Regional Integration and Foreign Direct Investment in Developing Countries[1]

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Abstract

The empirical literature offers little guidance on whether some regions are more successful in attracting FDI than others. We bring together two differing approaches (detailed descriptions of regions and studies estimating effects econometrically based on 0/1 dummies) and estimate a model explaining the real stock of UK and US FDI in developing countries, covering 68 (UK) and 97 (US) developing countries over 1980-2001 and identify the effects of specific regional investment-related provisions on FDI. We show that i) membership of a region leads to further extra regional FDI inflows, but the type of regional provisions matters; ii) that the position of countries within a region matters.

Jel code: F15, F21
Key words: Regional Integration, Foreign Direct Investment, Developing Countries
(including regions in Latin America, Africa and East Asia)

1   Introduction

The purpose of this paper is to understand the relationship between Regional Integration and Foreign Direct Investment in developing countries. A theoretical and empirical literature on Regional Integration and FDI has begun to emerge over the past decade. This has coincided with strong growth in both the number of Regional Trade Agreements (RTAs) notified to the WTO and the value of FDI in developing countries. There appears to be a consensus in the literature that RI leads to further (extra and to some extent intra-regional) FDI. One of the factors often cited is the increase in the "market size" that follows regional integration.

Chart 1   The number of GATT/WTO notified RTAs in force
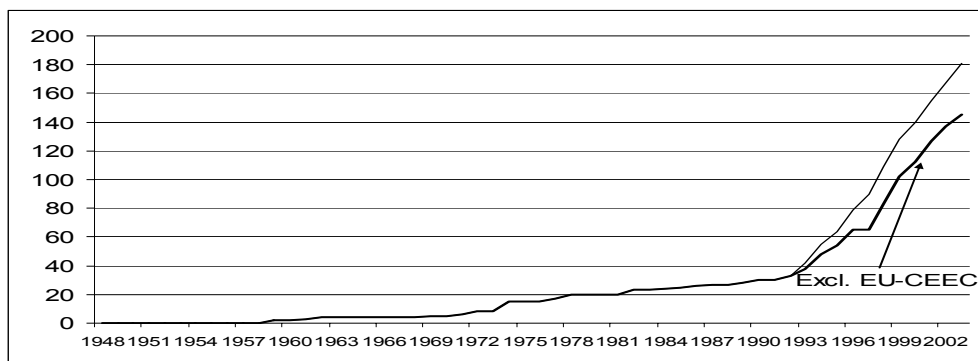
Source: WTO

However, the empirical literature seems to offer little guidance on whether different regions are more successful in attracting FDI (unlike an emerging literature on the effects of certain trade provisions in regions (see e.g. Estevadeordal and Robertson, 2002 on tariffs; and Estevadeordal and Suominen, 2003 on rules of origin) than others, and if so, why some regions are more successful and crucially whether trade negotiators can design an RTA in order to have the best possible outcome for FDI. Empirical studies of FDI and Regional Integration can be divided into:

i)   those that describe the investment-related provisions present in a growing number of RTAs with a prediction of how these should affect FDI (see e.g. UNCTAD, 1996; Te Velde and Fahnbulleh, 2003); and

ii)   those that base their findings on econometric models explaining FDI where 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 region (see e.g. Levy *et al.*, 2002).

This paper aims to bring these two approaches together by moving beyond describing a region as a "black box"[3] and conduct empirical research that can help to identify the effects of specific investment-related provisions in RTAs on Foreign Direct Investment. We illustrate this by estimating a model explaining the real stock of UK and US FDI in developing countries, covering more developing countries than contained in the OECD database often used for such analyses, over the period 1980–2001. An innovative feature of the analysis is the use a variable that measures the scope of regional investment and trade provisions in an RTA in addition to standard explanatory variables.

The structure of this paper is as follows. Section 2 reviews the theory on the relationship between regional integration and FDI, concentrating on regional trade and investment rules. Section 3 discusses the econometric evidence arguing that most econometric studies use a simple 0/1 dummy to describe regions, which offers little guidance for trade negotiators on whether different types of regions have different effects on FDI and if so, why. On the whole, econometric studies measure RTAs as

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[3] One can argue that the term "black box" is not adequate for all studies, because some researchers discuss provisions within regions but measure these with a 0/1 dummy. Hence, the term black box refers predominantly to the way regional provisions are measured.

black boxes that do or do not exist. In Section 4, we attempt to step outside the black box of a region and measure trade and investment provisions in RTAs. Section 5 provides new econometric evidence on the effects of Regional Integration on FDI, focusing on trade and investment provisions in regions and on differences in effects on FDI amongst members of a region. Section 6 concludes.

