AUSTRALIA–JAPAN RESEARCH CENTRE
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MULTINATIONAL CORPORATIONS AND PACIFIC REGIONALISM

Philippa Dee

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Multinational Corporations and Pacific Regionalism*

The purpose of this paper is twofold. The first is to determine empirically whether there is a unique regional model of foreign direct investment (FDI) somewhere in the Asia–Pacific region, driven by complex 'network' behaviour of multinational corporations. The second is to determine empirically whether the investment provisions of preferential trade agreements (PTAs) have had any influence on this regional investment behaviour. The results suggest that the answer to the first question is affirmative and the answer to the second is negative. They show that when FDI and trade are sufficiently driven by fundamentals, as in Asia, the resulting network patterns of investment do not need to be boosted by investment provisions of PTAs. Further, the network patterns can be sufficiently strong to insulate a country from investment diversion when the FDI source countries play the PTA game elsewhere. So the investment provisions of PTAs pose neither a threat nor a promise to FDI in the Asian region. But a very real threat may come from the trade provisions of PTAs.

Introduction

Time was when investment was investment, and trade was trade, and the contribution of each to economic development was examined separately. Foreign direct investment was to be encouraged by having a good investment climate, because investment added to the stock of resources for economic development. Trade was to be encouraged by having an open trading regime, because trade provided the discipline of competition, ensuring the most efficient use of the resources available.

Now it is recognised that foreign direct investment and trade respond jointly to the complex forces of economic geography. Both phenomena reflect 'a tug of war between forces that tend to promote geographical concentration and those that tend to oppose it — between "centripetal" and "centrifugal" forces' (Krugman 1998: 8). And the key players making the balancing decisions that determine the resulting trade and investment flows are multinational corporations.

Centripetal forces tend to ensure that economic activity is concentrated. Centripetal forces include large local markets (which create both backward and forward linkages), thick labour markets, and pure external economies (such as information spill-overs). In an

international context, an important centripetal force is plant-level economies of scale. These provide an incentive to concentrate production in a particular location and serve other markets via international trade.

Centrifugal forces tend to ensure that economic activity is dispersed. Centripetal forces include immobile factors (for example, skilled labour, land) whose shortage may bid up factor prices and restrict further concentration, and purely external diseconomies (for example, congestion). In an international context, two important centrifugal forces are transport costs (both trade barriers and shipping costs) that make it relatively expensive to serve a market via trade, and differences in factor endowments, which may make it expensive to concentrate all stages of production at home. A final important factor is firm-level economies of scale, which mean that even if economic activity is geographically dispersed, it is still carried out by the same firm, hence promoting foreign direct investment (FDI).

Early models of multinational behaviour that reflected a balancing of these forces were models of horizontal and vertical FDI. Horizontal FDI was 'market seeking'. It reflected a desire to place economic activity close to markets, so as to minimise trade costs. Vertical FDI was 'factor seeking'. It reflected a desire to carry out the unskilled labour-intensive elements of production in locations with relatively abundant unskilled labour.

Early examples of literature that explained the behaviour of multinationals in these terms included Markusen (1984) and Helpman (1984). These models forced FDI to take one or the other of these forms. More recent studies have integrated the two motivations for FDI, particularly in the 'knowledge capital' model of FDI by Markusen (1997, 2002).

But anecdotal evidence suggests that these characterisations of multinational behaviour may be too simplistic. For example, Victor Fung, a Hong Kong clothing and textile executive, no longer describes himself as being in the textile and clothing business, but rather in the supply chain management business. He describes how his company may divide the production process for a particular clothing order into six or more steps in different countries throughout the East Asian region, and will re-optimise the supply chain for each new order. He describes this process as the 'democratisation' of the global production system, where every economy has a place (Fung 2005). Further, firms such as his may invest in some countries, and deal at arms length in others. This behaviour is better described in network terms, rather than as simple horizontal or vertical FDI.

The purpose of this paper is twofold. The first is to determine empirically whether there is a unique regional model of FDI (somewhere) in the Asia–Pacific region, driven by such 'network' behaviour. This question is examined by estimating a theoretical model of FDI that can account for such behaviour, and ascertaining whether it fits FDI patterns in the Asian region better than elsewhere. The second purpose is to determine empirically whether the investment provisions of preferential trade agreements (PTAs) have had any influence on this

regional investment behaviour. This question is examined by including measures of the extent of investment provisions in the estimated model of FDI. The results suggest that the answer to the first question is affirmative and the answer to the second is negative. By comparing this behaviour to that in other regions, the paper draws conclusions about fruitful directions for future regional integration initiatives.

