

Regional integration and foreign direct investment in developing countries*

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The potential for regional trade agreements to foster growth and reduce poverty is increasingly discussed, but the empirical literature has hitherto offered little guidance on how this might be done, i.e. on whether and why some regions are more successful in attracting foreign direct investment than others. This study introduces a new approach that quantifies the level of trade and investment provisions in regional trade agreements and assesses their impact. It estimates a model for the real stock of United Kingdom and United States foreign direct investment in developing countries during the period 1980-2000. It finds that membership of a regional grouping as such is not significantly related to inward foreign direct investment. However, a country that is a member of a regional trade agreement with a sufficient level of trade and investment provisions is in a better position to attract more inward foreign direct investment. Furthermore, countries that have larger economies or are geographically closer to larger countries within the regional grouping can expect a larger increase in foreign direct investment as a result of joining a regional trade agreement than those of countries that have smaller economies or are located on the periphery.

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1. Introduction

The purpose of this article is to contribute to our understanding of the relationship between regional integration (RI) and foreign direct investment (FDI)¹ in developing countries. There is increasing research on the effects of RI, and its effect on FDI forms an integral part of that discussion (e.g. Mirza, 2002 for Asian countries; Nina and Andersen, 2004 for Bolivia). However, there is little in the literature that suggests whether and why certain regions perform better in attracting FDI than others. This is the focus of this article.

A theoretical and empirical literature on the relationship between RI and FDI has emerged in recent years, coinciding with strong growth in both the number of regional trade agreements (RTAs) notified to the World Trade Organization (WTO) and the value of FDI in developing countries. There appears to be a consensus in the literature that RI leads to further (extra-regional and, to some extent, intra-regional) FDI. One of the factors often cited is the increase in the “market size” that follows RI.

There is an emerging literature on the effects of specific trade provisions in RTAs (e.g. Estevadeordal and Robertson, 2002 on tariffs; Estevadeordal and Suominen, 2003 on rules of origin). However, on the whole, the empirical literature seems to offer little guidance on whether *different* RTAs (as opposed to RTAs *per se*) have different effects on attracting FDI and, if so, why some regional groupings are more successful. It, therefore, has little to say on whether trade negotiators can develop an RTA designed to have the best possible outcome for attracting FDI.

¹ “FDI” in this article refers to inward FDI, unless it is United Kingdom FDI or United States FDI, in which case, it refers to outward FDI.

Empirical studies on RI and FDI can be divided into the following categories:

- studies that describe the investment-related provisions included in a growing number of RTAs, with a prediction on how these might affect FDI (e.g. UNCTAD, 1996; te Velde and Fahnbulleh, 2003); and
- studies that base their findings on econometric models explaining FDI, in which one of the explanatory variables is a “black box” 0/1 dummy or binary variable describing whether or not a country is a member of a regional grouping (e.g. Levy *et al.*, 2002).

This article aims to bring these two approaches together by moving beyond describing RTAs as a “black box”, and to identify the effects of specific investment-related provisions in RTAs on FDI. This will be done by estimating a model of the real stock of United Kingdom and United States FDI in developing countries over the period 1980-2001. The use of United Kingdom and United States FDI data ensures that the coverage of developing countries can be larger than that contained in the OECD FDI database, which is often used for such analyses. Moreover, the two countries are amongst the key investors. An innovative feature of the analysis is the use of a variable that measures the scope of investment and trade provisions in RTAs in addition to standard explanatory variables.

The structure of this article is as follows. Section two reviews the theory on the relationship between RI and FDI, concentrating on regional trade and investment rules. Section three discusses econometric studies and argues that most of them offer little guidance for trade negotiators on whether different types of RTAs have different effects on FDI. This is because they use a simple 0/1 dummy variable to describe regional groupings and, therefore, measure RTAs as a black box that either exists or does not. In section four, we attempt to step inside the black box of RTAs and measure trade and investment provisions in RTAs. Sections five and six present our model and discuss methodology and econometric results on the effects

of RI on FDI; the focus is on trade and investment provisions in RTAs and on differences in the effects on FDI amongst members of a regional grouping. Section seven concludes.

2. RI and FDI: the theory

There are various provisions through which an RTA can influence FDI. They can be categorized into investment rules, trade rules and other initiatives (e.g. Blomström and Kokko, 1997; Dunning, 1997a).

Regional investment rules and FDI

Investment rules govern cross-border investment in a regional grouping and usually consist of rules on the treatment and protection of FDI contributing to a favourable investment climate. Investment rules exist in a number of RTAs,² although they are not as common as trade rules, particularly amongst the poorer developing countries. Some RTAs include investment rules as voluntary principles (e.g. Asia-Pacific Economic Cooperation), while others include rules with effective dispute settlement procedures. In some RTAs, the provisions apply only to regional investors, while in others they also apply to extra-regional investors. Several studies discuss investment provisions in RTAs (scope, standard of treatment, performance requirement, expropriation, dispute settlement mechanisms) and their expected effects on the volume of FDI (e.g. Page, 2000; UNCTAD, 1996, 2003).

There is a heated discussion on how investment rules (bilateral, regional and multilateral) affect investment decisions. Surveys of investors usually show that investors require a predictable investment climate (European Commission, 2000). The predictability of the investment climate may be enhanced when domestic policies are enshrined or locked into regional treaties. Much will also depend on the existing treatment. If the

² Investment rules also appear in bilateral trade arrangements (e.g. Singapore-Japan), which are included here as RTAs if they are notified to the WTO, but more often they appear in bilateral investment treaties.

existing treatment of investors is already adequate, new (regional) rules may add little to creating a better investment climate other than offering a little more long-run security. There seems to be no empirical studies that address the effects of individual investment provisions on FDI.

