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18. November 2006

Online at <http://mpa.ub.uni-muenchen.de/1817/>  
MPRA Paper No. 1817, posted 16. February 2007

# Reform-Creating Regional Trade Agreements and Foreign Direct Investment: Applications for East Asia\*

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January 2007

## Abstract

The spread of regional trade agreements (RTAs) is strongly motivated by the desire for more foreign direct investment (FDI) flows. The net benefits from freer capital flows are expected to trigger a domino effect of new regionalism. However, this is still an empirical question to be tested, especially for the case of East Asia. This paper quantitatively estimates the investment creation and diversion effects of RTAs by using an extended gravity equation focusing on domestic reform as a commitment device for RTA membership. As a case study, we investigate whether reform-minded less developed countries (LDCs) can trigger this domino effect by actively participating in RTAs. Moreover, in order to search for the most preferable member pair among the proposed East Asian RTAs, we estimate the likely impact of the East Asian RTAs on inward FDI stock. From our empirical analyses, we find that (i) reform-creating RTA membership, larger market size, better skilled labor, and lower trade costs all contribute positively and significantly to inward FDI stock; (ii) reformatory LDCs attract more FDI in addition to the investment creation effect of their RTA membership; and (iii) most of proposed East Asian RTAs promote intra-bloc FDI. In particular, both South-North and North-North RTA such as an ASEAN-Japan and a Japan-Korea RTA prove to be more preferable membership combinations to South-South RTAs in East Asia.

*Keywords: regional trade agreements, reform, foreign direct investment, gravity, East Asia*

JEL Classification: F02, F15, O53

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\* Earlier version of this paper was presented at the 10<sup>th</sup> International Convention of the East Asian Economic Association on *Economic Integration in East Asia*, 18-19 November 2006, Beijing, China. I would like to thank Kazuhiko Yokota and participants at the Convention for helpful comments and suggestions.

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## I. Introduction

Responding to the world-wide proliferation of regional trade agreements (RTAs), quite a few studies have been conducted to find answers on whether RTAs are net trade creating or diverting and whether they impede multilateral trade liberalization or not.<sup>1</sup> Most of them mainly focus on the impact of RTAs on the bilateral trade of goods and services. However, the motivation behind the trend of currently proliferating regionalism has been mainly for creating more foreign direct investment (FDI) flows across borders rather than for seeking traditional gains from freer trade of goods and services. In addition, the net benefit from freer capital flows will be expected to trigger “the domino effect of new regionalism”<sup>2</sup> and finally lead the regional trade blocs to a global free trade area. In this way, a discriminatory regional trade bloc can be a building bloc for global free trade.

In general, attracting FDI has been recognized as a successful strategy for economic growth and prosperity, especially in less developed countries (LDCs), and RTA membership has proven effective in attracting FDI by creating a positive market size effect and providing a better investment environment that is favorable to foreign investors. In particular, RTA membership can be a device to ensure commitment to domestic reform for attracting more FDI. There has been huge volume of studies that look at the linkages between RTA membership, host country reform, and inward FDI, both theoretically and empirically. However, there is no generally agreed clear evidence and it is still an empirical question to be tested. Furthermore, most existing studies on the determinants of international capital flows deal separately with RTA membership and reform measures in their empirical tests. This study is an effort to overcome those limitations.

For this purpose, firstly, we quantitatively estimate the investment creation and diversion effect of RTAs by using an extended gravity equation. In particular, we introduce an RTA/Insiders (member-member relationship) and an RTA/Outsiders (member-nonmember relationship) dummy variable into the equation of FDI in order to explicitly measure the likely effect of RTA membership. Secondly, by introducing a domestic reform index to the gravity equation and interacting the term with RTA membership, we test whether countries of implementing regulatory reforms initiated by RTA membership may or may not attract more FDI.

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<sup>1</sup> For the welfare effects of RTAs from both theoretical and empirical bases, see Baldwin and Venables (1995), Winters (1996), and Bhagwati, Greenaway, and Panagariya (1998).

<sup>2</sup> For the domino effect, see Baldwin (1993) and for the new regionalism, see Ethier (1998 and 2001).

Thirdly, we investigate whether reform-minded LDCs can trigger the domino effect of new regionalism by actively participating in RTAs and by taking domestic reform measures to attract more FDI. From our empirical experiments, it will be possible to explain why RTAs, actively initiated by LDCs, are currently proliferating and whether they will lead us to global free trade or not. Fourthly, we apply our estimation results to proposed East Asian RTAs such as an ASEAN+3, ASEAN-China, ASEAN-Japan, ASEAN-Korea, China-Japan-Korea, and Japan-Korea RTAs, to see whether their efforts for regional economic cooperation would be successful enough to trigger the domino effect of new regionalism. Moreover, we search for the most favorable membership combination by estimating the investment creation effects of the proposed East Asian RTAs.

This paper is organized as follows. Section II provides a brief survey and stylized facts of the linkages between RTA membership, host country reform, and FDI flows. Section III describes the bilateral gravity model constructed and data used. Section IV summarizes empirical findings from analyzing the investment creation and the investment diversion effects of RTAs, explicitly estimating the effect of domestic reform as a commitment device. In Section IV, we also apply our experiments to cases for LDCs and possible East Asian RTAs. Concluding remarks follow in Section V.

## **II. RTA membership, Host Country Reform, and FDI Flows**

### **1. Theoretical and Empirical Reviews**

World trade, as well as foreign direct investment, has grown rapidly in recent decades, as figured in Table 1, accompanied by the proliferation of RTAs. Growing world trade has been deeply investigated and has given very clear answers. For example, Baier and Bergstrand (2001) empirically estimate the growing trend of world trade by source and find that border-related trade costs explain the world-wide increase in trade volume by 33 percent. Among the other sources estimated, tariff reductions constitute 25 percent of world trade expansion, and the transportation costs saved would raise world trade by 8 percent.