2 Regional Integration and Foreign Direct Investment: theory

There are various ways through which RTAs can influence FDI and vice versa. We can distinguish among investment rules, trade rules and other links (see e.g. Blomstrom and Kokko, 1997; Dunning, 1997a).

Regional Investment rules and FDI

Investment rules govern cross-border investment in the region and usually consist of rules on treatment and protection of FDI contributing to the "investment climate". Investment rules exist in a handful of RTAs[4] although they are not as common as trade rules, particularly amongst the poorer developing countries. Some regions include voluntary principles (e.g. APEC) while other regions include rules with effective dispute settlement procedures. Several studies discuss a number of investment provisions in regional treaties (scope, standard of treatment, performance requirement, expropriation and dispute settlement mechanisms) and their expected effects on the volume of FDI. The provisions sometimes apply to regional investors and sometimes to extra-regional investors.

There is a heated discussion on how investment rules (bilateral, regional and multilateral) affect investment decisions. Generally, a predictable investment climate can be in the interest of investors when they were previously disadvantaged by unpredictable investment conditions. It is not clear whether this would lead to *additional* FDI or simply to more comfort for the investor. It is, however, clear that surveys reveal that investors want a predictable investment climate (e.g. CBI position

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[4] 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 appear in bilateral investment treaties.

paper for WTO negotiations, EU survey of MNEs), although not necessarily at the cost of other policy liberalisation (e.g. further trade liberalisation). The predictability of the investment climate may be enhanced when domestic policies are enshrined or locked into regional treaties. Much will also depend on existing treatment. If treatment of existing investors is already good in practice, new (regional) rules may add little to generating new investment or a better investment climate, other than offering a little more long-run security. There seems to be no empirical evidence that addresses the effects of individual investment provisions on FDI.

Regional trade rules and FDI

The elimination of intra-regional tariffs will affect trade *vis-à-vis* the level of sales by multinational subsidiaries depending on the importance of transport (e.g. tariff) costs and plant-level and firm-level costs in setting up multinational subsidiaries (Markusen and Venables, 1997; Brainard, 1997; Carr *et al.*, 2001). Hence, the type and motive of investment plays an important role in understanding how FDI is affected by tariffs and trade (Barrell and Te Velde, 2002). To reflect this, we distinguish between intra-regional and extra-regional FDI and between horizontal (market-seeking: subsidiaries selling similar products) and vertical (efficiency and natural resource seeking: subsidiaries exploiting efficiencies or control over inputs) FDI.

Regional tariff preferences can decrease *horizontal* (tariff-jumping) intra-regional FDI because it may now become cheaper to serve the partner country by trade rather than to establish a subsidiary and incur plant-level costs more than once and firm-level costs only once. Of course, when firm-level and plant-level fixed costs are zero, there will be no trade and no concentrated production facility or FDI – just national

production. However, on the other hand, regional tariff preferences encourage *vertically-motivated* intra-regional FDI, because lower trade costs will provide incentives to establish international production networks and establish an efficiency-seeking subsidiary in a partner country that can process imports for re-export.

Extra-regional FDI (the focus of the empirical part of the paper) can also be affected by declining regional tariff preferences in different ways. First, by lowering tariffs amongst parties to the RTA, it may become profitable for an extra-regional investor to avail of an effectively larger market (horizontal market-seeking FDI) from one or more locations in the region (export platforms). If individual countries of a region are previously served by trade, this may then raise inward FDI (export platforms or beachhead locations, see Ethier, 1998). However, if the member countries of a region were already served through sales of a multinational subsidiary, concentration of production may occur in one or a few countries in the region, with ambiguous or negative effects for the volume of extra-regional FDI in each country. The combination of lower internal tariffs and significant plant fixed costs would lead to a consolidation of several plants in several members of the region into one or a few plants, used by the parent to serve the region as a whole. This may also induce FDI inflows to the most cost-efficient location (usually nearest to the largest market), possibly at the cost of FDI to other members in the same region. This could be the case for market-seeking multinationals. The effects of regional trade preferences for extra-regional vertical (or efficiency-seeking) FDI is likely to be small, though lower regional preferences may lower costs and raise efficiency in the vertically motivated subsidiary when it uses inputs from more than one country in the region (regional enterprises in ASEAN, ANDEAN or SAARC).

