 3 and 4. Four of the five RTAs, including EU, CUSFTA, ASEAN and CER, are found negatively related with China FDI. Each of European Union, ASEAN and CER has statistically significant coefficients at 10, 5 and 1 percent level in Regression 3, while CUSFTA has statistically significant coefficient at 10 percent level in Regression 4. No relationship at all is found for APEC. The results may indicate that when countries from Europe, North America, Southeast Asia, and Oceania form a kind of economic integration and organize investment incentives or free investment regulations they enlarge their intra-regional investment at the expense of investment in outside countries. As China's major investment source countries are from these regions China may be affected by their regional economic integration. If China is not involved in these integrate regions it will lose the chance to attract investment from them.

2. Fixed effects and country effects results

Table 2 and Table 3 report results of fixed effects regression and country effect. It is found that the fixed effects for home countries are similar to each other from the range of around 267 to 273. In those countries Hong Kong has the highest number of 273, while New Zealand has the lowest one of 267. The results of country effects only show UK and Australia having an impact on China's FDI stock changes, where the coefficients of UK are positively significant at 1 percent level in Regression 4 and the coefficient of Australia is positive and significant at 5 percent level.

3. Period regression results

In order to capture the impact of the inception of a regional trade agreement compared with pre-RTA period, the equation is estimated based on the formation year of each RTA. As CER was formed in 1983, EU in 1992, CUSFTA in 1989, APEC in 1989 and ASEAN in 1967, three periods are identified, i.e. 1985-1988, 1989-1991, 1992-2002. The results are showed in Table 4.

The results indicate that only distance and export variables are statistically significant, others are not significant. The coefficients of exports have the expected positive sign and are significant at 1 percent level in all three periods. The coefficient of distance has a negative sign in Period 1985-1988 and Period 1989-1991, but has a positive sign in Period 1992-2002. It is significant at 5 percent level only in period 1989-1991. The result indicates that, all other factors being equal, China is such a large market that it could not be ignored when other countries regard it as one of their main trading partners. Thus multinational corporations would maintain or strengthen their ability to serve this market. Hence no matter how the economic indicators change, MNCs would enlarge their direct investment in China.

No impact can be found for RTA variables in period 1985-1988. For the other two periods, CER shows contrarily signed coefficients in period 1989-1991 (positive) and 1992-2002 (negative), and both coefficients are statistically significant at 10 percent and 1 percent level respectively. CUSFTA shows a positively signed coefficient which is statistically significant at 10 percent level in period 1989-1991 only, while ASEAN shows a negatively signed coefficient which is statistically significant at 5 percent level in period 1992-2002 only. It is clear that from 1992 when ASEAN countries decide to establish an ASEAN Free Trade Area (AFTA) to increase their regional competitive advantage to serve the global market, they have strengthened their economic relationship and redirect their intra-regional and extra-regional investment as a result. Thus China is facing a declining investment from ASEAN countries. China's direct investment from Australia and New Zealand seems to have decreased as the economic relationship between the latter two strengthened. Although there is a positive sign in Period 1989-1991, negatively signed coefficients exist to the rest of the studied period. Thus the same conclusion can be reached as the total panel data analysis, that the implementation of CER has a negative impact on China's FDI from this region. Though Canada and the United States formed a Free Trade Agreement in 1989 they did not decrease their direct investment in China in the period for 1989-1991. However it could not be concluded that CUSFTA has a positive impact on China's FDI from Canada and USA. On the contrary a negative signed coefficient is detected in period 1992-2002. It is unclear whether a positive or negative result would be found if the integrated region is estimated beyond the studied periods.

Only three year dummies can be included in the regression in Period 1992-2002. They all have a positive coefficient, but none of them is statistically significant. It might indicate that the specific formation year of EU has no impact on China's FDI inflows as China becomes a major production centre of the world.