Theoretical models of FDI

Some recent empirical studies of the determinants of FDI have used a gravity model specification of investment (for example, Stein and Daude 2001, Yeyati, Stein and Daude 2003, Bevin and Estrin 2004, Egger and Pfaffermayr 2004a, Dee and Gali 2005). In this model, investment is driven by the sizes of the sending and receiving countries and by the distance between them, where the latter is a proxy for total transport costs. The justification is a loose one — since models of trade in differentiated products provide theoretical backing for a gravity model specification of *trade*, and since such models also explain FDI, they therefore provide backing for a gravity model specification of *investment*. The arguments recognise that trade and investment are linked, and can be either substitutes or complements, but the arguments are largely informal.

More recently, 'post-gravity' empirical specifications of the determinants of FDI have been drawn from formal analytical models in which decisions to trade or invest are made endogenously, based on such factors as economies of scale and transport costs. Seminal studies in this vein are Carr, Markusen and Maskus (2001), Markusen and Maskus (2002), Blonigen and Davis (2000), Blonigen Davies and Head (2003), Blonigen and Davies (2004), and Carr, Markusen and Maskus (2003). Simulations of the formal analytical models provide testable hypotheses that are then tested econometrically using real world data. Blonigen and Davies (2000) do a head-to-head comparison of the Markusen and Maskus (MM) specification with a gravity model and find that MM model consistently fits the data better.[1]

Most models of either form find that the investment provisions of PTAs boost FDI activity.[2] However, most 'post-gravity' specifications are based on a relatively simple, single-stage representation of production in a two-country framework, ruling out the possibility of the network pattern described by Victor Fung. Their findings of a positive effect of the FDI provisions of PTAs could be the result of mis-specification of the underlying investment behaviour, or alternatively, of a naïve specification of the investment provisions of PTAs. Further, most tests of the post-gravity specifications have been made using data sets that describe FDI into and out of the United States. This is because the United States is one of the few countries to collect systematic data on the activities of foreign affiliates. However, the behaviour of US multinationals investing abroad, or of other multinationals investing in the

United States, need not be representative of multinational activity in the region more generally.

Very recently, a new class of analytical models has allowed for more 'complex' patterns of trade and investment (Ekholm, Forslid and Markusen 2003, Grossman, Helpman and Szeidl 2003, Yeaple 2003, Egger, Larch and Pfaffermayr 2004, Baltagi, Egger and Pfaffermayr 2005). These could potentially provide a richer specification of the determinants of FDI, taking account of its network characteristics and its interactions with trade flows. Of these specifications, the Baltagi, Egger and Pfaffermayr (2005) model is the most promising, because it allows for two-stage production in a three-country framework. It therefore makes provision analytically for a network pattern of trade and investment, and so is less likely to suffer mis-specification bias.

In this model, four types of 'complex' FDI are possible, depending on the combinations of relative factor endowments, transport costs, and economies of scale. Taking *d* as the parent country, *i* as the host country and *j* as the third country, the investment patterns of the parent country can be

- horizontal — plants in *d* and *i*, with exports from *d* to *j*
- export platform (complex horizontal) — plants in *d* and *i*, with exports from *i* to *j*
- vertical — plants in *i* and *j*, with exports from *i* to *d*
- complex vertical — plants in *i* and *j*, with exports from *j* to *d*.

These authors make clear that the complex vertical pattern is also underpinned by exports from *i* to *j*, so this pattern corresponds closely to that described by Victor Fung. If export platform FDI was accompanied by exports from *j* to *d* it could also correspond to a network pattern, differing only from complex vertical FDI in that the interaction between *d* and *j* was arms-length via trade, rather than via FDI. However, other motivations may also be present in the Asia–Pacific region.

One of the strengths of this framework is that it shows how the incentives for parent *d* to invest in host *i* depend not just on the characteristics of the particular host *i*, but also on the characteristics of other countries in the network *j*. Indeed, the so-called third-country effects play an important role in being able to infer which type of investment is taking place between *d* and *i*.

