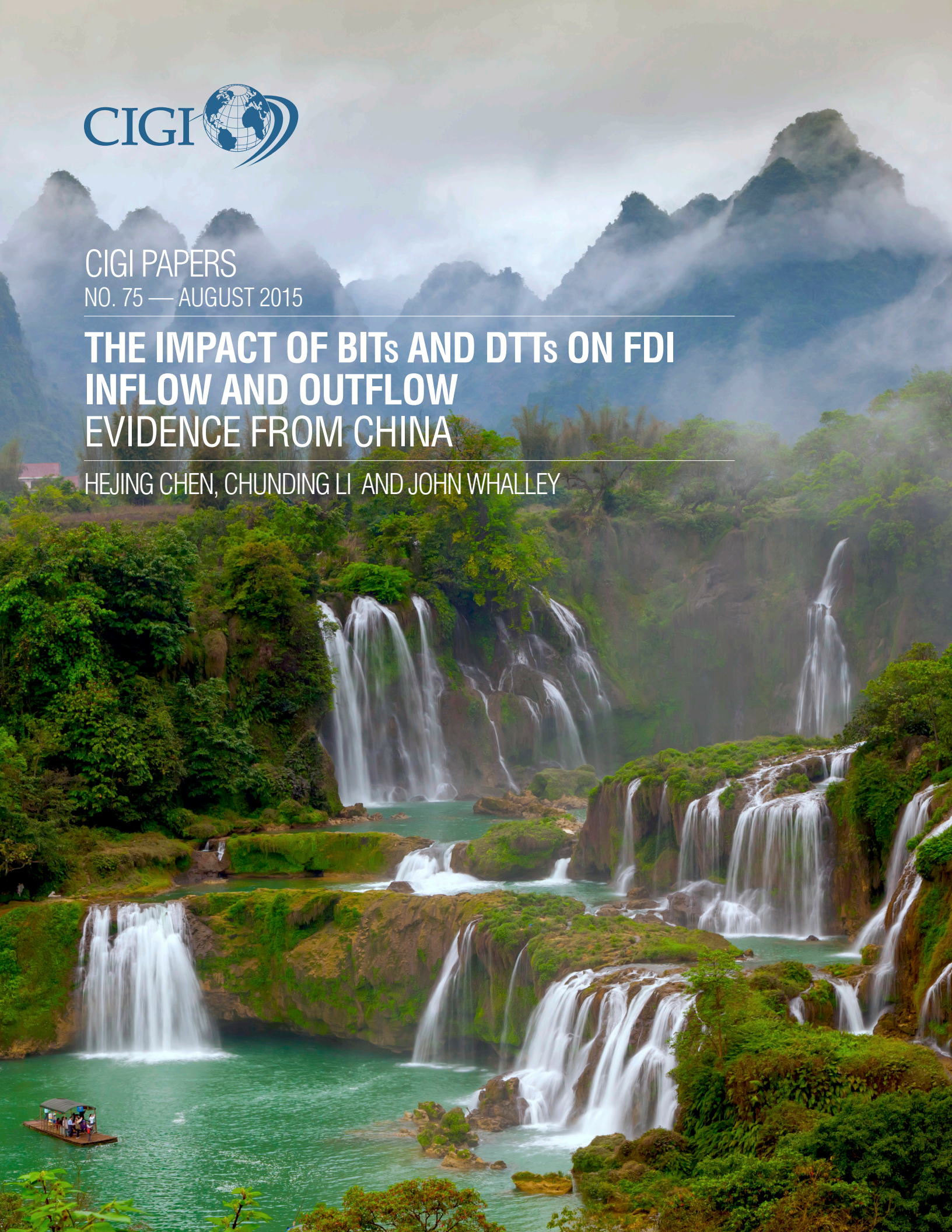

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# THE IMPACT OF BITs AND DTTs ON FDI INFLOW AND OUTFLOW
## EVIDENCE FROM CHINA

HEJING CHEN, CHUNDING LI AND JOHN WHALLEY

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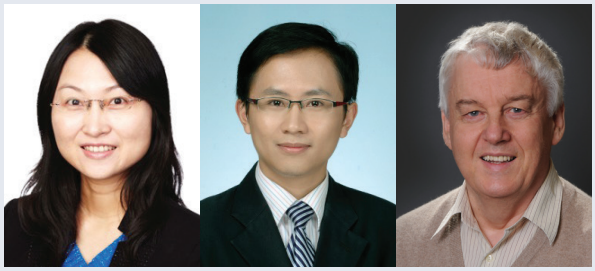

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## ACRONYMS

| | |
|---|---|
| BITs | bilateral investment treaties |
| CEIC | Census and Information Center |
| CMM | Carr, Markusen and Maskus (model) |
| CSY | Chinese Statistics Yearbook |
| DTTs | double tax treaties |
| FDI | foreign direct investment |
| ICT | income and capital tax treaty |
| IIA | International Investment Agreement |
| IT | income tax treaty |
| LSDV | least squares dummy variable |
| MNEs | multinational enterprises |
| ODI | outward direct investment |
| OECD | Organisation for Economic Co-operation and Development |
| OLS | ordinary least squares |
| RMB | renminbi |
| UNCTAD | United Nations Committee of Trade and Development |

## EXECUTIVE SUMMARY

This paper examines the impact of both China's bilateral investment treaties (BITs) and double tax treaties (DTTs) simultaneously on China's bilateral foreign direct investment (FDI) inflows and outflows. Using China's bilateral FDI flow data from 1985 to 2010, this paper finds that the cumulative number of BITs China signed has a positive (although not always statistically significant), but minor, impact on both China's FDI inflows and outflows. The effect of a dummy BIT using dyadic data is always significant and positive for China's FDI inflows, while negative but not always significant for China's FDI outflows. There is also evidence that the cumulative number of DTTs tends to promote China's FDI inflows and outflows in most equations with weighted cumulative BITs. However, tax treaty dummies do not reveal any robust effect on FDI flow. Generally, BITs and DTTs are more inclined to affect China's FDI inflows than to affect China's FDI outflows.

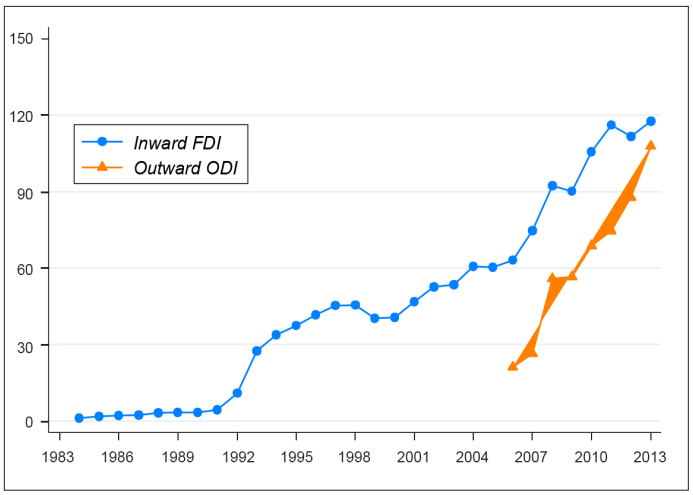
## INTRODUCTION

China has been one of the largest recipients for global FDI since the twenty-first century. Annual realized FDI inflows have grown from $1.9 billion in 1985 to $118.7 billion in 2013 (see Figure 1).[1] By 2013, China had accumulated an FDI stock of $1.344 trillion, well ahead of other large developing and transition economies such as Brazil, India and Russia. Meanwhile, China's FDI outflows have taken off as a result of the government's adoption and promotion of a "go global" policy aimed at establishing the country's investors as international players following China's entry to the WTO in 2001. Although China's outward direct investment (ODI) stock is still small relative to the inward FDI stock, growth in China's outward FDI flows has become significant in recent years, growing from less than $100 million in the 1980s to $107.84 billion in 2013 (see Figure 1), and the cumulative FDI abroad (stock) had reached $660.48 billion by the end of 2013,[2] making China the fifth-largest originator of ODI by value.