How about the growing trend of international capital flows? As you can see from Table 1, foreign direct investment flows have increased dramatically and grown much faster than world trade flows since the late 1980s, even though the trend has stalled recently. Quite a few studies

deal with the determinants of FDI to explain the rapidly growing trend both theoretically and empirically.<sup>3</sup> It is well known that RTA membership has been listed as one of the most important factors of the determinants.<sup>4</sup>

Similar to bilateral trade flows in regional trade blocs, RTAs may create more investments for members and divert investments from nonmembers to members. The investment creation and diversion effect of RTAs are estimated in Baldwin, Forslid, and Haaland (1995) for EU92 (the EU's Single Market programme in 1992). OECD (2003) also strongly supports the positive investment creation effect of EU membership. Chen (2006) argues that the investment creation effect will be stronger for a hub country by empirically testing US FDI outflows. Özden and Parodi (2004) for MERCOSUR and Yeyati, Stein, and Daude (2004) for Latin American countries empirically indicate the strong investment creation and diversion effect of RTAs. Unlike them, Di Mauro and Lücke (1999) and Di Mauro (2001) strongly argue that RTAs may not divert investment from nonmembers to members by investigating the EU case with CEEC (Central and Eastern European Countries).

On the other hand, Balasubramanyam, Sapsford, and Griffiths (2002) analyze the impact of RTAs on FDI flows in terms of welfare and conclude that the economic characteristics of host and source countries will determine the magnitude and direction of bilateral FDI rather than the existence of RTAs. Similarly, Dollar, Hallward-Driemeier, and Mengistae (2006) emphasize the role of investment climate indicators of facilitating transactions each of investment location has. Jaumotte (2004) joins the argument by emphasizing the importance of education and the financial stability of host countries relative to RTA membership. From a different point of view, Vamvakids (1999) argues that broader liberalization through a nondiscriminatory multilateral approach is much better than discriminatory regional liberalization for attracting FDI. In particular, Raff (2002) indicates that the type of RTA is more important for investment creation, by emphasizing the superior role of a Customs Union relative to an FTA, which may fail to induce welfare-improving FDI.

From the above-mentioned literature survey, we find that the investment creation and diversion effects of RTA membership is still a debated issue and that there exist member-specific characteristics to be considered when explaining the rising trend of international capital flows.

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<sup>3</sup> See Kumar (1996), Gastanaga, Nugent, and Pashamova (1998), Biswas (2002), Bengoa and Sanchez-Robles (2003), Blonigen (2005), and Chen (2006).

<sup>4</sup> See Motta and Norman (1996), Donnenfeld (2003), Brooks, Fan, and Sumulong (2003), and Altomonte (2004) for a theoretical analysis of this issue.

Thus we propose that RTA membership can be an important factor in attracting more FDI but that it cannot be a sufficient condition for creating a net foreign direct investment effect. Then, what other conditions should we consider for fostering the investment creation effect of an RTA? We strongly propose that domestic reform measures be accompanied by RTA membership. RTA membership may improve its members' credibility regarding commitment to reform and enhance the institutional quality of trade and investment liberalization. Thus, RTA-induced reform could be counted as a locational advantage by becoming a cost-reducing factor for the FDI host country.

Schiff and Winters (1998) introduce some research to answer whether RTAs stimulate FDI, whether RTAs confer credibility on domestic regulatory reform, and whether RTAs lead to multilateral liberalization. Ethier (1998) argues that reform-minded small countries are actively participating in RTAs by expecting FDI from neighboring countries that involve deeper integration. He concludes that this 'new regionalism' will make RTAs more attractive than multilateral negotiations, trigger the domino effect of regionalism, and finally lead the world economy to global free trade. Ethier (2001) further emphasizes his optimistic opinion about the reform creation effect of RTA membership in attracting FDI and applies his theory to the American RTA as a suitable case. Dee and Gali (2003) agree with Ethier (2001)'s argument by acknowledging that RTA membership is a way of signaling reform and will bring a strong net investment creation effect of the non-trade provisions of RTAs, which are much deeper than the trade provisions of RTAs.

There have been many empirical attempts to explain how reform-creating RTAs become an engine for inward FDI such as OECD (2003 and 2004) for the EU, Chase (2004) for CUSFTA, Blomström and Kokko (1997) for CUSFTA, NAFTA, and MERCOSUR, Graham and Wada (2000) for NAFTA, and Bengoa and Sanchez-Robles (2003) for Latin American countries. Waldkirch (2003) empirically investigates the determinants of FDI in Mexico under NAFTA and attempts to explain the important role of reform for more FDI inflows to LDCs. However, he did not test the investment creation effect of reform in his Tobit regression analysis. Waldkirch (2004) also confirms that an RTA is better than multilateralism in terms of reform commitment and emphasizes choice of partner in attracting more FDI through RTAs.

## **2. Investment Creation Effect of RTA membership and Reform: Data Analysis**

Before we experiment with gravity analysis of the investment creation effects of RTA membership and domestic reform in the following sections, we briefly investigate the relation

between RTA membership, host country reform, and inward FDI by analyzing a simple data set. The data for inward FDI stock and GDP come from UNCTAD's *World Investment Report*. The data for domestic reform is a composite score of *Economic Freedom Ratings* compiled by the Fraser Institute.<sup>5</sup> This score measures the degree to which the policies and institutions of countries are supportive of economic freedom in the following five areas: size of government, legal structure and protection of property rights, access to sound money, international exchange, and regulation.<sup>6</sup> The index ranges from zero to ten, with higher numbers meaning higher economic freedom for a better investment environment, and covers 121 countries for the period from 1980 to 2000.