There are various effects of regional tariff preferences on inward FDI. However, in the context of developing country regions, where most inward FDI is inter-regional (even though South Africa is an important investor in SADC), the market size argument would be the most important, and apart from other factors regional tariff preferences would tend to 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 others on an Most Favoured Nation (MFN) basis. Indeed, the market size gained as a result of regional integration needs to be the total market size of the region *corrected* for initial MFN rates, as this will indicate the maximum scope of the market size gained. Hence, the higher the MFN rate and the larger the market size, the more likely it is that market-seeking investors will respond. Accounting for this, it emerges that regions in Africa such as COMESA and SADC have as much to offer as ANDEAN not because of their similar market size (second column, Table 1) but because of similar regional market size *corrected* for MFN tariffs (final column).[5]

Table 1   Market size in seven developing country regions

	Market size (US$bn, 2001)	Unweighted average MFN tariffs (latest year available)	Approximate market size "gained" by regional tariff preferences
NAFTA	11400	8.2	935
MERCOSUR	797	13.6	108
ANDEAN	287	11.2	32
ASEAN	548	7.9	43
SAARC	605	23.6	143
COMESA	181	16.9	31
SADC	171	15.6	27
CARICOM	33	11.6	4

Source: **WTO, WDI**

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[5] One can argue that this correction is simplistic: it does not take into account the distribution and peaks of tariffs, or whether the tariffs are on goods relevant for FDI.

Rules of origin constitute another trade rule that can affect location decisions. The effects of rules of origin (RoO) on investment can vary depending on the type of investment as well as the interaction with regional tariff preferences. The RoO can encourage the use of intra-regional inputs diverting away from extra-regional inputs, even if these were more efficient. However, a stricter and more costly RoO would stifle intra-regional trade favouring extra-regional imports (which are likely to face the MFN tariff). The higher the difference between MFN tariffs and regional tariffs, the higher the incentive to comply with the RoO by importing regionally using good certificates (see Estevadeordal and Suominen, 2003).

Non-tariff barriers to trade can also affect investment. NTBs include voluntary export restraints; the threat of imposing EU quotas and using anti-dumping against Japanese exports motivated the Japanese to set up operations inside the EU. Barrell and Pain (1999) found that after controlling for relative labour costs and market size, Japanese investment flows to EC countries over 1980–91 were significantly influenced by anti-dumping activities taken in the EC.

On balance, RTAs should lead to increased extra-regional FDI, but there are more ambiguous results for intra-regional FDI. An important reason for the ambiguity of the effects of trade rules is that MNEs are motivated by exploiting firm-specific assets (e.g. firm-specific fixed costs) and hence want to enjoy economies of scale and scope, in addition to simply jumping trade barriers.

Other regional initiatives and FDI

There are various other links between RTAs and FDI. Many provisions are region specific and cannot be easily categorised. For example, provisions other than the trade and investment rules include free movement of people (CARICOM) and free transfers of profits which can all facilitate the establishment of intra-regional FDI.

Taking another example, some regions (ANDEAN, ASEAN, MERCOSUR) have cooperation schemes which aim to establish regional enterprises by promoting joint ventures. The ASEAN region seems to be one of the most advanced in this area. The ASEAN Industrial Cooperation scheme (AICO Scheme) seeks to promote 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. It can thus be said that a region can do much more to try to promote investment than design and implement trade and investment rules. They can put in place the regional infrastructures (legal, institutional etc.) to deal with investment issues at a 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 and stable trade policies) in a wider context. The fact that national policies are "locked" in regional treaties should give investors additional security in that policy reversals are less likely, reducing non-

commercial risk. In practice, this argument would depend on how strong the region is *vis-à-vis* individual members. The argument is also related to signalling, in that signing an RTA signals an intention that can be regarded as favourable to investors; this would apply equally to intra and extra-regional investors.