1 Data are from the Chinese Statistics Yearbook (CSY) at http://data.stats.gov.cn. Note that all currency in this paper are in US dollars.

2 Data are from the CSY at http://data.stats.gov.cn.

**Figure 1: China's Inward and Outward FDI (in US$ billions)**




*Data source*: CSY, http://data.stats.gov.cn.

BITs and DTTs are the two most widely used types of international agreements both for protecting foreign investors and providing such investments non-discriminatory treatment, and from double taxation. BITs are agreements between two countries for the reciprocal encouragement, promotion and protection of investments in each other's territories by companies based in either country. DTTs aim to avoid double taxation on income earned in any two different countries, and stimulate FDI between countries. Under a DTT agreement, a credit is usually allowed against the tax levied by the country in which the taxpayer resides for taxes levied in the other treaty country and, as a result, the taxpayer pays no more than the higher of the two rates.

BITs and DTTs are presumed to have a positive influence on the flow of FDI between countries bound in BIT or DTT. Whether BITs and DTTs increase FDI inflows has been studied and debated for the past few decades for a number of developing countries. By the end of 2014, China had already concluded 130 BITs[3] and 107 DTTs (including double taxation arrangement with Hong Kong and Macau), making China the largest contracting party to BITs and DTTs among developing countries. Given China's large FDI involvement, it is best to assess separately whether China's BITs and DTTs play an important role in attracting FDI inflows, on the one hand, and assess other determinants — such as market size or labour endowment — on the other hand. There is also an issue of whether China's BITs and DTTs have symmetrical effects on China's outward FDI.

To the authors' knowledge, this is the first empirical study examining the impact of both China's BITs and DTTs simultaneously on both China's FDI inflows and outflows. This paper finds that the cumulative number of BITs China signed has a negative but minor impact on China's FDI inflows, but a positive (although not always statistically significant) impact on China's FDI outflows. The effect of a dummy BIT is always significant and positive for China's FDI inflows, while negative but not always significant for China's FDI outflows. It also finds evidence that the cumulative number of DTTs tends to promote China's FDI inflows and outflows, especially when the cumulative number of BITs is weighted. However, tax treaty dummies do not reveal any robust effect on FDI flow. Generally, BITs and DTTs are more inclined to affect China's FDI inflows than to affect China's FDI outflows.

## BACKGROUND: BITs, DTTs AND FDI

### BITs and DTTs

A BIT is an agreement establishing the terms and conditions for private investment by nationals and companies of one state in another state. Treaties typically cover the following areas: scope and definition of investment; admission and establishment; national treatment; most-favoured nation treatment; fair and equitable treatment; compensation in the event of expropriation or damage to the investment; guarantees of free transfers of funds and dispute settlement mechanisms; both state-state and investor-state.

Conventionally, the declared goals of BITs include investment protection, market and investment liberalization and investment promotion. It is the third of these goals that is evaluated in this paper. By providing that national companies of either party to the treaty may invest under the same conditions and be treated in the same way in the territory of the other, a BIT defines a symmetric relationship between the two contracting countries and provides a stable legal environment that supports foreign investment in the host country. But whether and to what extent a BIT — relative to other key determinants of FDI flows, such as the market size and labour endowment of the host country — promotes investment is left open (Salacuse and Sullivan 2005).

The DTTs are bilateral agreements between two states. A primary objective is to eliminate double taxation, which is achieved by: allocating taxing rights to one or another state for specified categories of income or gains (including, in some cases, how much each state may tax); or, if both states are entitled to tax the income or gains, specifying whether double taxation should be eliminated and, if so, which state should provide relief against double taxation (and the method by which it should do this, either by exempting income or gains taxed by the other state, or by giving credit for tax paid to the other state when assessing the amount of tax it will collect). DTTs will typically provide mechanisms for resolving disputes and provide a measure of protection for taxpayers against the treaty

3 Data are from the United Nations Committee of Trade and Development (UNCTAD) International Investment Agreement (IIA) Database: www.unctad.org/iia.

partners applying their domestic tax rules less favourably in relation to residents of the counterparty state compared with their treatment of their own residents (Clayson, Valentin and Wille 2008).

DTTs perform four primary functions:

- The first is to standardize tax definitions and define the tax jurisdictions of treaty partners.
- The second is to reduce transfer pricing and other forms of tax avoidance.
- The third is linked to information exchange.
- The fourth is that they affect the actual taxation of multinational enterprises (MNEs) through lowered withholding rates on interests, dividends and royalties (Blonigen and Davies 2004).

The impact of the last of these depends on the tax treatment in the home country, and whether a foreign credit is provided or whether taxed foreign income is exempt from domestic taxation. If the former, and foreign tax rates are below domestic rates, a tax treaty has little effect via its rate reduction. Also, if the MNEs engaged in FDI are more concerned with reducing their tax burdens through transfer pricing, tax treaties (with the second and third goals above) may reduce incentives for FDI activity instead of increasing them. On the other hand, a tax treaty (with the first and the fourth functions) may promote investment by reducing uncertainty about the overseas tax environment. Therefore, the net effect of tax treaties on FDI is open and depends on which goal of the tax treaty dominates.

## Overview of World BITs, DTTs and FDI Flows

The first BIT was signed between Germany and Pakistan in 1959. BITs spread slowly throughout the 1970s and 1980s, with roughly 20 treaties being signed annually, mainly between European and developing countries. With the US decision to adopt BITs as a foreign investment protection device, the number of BITs in general started to increase sharply. When the bloc of developing countries decided to give up their struggle for a "new international economic order," including the right of host states to expropriate foreign companies' investments in the natural resource sector, the number of BITs rose even further, since developing countries started to compete in capturing a share of global FDI flows, facing the dilemma of either signing BITs that privileged the contracting party exporting FDI or possibly losing FDI to other countries increasing their competitive advantage (Berger 2008).

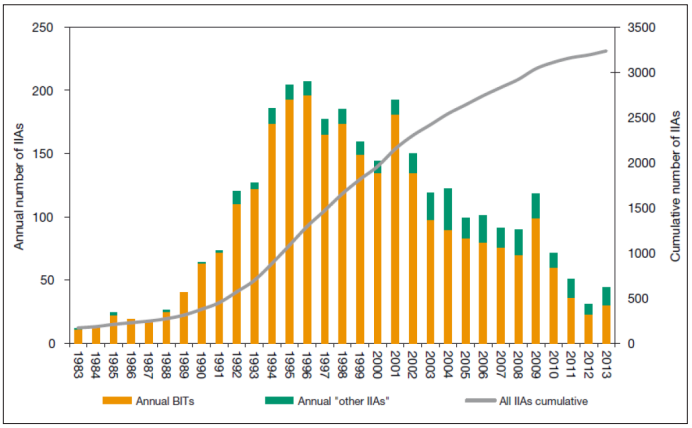
Worldwide, the number of BITs and DTTs has increased in recent decades. There were approximately 386 BITs in 1989; however, a decade later, in 1999, their number had grown to 1,857 (see Malik 2008). In 2010, the total stock of BITs in the world was 2,807, and at the end of 2013, world total BITs had reached 2,902.[4] The number of DTTs in force has risen from 100 in the 1960s to 2,976 by the end of 2010 (see UNCTAD 2003).