4. Major regression results

- Export is considered the most important factor that has a positive impact on FDI stock changes in China. This can be seen from both the total panel data estimate and period regression. It indicates that the more goods the home country exports to China, the more FDI it will have in China.
- The distance variable is another crucial factor that has an impact on the changes of China FDI stocks. It is negatively related with China's FDI stocks in total panel data regression with only economic variables and in period estimation 1989-1991. It indicates that other countries will tend to export to China when they are far away from China without considering regional economic integration and world free trade development.
- China's market share, market growth, domestic capital investment, capital and labour cost, and free trade approach have a significant impact on the changes of FDI stocks from the total panel data estimate. It is consistent with the decisions of multinational corporations that a large and fast growing market with better investment climate is their first choice to establish their affiliates.
- Although it is conclusive that the impact of regional economic integration can be identified for China's FDI stock changes, countries from European Union, CUSFTA and ASEAN seem to decrease their investment in China. But as ASEAN countries are not important FDI source countries for China their investment activities do not have a crucial impact on China. In addition the strengthened economic relationship within CER results in their members' investment tending to decrease to China. When China is a member of APEC it has no impact on China's FDI inflows.

V. Conclusion

This paper aims at studying whether there is a relationship between the formation and implementation of a regional trade agreement and foreign direct investment into China. A model with FDI as a dependent variable and economic factors as independent variables is estimated, by introducing RTAs as dummy variables to capture the effect of RTAs on FDI. Country effect is also estimated in the model. The equations are further estimated for three periods separated by the inception year of an RTA.

The regression results indicate that multinational corporations do not make their investment into China just according to the distance between them and China and their exports shares in China. They would consider total economic factors to maximise their profits. Therefore they will decide to increase their direct investment according to China's large market size, higher market growth rate, labour and capital prices, and China's continuing economic and trade reform.

Regional trade agreements have been found having an important impact on the changes of FDI stocks in China. Most of the RTAs have resulted in increasing intra-regional direct investment, thus decreasing their investment outside the region. This indicates a tendency of declined FDI from EU, CUSFTA, ASEAN and CER into China. It can be concluded that when regional economic and trade integration is highly sought by most countries throughout the world, it will affect its members' investment activities to encourage production within the region instead of producing in non-member countries. When foreign direct investment shares an important role in the economy development in China it is desirable to involve in regional economic integration as much as China can.

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Table 1: Economic and RTA variables regression results for China host

Dependent Variable: LNFDI								
Method: Pooled Least Squares Sample 1985-2002								
Variable	Regression 1		Regression 2		Regression 3		Regression 4	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	251.8153	1.4599	—	—	269.5052	1.6169	281.8636**	2.3430
LN GDP	19.4412**	2.2835	20.9269***	3.5505	23.40251***	2.7534	23.2769***	3.8317
GDP growth	0.1001**	2.4426	0.1043***	3.67	0.1084**	2.2937	0.1043***	3.0659
LN Population	-57.7021*	-1.7356	-63.6760***	-2.7673	-63.7480**	-1.9788	-67.5860***	-2.9383
LN Gross fixed capital formation	-8.0598*	-1.938	-8.0204***	-2.7788	-10.2906**	-2.4293	-9.4165***	-3.0963
LN Distance	-0.2722**	-2.3087	0.634	0	-0.1627	-0.6907	1.0267	0.3827
Wage	0.0911***	2.6672	0.0916***	3.8622	0.1033***	3.0549	0.0994***	4.0978
LN Export	1.0864***	19.2982	0.4404***	2.7604	0.8906***	10.9362	0.4074**	2.5096
LN Interest	2.2777***	3.3198	2.2907***	4.8226	2.5505***	3.7111	2.4783***	5.0450
LN Tariff	-1.2999**	-2.0208	-1.1943***	-2.6685	-1.3522**	-2.1734	-1.2322***	-2.7565
LN Openness	-3.6602***	-3.163	-3.4119***	-4.2232	-3.8303***	-3.3963	-3.5633***	-4.3814
EUJ	—	—	—	—	-0.9023*	-1.8694	-3.0534	-0.5154
CUSFTAJ	—	—	—	—	-0.2218	-0.4326	-0.7879*	-1.9033
ASEANJ	—	—	—	—	-0.8054**	-2.2700	-1.9591	-0.5653
CERJ	—	—	—	—	-1.4663***	-2.8082	-5.2201	-0.7602
APECCHNJ	—	—	—	—	-0.6108	-1.5046	-0.1764	-0.5967
APECJ	—	—	—	—	-0.0943	-0.2046	-0.1400	-0.4211
R-squared	0.7965		0.9084		0.8160		0.9104	
Adjusted R-squared	0.7885		0.8988		0.8040		0.9002	
F-statistic	99.0399		262.1802		68.4411		88.8382	
Probability (F-statistic)	0		0		0		0	
Total panel (unbalanced) observations	264		264		264		264	