According to the evidence from the simple data analysis,<sup>7</sup> countries attracted more FDI five years after implementing domestic reform or participating in an RTA, compared to the five years before it. The data also show that the investment creation effect of domestic reform is much stronger than that of RTA membership. More specifically, out of the 43 countries considered, 25 (58 percent) countries raised inward FDI stock more rapidly five years after the reform than five years before it. Furthermore, 37 (86 percent) countries attracted more FDI five years after the reform was implemented, and the inward FDI stock as a percentage of GDP increased by 15.6 percentage points from 15.6 percent to 31.1 percent on average. The average increase in the share is 7.5 percentage points before the reform and 8.1 percentage points after the reform, and the average gains are 0.6 percentage points.

The average effect of RTA membership on inward FDI is estimated to be 7.4 percentage points, which is much weaker than that of reform. However, the increase in inward FDI stock as a percentage of GDP is estimated to be higher, which is 4.3 percentage points, changing from gains of 1.6 percentage points five years before joining an RTA to gains of 5.9 percentage points after

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<sup>5</sup> See Gwartney and Lawson (2002). This reform dataset will be used for the gravity analysis in Section III.

<sup>6</sup> See <http://www.freetheworld.com>

<sup>7</sup> Appendix Table 1 indicates those countries tested for the impact of reform on FDI inflow and summarizes the relationship between domestic reform and inward FDI stock as a percentage of GDP five years before and after the reform. The year of reform is determined if the highest change in the reform index that is at least greater than 1 is found for the corresponding country. Similarly, Appendix Table 2 summarizes the relationship between RTA membership and inward FDI stock, considering seven major RTAs including the EC (European Communities), CER (Closer Economic Relations), MERCOSUR (Southern Common Market), CAN (Andean Community of Nations), AFTA (ASEAN Free Trade Area), NAFTA (North American Free Trade Agreement), and SAPTA (South Asian Preferential Trade Arrangement).

joining an RTA. Interestingly, the gains from RTA membership in attracting FDI are much stronger in the case of AFTA in East Asia, compared to the other RTAs. Overall, we conclude that reform is more important than RTA membership in attracting inward FDI.

### **III. Extended Gravity Equation: Model and Data**

#### **1. Bilateral Gravity Equation of FDI**

We quantitatively estimate the investment creation and diversion effects of RTAs based on a bilateral gravity equation of FDI. The gravity equation has been widely used for empirical analyses on both aggregate bilateral trade flows and bilateral FDI. Unlike gravity equations developed for bilateral trade flows,<sup>8</sup> however, the gravity analysis conducted for global capital flows has some weaknesses, caused by the lack of a theoretical foundation, even though empirically oriented gravity equations explain bilateral FDI patterns very well.<sup>9</sup>

The basic empirical specification applied to the gravity equation in this paper is an extended version of the knowledge-capital model in Carr, Markusen, and Maskus (2001)—the CMM model. The CMM model explains both horizontal (market size) and vertical (factor endowment) motives for foreign direct investment while considering investment and trade costs. The extended gravity equation in this paper specifies the market size by a sum of the GDPs of the source and host countries. For vertical FDI, we include the skill level of the host country instead of the skill differences between them.<sup>10</sup> The investment cost is proxied by a domestic reform index of the FDI host country. The trade costs are proxied by an openness index, which is a trade dependence ratio of the host country and by the distance between the two countries. By specifying trade dependence into the model, we may evaluate whether there exists a complementary or substitutable relation between trade and FDI. In addition to the typical CMM

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<sup>8</sup> For the theoretical foundations and econometric limitations of the gravity equation of trade, see Greenaway and Milner (2002), Anderson and van Wincoop (2003), and Baier and Bergstrand (2005).

<sup>9</sup> See Blonigen (2005) for a survey on this issue. Recently, the theoretical foundations of bilateral FDI in general equilibrium frameworks were deeply analyzed by Kleinert and Toubal (2005) and Bergstrand and Egger (2006).

<sup>10</sup> The validity of skill differences for dissimilarities in factor endowment between the host and source countries of FDI has been carefully tested and rejected by Bolonigen, Davies, and Head (2002).



model specification with the reform index, we extend the model by including RTA dummy variables such as RTA/Insiders and RTA/Outsiders to analyze the investment creation and diversion effect of RTA membership. The RTA/Insiders is a dummy variable to capture the relation between members of the same RTA and the RTA/Outsiders dummy captures the relation between members of an RTA as a host country of FDI and nonmembers of that RTA as a source country of the FDI. The extended gravity equation of FDI is as follows:

$$\begin{aligned} \ln FDI_{ijt} = & c + \beta_1 \ln GDP_{it} GDP_{jt} + \beta_2 Skill_{jt} + \beta_3 Reform_{jt} + \beta_4 Openness_{jt} + \beta_5 \ln Distance_{ij} \\ & + \gamma_1 RTA / Insiders_{ijt} + \gamma_2 RTA / Outsiders_{ijt} \\ & + \gamma_3 (RTA / Insiders_{ijt}) \cdot Reform_{jt} + \gamma_4 (RTA / Outsiders_{ijt}) \cdot Reform_{jt} \\ & + \alpha_1 Border_{ij} + \alpha_2 Language_{ij} + \alpha_3 ExCol_{ij} + \delta Year_t + \varepsilon_{ijt} \end{aligned}$$

where  $i$  and  $j$  denote countries,  $t$  denotes time,

- $FDI$  denotes the average value of the bilateral FDI stock,
- $GDP$  is real GDP,
- $Skill$  is skill level,
- $Reform$  is a domestic reform index,
- $Openness$  is trade dependence measured by the sum of exports and imports over GDP,
- $Distance$  is the distance between  $i$  and  $j$ ,
- $RTA/Insiders$  is a binary variable which is unity if  $i$  and  $j$  belong to the same RTA,
- $RTA/Outsiders$  is a binary variable which is unity if  $i$  belongs to an RTA and  $j$  does not belong to the RTA,
- $(RTA/Insiders) \cdot Reform$  is an interaction term between an intra-bloc RTA dummy and a reform index,
- $(RTA/Outsiders) \cdot Reform$  is an interaction term between an extra-bloc RTA dummy and a reform index,
- $Border$  is a binary variable which is unity if  $i$  and  $j$  share a common land border,
- $Language$  is a binary variable which is unity if  $i$  and  $j$  use a common language,
- $ExCol$  is a binary variable which is unity if  $i$  and  $j$  were ever colonies after 1945 under the same colonizer, and
- $Year$  denotes a set of binary variables which are unity in the specific year  $t$ .