During the same period, FDI has been spurred by the widespread liberalization of FDI policies, combined with advances in information and communication technologies, and competition among firms. Inflows of FDI have grown at an unprecedented rate, expanding from approximately $40 billion at the beginning of the 1980s, to $200 billion in 1990, to the historical high of $1.97 trillion in 2007, then dropping to $1.2 trillion in 2009 and reaching $1.45 trillion in 2013. The simultaneous growth in FDI and the growth of BITs and DTTs suggest a potential positive relation.

## BITs, DTTs and FDI Activity in China

China's BITs began in 1982 when China and Sweden signed the first such agreement. China signed the first income and capital type of DTT with Japan in 1983.[5] From 1992 to 1996, the number of BITs China concluded increased at a very high rate, and another eight and 10 new BITs were signed by China in 2001 and 2005, respectively. The years 1986 and 1994–1996 saw a fast growth for the number of DTTs China signed. Figure 2 shows that the fast-growing period of China's BITs and DTTs coincide with growth of China's FDI inflows and outflows, which also indicate a potential positive relationship between BITs, DTTs and FDI activity.

**Figure 2: Trends in Signed BITs and Other IIAs, 1983–2013**

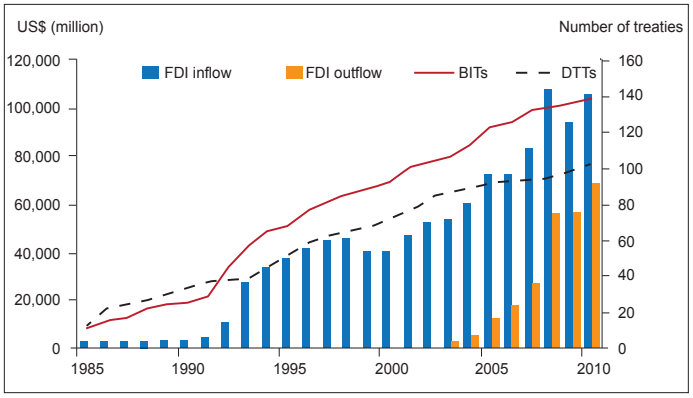



*Data source*: UNCTAD IIA database: www.unctad.org/iia.

4 Data from the UNCTAD IIA database: www.unctad.org/iia.

5 There are some transportation treaties China concluded with Argentina, France, Japan, South Africa, the United Kingdom and the United States during the period between 1975 and 1982.

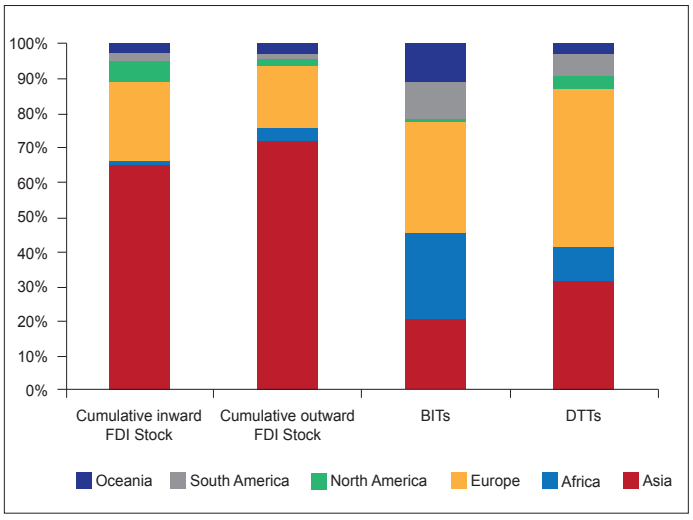
**Figure 3: BITs, DTTs and FDI Flows of China, 1985–2010**




*Source*: Authors' calculation based on UNCTAD IIA database: www.unctad.org/iia.

In terms of geographic distribution, most of China's FDI activities are concentrated in Asia and Europe, with more than 60 percent of China's cumulative inward and outward FDI stock involving Asia, and nearly 20 percent involving Europe. The number of BITs China signed is more evenly distributed among continents, except for North America, where substantial FDI is not covered by any existing bilateral investment protection agreement. This large amount of FDI activity without a BIT is also the case for the Cayman Islands and the British Virgin Islands (see Figure 3). For DTTs, the geographic distribution is similar to that of FDI activity, except for an expanding share for Europe. Unlike the case of BITs, both Canada and the United States signed a DTT with China. As a worldwide tax haven, the Cayman Islands and the British Virgin Islands are still outside of the partner list of DTTs that China has concluded (see Figure 4).

**Figure 4: Geographic Distribution of China's BITs, DTTs and FDI, by end 2010**




*Source*: Authors' calculation based on UNCTAD IIA database: www.unctad.org/iia.

## Empirical Studies on the Effect of BITs and DTTs on FDI

In the literature, different approaches are used empirically to model the effects of BITs and DTTs on FDI. Most are dyadic analyses,[6] taking bilateral FDI as the dependent variable in a panel setting to examine whether the existence of a BIT or DTT (in the form of a dummy variable) will lead to higher FDI flows. Other studies use models with the aggregate FDI inflows of the individual host country as the unit of observation, and examine whether the total number of BITs or DTTs affect aggregate FDI inflows into the host country.

Dyadic analyses have yielded mixed results as to the impacts of BITs on FDI. Most of them find little, if any, statistically significant increase in FDI inflows as a result of BITs. K. Vandervelde, J. V. Aranda and Z. Zimny (1998) found a positive coefficient for BITs in most of their statistical models, but the estimated effect was marginal and statistically not significant at conventional levels. M. Hallward-Driemeier (2003) raised further doubts about the effectiveness of BITs. Her paper uses bilateral FDI outflows from 20 Organisation for Economic Co-operation and Development (OECD) countries to 31 developing countries; the data covers the years 1980 to 2000, capturing the surge in the number of BITs ratified, showing that the estimated coefficient for BITs was actually negative and insignificant. This conclusion was echoed in related work by UNCTAD (2003). Similar results can also be found in J. Tobin and S. Rose-Ackerman (2005): their datasets were compiled from a variety of sources and contain a different number of observations for different variables, using panel data from the first BIT signed in 1959 through 2000 for low- and middle-income countries to take into account the dynamic nature of some of the data, and to control for some of the statistical problems inherent in cross-sectional analyses; the interaction term between BIT and a measure of political risk shows a conditional positive effect on FDI activity. However, J. W. Salacuse and N. P. Sullivan (2005) found that signing a BIT with the United States is associated with higher FDI inflows, whereas the number of BITs signed with other OECD countries is statistically insignificant. Y. Z. Haftel (2008) uses a dataset that includes 132 developing countries from 1977 to 2004 to perform empirical analysis, and also has provided qualified support for Salacuse and Sullivan's argument by showing that ratified (rather than merely signed) US BITs boost US FDI into developing country signatories.

Empirical studies on bilateral DTTs are less, compared to BITs, and more negative in assessment of impact. B. A. Blonigen and R. B. Davies (2004) found large and statistically negative effects of treaties established in 1980s

6 Dyadic analyses use data from both developed and developing countries to explore the effects of BITs or DTTs on FDI.

and 1990s (so-called "new treaties" in the paper) on US FDI. Using OECD data, Blonigen and Davies (2005) also suggested that new treaties (during the 1983–1992 period) did not encourage FDI and might have actually reduced FDI activity. P. Egger, M. Larch, M. Pfaffermayr and H. Winner (2006) also found a negative effect of newly implemented DTTs in a difference-in-differences analysis of two years prior to, and two years after, treaty conclusion using dyadic FDI data over the period 1985 to 2000.