Regional trade rules and FDI

The elimination of intra-regional tariffs will, in general, affect the level of sales by foreign affiliates, but its extent will depend on the importance of transport costs and plant-level and firm-level costs in setting up foreign affiliates (Markusen and Venables, 1997; Brainard, 1997; Carr *et al.*, 2001). Hence, the type and motive of investment play an important role in determining how FDI is affected by RTAs (Barrell and te Velde, 2002). We, therefore, distinguish between intra-regional and extra-regional FDI and between horizontal (market-seeking: affiliates selling similar products) and vertical (efficiency and natural resource seeking: affiliates exploiting efficiencies or control over inputs) FDI.

RTAs can decrease horizontal (tariff-jumping) intra-regional FDI because it may become cheaper to serve other economies in the region through trade rather than establishing an affiliate with production facilities and thus incurring plant-level costs. However, on the other hand, the removal of intra-regional tariffs may encourage vertically-motivated intra-regional FDI, because lower trade costs will reduce the costs of establishing international production networks across member countries of an RTA. Transnational corporations (TNCs) may therefore establish efficiency-seeking affiliates in different countries within the regional grouping that can process imports for re-export.

Extra-regional FDI (the focus of the empirical part of this article) can also be affected by RTAs in different ways. First, as tariffs amongst parties to the RTA are removed, it may become profitable for an extra-regional TNC to serve an effectively larger market (horizontal market-seeking FDI) from one or more

locations in the region (export platforms). If individual countries of a regional grouping are previously served by trade, this may then raise inward FDI for establishing export platforms or beachhead locations (Ethier, 1998). However, if the member countries of a regional grouping are already served through sales of foreign affiliates, consolidation of those affiliates may take place, with ambiguous or negative effects for the volume of extra-regional FDI in each country. This may also concentrate FDI inflows to the most cost-efficient location (usually nearest to the largest market), possibly at the expense of FDI to other members in the same regional grouping.

The effects of an RTA on extra-regional vertical (or efficiency-seeking) FDI are likely to be small, though it may lower costs and raise efficiency in the vertically motivated affiliates when it uses inputs from more than one country in the region.

In addition to the removal of internal trade barriers, rules of origin can also affect location decisions for FDI. The effects of rules of origin on investment can vary depending on the type of investment as well as the interaction with regional tariffs. Rules of origin would encourage the use of intra-regional inputs instead of extra-regional ones. The higher the most-favoured-nation (MFN) tariffs are, the greater the incentive to comply with the rules of origin becomes (Estevadeordal and Suominen, 2003).

Non-tariff barriers to trade, such as voluntary export restraints, can also affect investment. The threat of imposing European Union (EU) quotas and using anti-dumping measures against Japanese exports motivated Japanese TNCs to set up operations inside the EU. Ray Barrell and Nigel Pain (1999) found that, after controlling for relative labour costs and market size, Japanese investment flows to European Community countries over the period 1980-1991 were significantly influenced by anti-dumping measures taken by the Community.

Hence, there are various effects of an RTA on inward FDI. However, in the context of developing-country regions, where most inward FDI is extra-regional, even though South Africa is

an important investor in the Southern African Development Community (SADC), the market size argument would be the most important and, other factors being equal, an RTA would raise inward FDI. It must be noted, however, that the strength of this argument depends on the difference between tariffs applied regionally and tariffs applied to non-members on an MFN basis.

Other regional initiatives and FDI

There are various other channels through which RTAs can affect FDI. Many provisions are region specific and cannot be easily categorized. For example, some regional groupings, including the Andean Community (ANDEAN), the Association of Southeast Asian Nations (ASEAN) and the Mercado Común del Sur (MERCOSUR), have cooperation schemes that aim at establishing regional enterprises by promoting joint ventures. ASEAN seems to be one of the most advanced in this area. The ASEAN Industrial Cooperation Scheme promotes joint manufacturing industrial activities between ASEAN-based companies. More than 100 projects have been selected for special tax and tariff incentives. The ASEAN Secretariat has also begun various activities in the area of investment facilitation, by providing information through portals, databases, publications and statistics. Thus, a regional grouping can do much more to promote investment than simply setting trade and investment rules. They can put in place the regional infrastructures (legal, institutional etc.) to deal with investment issues at the regional level.

Some argue that the effects of RTAs on FDI are not so much about trade and investment rules, but about the increased predictability of the investment climate by “locking in” general reforms (regulation, competition policies, property rights, contract enforcement, guaranteed access to members’ markets, stable trade policies) in international treaties, thus making policy reversals less likely. In practice, this argument depends on how strong a regional grouping is *vis-à-vis* individual members.

Many argue that important effects of RTAs on FDI are dynamic, with competition creating a more efficient industry and growth, which, in turn, affect FDI. Peter Neary (2001) includes dynamic effects in a theoretical model of TNCs. First, there is the tariff-jumping motive as discussed above; FDI is more favoured over exporting if tariffs are higher and the fixed costs of a new plant are lower. Second, the export platform motive could affect FDI, as lower intra-regional tariffs would favour a single plant in the region. Finally, lower intra-regional tariffs would lead to increased competition from stronger domestic firms and hence lower FDI. On the other hand, a more efficient private sector can raise efficiency-seeking investment by firms that become efficient regional suppliers; this will raise strategic asset-seeking investment.