Many argue that important effects of RTAs on FDI are dynamic, with competition creating a more efficient industry and growth, which in turn can affect FDI. Neary (2001) includes dynamic effects in a theoretical model of describing MNEs. First, there is the tariff-jumping motive as discussed before: FDI is favoured over exporting the higher the external tariff and the lower the fixed costs of a new plant. 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 becoming efficient regional suppliers, and raise strategic asset-seeking investment.

Blomstrom and Kokko (1997) also argue that regional integration leads to efficiency gains and higher growth, and thus further FDI. FDI can actually be such a catalyst through spillovers in terms of 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. Schiff and Wang (2003) show that NAFTA imports has raised productivity (between 5.5-7.5%) in Mexico in the form of imported knowledge stocks, while other imports did have no effects.

Apart from trade and investment rules and regional institutions, regions can also decide to harmonise fiscal and monetary policies. For instance, the Euro area (within the EU), the UEMOA, and four out of five SACU members (within SADC) have common currencies. This reduces intra-regional exchange-rate variability and may reduce cross-border transaction costs, which are amongst the factors contributing to investment. Because the EU and SADC and SACU are incomplete currency areas, there should be implications for which parts of the region are influenced.

Spatial distribution of FDI across region

While regional integration can lead to more extra-regional investment for the region as a whole, this may not lead to more FDI in each individual member country. While peripheral countries to the EU, such as Ireland, have caught up in terms of productivity levels with other members of the EU – apparently through trade and FDI spillovers, there has been a degree of divergence and agglomeration in developing regions such as the East African Community and the Central American Common Market, both dating back to the 1950s and 1960s.

An uneven spread of benefits amongst members (Venables, 1999) can be enhanced by agglomeration effects. Agglomeration effects refer to a spatial clustering of economic activities. Agglomeration can occur within a county (e.g. cities) or across countries. Clusters of economic activities can lead to efficiency gains, for instance, because a pool of specialised support services is feasible owing to economies of scale (e.g. 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 regional integration processes. On the other hand, as argued in Ethier (1998) smaller (and possibly poorer – though this is obviously not the case in regions such as ASEAN) countries may actually have incentives to form a region in order to attract investment away from other members, particularly extra-regional FDI. This may be the case when regional tariff preferences allow foreign investors to 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, strictness of RoO, market size and agglomeration effects in individual member countries.

3 Regional Integration and Foreign Direct Investment: econometric evidence

The empirical evidence has begun to address the links between RTAs and FDI. Table 2 provides a review of a few studies tentatively finding that RTAs in most cases boost extra-regional FDI and in some cases intra-regional FDI. Levy *et al.,* (2002) address the issue of regional integration and FDI at a basic level, using dummies for regions, applying the analysis to the OECD database covering 60 countries (thus – excluding many developing countries). The regressions control for a number of factors and use a variable for market size. Other researchers have examined individual regions; Waldkirch (2003) and Monge-Naranjo (2002) for NAFTA, Chudnovsky and Lopez (2001) for MERCOSUR, and UNCTAD (2003) for several regions.

Dunning (1997b) analysed 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 the FDI is through the effects on

other determinants of FDI, such as market size, income levels, structure of activity and agglomeration economies. 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 sector. There was 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, there was complementarity between trade and FDI.

Table 2: RTAs and FDI inflows, selected econometric studies

Study	Research question; Region, countries and 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, 1982–98	RTA membership, extended market host, extended. market source, capital/worker distance, market size, bilateral trade, inflation trade/GDP, privatisation capital/worker, investment environment, common border, common language	• RTA membership doubles FDI stocks on average FDI increases upon joining a FTA with: • more trade/GDP (openness) • more similar capital/worker • better investment environment • larger market
Srinivasan and Mody (1997)	Which factors determine US and Japanese FDI? 35 OECD and non-OECD countries, 1997–92, 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	• When split by periods (1977–81; 1982–86; 1987–92), no evidence that IMP increased US and Japanese FDI (but we should bear in mind that IMP was complete only in 1993)
Brenton *et al.,* (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)	• Single European Act (1992) and Iberian enlargement : more FDI but no observed FDI diversion
Pain and Lansbury (1996)	How has intra- and extra EC FDI by UK and German forms in different sectors changed with the introduction of the Internal Market Programme (IMP)? UK and German outward FDI for seven sectors, 1980/81–92	Sector output, factor costs, currency volatility, corporate finance conditions, non-tariff barriers (1–3 scale), IMP dummy, sector dummies	• FDI determinants differ over sectors • IMP introduction boosted FDI • IMP redirected UK FDI from US to EC