Although there are fewer empirical studies using monadic models,[7] most of them, in contrast to dyadic analyses, find positive findings on the impact of BITs and DTTs on aggregate FDI. R. Gross and L. J. Trevino (2005) found the number of BITs signed by a country to be positively and statistically significantly correlated with aggregated FDI inflows into that country. E. Neumayer and L. Spess (2005) employed a larger panel data over the period 1970 to 2001, covering up to 119 countries, and found a positive and statistically significant effect for BITs on FDI inflows. As for the effect of DTTs, Neumayer (2007) found developing countries with more DTTs signed with major capital-exporting developed countries have a higher overall FDI stock and share of stock, and receive more FDI inflows, as well as a higher share of inflows.

Most of these existing studies focus on FDI flows from developed countries to developing countries and the different approaches tend to lead to different conclusions. Most analyses using a dyadic approach find no or negative effect, while most monadic studies do find an effect for BITs or DTTs on FDI.

The research mentioned above explores the effects of BITs or DTTs on inward or outward FDI, and is related to the topic of this paper, in particular the studies that include China as one of the developing host countries. But the research does not focus only on China, with most exploring only BITs or DTTs effects on FDI inflows to developing countries. This paper's empirical research methodologies are somewhat the same as the related research, meaning that there are few empirical studies on the effects of BITs and DTTs on China's FDI outflows.[8] Since China is continuously strengthening its position as a source of outward foreign investment, as well as the biggest FDI recipient in the world, an analysis on the impact of BITs and DTTs on China's inbound and outbound FDI is of significance.

## RESEARCH DESIGN

### Empirical Framework

In order to examine how BITs and DTTs might affect FDI flows, a theoretical framework is required to describe the determinants of FDI. There are different frameworks used for the determinants of bilateral FDI flows, among which the gravity model and the knowledge-capital model by D. Carr, J. R. Markusen and K. E. Maskus (2001) are the most widely used. The standard gravity model from empirical trade analysis has been extended to the study on FDI flows between countries (Hejazi and Safarian 1999; Bevan and Estrin 2004). The general idea of using a gravity model to describe determinants of FDI flows is based on the argument that the amount of bilateral resource flow will positively depend on the size of source/destination countries, which reflects potential supply/demand, and reflects negatively on transportation costs.

The knowledge-capital model (known as the CMM model, named after those who created it) established by Carr, Markusen and Maskus is grounded in the formal theories of an MNE model, which allows for both the horizontal and vertical FDI. Horizontal FDI is captured by the sum of two countries' real GDP and the squared difference between the two countries' real GDP in the CMM model, since larger and more similar-sized markets better support the higher fixed costs associated with setting up production across countries, and will lead to greater horizontal FDI activity. Vertical FDI in the CMM model is related to differences in the two countries' relative endowments of skilled and unskilled labour, and is represented by three variables: the skill difference between the home and host country; the interaction term between skill difference with the difference in GDP; and the interaction term between the square of skill difference and trade openness in the host country (for a detailed explanation, see Carr, Markusen and Maskus 2001; Blonigen and Davies 2004; 2005).

The gravity model is used as the main regression methodology to estimate the impacts of BITs and DTTs that China has signed on its FDI inflows and outflows, which is the same as most existing literatures did. In order to check the robustness of empirical results, this paper also uses the knowledge-capital model as a comparison. Both gravity models and knowledge-capital models of FDI have precise micro-model foundations for FDI flow, and are often-used methods for empirical analysis.

7 Monadic models use data from only developing or developed countries to explore the effects of BITs or DTTs on FDI.

8 To our knowledge, Buckley et al. (2008) is the only one evaluating the impact of BITs and DTTs on China's outbound FDI.

## Variables[9]

The dependent variables used here are the annual bilateral FDI inflows into China and outflows from China between China and its investment partner economies. These are converted to constant 2005 US dollars using the US GDP deflator.[10] The measure of FDI flow is typically natural logged to capture elasticity responses (percent change), but in this case, there are some observations where FDI inflows from a given country to China or opposite outflows are negative. Observations are excluded for which the dependent variable takes on a zero or negative value where the log does not exist. By doing this, the observation number is reduced by, separately, two and 77 for China's FDI inflows and outflows. These negative observations are rare and mainly in small countries, such as Angola in 2008, Argentina in 2009, Azerbaijan in 2007 and 2008, Bulgaria in 2009, the Bahamas in 2003 and 2008, Belize in 2010 and Bermuda in 2007 and 2008, among other examples. This treatment will not likely give influence to the empirical results.

**Table 1: Description of Variables**

| Variable | Description |
|---|---|
| **Dependent Variable** | |
| Ln $FDI_{ij}$ | Logarithm of FDI flow measure in 2005 US dollars (thousand) from country i (source) to country j (host) |
| **Main Independent Variables** | |
| BIT | Dummy, taking 1 after the BIT between country i and j has been signed |
| BITS | Cumulative number of BITs China had signed by year t |
| ICT | Dummy, taking 1 after the income and capital tax treaty (ICT) between country i and j has been signed |
| IT | Dummy, taking 1 after the income tax treaty (IT) between country i and j has been signed |
| DTTS | Cumulative number of DTTs China had signed by year t |
| **Gravity Control Variables** | |
| GDP | Real GDP measured in 2005 US dollar (thousand) |
| DIS | Logarithm of physical distance in kilometers between capital cities of country i and j |
| COMLANG | Dummy, taking 1 for countries or areas share the same language (dialect) as China |
| OECD | Dummy, taking 1 for OECD members |
| BRER | Bilateral real exchange rate, adjusted by the price index |
| **CMM Control Variables** | |
| ΣGDP | Logarithm of sum of $GDP_i$ and $GDP_j$ |
| GDPDIFSQ | $Ln[(gdpi-gdpj)^2]$ |
| SKDIFF | Ln(tert.edu. $enr._i$)-Ln(tert.edu. $enr._j$ ) |
| SKDIFF*GDPDIFF | [Ln(tert.edu. $enr._i$)-Ln(tert.edu. $enr._j$)]*($lnGDP_i$-$lnGDP_j$) |
| T_OPEN | Trade share in GDP |
| $(SKDIFF)^2$*T_OPENj | [Ln(tert.school $enr._i$)-Ln(tert.school $enr._j$)]²*trade share in GDP of host country j |

*Source*: Authors.
*Note*: SKDIFF is skewed difference; GDPDIFF is GDP difference.

The main explanatory variables in this paper reflect the development of China's BITs and DTTs. Previous studies using the gravity or CMM model either include a BIT dummy or a DTT dummy as an explanatory variable. In this study, both dummies are included simultaneously to avoid omitted variable bias. In addition, instead of including just one DTT dummy variable (as is usually done), the tax treaties are classified into three dummies based on their content. The International Bureau of Fiscal Documentation categorizes tax treaties in the following manner: income and capital tax treaties; social security treaties, administrative assistance and inheritance/gift; and transportation tax treaties (Coupe, Orlova and Skiba 2009). There are two major categories from this classification that are used, which constitute the vast majority of treaties China signed: income and capital treaties, and income tax treaties. This allows for more differentiation between tax treaties, since different treaties imply different degrees of integration between countries. For instance, from the point of view of foreign investors, a country with an income tax treaty and capital tax treaty might be more attractive than a country with just an income tax treaty.

Furthermore, the cumulative number of China's BITs and DTTs are also included in this study due to possible positive spillover effects from signing a BIT or DTT. In concluding a BIT or DTT, the signatory developing country explicitly commits only to protect FDI under signatory developed country law, but also implicitly signals its willingness to protect all foreign investment. A single dyadic design may therefore underestimate the effect that signing a BIT or DTT has on FDI inflows or outflows.