Magunus Blomström and Ari Kokko (1997) also argue that RI leads to efficiency gains and higher growth, and thus further FDI. FDI can actually be such a catalyst through spillovers through technology transfer and other linkages with local firms. There can thus be long-lasting effects on growth and productivity as opposed to a one-off effect based on a more efficient allocation of resources. Maurice Schiff and Yangling Wang (2003), for example, show that imports from NAFTA countries have raised productivity in Mexico (between 5.5-7.5%), while other imports had no effects.

Apart from trade and investment rules and regional institutions, regional groupings can also decide to harmonize fiscal and monetary policies. For instance, the Euro area (within the EU), the Western African Economic and Monetary Union (UEMOA) and four out of five Southern African Customs Union (SACU) members (within SADC) have common currencies. A common currency removes intra-regional exchange-rate variability and may reduce cross-border transaction costs.

Spatial distribution of FDI across the region

While RI can lead to more extra-regional investment for a region as a whole, this may not lead to more FDI in each individual member country. While certain peripheral countries

of the EU, such as the Republic of Ireland, have caught up in terms of productivity levels with other members of the EU, there has been a degree of divergence and agglomeration in developing regions such as the East African Community and the Central American Common Market, dating back to the 1950s and 1960s.

Agglomeration effects – due to a spatial clustering of economic activities – may accentuate an uneven spread of benefits amongst members (Venables, 1999). Agglomeration can occur within a country (e.g. cities) or across countries. Clusters of economic activities can lead to efficiency gains, because, for instance, providing specialized support services becomes feasible owing to economies of scale (Porter, 1998). If relocation effects occur within a region, this may lead to efficiency gains, which may reinforce further relocation effects. This would lead to further divergence or convergence, which could affect the distribution of gains from – and ultimately the motives for – RI processes. On the other hand, as argued in Wilfred Ethier (1998), smaller (and possibly poorer, though this is obviously not the case in regions such as ASEAN) countries may actually have incentives to join a regional grouping in order to attract investment away from other members, particularly extra-regional FDI. This may be the case when foreign investors set up beachhead locations in a small (or poor) country to serve the entire regional market. Hence, the spatial distribution of FDI is an empirical question and depends on factors such as the level of external MFN tariffs, the strictness of rules of origin, market size and agglomeration effects in individual member countries.

3. RI and FDI: econometric evidence

Empirical studies have begun to address the links between RTAs and FDI. Table 1 provides a review of studies. They tentatively find that RTAs in most cases boost extra-regional FDI and, in some cases, intra-regional FDI also. Y. E. Levy *et al.* (2002) address the issue of RI and FDI at a basic level, using dummies for regions, applying the analysis to the OECD database covering 60 countries (hence excluding many developing countries). The regressions control for a number of

factors and use a variable for market size. Other studies have examined individual regional groupings: Andreas Waldkirch (2003) and A. Monge-Naranjo (2002) for NAFTA, Daniel Chudnovsky and Andreas Lopez (2001) for MERCOSUR, and UNCTAD (2003).

John H. Dunning (1997b) analyses empirical findings regarding the effects of the formation of the Internal Market Programme (IMP) in Europe largely on the basis of econometric studies. He finds that the main dynamic impact of FDI is through effects on other determinants of FDI, such as market size, income levels, structure of activity and agglomeration economies. The inclusion of IMP as an independent variable raised extra- (and to a lesser extent intra-) regional FDI but not by as much as other variables. The effects of the IMP were industry specific, with extra-EC FDI increasing more in FDI sensitive industries. There is limited evidence that economic activity has become geographically concentrated as a result of the IMP, although high value-added activities remained clustered and lower value activities became more dispersed. Finally, the study found complementarity between trade and FDI.

As already mentioned, most econometric studies, by using a 0/1 dummy variable to describe regions, in effect measure RTAs as black boxes that either exist or do not exist, but do not differ in content. There is, however, one recent exception. Philippa Dee and Jyothi Gali (2003) examine how “new” trade provisions in preferential trade agreements affect the patterns of trade and investment flows. They use gravity models of trade and investment between pairs of countries over the period 1988-1997. They include two types of indices. The first covers “traditional” trade provisions regarding agriculture and industrial products. The second index covers “new age” provisions covering services and other provisions such as investment rules. The indices are unweighted averages of scores on sub-categories. They also include the usual control variables in gravity equations and three dummies for each RTA provision to measure intra-regional effects, extra-regional effects on inward FDI and extra-regional effects on outward FDI. The traditional trade provisions affected both intra-regional inward