Because the econometric studies use a simple 0/1 dummy to describe regions, there is little guidance for trade negotiators on whether different types of regions have different effects on FDI and if so, why. On the whole, econometric studies measure RTAs as black boxes, which either exist or not, but which do not differ in content.

There is one recent exception. Dee and 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 1988–97. They include two type of indices: i) covering "traditional" trade provisions regarding agriculture and ii) industrial products and "new age" provisions covering services and other provisions such as investment rules. The indices are unweighted averages of scores on sub-categories. They also control for the usual control variables in gravity equations and include 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 FDI stocks and extra-regional inward FDI stocks in SPARTECA (investment creation), but only extra-regional outward FDI in the EU and US-Israel RTA (investment diversion). The new age provisions led to net investment creation in EFTA, EU, NAFTA, MERCOSUR, SPARTECA, CER, net investment diversion in AFTA, and no impact in ANDEAN and US-Israel (Tables 4–7 in Dee and Gali, 2003).

While the study by Dee and Gali has gone some way in understanding the effects of different provisions in regions on trade and investment flows, many questions relevant for this paper have remained unanswered. For instance, the study did not include

regression with "all RTAs" or RTAs with African countries; it did not include a lot of developing countries, focusing their attention on RTAs relevant for Australia; it did not track regional provisions over time –provisions can change over time (as e.g. in ASEAN); finally, it is not clear whether different types of countries within regions are affected differently.

4   Stepping out of the "black box"

This section moves beyond describing regions as a black box and describes regions on the basis of provisions included in protocols. While several papers have included a discussion of investment and other provisions (UNCTAD, 1996; Page, 2000), none includes a measured description of trade and investment provisions over time.

Description of provisions in regions

Te Velde and Fahnbulleh (2003) discuss trade and investment provisions across seven main regions, as well as for each region over time. The following provisions are compared across regions: investment rules (scope and coverage; National Treatment; Most Favoured Nation and fair and equitable treatment; performance requirements; transfers of funds; provisions with respect to expropriation exist; Settlement of Disputes) and trade rules (Rules of Origin; tariff structures; other relevant 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 COMESA contain weak trade and

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

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

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

Table 3 measures trade and investment provisions for 7 regions which are arguably the most advanced in the developing world regarding the inclusion of investment-related provisions. The following keys were used:

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, (close to) zero intra-reg tariffs
	= 3 if high MFN, (close to) zero intra-reg tariffs

Based on this classification and bearing the theoretical discussion of Section 2 in mind, a higher value of the index should lead to further (extra-regional) FDI.

Table 3   Regional Integration Index

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

Source: Measurement of provisions described in Te Velde and Fahnbulleh (2003); years between parentheses indicate when certain provisions were announced.

Some illustrations

There appears to be hardly any empirical literature that links time varying trade and investment provisions with inward FDI. Here we illustrate how such as link could be visualised for extra-regional FDI (see UNCTAD, 2003, for total inward FDI in ASEAN). Charts 2–4 show how the stock of US FDI as a percentage of GDP evolves over time as regions add or change trade and investment provisions for ANDEAN (the sum of Bolivia, Peru, Ecuador, Venezuela and Colombia), MERCOSUR (Argentina, Brazil, Paraguay and Uruguay) and ASEAN-5 (Indonesia, Malaysia, Philippines, Singapore and Thailand).

Chart 2 indicates that US FDI into ANDEAN fell in the early 1970s after the introduction of restrictive investment provisions (especially regarding extra-regional FDI) contained in Decision 24. It has gradually recovered since the 1990s, when Decisions 291 and 292 – marking the formal end of the common restrictive policy towards FDI and the ANDEAN free trade area – were being put into practice. US FDI rose in MERCOSUR some time after its inception and investment provisions were included in the mid 1990s (Chart 3). US FDI also seems to have responded to a gradual increase in trade and investment provisions in ASEAN, the signing of an investment protection agreement in 1987, the start of the ASEAN Free Trade Agreement in 1992, improved investor protection in 1996 and the signing of the ASEAN investment area. The charts suggest that the causation, if any, runs from investment provisions to FDI.