Using simulations of their analytical model, these authors show that all four types of bilateral FDI between *d* and *i* should be expected to increase with bilateral total size, with the parent-to-host capital endowment ratio (K_d/K_i), with the parent-to-host skilled labour ratio

(H_d/H_i), and to decrease with the unskilled labour ratio (L_d/L_i). The effects of similarity in size between *d* and *i* are mixed.[3]

Thus far there are no clear predictions about the mathematical signs of particular determinants that can be used to distinguish which type of FDI is taking place. However, two interaction terms are important. The first is between the *d*-to-*i* capital endowment ratio and bilateral size. This captures the fact that *d*'s capital abundance is more in favour of bilateral FDI at larger bilateral size. The second interaction term is the product of log differences in relative factor endowments and log transport costs. This accounts for the fact that an increase in transport costs would lead to more horizontal-type investment (simple or complex) and less vertical-type investment.

The third-country effects also help to distinguish which type of investment is occurring between *d* and *i*. In general terms, the third-country effects reflect a trade-off between demand and supply effects. The bigger *j* is, the more it is likely to appeal as an alternative base for investment, in order to serve the local market directly. However, such relocation also depends on supply factors — on *j*'s factor endowments relative to *i*, but also on *j*'s supply of exports to *d* and *i*. The pattern of expected third-country effects are reported, along with own country effects, in Table 1. As noted, the signs of the third-country effects are useful ways to distinguish which type of bilateral FDI is occurring between *d* and *i*.

For estimation purposes, the framework of the Baltagi, Egger and Pfaffermayr (2005) model has been extended in two ways. The first is to include distance as an explicit additional determinant of bilateral FDI, as was done in Egger and Pfaffermayr (2004b). Greater distance between *d* and *i* would increase the cost of serving *i*'s market via exports (thus promoting FDI), but it may also increase the set-up costs of establishing a branch in *i* (thus reducing FDI). Hence the sign of this variable is ambiguous, irrespective of the type of FDI taking place. However, its inclusion will reduce the risk of mis-specification, and hence reduce the risk of mis-attributing the potential effects of PTAs.

Finally, the framework has been expanded to include index measures of the investment provisions of any PTAs between *d* and *i* (own-country effects) and *d* and *j* (third-country effects). In estimating their framework, Baltagi, Egger and Pfaffermayr (2005) made provision for spatial correlation in error terms. One obvious source of such spatial correlation is the existence of PTAs. Hence, in the current specification, this effect has been incorporated deterministically, using index measures of the provisions of PTAs.

Thus the full specification used for estimation purposes is as follows:

$$\mathbf{F}_t = \beta_0 + \beta_1\mathbf{dis} + \beta_2\mathbf{G}_t + \beta_3\mathbf{S}_t + \beta_4\mathbf{k}_t + \beta_5\mathbf{h}_t + \beta_6\mathbf{l}_t + \beta_7\mathbf{gamma}_t + \beta_8\mathbf{phi}_t + \beta_9\mathbf{risk} + \beta_{10}\mathbf{P}_t + \beta_{11}\mathbf{wG}_t + \beta_{12}\mathbf{wS}_t + \beta_{13}\mathbf{wk}_t + \beta_{14}\mathbf{wh}_t + \beta_{15}\mathbf{wl}_t + \beta_{16}\mathbf{wgamma}_t + \beta_{17}\mathbf{wphi}_t + \beta_{18}\mathbf{wrisk} + \beta_{19}\mathbf{wP}_t + \mathbf{u}_t$$

Table 1 Expected signs of determinants of complex FDI from *d* to *i*

Explanatory variable	Mode of FDI			
	Horizontal	Export platform	Vertical	Complex vertical
Bilateral changes[a]				
dis = distance between d and i	+/-	+/-	+/-	+/-
G = bilateral size of d plus i	+	+	+	+
S = similarity in size of d and i	+/-	+ -/	+	+/-
k = $\ln(K_d/K_i)$	+	+	+	+
h = $\ln(H_d/H_i)$	+	+	+	+
l = $\ln(L_d/L_i)$	-	-	-	-
gamma = G*k	+	+	+	-
phi = ln(dis)*(k-l)	+	+	-	+/-
risk rating of i	+	+	+	+
FTA lib'n between d and i:				
- cross-border trade	+/-	+/-	+/-	+/-
- investment	+	+	+	+
- movement of people	+/-	+/-	+/-	+/-
Third-country changes[b]				
wG = bilateral size of d and j	+	+	+	+
wS = similarity in size of d and j	+	+	+/-	+/-
wk = $\ln(K_d/K_j)$	-	+	+	-
wh = $\ln(H_d/H_j)$	+	+	-	-
wl = $\ln(L_d/L_j)$	+	-	+	-
wgamma = wG*wk	+	+	-	+
wphi = $\ln(dis_{dj})$*(wk-wl)	+	+	+/-	+
Wrisk = risk rating of j	-	-	-	+/-
FTA liberalisation between d and j:				
- cross-border trade	+/-	+/-	+/-	+/-
- investment	-	-	-	+/-
- movement of people	+/-	+/-	+/-	+/-