Table 1. RTAs and FDI inflows, selected econometric studies

Study	Research question; Region; countries; years; methodology	Explanatory variables	Findings
Levy, Stein and Daude (2002)	How do RTAs affect the location of FDI? FDI from 20 OECD countries to 60 OECD/non-OECD countries, 1982-1998	RTA membership, extended market host, extended market source, capital/worker ratio, distance, market size, bilateral trade, inflation, trade/GDP, privatization, investment, environment, common border, common language	<ul style="list-style-type: none"> • RTA membership doubles FDI stocks on average • FDI increases upon joining a FTA with: <ul style="list-style-type: none"> • more trade/GDP (openness) • more similar capital/worker ratios • better investment environment • larger market
Mody and Srinivasan (1998)	Which factors determine United States and Japanese FDI? 35 OECD and non-OECD countries, 1977-1992, split out in groups of low-middle, high income countries; and EEC, Latin America, East Asia	Market size, labour costs, capital costs, previous FDI infrastructure (telephone, electricity), country risk openness	<ul style="list-style-type: none"> • When split by periods (1977-1981; 1982-1986; 1987-1992), no evidence that IMP increased United States and Japanese FDI (but we should bear in mind that IMP was complete only in 1993)
Brenton <i>et al.</i> (1998)	Does European integration increase FDI? Does it divert FDI? Are trade and FDI substitutes or complements? FDI in and outflows, imports, exports for EU and CEEC countries	Population, distance, trade/FDI agreement dummies, host country economic freedom dummies, CEE dummies, host country EU membership dummy, FDI residual in trade regression	<ul style="list-style-type: none"> • Single European Act (1992) and Iberian enlargement led to more FDI but no observed FDI diversion
Pain and Lansbury (1996)	How has intra- and extra EC FDI by United Kingdom and Germany in different sectors changed with the introduction of the IMP? United Kingdom and German outward FDI for seven sectors, 1980/81-1992	Sector output, factor costs, currency volatility, corporate finance conditions, non-tariff barriers (1-3 scale), IMP dummy, sector dummies	<ul style="list-style-type: none"> • FDI determinants differ over sectors • IMP introduction boosted FDI • IMP redirected United Kingdom FDI from United States to EC

Source: authors.

FDI stocks and extra-regional inward FDI stocks in the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA) (investment creation), but only extra-regional outward FDI in the EU and United States-Israel RTA (investment diversion). The new age provisions led to net investment creation in the European Free Trade Agreement (EFTA), EU, NAFTA, MERCOSUR, SPARTECA, the Closer Economic Relations of Australia and New Zealand (CER), net investment diversion in the ASEAN Free Trade Area (AFTA), and no impact in ANDEAN and United States-Israel (Dee and Gali, 2003, tables 4-7).

While the study by Dee and Gali has gone some way towards understanding the effects of different provisions in RTAs on trade and investment flows, many questions remain unanswered. For instance, the study focused on RTAs relevant for Australia, excluding many developing countries (while we can include many developing countries due to the choice of the United Kingdom and the United States as investor countries). It did not track regional provisions over time, while in reality provisions can and do change over time (e.g. ASEAN). Finally, it is not clear whether different types of countries within regional groupings are affected differently.

4. Looking inside the “black box”

This section moves beyond describing RTAs as a black box and classifies regional groupings on the basis of provisions included in the RTA. While several studies have included a discussion of investment and other provisions (UNCTAD, 1996; Page, 2000), none – to our knowledge – includes a measurement of trade and investment provisions over time.

Description of provisions in regions

Generally, RTAs differ with respect to trade and investment provisions in two fundamental respects:

- *Over time*, when regions change or add investment-related provisions.

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- *Across regions*, when investment-related provisions differ between regions at one point in time.

Dirk Willem te Velde and Miatta Fahnbulleh (2003) discuss different trade and investment provisions in seven RTAs, as well as changes in each over time. The following provisions are compared across RTAs: investment rules (scope and coverage; national treatment; MFN and fair and equitable treatment; performance requirements; transfers of funds; provisions with respect to expropriation; settlement of disputes) and trade rules (rules of origin; tariff structures; other provisions). The comparison yielded some interesting insights. For instance, ANDEAN restricted FDI in the 1970s, but this changed over the 1980s and 1990s. ASEAN has gradually added more investment provisions over time. NAFTA included quite strong provisions from its inception in 1994. SADC and the Common Market for Eastern and Southern Africa (COMESA) contain weak trade and investment provisions.

Table 2 measures trade and investment provisions for seven regional groupings that are arguably the more advanced in the developing world regarding the inclusion of investment-related provisions. As indicated in the note to the table, the Investment Index captures provisions on investment rules in RTAs and the extent of investment provisions. The Trade Index covers trade rules in RTAs such as MFN tariff status. Bearing in mind the theoretical discussion of section two, a higher value of the index should lead to further (extra-regional) FDI.

5. The model

Several determinants of FDI in developing countries are frequently found to be significant in empirical studies (Wheeler and Mody, 1992; Dunning, 1993; te Velde, 2003). In particular, the following factors are found to be important: (i) the general potential for viable projects on the demand side (growth and size of market) and supply side (skills, infrastructure, financial and technological development); (ii) the domestic regulatory framework (e.g. protection of property rights); and (iii) specific

factors (e.g. availability of project finance, technical assistance, provision of specific information etc.). Moreover, RI can be one additional factor or it can affect the underlying determinants of FDI (Dunning, 1997b).

Table 2. Regional Integration Index

Region and (date of establishment of RTA)	Investment provisions			Trade provisions		
	1970s	1980s	1990s	1970s	1980s	1990s
NAFTA (1994)	0	0	3 (1994)	0	0	2 (1994)
MERCOSUR (1991)	0	0	2 (1994)	0	0	3 (1991)
CARICOM (1973)	0	1 (1982)	2 (1997)	1 (1973)	2	3 (1997)
ANDEAN (1969)	-1(1970)	1 (1987)	2 (1991)	1	1	2 (1993)
ASEAN	0	1 (1987)	2 (1996), 3 (1998)	1	1	1
SADC (1992)	0	0	1 (1992)	0	0	1 (1992)
COMESA (1994)	0	0	1 (1994)	0	0	1 (1994)

Source: te Velde and Fahnbulleh (2003); in parentheses are the specific years in which certain provisions were announced.