While the charts control for market size (GDP) of the countries within the region, other variables are not taken into account. The evidence presented here is therefore

only preliminary evidence that FDI is responsive to the type of investment provisions included in regions – not just whether or not a country is a member of a region. Such evidence would need to be supported by more formal statistical evidence, to which we turn in the next session.

Chart 2   **US Foreign direct investment in ANDEAN-5**
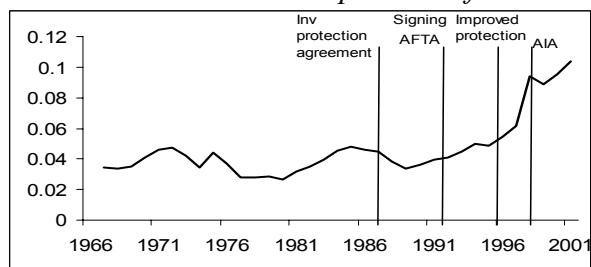*Stock as per cent of GDP*
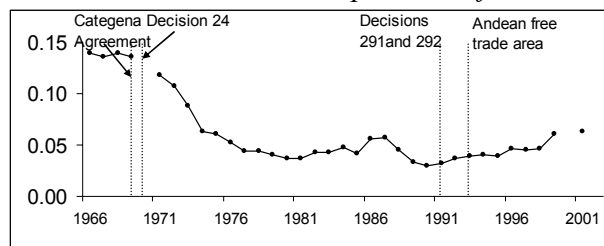
Chart 3   **US Foreign direct investment in MERCOSUR-4**
Stock as per cent of GDP
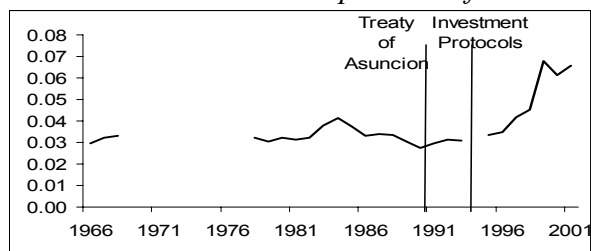
Chart 4   **US Foreign direct investment in ASEAN-5**
Stock as per cent of GDP

5   New evidence on Regional Integration and FDI

The effects of investment-related provisions in regions can be treated more formally in econometric models.

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Model set-up

Several determinants of FDI in developing countries are frequently found to be significant (see e.g. Wheeler and Mody, 1992 and Dunning, 1993): 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 within which investment can take place affects investment decisions (e.g. protection of property rights); and iii) specific factors that can affect particular projects (availability of project finance, technical assistance, provision of specific information etc.). A large literature has emerged on determinants of FDI, of which RI can be one (see e.g. Te Velde 2003).

There are two types of empirical specifications common in the literature on determinants of FDI. The first is the gravity model explaining bilateral FDI stocks. Gravity models have recently been based on theoretical foundations (e.g. Harrigan, 2001) and perform well in explaining bilateral trade. Recent advances in understanding locational decisions, in particular the knowledge-capital model, have led to the use of gravity models in determining FDI (Carr *et al.* 2001; Levy *et al.,* 2002). Gorg and Greenaway (2002) apply the gravity model to bilateral UK FDI stocks in Central and Eastern European countries, see Greenaway and Milner (2002) for further detail

We have decided to follow a second approach which is broadly in line with various authors such as Pain (1997) who applies the methodology to UK FDI in Europe and the US. We will 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[6]

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

where FDI is the real stock of FDI, i is the home country (here US and UK, and hence we refer to extra-regional FDI only, except of course US FDI in NAFTA), j is the host country, t time. *HOME* country factors can include GDP or interest rates, or more simply a dummy if it is expected that different source countries react differently. *HOST* country factors can include amongst others market size, human capital, and infrastructure. *OTHER* may include such variables as distance or shared language. *RTA* denote measures of (the sum of) investment-related provisions k in an RTA applicable in host country j at time t. Rules that are expected to raise FDI (extra, and/or intra-regional FDI) would appear in the regression with a significant and positive regression coefficient.