The other control variables in this study are similar to the ones used in the standard gravity and CMM models. Besides the conventional determinants of FDI — such as market size (natural log of real GDP of FDI source and host country), physical distance (natural log of physical distance between the capital cities of the two countries), ethnic distance (common language dummy) and institution maturity (OECD dummy) in gravity models and the five variables representing horizontal and vertical FDI in the CMM model — this study also controls for bilateral real effective exchange rates, defined as the nominal bilateral exchange rate (calculated indirectly via the individual

9 See Table 1 for a detailed explanation of the variables used.

10 See Aisbett (2009) for detailed discussion on the advantages and disadvantages of different dependent variables (for example, FDI stocks, FDI flow, affiliate sales).

exchange rate with the US dollar), multiplied by the major trading partner price index and divided by the Chinese price index.

China adopted a managed floating regime of renminbi (RMB) exchange rate in 2005. The RMB was kept fixed to the US dollar under the dollar peg system before July 21, 2005, but fluctuated against other major trade partners' currencies. After the announcement of Chinese exchange rate system reform, the RMB began to fluctuate against the US dollar as well as other major trade partners' currencies. By the end of 2011, the RMB-US dollar exchange rate had appreciated by 30.2 percent. The bilateral real exchange rate may also be an important determinant of China's FDI inflows and outflows.

Consistent with other econometric studies, data for all economic explanatory variables (GDP, exchange rate) are lagged one year to mitigate potential reverse causality problems. This treatment is also based on the argument that investors were reacting to known information from the year before. Ideally, reverse causality problems could be more comprehensively tackled by instrumental variable regressions. However, practically all economic explanatory variables are potentially subject to reverse causality and it has proven to be too difficult to find adequate and valid instruments.

The baseline specification used in this study is as follows.

For the gravity model:

$$\ln FDI_{ijt} = \alpha_0 + \alpha_1 \ln GDP_{it-1} + \alpha_2 \ln GDP_{jt-1} + \alpha_3 \ln DIS_{ij} + \alpha_4 COMLANG + \alpha_5 OECD + \alpha_6 BRER_{ijt-1} + \alpha_7 BITS_t + \alpha_8 DTTS_t + \alpha_9 BIT_{ijt} + \alpha_{10} ICT_{ijt} + \alpha_{11} IT_{ijt} + \varepsilon_{ijt} \quad (1)$$

For the CMM model:

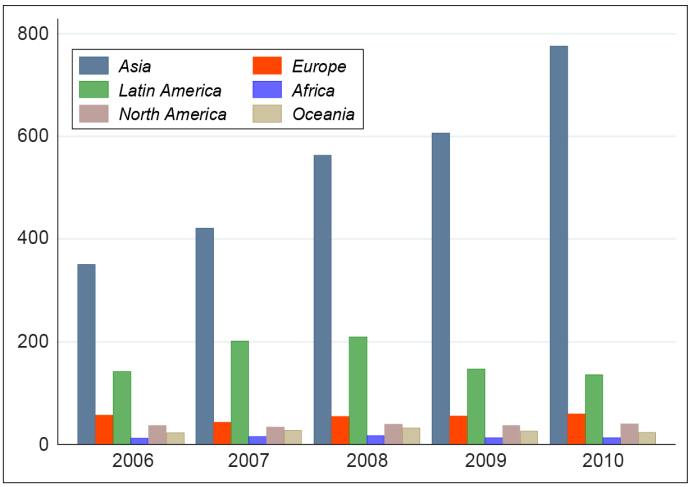
$$\ln FDI_{ijt} = \beta_0 + \beta_1 \sum GDP_{ijt-1} + \beta_2 GDPDIFSQ_{ijt-1} + \beta_3 SKDIFF_{ijt-1} + \beta_4 SKDIFF_{ijt-1} * GDPDIFF_{ijt-1} + \beta_5 (SKDIFF_{ijt})^2 * T\_OPEN_{jt-1} + \beta_6 BRER_{ijt-1} + \beta_7 BITS_t + \beta_8 DTTS_t + \beta_9 BIT_{ijt} + \beta_{10} ICT_{ijt} + \beta_{11} IT_{ijt} + \varepsilon_{ijt} \quad (2)$$

## Data

The main data source for this study is a panel dataset of bilateral FDI inflows and outflows reported by China with its 173 investment partner countries (areas) for the 1985–2010 period from the Census and Economic Information Center (CEIC) database. Data on real GDP, trade openness, official exchange rate with US dollar and inflation measured by consumer price index are from the World Bank's 2012 World Development Indicators. The UN Educational, Scientific and Cultural Organization higher education statistics provides data on enrolment in tertiary education to calculate skilled labour difference. Data on the bilateral investment and taxation treaties China signed are from UNCTAD IIA database. Distance and common language data come from CEPII gravity dataset. Table 2 (on page 8) provides summary statistics on the variables. Table 3 (on page 8) shows the covariance matrix of independent variables.

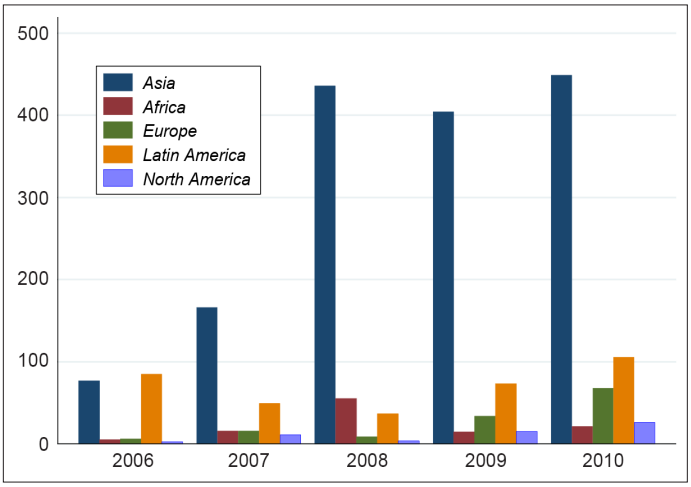
Figures 4 and 5 report China's inward and outward FDI data by continents in recent years. We find that Asia, Latin America and Europe are China's main inward and outward FDI source regions. The Asian region is China's largest FDI source region.

**Figure 4: China's Inward FDI by Region**




*Source*: CEIC Database.

**Figure 5: China's Outward ODI by Region**




*Source*: CEIC Database.

## Table 2: Summary Statistics

| Variable | Mean | Standard Deviation | Min. | Max. | Observations |
|---|---|---|---|---|---|
| **Dependent Variables** | | | | | |
| $lnFD_{lic}t$ | 8.899192 | 3.023741 | 2.209742 | 17.81497 | N=2004 |
| $lnFDI_{cit}$ | 8.890661 | 2.57395 | 2.22025 | 17.38747 | N=907 |
| **Independent Variables** | | | | | |
| $BITS_t$ | 77.84615 | 42.14702 | 12 | 139 | N=4498 |
| $DTTS_t$ | 61.53846 | 27.55892 | 13 | 103 | N=4498 |
| $BIT_{ict}$ | 0.413962 | 0.492597 | 0 | 1 | N=4498 |
| $ICT_{ict}$ | 0.258115 | 0.437646 | 0 | 1 | N=4498 |
| $IT_{ict}$ | 0.052023 | 0.222098 | 0 | 1 | N=4498 |
| **Gravity Controls** | | | | | |
| $lnGDP_{it-1}$ | 16.53674 | 2.398509 | 10.39391 | 23.30156 | N=4040 |
| $lnGDP_{ct-1}$ | 20.80379 | 0.726538 | 19.84888 | 22.23811 | N=4325 |
| lnDIS | 8.966571 | 0.556845 | 6.697034 | 9.867705 | N=4446 |
| OECD | 0.196532 | 0.397419 | 0 | 1 | N=4498 |
| COMLANG | 0.028902 | 0.167549 | 0 | 1 | N=4498 |
| **CMM controls** | | | | | |
| $\Sigma G_{DPt}$-1 | 20.96992 | 0.793977 | 19.84888 | 23.64005 | N=4482 |
| $GDPDIFSQ_{t-1}$ | 41.551 | 1.795706 | 28.96584 | 46.11524 | N=4482 |
| $SKDIFF_{it-1}$ | –4.35317 | 2.243205 | –11.6661 | 1.494677 | N=2642 |
| $SKDIFF_{ct-1}$ | 4.353167 | 2.243205 | –1.49468 | 11.66614 | N=2642 |
| SKDIFF*GDPDIFFt-1 | 20.08008 | 18.11525 | –1.33435 | 107.1482 | N=2540 |
| $(SKDIFF)^2$*$T\_OPEN_{ct-1}$ | 1083.444 | 1177.448 | 0.0065505 | 8471.337 | N=2571 |
| $(SKDIFF)^2$*$T\_OP_{ENit}$-1 | 2137.38 | 2615.445 | 0.0038188 | 26272.41 | N=2398 |
| **Other controls** | | | | | |
| $lnBRER_{t-1}$ | 0.875151 | 2.827776 | –8.665509 | 12.60468 | N=3067 |

Source: Authors.
Note: lnBRERt-1 means exchange rate.