Notes: a d is parent, i is host and j is third country.
b Predicted signs of wG to wphi are based on reasonably low values of transport costs.
Source: Based on Baltagi, Egger and Pfaffermayr (2005).

where

$\mathbf{F}_t$ is the log of the bilateral stock of outward FDI from parent *d* to host *i* in year t

dis is the distance between *d* and *i*

$\mathbf{G}_t$ = ln(GDPd + GDPi) is a measure of absolute bilateral country size in year t

$\mathbf{S}_t = (1-s_d^{\,2}-s_i^{\,2})$ where $s_d = GDP_d/(GDP_d+GDP_i)$ and $s_i = GDP_i/(GDP_d+GDP_i)$ is a measure of similarity in country size in year t

$\mathbf{k}_t = \ln(K_d/K_i)$; $\mathbf{h}_t = \ln(H_d/H_i)$; $\mathbf{l}_t = \ln(L_d/L_i)$

$\mathbf{gamma}_t = \mathbf{G}_t\,\mathbf{k}_t$ $\mathbf{phi}_t = \ln(\mathbf{dis})(\mathbf{k}_t - \mathbf{l}_t)$

risk is a measure of country investment risk in host *i*

Pt is one or more index variables measuring the strength of the investment provisions of any PTA in place between *d* and *i* in year *t*.

The remaining variables, prefixed with **w,** measure third-country effects. These are measured as the inverse distance-weighted averages of the corresponding variables between the same parent *d* and all of its other third-country hosts *j* in year *t*. Thus, for example, **wG**t is a weighted average of ln(GDPd + GDPj) over all of *d*'s other host countries *j*, where the weights are the inverse of distance between *d* and *j*. This is based on the idea that the strength of third-country effects is likely to decay with distance, as found in Egger and Pfaffermayr (2004b). In addition, as in the Baltagi Egger and Pfaffermayr (2005) model, the specification includes a measure of host-country investment risk.

This specification is estimated on a panel of annual data covering up to 32 parent countries and up to 109 hosts over the period 1988–1997. Not all parents or hosts are present in the sample in all years, so the panel is highly unbalanced. But when a parent country appears in a given year, its hosts in that year are reasonably representative. Hence the measures of third-country effects are also representative. The entire data-set has 5,826 observations. The data sources and countries are listed in the data annex.

The real-world data on which the specification is estimated clearly violate the analytical model of Baltagi, Egger and Pfaffermayr (2005) in several key respects. Their model predicts that multinationals will only arise in countries that are well endowed with capital and skilled labour. Yet in the real world, countries such as Malaysia and Thailand invest non-trivial amounts in locations like the United States, despite having an absolute disadvantage in both capital and skilled labour. How to treat this issue seems to be at the heart of the debate between Blonigen, Davies and Head (2003) and Carr, Markusen and Maskus (2003) about whether relative endowments should be measured as simple or absolute differences. The approach here is to note that even in the simple Heckscher-Ohlin framework, notions of relative factor abundance become slippery, 'on-average' concepts once the model is extended beyond two goods and two factors. However, it is reasonable to suppose that countries such as Malaysia and Thailand will invest more in the United States as their absolute disadvantage in capital or skilled labour lessens. This is consistent with the empirical specification used by Baltagi, Egger and Pfaffermayr and shown above, where relative endowments are measured using simple rather than absolute differences.

The first research task is to estimate the above specification on various country groupings, to see if particular patterns of FDI can be discerned for that grouping, on the basis that the signs of the coefficients for that grouping follow one or more of the patterns identified in Table 1. The second research task is to see whether the measures **P** or **wP** have any significance.

The expected effects of investment provisions of PTAs

If **P** is significant, it means that the bilateral FDI between parent *d* and host *i* is significantly affected by the investment provisions of PTA agreements signed between *d* and *i*. Potentially, then, this variable can measure gross 'investment creation' between the parties to a PTA, although as shall be seen shortly, whether 'creation' or 'destruction' is expected depends on the type of provision.

If **wP** is significant, it means that the bilateral FDI between parent *d* and host *i* is significantly affected by the investment provisions of PTA agreements signed between *d* and its other investment partners *j*. Potentially, then, this variable can measure 'investment diversion', although once again, the expected sign depends on the type of provisions.