Note: keys to the indices

- Investment Index = 0 if not member of group
 = 1 if some investment provisions in region (as in COMESA, SADC),
 = 2 if advanced investment provisions in region (e.g. improved investor protection in ASEAN)
 = 3 if complete investment provisions in region (e.g. Chapter XI of NAFTA)
 = -1 if more restrictive provisions (restrictions on foreign investors in ANDEAN in 70s)
- Trade Index = 0 if not member of group
 = 1 if some trade provisions (e.g. tariff preferences),
 = 2 if low MFN tariffs, (close to) zero intra-reg tariffs
 = 3 if high MFN tariffs, (close to) zero intra-reg tariffs

Recent advances in understanding locational decisions have led to the use of gravity models in explaining the determinants of FDI (Carr *et al.* 2001; Levy *et al.*, 2002). Holger Görg and David Greenaway (2002) apply the gravity model to bilateral United Kingdom FDI stocks in Central and Eastern European countries. We follow the empirical approach broadly

in line with Nigel Pain (1997) who applies the methodology to United Kingdom FDI in Europe and the United States. We take a standard FDI model with standard explanatory variables and include an additional variable measuring the degree of implementation of the investment provisions. In this way, we can isolate a separate RTA (provision) effect.³ The model can be written as:

$$(1) \quad FDI_{ijt} = f(HOME_{ijt}, HOST_{ijt}, RTA_{jt}) ,$$

where *FDI* is the real stock of FDI, and subscripts *i*, *j*, *t* are indices for the home country (here the United States and the United Kingdom, and hence we refer to extra-regional FDI only, except of course United States FDI in NAFTA), the host country and time, respectively. *HOME* refers to home country factors, such as GDP, interest rates or simply a dummy if it is expected that different source countries react differently. *HOST* refers to host country factors including market size, human capital and infrastructure. *RTA* denotes measures of (the sum of) investment-related provisions in an RTA applicable in host country *j* at time *t*. Rules that are expected to raise FDI (extra, and/or intra-regional FDI) should appear in the regression with a significant and positive regression coefficient.⁴

As we indicated above, we cannot expect all countries to be affected by RTAs in the same way. Hence we include an interaction term between RTA and the position of the countries within the region.

$$(2) \quad FDI_{ijt} = f(HOME_{ijt}, HOST_{ijt}, RTA_{jt}, RTA_{jt} * POSITION_{jt})$$

³ Dunning (1997b) argues that important effects of RTAs can work through the explanatory variables and are dynamic. We can control for the regional market size effect, by including it as an explanatory variable in the regression. However, this is not so straightforward for the other effects. We assume that the variable RTA in the above equations will ultimately pick up such effects.

⁴ We limit the choice of key determinants of FDI to avoid over-parameterization, but acknowledge that there could be additional factors that we cannot deal with. For example Dunning (1993) and Carr *et al.* (2001) provide a rationale for including variables such as infrastructure, human capital and market size.

where *POSITION* measures the position of country *j* in a region in the following three ways.

- Real GDP of country *j* compared to the largest economy in the region at time *t*. This tests whether countries of different sizes attract different amounts of FDI. Different views on the relevance of this effect exist (Ethier, 1998; Venables, 1999).
- GDP per capita of country *j* compared to the richest country in the region at time *t*. This tests if richer or more productive countries attract more FDI than poorer and less productive countries.
- Distance of country *j* from the largest market in the region. This tests whether core and periphery countries attract different amounts of FDI.

Ideally, we would estimate a dynamic version of equations 1 and 2. However, this is difficult because we deal with bilateral FDI data containing many gaps, either for reasons of confidentiality or because they are not measured. The same applies to some of the explanatory variables. Therefore, it is difficult to use first differences or dynamic panel data estimators to the most extensive database. While it is possible to have time continuing variables for a selective group of countries, initially, we have chosen to keep as many countries as possible in the sample. One alternative to a dynamic specification is to include time dummies. Another is to use an error correction model which distinguishes between long-run and short-run effects for a sub-sample of countries:

$$(3) \Delta \ln FDI_{ijt} = \alpha \ln(FDI_{ijt-1}) + \beta \ln(HOSTGDP_{ijt-1}) + \chi RTA_{jt} + \gamma \Delta \ln(HOSTGDP_{ijt}) + cons + USdum + \varepsilon_{ijt}$$

6. Methodology and results

We apply versions of equations 1 and 2 to a pooled sample of United States and United Kingdom FDI in developing countries over the period 1980–2001 (see appendix for data description). There are many gaps in the data, with observations for countries varying, so it is an unbalanced panel with a total

of 1,561 observations. Tables 3 and 4 contain the results of estimation using OLS or GLS estimation. We correct the standard errors for serial correlation and heteroscedasticity using White's robust estimator. We approximated the home country effect by a United States fixed effect.

Column I shows an FDI model with standard explanatory variables, including infrastructure, education and inflation. The coefficients are significant and with the expected sign, except in the case of inflation, which is not significant in this regression. The column also contains a variable *region*, which has value 1 if a country is part of any of the developing country regional groupings (as notified to the WTO and in force) and 0 otherwise; its coefficient is insignificant. This result suggests that it is important to examine the nature of regions, as opposed to the mere existence of them, in order to understand whether RTAs affect FDI. We, therefore, proceed to account for the nature of regions in more detailed models, particularly with respect to the level of provisions. This, we do by the variable, *region7*, which focuses on seven regions that already have or are planning to have substantial regional investment provisions (ANDEAN, ASEAN, the Caribbean Community and Common Market (CARICOM), COMESA MERCOSUR, NAFTA, SADC). Its coefficient is significant and positive.⁵ The equation in column II shows that the real stock of FDI is significantly higher if countries become a member of one of the seven regions identified above.