## Table 3: Covariance Matrix of Independent Variables

| Variables | BITS | DTTS | BIT | ICT | IT |
|---|---|---|---|---|---|
| BITS | 1776.37 | | | | |
| DTTS | 1148.99 | 759.49 | | | |
| BIT | 8.95 | 5.80 | 0.24 | | |
| ICT | 4.04 | 2.66 | 0.11 | 0.19 | |
| IT | 2.22 | 1.47 | 0.02 | –0.01 | 0.05 |

*Source*: Authors.

# EMPIRICAL RESULTS

## Estimation Technique

Panel data fixed-effects analyses for both gravity and CMM models were conducted, as there are factors affecting bilateral FDI relationships that are not captured by the study's explanatory variables and that are time-invariant. A fixed country pair and year-effects specification could help control for unobserved characteristics that affect FDI activity between China and each individual investment partner. Thus, a binary variable for each bilateral country pairing and year is included, in addition to the control variables. The binary fixed-effect country-pair variables estimate the aggregate effect of time-invariant characteristics that raise or lower FDI activity for that bilateral pairing versus average effects, and the binary fixed-effect time variables are included to control for global business cycles and trends in world FDI or other omitted time-variant factors that affect all country pairs in the same way.

Further, a weighted measure of BITs was created, which reflects the relative importance of different states as the FDI source. The measure of "weighted BITs" was calculated in two ways. First, the ratio of lagged one year of FDI outflows of the source country to that of the host country was used as the proxy for the importance of FDI source country. Therefore, the weighted BITs variable is:

$$BITs\_OFDI = \left(\sum_{i=j}^{n-j}\left[BIT_{ijt} \times \frac{OFDI_{it-1}}{OFDI_{jt-1}}\right]\right) \quad (3)$$

where *BITs_OFDI* is the measure of weighted cumulative BIT, BIT is a dichotomous indicator variable coded *1*, if a BIT exists between country *i* and *j* in year *t* (zero otherwise), the subscript $_i$ signifies the FDI source country as the (potential) signatory of a BIT with country *j*, and subscript $_j$ signifies the FDI host country for which the weighted BITs measure is recorded, while *n* is the universe of all sample countries in year *t*. The other way to calculate the weighted count BITs is to use the ratio of lagged one year of source country GDP per capita to that of host country GDP per capita to capture the relative important position in international investment activities. Therefore, the alternative weighted BITs variable is:

$$BITs\_PGDP = \left(\sum_{i=j}^{n-j}\left[BIT_{ijt} \times \frac{PGDP_{it-1}}{PGDP_{jt-1}}\right]\right) \quad (4)$$

## Results of the Gravity Model

Table 4 (on page 10) presents the least squares dummy variable (LSDV) empirical estimation results on China's inbound FDI. Cumulative BIT is unweighted (columns 1 and 2), while columns 3 to 6 report the impact of two kinds of weighted BITs on China's FDI inflows. The country pair and time effects always enter significantly in regressions for China's FDI inflows. The fit of these equations increases dramatically from 47 percent in pooled ordinary least squares (OLS) regression to 84 percent.[11]

When the number of cumulative BITs is not weighted, the conventional control variable for market size of source country in the gravity model is only a statistically significant positive factor when the bilateral real exchange rate enters in the equation and the GDP of China is dropped.

A surprising result is that the coefficient of distance has a positive sign and is statistically significant, which is contrary to the traditional prediction that distance may be a negative determinant for international investment. D. Castellani, A. J. Palmero and A. Zanfei (2011) found that when controlling for institutional and psychic distance,[12] in particular language and religious differences, the negative effect of geographic distance vanishes, especially in cases of research and development FDI. This paper's LSDV results go further with the coefficient of distance having a positive sign and being statistically significant. The investment cost is more related to the fixed cost of setting up branches than variable transportation cost in trade; therefore, when making the decision on approach of market entry, MNEs might have a stronger incentive to invest rather than export when the distance is far enough. This might help explain the positive coefficient of distance on bilateral investment flows.

Representing institutional maturity and psychic distance, OECD and common language seem to be important factors affecting China's FDI inflows. OECD members and country (area) sharing the same language (dialect) as China on average have 4.7 percent and 4.4 percent higher annual FDI activities in China, respectively.

The cumulative number of BITs China signed has a significant positive coefficient, which is minor if compared to the coefficient of the BIT dummy. This is because cumulative BITs only have spillover effects on a bilateral investment flow, which is not as direct and explicit as a BIT between the two related parties. And when the bilateral real exchange rate is taken into account, the positive impact of BIT increases by nearly 20 percent. The cumulative number of DTTs China signed has a non-significant and negative effect, while the ICT and IT dummy has a non-significant and positive effect. However, if the bilateral real exchange rate is entered in the explanatory variables, the ICT dummy becomes a significant positive factor for FDI inflows to China.

For the regression with weighted BITs, the coefficients of gravity controls and dummy treaty variables have almost

11 The pooled OLS regression result is available on request.

12 Psychic distance is the sum of factors preventing the flow of information from and to the market. Examples include differences in language, education, business practices, culture and industrial development.