Note: *** $P < 0.01$, ** $P < 0.05$, * $P < 0.10$ mean statistically significant at 1, 5, and 10 percent level respectively.

Table 2: Fixed effects

Dependent Variable: LN FDI	
Method: Pooled Least Squares	
Sample 1985-2002	
Fixed Effects	Regression 2
	Coefficient
Canada	268.9937
USA	271.0773
France	269.4463
Germany	269.5761
Netherlands	269.2897
UK	270.2941
Australia	268.9958
New Zealand	267.1114
Japan	271.9258
Korea	271.2866
Hong Kong	273.3542
Indonesia	267.9651
Malaysia	268.5982
Philippines	269.8613
Singapore	271.0989
Thailand	269.8634

Table 3: Country effect

Dependent Variable: LNFDI	
Method: Pooled Least Squares	
Sample 1985-2002	
Variable	Regression 4
	Coefficient
CANADA	-2.612
USA	-0.503
FRANCE	0.1819
GERMANY	0.3853
UK	1.0137***
AUSTRALIA	2.0250**
JAPAN	0.3693
HONG KONG	1.8122
INDONESIA	-2.0716
MALAYSIA	-1.3671
SINGAPORE	1.1384

Table 4: Period regression for China host

Dependent Variable: LNFDI						
Method: Pooled Least Squares						
Variable	Period 1985-1988		Period 1989-1991		Period 1992-2002	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
LN GDP	-3.0137	-0.1258	-8.8150	-0.4253	-7.8139	-0.0973
GDP growth	0.0136	0.0168	-0.0985	-0.5104	-0.3430	-0.4384
LN Population	—	—	—	—	128.1392	0.1447
LN Gross fixed capital formation	3.9394	0.1537	12.7891	0.5520	-3.0953	-0.6153
LN Distance	-0.8656	-1.3755	-4.1481**	-2.6383	0.3133	0.9142
Wage	—	—	—	—	—	—
LN Export	1.1311***	3.5327	1.0327***	4.2539	0.7600***	9.3195
LN Interest	—	—	—	—	2.2369	0.4265
LN Tariff	—	—	—	—	-1.2413	-0.3905
LN Openness	—	—	—	—	-0.3510	-0.0672
EUJ	-0.6719	-0.7667	4.4052	1.5878	-764.4860	-0.1474
CUSFTAJ			5.8062*	2.0248	-0.9736	-1.3044
ASEANJ	-1.0893	-0.8829	0.9212	0.5530	-1.0315**	-2.1451
CERJ	-1.8108	-1.6313	5.3843*	1.8254	-2.3907***	-3.0409
APECCHNJ	—	—	-0.3513	-0.2563	-763.4950	-0.1472
APECJ	—	—	0.2615	0.2861	—	—
Year 1992	—	—	—	—	0.7915	0.2005
Year 1993	—	—	—	—	1.2077	0.3805
Year 1994	—	—	—	—	0.7911	0.6136
R-squared	0.6818		0.7585		0.7861	
Adjusted R-squared	0.6200		0.6853		0.7645	
F-statistic	11.0218		10.3630		36.5103	
Probability (F-statistic)	0		0		0	
Total panel (balanced) observations	44		44		176	

Note: *** $P < 0.01$, ** $P < 0.05$, * $P < 0.10$ mean statistically significant at 1, 5, and 10 percent level respectively.