One of the main motivations behind this article is that one should not expect each regional grouping or each country in such a grouping to have the same capacity to attract FDI.

⁵ This would provide evidence that regions with provisions attract more FDI than those without it. If the other regions did include trade and investment provisions, which our analysis did not measure because it assumed these were negligible, the subsequent analysis is still relevant but with the caveat that it relates to the effects of investment provisions in the 7 key regions only. As discussed in UNCTAD (2005, p.28), there are currently over 200 regional arrangements that contain some investment provisions; the subject of this article is confined to RTAs as notified to the WTO and in particular to those RTA which contain substantial provisions.

Regional groupings are different with respect to trade and investment rules, and countries within a regional grouping also differ. Column III provides a breakdown by region: relative to being outside one of the seven regional groupings, the formation of CARICOM, ASEAN, ANDEAN and NAFTA has resulted in attracting additional extra-regional FDI. This is not true for three other regions: SADC, COMESA and MERCOSUR. This result can, in part, be explained by the low level of investment provisions in SADC and COMESA as shown in table 2; however, it may also reflect factors not accounted for in the model.

In the next columns IV and V, we explore why different regional groupings attract different amounts of FDI. We use the indices constructed on the basis of a careful examination of investment and trade provisions in the seven key regions (table 2). Column IV shows that the coefficient on the variable measuring *regional investment provisions* is positive and significant. This implies that regions with more investment provisions provide United Kingdom and United States investors with positive signals about how such regions will treat their investors. The coefficient of 0.41 means that regions with some investment provisions (index 1) will raise their real stock of FDI by 41% and increase by a further 41% (or 82% in total, compared to the original FDI stock) if they include further investment-related provisions (i.e. a move on the index from 1 to 2 will lead to an increase of 41% FDI over the original stock).⁶ For instance, ASEAN would have increased FDI by 123% on average, while COMESA only by 41%, because so far it has included fewer investment-related provisions. Column V shows that similar observations apply to trade provisions – in fact, it is hard to distinguish between trade and investment provisions because they tend to be announced at the same time (e.g. NAFTA), although the indices need not have the same value. Thus, the results with respect to trade or investment provisions should be interpreted with some caution.

⁶ Because the explanatory variable is ordinal one should be careful in interpreting the movement from 1 to 2 and 3. In reality movement may be more gradual.

The formation of a regional grouping does not necessarily lead to an equal distribution across countries, and some countries may achieve a greater increase in the stock of real FDI than others. Columns VI-VIII explore some underlying reasons. Column VI is as column V, but includes an interaction term between investment provisions and the relative size of the country in the regional grouping (ratio of country GDP to largest GDP in the regional grouping varying between 0 and 1).⁷ As the coefficient is positive and significant, it follows that the larger the country relative to others in the regional grouping, the more FDI it will attract on the back of RI. This would be consistent with the observation that United Kingdom and United States investors seek to invest in the largest or larger markets of the regional grouping in order to be closest to most of the demand. As an example, United States FDI as a percentage of GDP has increased much more in Argentina (threefold) than in Uruguay (twofold) after the formation of MERCOSUR.

Column VII shows that the interaction term with relative GDP per capita in the regional grouping is not significant. This indicates that it is not necessarily poorer countries in a regional grouping that attract less FDI. Finally, column VIII shows that countries that are further away in distance from the largest economy in the regional grouping attract less FDI. A distance of 1,000 km would decrease the effects of regional investment provisions on FDI by around 15%. This finding is consistent with the hypothesis that core countries would attract more FDI than periphery countries.

Sensitivity analysis

We performed several sensitivity analyses. First, while the regressions reported in table 3 included a fixed effect for United States FDI, it could also be that United States FDI responds differently than United Kingdom FDI to all explanatory variables, including the variables on RI. Therefore, we ran separate regressions for United Kingdom FDI and United States FDI as reported in table 4. We omit regressions with education

⁷ Interaction terms with trade provisions yield similar results.

or inflation, as these did not appear to give satisfactory results. However, we gained more observations.

As can be seen from columns 1 and 2, United States and United Kingdom investors behave differently.⁸ Simple F-tests in a panel context confirm that coefficients on each explanatory variable are significantly different between the two home countries. Qualitative results are largely the same. However, the effects of RI on United Kingdom FDI in one of the seven regional groupings are much more equally distributed than United States FDI (see the coefficient on the interaction term), but it is not clear why this is so.

Columns 3 and 4 in table 4 also present separate regressions for United Kingdom and United States FDI, but now using a different panel estimator. Whereas previous estimations presented OLS estimates with robust standard errors, we now present Random Effect Panel data estimates (these are preferred to Fixed Effects Panel estimates for both the United Kingdom and United States; see the Hausman tests at the bottom of the chart). The results are similar, but the investment provisions variable is insignificant for the United States and significant for the United Kingdom. However, there is no evidence that the United States and United Kingdom behave significantly differently.