**Table 4: Fixed-effects Results from Gravity Model on China's FDI Inflows**

| Variables | (1) lnFDIic | (2) lnFDIic | (3) lnFDIic | (4) lnFDIic | (5) lnFDIic | (6) lnFDIic |
|---|---|---|---|---|---|---|
| BITS | 0.0546** | 0.0486* (0.0249) | | | | |
| | (0.0231) | | | | | |
| BITs_OFDI | | | 0.00087*** | 0.000414 | | |
| | | | (0.000243) | (0.000339) | | |
| BITs_PGDP | | | | | 0.00383*** | 0.000940 |
| | | | | | (0.00100) | (0.000674) |
| DTTS | -0.0378 | -0.0508 | 0.0435*** | 0.0196* | 0.0756*** | 0.0288* |
| | (0.0306) | (0.0406) | (0.00745) | (0.0115) | (0.0152) | (0.0153) |
| BIT | 0.606*** | 0.866*** | 0.606*** | 0.866*** | 0.606*** | 0.866*** |
| | (0.200) | (0.219) | (0.152) | (0.169) | (0.152) | (0.169) |
| ICT | 0.332 | 0.888*** | 0.332 | 0.888*** | 0.332 | 0.888*** |
| | (0.327) | (0.317) | (0.227) | (0.260) | (0.227) | (0.260) |
| IT | 0.114 | 0.107 | 0.114 | 0.107 | 0.114 | 0.107 |
| | (0.235) | (0.255) | (0.184) | (0.212) | (0.184) | (0.212) |
| $lnGDP_{it-1}$ | 0.127 | 0.324* | 0.127 | 0.324* | 0.127 | 0.324* |
| | (0.173) | (0.188) | (0.155) | (0.180) | (0.155) | (0.180) |
| $lnGDP_{ct-1}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| | (0) | (0) | (0) | (0) | (0) | (0) |
| lnDIS | 0.426** | 0.390* | 0.426 | 0.390 | 0.426 | 0.390 |
| | (0.207) | (0.209) | (0.577) | (0.578) | (0.577) | (0.578) |
| OECD | 5.096*** | 4.687*** | 5.152*** | 4.445*** | 5.152*** | 4.445*** |
| | (1.392) | (1.031) | (0.763) | (0.890) | (0.763) | (0.890) |
| COMLANG | 5.152*** | 4.445*** | 5.096*** | 4.687*** | 5.096*** | 4.687*** |
| | (0.720) | (0.773) | (1.412) | (1.387) | (1.412) | (1.387) |
| $LnBRER_{ict-1}$ | | 0.0856* | | 0.0856* | | 0.0856* |
| | | (0.0499) | | (0.0474) | | (0.0474) |
| Country effect | yes | yes | yes | yes | yes | yes |
| Year effect | yes | yes | yes | yes | yes | yes |
| Observation | 1,904 | 1,586 | 1,904 | 1,586 | 1,904 | 1,586 |
| R-squared | 0.842 | 0.843 | 0.842 | 0.843 | 0.842 | 0.843 |

*Source*: Authors.
Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05 and * p<0.1.

the same sign and similar magnitude to those of columns 1 and 2, except that now the distance is not a significant factor. However, the coefficients of the cumulative number of treaties vary a lot with those in unweighted BITs equations, where both FDI outflows-weighted and GDP per capita-weighted BITs have a much smaller positive impact on bilateral FDI flows, while the cumulative number of DTTs now turns out to be a significant positive factor.

Table 5 reports the LSDV results on China outbound FDI. Similarly, columns 1 and 2 cumulative BIT is unweighted, while columns 3 to 6 represent the impact of two kinds of weighted BITs on China's FDI outflows. The country pair and time effects always enter significantly in regressions for China's FDI inflows. The country pair and time-fixed effects increase the fit of the equations from 33 percent in pooled OLS regression to 75 percent.

When China's FDI outflows are evaluated, common language and bilateral real exchange rate variables become positive and significant determinants of China's FDI outflows. With much greater magnitude of the coefficient than that for China's FDI inflows, a one percent increase in a bilateral real exchange rate will promotes China's FDI outflows by 0.4 percent, suggesting that China's outward FDI is more or less driven by currency appreciation. Unlike its positive impact on China's FDI inflows, the distance and OECD dummy now deter China's FDI outflows, which are consistent with the early stage of China's outward FDI

**Table 5: Fixed-effects Results from Gravity Model on China's FDI Outflows**

| Variables | (1) lnFDIci | (2) lnFDIci | (3) lnFDIci | (4) lnFDIci | (5) lnFDIci | (6) lnFDIci |
|---|---|---|---|---|---|---|
| BITS | 0.0644*** (0.0170) | 0.0781*** (0.0179) | | | | |
| BITs_OFDI | | | -1.10e-08 (2.98e-08) | 3.54e-09 (3.23e-08) | | |
| BITs_PGDP | | | | | 0.0200*** (0.00598) | 0.0220*** (0.00649) |
| DTTS | 0.0728** (0.0315) | 0.0281 (0.0336) | 0.194*** (0.0194) | 0.180*** (0.0233) | -0.0137 (0.0561) | -0.0483 (0.0603) |
| BIT | -0.634** (0.306) | -0.486 (0.355) | -0.634** (0.306) | -0.486 (0.355) | -0.634** (0.306) | -0.486 (0.355) |
| ICT | -0.0712 (0.425) | -0.114 (0.426) | -0.0712 (0.425) | -0.114 (0.426) | -0.0712 (0.425) | -0.114 (0.426) |
| IT | 0.653 (0.489) | -0.0312 (0.528) | 0.653 (0.489) | -0.0312 (0.528) | 0.653 (0.489) | -0.0312 (0.528) |
| lnGDPit-1 | 0.256 (0.337) | 0.428 (0.375) | 0.256 (0.337) | 0.428 (0.375) | 0.256 (0.337) | 0.428 (0.375) |
| lnGDPct-1 | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| lnDIS | -0.445*** (0.110) | -0.451*** (0.112) | -0.445*** (0.110) | -0.451*** (0.112) | -0.445*** (0.110) | -0.451*** (0.112) |
| OECD | -2.191* (1.309) | -2.092 (1.483) | -2.191* (1.309) | -2.092 (1.483) | -2.191* (1.309) | -2.092 (1.483) |
| COMLANG | 4.781*** (1.492) | 4.456*** (1.385) | 4.781*** (1.492) | 4.456*** (1.385) | 4.781*** (1.492) | 4.456*** (1.385) |
| LnBRERict-1 | | 0.408*** (0.119) | | 0.408*** (0.119) | | 0.408*** (0.119) |
| Country effect | yes | yes | yes | yes | yes | yes |
| Year effect | yes | yes | yes | yes | yes | yes |
| Observation | 879 | 750 | 879 | 750 | 879 | 750 |
| R-squared | 0.746 | 0.756 | 0.746 | 0.756 | 0.746 | 0.756 |

*Source*: Authors.
Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05 and * p<0.1.

(resource acquiring and cost sensitive). Among the main explanatory treaty variables controlled for here, only the cumulative BITs seem to play a minor positive role in promoting China's FDI outflows.

When the cumulative BITs are weighted by the ratio of FDI outflows in the previous year, the cumulative number of BITs is no longer a significant factor, while the cumulative number of DTTs turns out to have a positive impact on China's FDI outflows. If the weight is replaced with the ratio of GDP per capita, things reverse, as weighted cumulative BITs are now a significant but minor factor to promote FDI, and cumulative DTTs have non-significant and negative impact.

## Results from a CMM Model

Table 6 (on page 12) reports the results from a CMM model specialization with China's inbound FDI as the dependent variable also using fixed effects regression techniques. In Columns 1 and 2, cumulative BIT is unweighted while columns 3 to 6 measure the impact of two kinds of weighted BITs on China's FDI inflows. The difference between equations with the unweighted BIT and weighted BIT focuses on the coefficient of cumulative number of BITs and DTTs.

Based on the theoretical predictions by Carr, Markusen and Maskus (2001) , the correlation between ∑GDP and the FDI activity is expected to be positive. Given the vertical