As we mentioned earlier, the coefficients  $\beta_1$ – $\beta_4$  and  $\alpha_1$ – $\alpha_3$  are expected to have a positive value, while the coefficient  $\beta_5$  tends to have a negative value. The investment creation and diversion effects of RTAs will be indicated by the signs of  $\gamma_1$  and  $\gamma_2$  respectively. The reformatory effects of intra-bloc and extra-bloc RTA membership will be estimated by the coefficients  $\gamma_3$  and  $\gamma_4$ .

## 2. Data

The data come from various sources. Foreign direct investment, FDI, is bilateral FDI stock data from the OECD's *International Direct Investment Statistics*. The data cover FDI from 24 OECD countries to 50 host countries for the period of 1982–1999 (see Appendix Table 3). The GDP is real GDP in constant US dollars from Rose (2004). The skill level is measured by the secondary school enrollment ratio from Barro and Lee (2000).

The domestic reform index representing an investment environment is a composite score of the Economic Freedom Rating compiled by the Fraser Institute as we mentioned earlier. For the LDC (less developed country as host) dummy, we select Australia, Canada, Hong Kong, Iceland, Japan, New Zealand, Norway, Switzerland, the United States, and the European Union as developed countries, and all other host countries are classified as LDCs (see Appendix Table 3). Openness is measured by trade dependence as the sum of exports and imports over GDP from the IMF's *Direction of Trade Statistics*. We include the following 13 RTAs: the EU, EFTA, NAFTA, CER, Canada-Chile, Czech Republic-Turkey, CEFTA, EFTA-Turkey, EC-Turkey, EC-Romania, EFTA-Romania, EC-Bulgaria, and EFTA-Bulgaria. The data for specific country pairs such as distance, a border dummy, a language dummy, and an ex-colony dummy come from Rose (2004).

The dataset has a feature of panel structure consisting of 1,619 annual observations for 1982, 1985, 1990, 1995, and 1999.<sup>11</sup> The number of observations varies per year. Summary statistics for all the data used in the estimation are presented in column 1 in Table 2. Out of all observations, 347 country-pairs (21.4 percent) belong to RTA/Insiders and 613 country pairs (37.9 percent) belong to RTA/Outsiders. The summary statistics for each case are reported in columns 2 and 3, respectively. The summary statistics for FDI-related data from members to nonmembers and between nonmembers are not reported.

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<sup>11</sup> Data on skill level and reform index is not available for 1982 and 1999. Therefore, we instead use the data for 1980 and 2000, respectively.

In Table 2, we observe some notable findings. First, there is more FDI flow into a host country from its RTA members and less from nonmembers of its RTA. The logarithmic mean of FDI in column 2 is much higher than that in column 1, indicating that the bilateral FDI between RTA members is much bigger than the average bilateral FDI of the whole sample. On the other hand, the logarithmic mean of FDI in column 3 is smaller than the average volume of bilateral FDI in the whole sample. Second, RTAs have been formed among relatively smaller and more opened economies. The logarithmic mean of GDP in pairs in column 2 is slightly smaller than that of column 1. This is also confirmed by the fact that the logarithmic mean of GDP in pairs in column 3 is higher. At the same time, the mean of openness in column 2 is higher than the average in column 1, but that of nonmembers in column 3 is smaller than the average. Third, reform is a strong commitment made between members of RTAs. The mean of the reform index in column 2 is much higher than the average in column 1. This is also confirmed by the slightly higher mean of the members' reform index in column 3 as they interact with nonmembers. Fourth, RTA membership seems to have been chosen after taking account of specific, possibly exogenous, country characteristics. Aside from economic size and degree of openness noted before, the mean of the skill level of RTA members is higher than the average, as indicated in columns 2 and 3. The logarithmic mean of distance is shorter for column 2 than that of column 1. Further, RTA member countries in column 2 are more likely to share a common land border but not a common historical background like a common colonizer.

From these findings, the proliferation of RTAs can be explained by the active participation of small and open economies in which the countries share borders. In addition, most of members of RTAs have a better investment environment through the implementation of domestic reforms and by having more skilled laborers. While the above data are suggestive, they are subject to serious limitations in that when each variable is discussed, the other variables are not appropriately controlled. A more systematic econometric approach follows in the next section.

#### **IV. Empirical Estimation of the Extended Gravity Model of FDI**

We apply two different estimation techniques: random-effects and fixed-effects estimation. The random-effects estimation assumes that individual country-pair effects are a random variable. In contrast, the fixed-effects estimation assumes that unobserved country-specific factors are present. Here we mainly analyze the fixed-effects estimation, and the random-effects estimation is

reported as a reference if necessary.<sup>12</sup> The possible endogeneity problem can be avoided by adopting the country-pair fixed effects estimation, which can alleviate potential specification errors from omitted important variables.