We also explored the use of dynamic specifications (equation 3). Because there are gaps in the data, the use of first differences does involve an unbalanced panel. In column I of table 5, we take the most simple equation explaining changes in FDI by changes in host country market size and regional investment provisions in order to have as many observations as possible. Clearly, the significance and positive sign of regional investment provisions is robust to using a dynamic specification. Columns II and III estimate an error correction term for the United Kingdom and United States FDI, respectively. United

⁸ Differences amongst source countries can be due to many factors including different sectors of involvement or the specificity of the home country or of the host-countries in which they operate.

Table 3. Regional integration and the real stock of United States and United Kingdom FDI in developing countries (1980–2001): results of estimates

Variables	ln (FDI) – United States and United Kingdom Pooled							
	I	II	III	IV	V	VI	VII	VIII
Ln (GDP_host)	0.67 (21.9)**	0.70 (23.1)**	0.65 (17.7)**	0.68 (22.7)**	0.73 (23.0)**	0.67 (22.3)**	0.68 (22.7)*	0.67 (22.4)**
Education enrolment	0.006 (4.67)**	0.003 (2.49)**	0.003 (2.09)**	0.004 (2.97)**	0.003 (2.08)**	0.004 (2.85)**	0.004 (2.98)*	0.004 (3.10)**
Inflation	0.00 (0.30)	-0.00 (-0.33)	-0.00 (-0.30)	0.00 (0.10)	0.00 (0.20)	0.00 (0.39)	0.00 (0.90)	0.00 (0.40)
Phonelines per 1000 inhabitants	0.003 (5.51)**	0.003 (6.57)**	0.003 (6.59)**	0.003 (6.16)**	0.003 (5.69)*	0.003 (6.16)**	0.003 (5.85)**	0.003 (5.84)**
Roads	0.20 (4.58)**	0.17 (3.71)**	0.33 (7.06)**	0.17 (3.72)**	0.08 (1.42)	0.11 (1.90)*	0.17 (3.56)**	0.15 (3.01)**
Region	0.12 (1.00)							
Region7		0.68 (7.10)**						
SADC			-0.37 (-1.65)*					
COMESA			0.35 (1.38)					
CARICOM			1.31 (8.08)**					
ASEAN			1.42 (13.7)**					
ANDEAN			1.07 (8.10)**					
NAFTA			1.48 (4.08)**					
MERCOSUR			-0.00 (-0.01)					
Regional Investment Provisions			0.41		0.17 (6.35)**	0.39 (1.93)**	0.63 (4.65)*	(7.55)**
Regional Trade Provisions					0.43 (8.45)**			
INVPROV* GDP RATIO						0.80 (6.66)**		
INVPROV* GDP pc RATIO							0.08 (0.59)	
INVPROV* DISTANCE								-0.0001 (-3.11)**
US fixed effect	0.60 (6.48)**	0.63 (6.95)**	0.60 (6.56)**	0.62 (6.84)**	0.63 (6.98)**	0.63 (6.96)	0.62 (6.81)**	0.61 (6.70)**
No of observations	1521	1521	1521	1521	1521	1521	1521	1521
R-squared	0.43	0.45	0.48	0.44	0.45	0.45	0.44	0.45

Source: authors.

Notes: robust standard errors within parentheses, constant omitted from tables

** (*) denotes 5% (10%) significance level.

Table 4. Differences between United Kingdom and United States FDI, 1980–2001

Variables	Ln (FDI)			
	United States	United Kingdom	United States	United Kingdom
	FDI	FDI	FDI	FDI
	1	2	3	4
Ln (GDP_host)	0.79 (24.2)**	0.40 (12.53)**	0.75 (9.37)**	0.51 (5.83)**
Phonelines per 1000 inhabitants	0.006 (10.6)**	0.002 (4.48)**	0.005 (6.67)**	0.005 (6.11)**
Roads	0.18 (3.20)**	0.19 (3.35)**	0.22 (0.74)	0.26 (1.03)
Regional Investment Provisions	0.09 (0.89)	0.35 (4.11)**	0.01 (0.13)	0.17 (3.00)**
INVPROV*GDPRATIO	1.14 (7.47)**	0.46 (3.57)**		
No of observations	1161	562	1161	562
No of countries	97	68	97	68
R-squared	0.52	0.35	na	Na
Robust standard errors	Yes	Yes	No	No
Hausman-test (RE vs FE): P-value			0.05	0.22
Estimation method	OLS	OLS	RE-GLS	RE-GLS

Source: authors.

Notes: OLS robust standard errors within parentheses for OLS estimations
GLS Random effects model (no R-squared available)

** (*) denotes 5% (10%) significance level

Kingdom FDI appears to respond particularly well and rapidly to changes in market size (short-run coefficient is 1.34); United States FDI follows market size in the long run (long-run coefficient is approximately $1.2 = 0.05/0.04$); United States and United Kingdom FDI grow between 4% and 11% faster in countries that become a member of one of the seven regional groupings.

Finally, we tested for the inclusion of time dummies and other variables, such as bilateral investment treaties between the United States or United Kingdom and developing countries.⁹ However, the effect of the regional variables did not change substantially. We find that bilateral investment treaties signed

⁹ The relevant table not included but available from the authors.

between the United Kingdom or the United States and developing countries are not significant as in Mary Halward-Driemeier (2003). We also carried out estimations for total FDI inflows. While in the latter case the effects on regional provisions are significant and positive overall, the coefficient became smaller (0.35). The results for the seven regions thus point to investment creation. The final regressions are for the United Kingdom and the United States FDI real stocks in manufacturing, and again the coefficient is positive and significant.