As we indicated above, we cannot expect all countries to be affected by regional integration in the same way, and hence we include an interaction term between regional integration processes and the position of the countries within the region

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

where *POSITION* measures the position of country j in a region in three different 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. As

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[6] 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 as straightforward for the other effects on other explanatory variables, and the variable RTA in the above equations will ultimately pick up such effects.

discussed before, this is an issue with opposing views (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

- 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 dynamic versions of equations 1 and 2. However, this is hampered to some extent because we deal with bilateral FDI data containing many gaps, either for reasons of confidentiality or because it is not measured. The same applies to some of the explanatory variables, and so 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, we have initially chosen to keep as many countries as possible in the sample. One way to avoid including a dynamic element is by including time dummies. But, we will also use a version of an error correction form which can be used to distinguish between long-run and short-run effects, for a more selected sample of countries:

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

Results

We apply versions of equations 1 and 2 to a pooled sample of US and UK FDI in developing countries over 1980–2001 (see Appendix for a data description). There are many gaps in the data, with observations per country varying, so it is an unbalanced panel with a total of 1561 observations. Tables 4 and 5 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 US 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 the value 1 if a country is part of any of the developing country regions (as notified to the WTO and in force) and 0 otherwise. The coefficient for the variable *region* is insignificant. This is not surprising because the variable contains very different regions, some that are hardly integrated (e.g. CEMAC) and some that are more integrated (e.g. NAFTA).

If we focus on seven regions (NAFTA, MERCOSUR, CARICOM, ASEAN, ANDEAN, SADC and COMESA) which have included some regional investment provisions, the coefficient on *region7* is significant and positive. The equation in column II shows that the real stock of FDI is on average 68% higher if countries become a member of one of the seven regions identified above.

One of the main motivations behind this paper is that one should not expect each region or each country in the region to have the same capacity to attract FDI as a result of forming a region. Regions are different with respect to trade and investment rules and countries within regions also differ. Column III provides a breakdown by region: relative to being outside one of the seven region, formation of some regions

(CARICOM, ASEAN, ANDEAN, NAFTA) attracts additional extra-regional FDI while this is not true for some others (SADC, COMESA and MERCOSUR).

In the next columns IV and V we explore why different regions 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 (see Table 3). 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 UK and US investors with positive signals about how such regions will treat their investors. The coefficient of 0.41 means that regions with some investment provisions will raise their real stock of FDI by 41% and increase by a further 41% (and 82%) 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)[7]. For instance, ASEAN would have increased FDI by 123% on average, while COMESA only by 41% because so far it has 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.

The formation of a region does not necessarily lead to an equal distribution across countries, and some countries may achieve a higher percentage 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 region (ratio country GDP to largest GDP in

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[7] Because the explanatory variable is ordinal one should be careful in interpreting the movement from 1 to 2 and 3. In reality this may go more gradually.

region varying between 0 and 1).[8] As the coefficient is positive and significant, it follows that the larger the country relative to others in the region, the more FDI it will attract on the back of regional integration. This would be consistent with observing that UK and US investors seek to invest in the largest or larger markets of the region in order to be closest to where most of the demand is. As an example, US FDI as a percentage of GDP has increased much more in Argentina (threefold) than in Uruguay (twofold) after the introduction of MERCOSUR.

Column VII shows that the interaction term with relative GDP per capita in the region is not significant. This indicates that it is not necessarily poorer countries in a region that attract less FDI. Finally, column VIII shows that countries that are further away in distance from the largest economy in the region attract less FDI. This is consistent with the hypothesis that core countries would attract more FDI than periphery countries through regionalisation (if not counteracted by other factors, e.g. direct policy initiatives, as in the Ireland example given above).

Sensitivity analysis

We performed several sensitivity analyses. First, while the regressions in Table 4 included a fixed effect for US FDI, it might be expected that US FDI responds very differently from UK FDI to all explanatory variables including the variables on regional integration. Therefore, we ran separate regressions for UK FDI and US FDI as can be seen from Table 5. We omit regressions with education or inflation, as these did not appear to give satisfactory results. However we gained more observations.

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[8] Interaction terms with trade provisions yield similar results.