## **1. FDI, RTAs, and Reform: Investment Creation and Diversion**

Table 3 presents the results from both the fixed-effects and random-effects estimations to analyze the relation between FDI, RTA membership, and commitment to reform. The gravity model fits the data well, explaining a major part of the variations in bilateral FDI stock. The conventional variables behave very much as the model predicts, and most of the estimated coefficients are statistically significant. To summarize briefly based on the fixed-effects estimation in column 4 of Table 3, the estimated coefficient on the log of GDP in pairs is significantly positive, indicating that market size matters in attracting more horizontal FDI. The estimated coefficient for the log of GDP in pairs implies that an expansion of the market size by 10 percent leads to 3.5 percent more bilateral FDI. The estimated coefficient for the skill level of the host country is significantly positive, indicating that better skilled labor in the host country attracts more vertical FDI. The estimated coefficient of the openness variable is also significantly positive. This means that reduced trade costs attract more investment and that there is a complementary relation between trade and foreign direct investment. Domestic reform is another important factor in raising inward FDI.

In column 4 of Table 3, the impact of RTAs on intra-bloc and extra-bloc investments is reported. The estimated coefficients for the RTA membership dummy variables are positive and statistically significant. The estimate for intra-bloc membership implies that a pair of countries that joins an RTA experiences an increase in FDI of 86.1 percent, with other variables being constant.<sup>13</sup> The estimate of the extra-bloc dummy variable is also positive and statistically significant. Hence, RTAs do not divert investment with other countries that do not belong to the bloc. The tariff factory argument may apply to this finding. The estimate implies that inward FDI for RTA members coming from non-members is estimated to rise by 86.8 percent on average, which is almost equivalent to that of RTA members. These findings are confirmed by column 5,

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<sup>12</sup> From the Hausman (1978) specification test we conducted, the null hypothesis of uncorrelated individual effects with other regressors in the model has been rejected.

<sup>13</sup> Since  $e^{0.621}=1.861$ , participation in RTA membership (RTA/Insiders dummy) from 0 to 1 raises inward FDI stock coming from members by 86.1 percent.

in which we do not distinguish between the sources of FDI between members and nonmembers. The RTA dummy is a binary variable which is unity if the host country  $j$  belongs to an RTA.

In the estimates in column 1 by random-effects estimation, the log of distance is a barrier for international capital flows but not statistically significant.<sup>14</sup> However, the existence of a common land border and ex-colony-colonizer increases the volume of bilateral FDI. A common language is not a statistically significant factor in determining bilateral FDI.

Columns 3 and 6 of Table 3 estimate the effects of reform as a commitment device for RTA membership by introducing two interaction terms—*RTA/Insiders·Reform* and *RTA/Outsiders·Reform*. The coefficient for *RTA/Insiders·Reform* (*RTA/Outsiders·Reform*) estimates that the stock of inward FDI comes from other RTA members (nonmembers, respectively) to reform-implementing RTA members. Those coefficients are statistically significant and positive, indicating that a reformatory RTA membership can attract more FDI from both members (20.2 percent) and nonmembers (17.7 percent) of the RTA and that participation in an RTA alone cannot raise FDI, as shown by the statistically insignificant and negative estimates of *RTA/Insiders* and *RTA/Outsiders* in columns 3 and 6.

## 2. FDI, RTAs, and Reform: Less Developed Countries (LDCs)

The proliferation of RTAs between LDCs has been an observable phenomenon since the late 1980s.<sup>15</sup> Why do LDCs actively participate in RTA negotiations? One of the most reasonable answers is that they seek FDI. To attract more FDI, LDCs actively participate in RTAs and aggressively implement domestic reform measures for a better investment environment. This may trigger the domino effect of new regionalism as Ethier (1998) emphasizes. In this section, we empirically test this hypothesis by introducing the following interaction terms for LDCs: *LDC dummy·Reform*, *LDC dummy·RTA*, and *LDC dummy·RTA·Reform* to capture the investment creation effects caused by reformatory LDCs, LDCs' participation in RTAs, and reformatory LDCs' participation in RTAs, respectively.

Table 4 reports the fixed-effects estimations. The traditional CMM variables for the determinants of FDI fit the model very well. In addition, the newly added dummy variables are

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<sup>14</sup> It is statistically significant and negative when we do not distinguish between FDI from members and nonmembers in column 2.

<sup>15</sup> According to Table 1 and Chart 6 in Crawford and Fiorentino (2005), 87 percent (123 RTAs) of all the RTAs notified (141 RTAs from 1958 to February 2005) to the WTO include either developing countries or transitional economies.

statistically significant and positive. As in column 1, the reformatory LDCs attract more FDI by 36.7 percent in addition to the investment creation effect of 87.6 percent by their RTA membership. An LDC's RTA membership also attracts more FDI by 82.8 percent, in addition to the 54.2 percent in FDI gains coming from implemented reforms in column 2. And reformatory LDCs' participation in RTAs raises FDI by 10.3 percent, together with an investment creation effect of 56.0 percent caused by its RTA membership. Columns 4 and 5 present the combined effects of RTA membership and reform on LDCs. From those combined effects, we find that reform is more important than RTA membership. This strongly supports the new regionalism argument in Ethier (1998).<sup>16</sup>

### **3. FDI, RTAs, and Reform: Proposed East Asian RTAs**

RTAs now proliferate through East Asia, which had been characterized by a dearth of RTAs until the late 1990s.<sup>17</sup> By the end of 2005, East Asia had implemented 14 RTAs (4 in 2005), had signed 10 RTAs (9 in 2005), with about 30 RTAs under negotiation. As we learned from the new bilateral partnership agreement that Singapore and Japan signed in 2002, as well as from studies done on a proposed China-Japan-Korea Free Trade Area (FTA) or a Korea-Japan FTA, proposed East Asian RTAs have been motivated by the desire to better facilitate international capital flows, rather than to boost intra-bloc trade volume. For this purpose, most East Asian LDCs are competing with each other to provide a better investment environment, mainly through the implementation of domestic reform measures. However, there is no clear answer to support a direct linkage between domestic reform induced by an RTA membership and growing FDI in the East Asian region, even though the East Asian share of the world FDI flows is continuously increasing with the exception of the late 1990s during the financial crisis (see Table 1).