Table 5. Dynamic specifications for United Kingdom and United States FDI, 1981-2001

Variable	$\Delta \text{Ln (FDI)}_{\text{-pooled}}$	$\Delta \text{Ln (UK FDI)}$	$\Delta \text{Ln (US FDI)}$
	I	II	III
$\Delta \text{Ln (GDP}_{\text{host}})$	0.61 (2.46)**	1.34 (2.65)**	0.23 (0.98)
Regional Investment Provisions	0.04 (2.47)**	0.11 (3.83)**	0.04 (2.15)**
$\text{Ln(GDP}_{\text{host}})_{-1}$		0.08 (5.44)**	0.05** (4.70)
Ln(UK FDI)_{-1}		-0.13 (-7.28)**	
Ln(US FDI)_{-1}			-0.04 (-5.16)**
US fixed effect	-0.01 (-0.31)		
No of observations	2024	613	1411
R-squared	0.01	0.10	0.02
Robust standard errors	Yes	No	No
Estimation method	OLS	OLS	OLS

Source: authors.

Notes: Robust standard errors within parentheses for first column.

** (*) denotes 5% (10%) significance level.

7. Conclusions

This article examined the relationship between RI and FDI in developing countries. The theoretical and empirical literature on RI and FDI that has begun to emerge over the past decade appears to show that RI leads to further (extra and to some extent

intra-regional) FDI. However, the empirical literature seems to offer little guidance on whether different regional groupings are more successful in attracting FDI than others.

We argued that it is important to move beyond describing RTAs as a “black box” and conduct empirical research that can help to identify the effects of specific investment-related provisions in RTAs on FDI. In particular, we estimated a model explaining the real stock of United Kingdom and United States FDI in developing countries, covering 68 (for United Kingdom FDI) and 97 (United States FDI) developing countries thus moving beyond analyses on the basis of the familiar OECD database. The period covered is 1980-2001; we added a variable that measures the scope of regional investment and trade provisions in key regional groupings.

The econometric evidence in this study shows that, for seven key regional groupings: (i) while membership in a regional grouping can lead to further extra regional FDI inflows, the type of regional grouping matters for attracting FDI, i.e. whether or not RTAs include certain trade and investment provisions; (ii) the position of countries within a regional grouping matters for attracting FDI, i.e. smaller countries and countries located further away from the largest country in a region benefit less from being part of a regional grouping than larger countries and those close to the core of the region (although indirectly smaller countries could gain from this). We showed that the results were robust to a number of alternative specifications.

This empirical exercise provides more detail on the benefits of RTAs than previous work. In particular, the following findings may be of practical relevance to, for instance, developing country trade negotiators designing the features of the RTA they wish to form or join:

- i) Joining just any RTA does not necessarily increase FDI inflows. Regional groupings are too heterogeneous with respect to the level of integration to expect a universally positive effect.

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- ii) Regional groupings, such as ANDEAN, ASEAN, CARICOM, and NAFTA,¹⁰ have had a positive effect on FDI from the United Kingdom and the United States.
 - iii) RTAs with more trade and investment provisions attract more inward FDI; it is thus sensible to negotiate more investment and trade provisions if the aim is to attract additional FDI from the United Kingdom and the United States.
 - iv) Countries that have larger economies or are geographically closer to other larger countries within a region can expect a larger increase in FDI as a result of joining than those countries that have smaller economies or are located in the periphery. However, on average, all countries in the seven key regional groupings benefited from additional FDI through regionalization.

An important area for future work is to investigate who are the winners and losers of specific RI agreements and what determines whether a particular country wins or loses its capacity to attract and/or retain FDI as a result of the process of RI. Additionally, it might be interesting to discuss alternative types of regional groupings; while this article examined South-South integration, the effects of North-South integration are becoming relevant (e.g. EU trade agreements with developing country regions). ■

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¹⁰ There are studies that find a positive effect of NAFTA on inward FDI to Mexico and studies that find no or only small effects. Our results are mostly in line with the views contained in an IADB report on this issue. See further references in box 10.2 in http://www.iadb.org/res/publications/pubfiles/pubB-2002E_18.pdf

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Appendix on data and variables

Foreign direct investment data

United States FDI: United States direct investment position abroad on a historical cost-basis, in millions of dollars, 90 countries, 1980–2001, see www.bea.gov.uk

United Kingdom FDI: net book value of FDI by United Kingdom enterprises, '000 \$, 60 countries, 1981, 1984, 1986-2001, Business Monitor MA4 (and data obtained directly from CSO).

Variables are deflated by home GDP deflator from the World Development Indicators, and are in natural logarithm form.

List of variables

EDU sum of EDUPRIM (school enrolment, primary, % gross), EDUSEC (school enrolment, secondary % gross) and EDUTERT (school enrolment, tertiary, % gross)

GDP_USD Gross domestic product, current dollar

GDPG Annual change in gross domestic product, percentage

Inflation Inflation rate (in %) from World Development Indicators

PHONES telephone landlines, # per 1,000 population

ROADS Road network length, kilometres

INVPROV*GDPRATIO

INVPROV*GDPpcRATIO

INVPROV*DISTANCE

GDP_host Real GDP from World Development Indicators

Ln Natural log

Transformed variables

GDPpcRATIO Ratio own GDP/capita to highest GDP/capita within own RTA

GDPRATIO Ratio own GDP to highest GDP within own RTA

DISTANCE Distance to largest market

Δ = change term or first difference operator

A list of countries included and details on data sources are available from the authors.