**Table 6: Fixed-effects Results from CMM Model on China's FDI Inflows**

| Variables | (1) lnFDIic | (2) lnFDIic | (3) lnFDIic | (4) lnFDIic | (5) lnFDIic | (6) lnFDIic |
|---|---|---|---|---|---|---|
| BITS | 0.0535** (0.0268) | 0.0477 (0.0316) | | | | |
| BITS_OFDI | | | 0.00105** (0.000520) | –8.53e-05 (0.000458) | | |
| BITS_PGDP | | | | | 0.00409* (0.00213) | 0.000316 (0.00253) |
| DTTS | –0.0465 (0.0380) | –0.0245 (0.0585) | 0.0354* (0.0181) | 0.0338* (0.0176) | 0.0696** (0.0323) | 0.0374 (0.0361) |
| BIT | 0.436* (0.239) | 0.560** (0.255) | 0.436* (0.239) | 0.560** (0.255) | 0.436* (0.239) | 0.560** (0.255) |
| ICT | 0.155 (0.395) | 0.867** (0.394) | 0.155 (0.395) | 0.867** (0.394) | 0.155 (0.395) | 0.867** (0.394) |
| IT | –0.0247 (0.308) | 0.0940 (0.365) | -0.0247 (0.308) | 0.0940 (0.365) | –0.0247 (0.308) | 0.0940 (0.365) |
| ∑GDPt-1 | 0.0931 (0.486) | –0.670 (0.550) | 0.0931 (0.486) | –0.670 (0.550) | 0.0931 (0.486) | –0.670 (0.550) |
| GDPDIFSQ t-1 | 0.0819*** (0.0303) | 0.0896** (0.0446) | 0.0819*** (0.0303) | 0.0896** (0.0446) | 0.0819*** (0.0303) | 0.0896** (0.0446) |
| SKDIFFi t-1 | 0.225 (0.242) | 0.783** (0.307) | 0.225 (0.242) | 0.783** (0.307) | 0.225 (0.242) | 0.783** (0.307) |
| SKDIFF *GDPDIFF t-1 | 0.0360 (0.0426) | 0.0747 (0.0495) | 0.0360 (0.0426) | 0.0747 (0.0495) | 0.0360 (0.0426) | 0.0747 (0.0495) |
| (SKDIFF)2 *T_OPENc t-1 | 0.000141 (0.000164) | –1.88e-05 (0.000254) | 0.000141 (0.000164) | –1.88e-05 (0.000254) | 0.000141 (0.000164) | –1.88e-05 (0.000254) |
| lnBRER ict-1 | | 0.244*** (0.0743) | | 0.244*** (0.0743) | | 0.244*** (0.0743) |
| Country effect | yes | yes | yes | yes | yes | yes |
| Year effect | yes | yes | yes | yes | yes | yes |
| Observations | 1,010 | 826 | 1,010 | 826 | 1,010 | 826 |
| R-squared | 0.867 | 0.884 | 0.867 | 0.884 | 0.867 | 0.884 |

*Source*: Authors.
Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05 and * p<0.1.

FDI motives that exist in the CMM knowledge-capital model, CMM predict a correlation between the three more complicated control variables and FDI activity from source to the host country.

In the fixed-effects estimation results for China's FDI inflows, among treaty variables, the BIT dummy and ICT dummy seem to promote China's FDI inflows as expected. Two CMM variables appear to perform well as the significant positive factor. The sign and magnitude of the coefficient for skill differences indicates that difference in skilled labour abundance between investment source and host countries is the greatest driver for MNEs' vertical FDI activities in China. The horizontal FDI incentive, represented by squared difference between the host and source countries' real GDP, does not follow the theoretical prediction to have a negative sign; instead, it has a significant positive impact on China's FDI inflows. This also indicates that the vertical FDI dominates China's inbound FDI. Besides, the bilateral real exchange rate also works as a positive determinant of China's FDI inflows. This could be explained by the continuous expectation for China's RMB appreciation.

When the cumulative number of BITs is weighted, the sign and magnitude of the coefficient for cumulative number of BITs and DTTs is changed, if compared to those in equations with unweighted BITs. When the cumulative number of BITs takes the weight as the ratio of FDI outflows lagged 1 year, its coefficient decreases and becomes a non-

**Table 7: Fixed-effects Results from CMM Model on China's FDI Outflows**

| Variables | (1) lnFDIci | (2) lnFDIci | (3) lnFDIci | (4) lnFDIci | (5) lnFDIci | (6) lnFDIci |
|---|---|---|---|---|---|---|
| BITS | 0.0452* (0.0244) | 0.0840*** (0.0255) | | | | |
| BITS_OFDI | | | –1.80e-08 (3.46e-08) | 4.99e-09 (4.01e-08) | | |
| BITS_PGDP | | | | | 0.0102 (0.0102) | 0.0190* (0.0111) |
| DTTS | 0.0855 (0.0519) | 0.0348 (0.0616) | 0.180*** (0.0537) | 0.206*** (0.0652) | 0.0743 (0.0782) | 0.00882 (0.0897) |
| BIT | –0.715** (0.356) | –0.500 (0.413) | –0.715** (0.356) | –0.500 (0.413) | –0.715** (0.356) | –0.500 (0.413) |
| ICT | –0.210 (0.540) | -0.306 (0.512) | –0.210 (0.540) | –0.306 (0.512) | –0.210 (0.540) | –0.306 (0.512) |
| IT | 0.379 (0.690) | –0.432 (0.740) | 0.379 (0.690) | –0.432 (0.740) | 0.379 (0.690) | –0.432 (0.740) |
| ∑GDPt-1 | 0.491 (0.890) | 0.195 (1.001) | 0.491 (0.890) | 0.195 (1.001) | 0.491 (0.890) | 0.195 (1.001) |
| GDPDIFSQ t-1 | 0.0370 (0.0520) | –0.0103 (0.0627) | 0.0370 (0.0520) | –0.0103 (0.0627) | 0.0370 (0.0520) | –0.0103 (0.0627) |
| SKDIFFc t-1 | 0.309 (0.589) | –0.282 (0.709) | 0.309 (0.589) | –0.282 (0.709) | 0.309 (0.589) | –0.282 (0.709) |
| SKDIFF *GDPDIFF t-1 | –0.181 (0.112) | –0.125 (0.106) | –0.181 (0.112) | –0.125 (0.106) | –0.181 (0.112) | –0.125 (0.106) |
| (SKDIFF)2 *T_OPENi t-1 | 0.000391* (0.000203) | 0.000283 (0.000199) | 0.000391* (0.000203) | 0.000283 (0.000199) | 0.000391* (0.000203) | 0.000283 (0.000199) |
| lnBRER ict-1 | | 0.469 (0.687) | | 0.469 (0.687) | | 0.469 (0.687) |
| Country effect | yes | yes | yes | yes | yes | yes |
| Year effect | yes | yes | yes | yes | yes | yes |
| Observations | 590 | 508 | 590 | 508 | 590 | 508 |
| R-squared | 0.764 | 0.778 | 0.764 | 0.778 | 0.764 | 0.778 |

*Source*: Authors.
*Note*: Robust standard errors in parentheses, *** p<0.01, ** p<0.05 and * p<0.1.

significant factor, while the cumulative number of DTTs changes to be a significant positive determinant. The coefficient for cumulative BITs and DTTs is similar in the scenario with the ratio of GDP per capita as the weight.

The results measuring the impact of explanatory variables on China's bilateral FDI outflows suggest that neither the CMM control variables nor the bilateral real exchange rate is a significant determinant of China's bilateral FDI outflows (see Table 7 above). Although the unweighted cumulative number of BITs and cumulative number of DTTs in FDI outflows weighted equations seem to have positive impacts on China's FDI outflows, the null hypothesis that the impact is actually zero cannot be rejected.

## CONCLUSIONS

This study examines the impact of both China's BITs and DTTs simultaneously on China's FDI activity, especially on China's FDI outflows. Using China bilateral FDI flow data, we find that both unweighted and weighted cumulative number of BITs China signed has a positive (although not always statistically significant), but minor impact on both China's FDI inflows and outflows. The effect of a dummy BIT using dyadic data is always significant and positive for China's FDI inflows, while negative but not always significant for China's FDI outflows. This indicates that most investment treaties China signed before 2001 aimed at attracting FDI to China, a purpose accomplished fairly well, but they do not serve to promote China's FDI outflows.

Evidence was also found that the cumulative number of DTTs tends to promote China's FDI inflows and outflows in most equations with weighted cumulative BITs. However, tax treaty dummies do not reveal any robust effect on FDI flow. Generally, BITs and DTTs are more inclined to affect China's FDI inflows than to affect China's FDI outflows.

China has signed many BITs and DTTs with other countries and is now negotiating BITs with the United States and the Europe Union, making the effect of these BITs and DTTs on China's inward and outward FDI an important policy topic.

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