#### ***A. Investment-creating East Asian RTAs***

Will the RTAs currently in force or under consideration in East Asia be beneficial for the participating countries in comparison to other existing RTAs? One question is whether there have already been any tendencies to promote an RTA among the East Asian economies, including China, Japan, Korea, and ASEAN. If the East Asian economies already behave as if they belong

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<sup>16</sup> We conducted the same experiment using small countries and got similar results.

<sup>17</sup> For East Asian RTAs, see Kawai (2004) and Lee and Park (2005).

to an implicit regional bloc, we may not expect significant additional effects from a formal RTA.

In order to investigate this issue, we add new RTA dummy variables for the country-pairs belonging to the hypothesized East Asian regional blocs to the gravity regressions shown in Table 3. Hence, the dummy variable for the members of an East Asian trade bloc shows the extent to which the group of countries belonging to the hypothesized trade bloc has increased intra-bloc FDI. We also add an interaction term for the interaction between country-pairs of proposed East Asian trade bloc members and reform. This interaction term explains whether a group of countries belonging to an East Asian trade bloc will have increased FDI when the RTA members improve their investment environment through regulatory reform. In addition, China and ASEAN dummy variables are added for those country-pairs belonging to RTAs that include China and ASEAN in order to control for the currently effective AFTA and dramatic FDI inflow into China for the period of 1999. Robust standard errors are in parentheses.

The estimation results are presented in Table 5. We include various pairings—ASEAN+3 (China, Japan, Korea), three ASEAN+1 arrangements (ASEAN-China, ASEAN-Japan, ASEAN-Korea), a China-Japan-Korea RTA, and a Japan-Korea RTA. We find that all the estimated coefficients for intra-bloc membership and the interaction terms between intra-bloc membership and reform in the proposed East Asian RTAs are statistically insignificant. The estimates are large in magnitude but insignificantly different from zero. That is, intra-regional FDI in an East Asian RTA would not be significantly different from the standard outcome that one would predict from the gravity estimation we conducted. In other words, there is no announcement effect expected in advance. Therefore, we conclude that the formation of East Asian RTAs would promote significant additional intra-bloc FDI based on our findings, given in Tables 3 and 5.

### ***B. Searching for the Most Favorable Partners for Investment Creation***

From the findings given in the earlier section, the proposed East Asian RTAs are expected to be beneficial to members by promoting more FDI. What then would be the most preferable RTA or RTAs among all the possible RTA combinations in East Asia? More specifically, who will be the most favorable partners for maximizing the investment creation effect of East Asian RTAs? With the assumption that the proposed East Asian RTAs will work like existing RTAs, we attempt to estimate their effects based on the effects of these existing RTAs. From the fixed-effects estimates of the gravity equation in column 4 of Table 3, East Asian RTAs are expected to increase both intra-bloc and extra-bloc FDI by 86 percent and 87 percent,

respectively. In addition to the effects of RTA membership on inward FDI, there are four other investment creation effects. The estimated coefficients of GDP in pairs between members, the skill level, the degree of openness, and the reform index in Table 3, together with average values of the determinants in Table 6, can be used to calculate the magnitude of market expansion, factor endowment, trade costs, and investment cost effects on FDI, respectively.

Columns 1, 2, 3, and 4 in Table 6 summarize the four characteristics of member countries for possible East Asian RTAs. As figured in Table 6, the average market size (measured by the log of GDP in pairs) in most East Asian RTAs except AFTA are bigger than that (52.764) of existing RTAs. This indicates that there is the high possibility of creating more intra-bloc horizontal FDI in East Asia, compared to that of existing RTAs. The average skill level in most East Asian RTAs except a China-Japan-Korea and a Japan-Korea RTA are lower than other RTA members, which provide relatively unfavorable conditions for creating vertical FDI compared to existing RTAs. For the possibility of creating the investment effect of reduced trade cost represented by openness, any member pairs, including ASEAN countries in East Asia, will induce a stronger effect than that of existing RTAs because of the higher trade dependence of the ASEAN countries. On the other hand, the average quality of East Asian countries in terms of the reform index is lower than that of existing RTAs as figured in column 4. That is, the investment environment in East Asia is still worse than those of already established trade blocs, and the resulting investment creation effect of reform is expected to be weaker than that of existing RTAs. This fact, however, also supports the idea that there may be a higher possibility for East Asian countries to create more FDI by improving the investment environment after forming RTAs and committing reforms.

The columns from 5 to 9 in Table 6 present the estimates of the additional investment creation effects of East Asian RTAs, which are constructed by the product of the average values of all member pairs in the first four columns and the estimated coefficients on the gravity equation in column 4 of Table 3, excluding the coefficients for RTA/Insiders and RTA/Outsiders. We exclude the investment creation effect of RTA membership because all the proposed RTAs will create the same investment effect. We calculate the investment creation effect by assuming that there will be no structural changes in member countries, even after joining an RTA. This may underestimate the investment creation effect because it could be expected that skill levels will be improved by technology transfer, that trade dependence may increase by the positive trade creation effect of an RTA, and that domestic reform measures will be more actively taken after the formation of an RTA.