As can be seen from columns 1-2 US and UK investors behave very differently.[9] Simple F-tests in a panel context confirm that coefficients on each explanatory variable are significantly different across source country. Qualitative results are largely the same. However, the effects of regional integration on UK FDI in one of the 7 regions are much more equally distributed than US FDI (see the coefficient on the interaction term), but it is not clear why this is so.

Columns 3 and 4 in table 5 also present separate regressions for UK and US 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 UK and US; see the Hausman tests at the bottom of the chart). The results are similar, but the investment provisions variable is insignificant in the US and significant in the UK.

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. Moreover, in column I (table 6) we take the most simple equation explaining changes in FDI by changes in host country market size and regional investment provisions in order to get 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 UK and US respectively. UK FDI appears to respond particularly well and rapidly to changes in market size (short-run coefficient is 1.33), US FDI follows market size in the long run (long-run coefficient is approx $1.2 = 0.05/0.04$) US and UK FDI grow between 4 and 11% faster in countries that become a member of one of the seven regions.

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[9] Differences amongst source countries can be due to many factors including different sectors, different hone county factors or differences in host-countries.

Finally, we tested for the inclusion of time dummies and other variables, such as bilateral investment treaties, as well as other estimators such as dynamic fixed effect panel estimators. However, the effect of the regional variables did not change substantially.

Table 4 Regional Integration and the real stock of US and UK FDI in developing countries (1980–2001)

	ln (FDI) – US and UK Pooled							
	I	II	III	IV	V	VI	VII	VII
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 (6.35)**		0.17 (1.93)**	0.39 (4.65)*	0.63 (7.55)**
Regional Trade Provisions					0.43 (8.45)**			
INVPROV*GDPRATIO						0.80 (6.66)**		
INVPROV*GDPpcRATIO							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

Notes: robust standard errors within parentheses, constant omitted from tables
** (*) denotes 5% (10%) significance level

Table 5   Differences between UK and US FDI, 1980–2001

	Ln (FDI)			
	US FDI	UK FDI	US FDI	UK FDI
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			
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

Notes: robust standard errors within parentheses for OLS estimations
** (*) denotes 5% (10%) significance level

Table 6   Dynamic specifications for UK and US FDI 1981–2001

	Δln (FDI) –pooled	Δ Ln (UK FDI)	Δln(US FDI)
ΔLn (GDP_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)**
Ln(GDP_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

Notes: robust standard errors within parentheses for first column
** (*) denotes 5% (10%) significance level

6   Conclusions

This paper examined the relationship between Regional Integration and FDI in developing countries. A theoretical and empirical literature on Regional Integration and FDI has begun to emerge over the past decade which appears to show a consensus in the literature 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 regions are more successful in attracting FDI than others, and if so, why some regions are more successful, and crucially whether trade negotiators can design an RTA in order to have the best possible outcome for FDI.

We argued that it is important to move beyond describing a region as a "black box" and conduct empirical research that can help to identify the effects of specific investment-related provisions in RTAs on Foreign Direct Investment. We illustrated this point on the basis of empirical examples. In particular, we estimated a model explaining the real stock of UK and US FDI in developing countries, covering 68 (for UK FDI) and 97 (US FDI) developing countries thus moving beyond analyses on the basis of the familiar OECD database, over a period 1980-2001, by a number of key explanatory variables and a variable that measures the scope of regional investment and trade provisions in key regions.

The new econometric evidence in this paper showed that i) while membership of a region can lead to further extra regional FDI inflows, the type of region matters for attracting FDI, i.e. whether or not regions include certain trade and investment provisions; and ii) that the position of countries within a region matters for attracting FDI, i.e. that smaller countries and countries located further away from the largest

country in the region benefit less from being part of a region 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.

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Data appendix

Foreign Direct Investment
US FDI: US direct investment position abroad on a historical cost-basis, in '000 US$, 90 countries, 1980–2001, see www.bea.gov.uk
UK FDI: Net book value of FDI by UK enterprises, '000 US$, 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

Other raw 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 US$
GDPG   Annual Change in Gross Domestic Product, percentage
PHONES   telephone landlines, # per 1,000 population
ROADS   Road network length, kilometres

Transformed variables
GDPpcRATI0   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.