The following notable facts are observed from forecasting the average value of the member characteristics of the four determinants of inward FDI. First, all the proposed East Asian RTAs create more horizontal FDI than existing RTAs, estimated in column 5 in Table 6. Among the RTAs tested for the market size effect, two Northeast Asian RTAs, such as a China-Japan-Korea and a Japan-Korea RTA, would be best, as illustrated in Figure 1. Second, most of the proposed East Asian RTAs create less vertical FDI than existing RTAs, but a China-Japan-Korea and a Japan-Korea RTA are expected to create more vertical FDI, as figured in column 6. Similar to the market size effect, two Northeast Asian RTAs attract more vertical FDI, as illustrated in Figure 1. Third, the investment creation effect of a reduced trade cost, including ASEAN countries as a member of an RTA will be much stronger than that of any pair of membership, including the Northeast Asian countries exclusively and existing RTAs. Fourth, to induce the investment creation effect of RTAs with respect to the reform index, any pair of membership that includes China will have the least investment creation effect (see Figure 1). Moreover, column 8 shows that AFTA attracts relatively more FDI through reform than most of the proposed East Asian RTAs. This supports our earlier argument: “the implementation of RTAs makes members take reform measures more actively.”

Overall, as figured in column 9 of Table 6, an ASEAN-Japan and a Japan-Korea RTA would be the two most favorable RTA membership combinations, and would overwhelm the positive investment creation effects of AFTA and existing RTAs. This means that RTAs between less developed countries and developed countries would be better for attracting more FDI. On the other hand, RTAs between LDCs such as an ASEAN-China RTA is not recommended. The reason for the lower investment creation effect of a China-Japan-Korea RTA is because of the relatively lower openness of China and Japan and the lower reform index of China. This is because we assume that there will be no structural changes in member countries, even after the formation of an RTA.

## **V. Concluding Remarks**

We quantitatively estimated the investment creation and diversion effects of RTAs by using an extended gravity equation while focusing on domestic reform as a commitment device for RTA membership. As a case study, we investigated whether reform-minded LDCs can trigger the domino effect of new regionalism by actively participating in RTAs. Searching for the most

preferable member pair among the proposed East Asian RTAs, we applied our findings to proposed East Asian RTAs such as an ASEAN+3, a China-Japan-Korea, three ASEAN+1, and a Japan-Korea RTA, and estimated the likely impact of the RTAs on inward FDI stock.

From the general case, we found that (i) larger market size, better skilled labor, lower trade costs, higher trade dependence, more efficient reform efforts, and membership of RTAs attract more FDI without causing an investment diversion effect; (ii) there exists a complementary relation between trade and FDI; and (iii) the reform-committed participation in RTAs is a key factor in determining the positive increase in FDI compared to RTA membership alone. These findings explain why RTAs are currently proliferating around the world by emphasizing the strong investment creation effect of RTA membership.

From the case study on LDCs, we found that reformatory LDCs attract more FDI in addition to the investment creation effect of their RTA membership. Therefore, the reformatory LDCs' participation in RTAs can explain why the RTAs that are currently proliferating have been mainly initiated by LDCs.

For proposed East Asian RTAs, it is most likely that the formation of an RTA will raise intra-bloc FDI in this region. We also found that RTA membership would improve the regional investment environment by pushing members to take domestic reform measures. More specifically, both South-North and North-North RTAs, such as an ASEAN-Japan and a Japan-Korea RTA, are proven to be preferable membership combinations in terms of creating FDI, but South-South RTAs like an ASEAN-China RTA are not recommended, as we put more weight on domestic reform as a determinant of FDI.

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Fraser Institute, *Economic Freedom Rating*

IMF, *Direction of Trade Statistics*

OECD, *International Direct Investment Statistics*

UNCTAD, *World Investment Report*

**Table 1. Trends of Trade, FDI, and RTAs in the World and East Asia**

	1971–80	1981–90	1991–95	1996–00	2001–04	2001	2002	2003	2004
Growth Rates (%)									
Trade Flows	20.9	5.7	8.6	4.9	9.7	-3.9	4.4	16.7	21.4
FDI Flows	16.2	17.6	10.9	31.4	-12.9	-40.5	-12.8	-8.7	10.3
New RTAs (numbers)	11	10	33	42	76	15	16	16	29
Share (%)									
Trade/GDP	31.1	33.6	32.6	38.3	42.5	40.6	40.8	42.6	45.8
FDI/GDP	1.0	1.4	1.9	5.2	4.0	5.0	4.2	3.5	3.4
East Asian Share (%)									
GDP	14.1	17.6	22.6	21.2	19.6	20.4	19.7	19.3	19.2
FDI Total	6.1	11.5	15.0	9.5	9.7	9.3	9.0	9.5	11.1
FDI Inflow	6.2	7.2	17.9	12.3	12.2	9.1	11.1	12.8	15.7
FDI Outflow	5.9	16.1	12.3	6.6	7.4	9.5	6.7	6.1	7.0

Note: East Asia includes ASEAN, China, Japan, and Korea.

Sources: UNCTAD and WTO.

**Table 2. Summary Statistics**

	(1) All (N = 1,619)		(2) RTA/Insiders (N = 347)		(3) RTA/Outsiders (N = 613)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Log of FDI	6.135	2.726	6.829	2.681	5.975	2.868
Log of GDP in pairs	53.157	1.847	52.764	1.936	53.169	1.852
Skill	35.766	14.828	40.752	12.528	41.256	12.407
Openness	64.874	52.902	69.891	32.196	62.286	29.073
Reform	6.534	1.316	7.096	0.843	6.880	1.163
Log of Distance	8.763	1.064	6.630	0.606	7.880	1.055
Common Land Border	0.074	0.262	0.193	0.395	0.069	0.253
Common Language	0.169	0.375	0.075	0.264	0.204	0.403
Ex-Colony-Colonizer	0.041	0.199	0.037	0.190	0.049	0.216



**Table 3. Gravity Estimations of Inward FDI Stock**

Dependent Variable: Log of FDI	Random Effects			Fixed Effects		
	(1)	(2)	(3)	(4)	(5)	(6)
Log of GDP in pairs	0.740 (0.040)***	0.704 (0.035)***	0.843 (0.038)***	0.348 (0.064)***	0.348 (0.063)***	0.548 (0.062)***
Skill	-0.002 (0.005)	-0.000 (0.004)	0.004 (0.005)	0.017 (0.006)***	0.017 (0.006)***	0.025 (0.007)***
Openness	0.006 (0.001)***	0.007 (0.001)***	0.009 (0.001)***	0.009 (0.002)***	0.009 (0.002)***	0.010 (0.003)***
Reform	0.220 (0.036)***	1.312 (0.090)***		1.419 (0.163)***	1.418 (0.162)***	
RTA/Insiders	0.461 (0.162)***		0.252 (0.610)	0.621 (0.176)***		-0.351 (0.625)
RTA/Outsiders	0.225 (0.119)*		0.048 (0.350)	0.625 (0.129)***		-0.306 (0.368)
RTA		0.316 (0.110)***			0.625 (0.128)***	
(RTA/Insiders)-Reform			0.064 (0.084)			0.184 (0.086)**
(RTA/Outsiders)-Reform			0.051 (0.049)			0.163 (0.053)***
Log of Distance	-0.138 (0.107)	-0.376 (0.093)***	-0.138 (0.106)			
Common Land Border	1.307 (0.421)***	1.240 (0.372)***	1.184 (0.413)***			
Common Language	0.224 (0.279)	-0.223 (0.372)	0.247 (0.274)			
Ex-Colony-Colonizer	1.415 (0.516)***	1.074 (0.456)**	1.373 (0.506)***			
R-squared	0.43	0.53	0.44	0.37	0.37	0.30

Notes: Robust standard errors are in parentheses. Intercept and year dummy variables are included but not reported. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at 10 percent, 5 percent, and 1 percent, respectively.

**Table 4. Fixed-Effects Estimation on FDI Flows to LDCs**

Dependent Variable: Log of FDI	(1)	(2)	(3)	(4)	(5)
Log of GDP in pairs	0.553 (0.056)***	0.250 (0.067)***	0.666 (0.056)***	0.564 (0.058)***	0.564 (0.058)***
Skill	0.011 (0.007)*	0.008 (0.006)	0.019 (0.007)***	0.011 (0.007)	0.011 (0.007)
Openness	0.011 (0.002)***	0.006 (0.002)***	0.011 (0.002)***	0.011 (0.002)***	0.011 (0.002)***
Reform		0.433 (0.042)***			
RTA	0.629 (0.130)***	0.127 (0.181)	0.445 (0.183)**	0.523 (0.184)***	0.524 (0.184)***
LDC dummy·Reform	0.312 (0.047)***			0.303 (0.049)***	0.304 (0.050)***
LDC dummy·RTA		0.603 (0.251)**		0.216 (0.267)	0.327 (0.876)
LDC dummy·RTA·Reform			0.098 (0.040)**		-0.018 (0.133)
R-squared	0.17	0.18	0.33	0.17	0.17

Notes: Robust standard errors are in parentheses. Intercept and year dummy variables are included but not reported. \*, \*\*, and \*\*\* indicate that the estimated coefficients are statistically significant at 10 percent, 5 percent, and 1 percent, respectively.

**Table 5. Effects of East Asian RTAs on FDI Flows**

East Asian RTAs	Fixed Effects
ASEAN+3 RTA (ASEAN+3)·Reform	1.624 (1.108) -0.157 (0.156)
ASEAN-China RTA (ASEAN-China)·Reform	1.717 (1.107) -0.137 (0.155)
ASEAN-Japan RTA (ASEAN-Japan)·Reform	1.226 (1.129) -0.102 (0.158)
ASEAN-Korea RTA (ASEAN-Korea)·Reform	1.161 (1.119) -0.077 (0.157)
China-Japan-Korea RTA (China-Japan-Korea)·Reform	11.087 (9.884) -1.542 (1.379)
Japan-Korea RTA (Japan-Korea)·Reform	9.171 (10.034) -1.272 (1.399)

Notes: The new RTA dummy variables for the country-pairs belonging to the proposed East Asian RTAs are added. In addition, the China and ASEAN dummy variables are added for the country-pairs belonging to the RTAs including China and ASEAN in order to control the currently effective AFTA and dramatic FDI inflow into China for the period of 1999. Robust standard errors are in parentheses.

**Table 6. Additional Investment Creation Effects of East Asian RTAs**

Proposed RTAs in East Asia	Average Value of all member pairs				Log of Inward FDI Stock created				
	GDP in pairs (log) (1)	Skill Level (%) (2)	Openness (%) (3)	Reform Index (4)	GDP in pairs (5)	Skill Level (6)	Openness (7)	Reform Index (8)	Total (9)
ASAEN+3	53.34	32.50	97.30	6.53	18.56	0.55	0.88	9.27	29.26
ASEAN-China	52.90	27.55	119.34	6.47	18.41	0.47	1.07	9.18	29.13
ASEAN-Japan	53.07	30.23	111.42	6.79	18.47	0.51	1.00	9.64	29.62
ASEAN-Korea	52.71	29.49	124.39	6.66	18.34	0.50	1.12	9.45	29.41
China-Japan-Korea	54.68	42.72	34.39	6.17	19.03	0.73	0.31	8.76	28.82
Japan-Korea	54.63	46.99	32.78	6.68	19.01	0.80	0.30	9.48	29.58
Currently Effective RTAs as a Reference									
AFTA	52.54	26.39	134.92	6.74	18.28	0.45	1.21	9.56	29.51
All existing RTAs	52.76	40.75	69.89	7.10	18.36	0.69	0.63	10.07	29.75

**Figure 1. Four Investment Creation Effects of East Asian RTAs**