How should we characterise the investment provisions of PTAs? This is not straightforward, because of the variety of ways in which investment provisions are incorporated in PTAs. Firstly, there are (at least) two broad types of agreements:

- GATS-style agreements follow the architecture of the General Agreement on Trade in Services under the WTO. Investment provisions typically only cover FDI in services — this is because commercial presence is one of the modes by which services are traded. Further, GATS-style agreements are typically positive-list agreements, so only those particular services sectors that are nominated by a member country are bound by the provisions of the agreement.

- NAFTA-style agreements follow the architecture of the NAFTA agreement between Canada, Mexico and the United States. These agreements typically have one chapter covering cross-border trade in services and a separate chapter covering investment in all sectors. Further, NAFTA-style agreements are typically negative-list agreements, so all sectors are automatically covered by the provisions of an agreement unless a member indicates otherwise in an annex of reservations and exclusions.

In addition to these (and a host of other) architectural issues governing the form of an agreement, there are also issues of *content*. A negative-list architecture may appear to guarantee a relatively liberal agreement, but this need not be the case in practice if the participants append lengthy lists of reservations and exclusions.

For the current exercise, the services and investment provisions of PTAs have been 'mapped' using the templates outlined in Tables 2–4. The first table covers the provisions governing the cross-border trade in services (modes 1 and 2 in GATS terminology), the second covers the provisions governing investment (GATS mode 3) and the third covers the provisions governing the movement of natural persons (GATS mode 4). Within each table,

Table 2 Template for scoring cross-border trade in services

	Category	Score
FORM OF AGREEMENT		
Scope	Covers everything	1
	Excludes only air passenger transport or government services	0.8
	Excludes air passenger transport and government services (same as GATS)	0.75
	Excludes a little more than GATS (e.g. financial services)	0.5
	Excludes a lot more than GATS	0.25
	Endeavours with unspecified scope (cooperation or no detailed provisions)	0.2
	No services provisions	0
MFN	Negative list bindings	1
	Positive list bindings	0.75
	Best endeavours	0.25
	No commitment	0
MFN exemptions	None	1
	None for new bilateral agreements	0.5
	Some for new bilateral agreements	0.25
	For all existing and new bilateral agreements or no commitment on MFN	0
National treatment	Negative list bindings	1
	Negative list bindings – some sectors	0.75
	Positive list bindings	0.5
	Best endeavours	0.25
	No commitment	0
Market access (i.e. prohibition on QRs as in GATS)	Negative list bindings	1
	Negative list bindings – some sectors	0.75
	Positive list bindings	0.5
	Best endeavours	0.25
	No commitment	0
Local presence not required (right of non-establishment)	Has this provision	1
	Has this provision, but with some exemptions	0.5
	Doesn't have this provision	0
Domestic regulation	General provisions as in GATS plus necessity test (or equivalent)	1
	General provisions as in GATS (transparency, not a disguised restriction)	0.75
	Measures in a reasonable and impartial manner	0.4
	Provisions for specific sectors e.g. professions	0.25
	No provisions	0
Transparency (scores additive)	Prior comment	0.3
	Publish (as in GATS)	0.4
	National inquiry point (as in GATS)	0.3
Recognition	General provisions as in GATS (nondiscrimination, based in international standards) plus provisions for all sectors	1

Continued on page 10

Table 2 contd.

	General provisions as in GATS (nondiscrimination, based in international standards) plus provisions for specific sectors	0.75
	General provisions as in GATS (nondiscrimination, based in international standards)	0.5
	Provisions for specific sectors e.g. legal, engineering	0.25
	Encouragement	0.2
	No provisions	0
Monopolies and exclusive services providers	Stronger than general provisions in GATS	1
	General provisions as in GATS (not act inconsistently with commitments, not anticompetitive in other markets)	0.75
	General provisions as in GATS plus some exceptions	0.6
	Provisions for specific sectors e.g. telecommunications	0.5
	No provisions	0
Business practices	Stronger than the GATS	1
	General provisions as in GATS (consult with a view to eliminating)	0.75
	Provisions for specific sectors	0.5
	No provisions	0
Transfers and payments	No restrictions except to safeguard balance of payments	1
	Restrictions in other prescribed circumstances	0.5
	No provisions	0
Denial of benefits (i.e. rules of origin)	Denial only to persons that do not conduct substantial (or any) business operations in other party	1
	Tougher treatment to specific sectors	0.75
	Tougher treatment to all sectors	0.5
	Total denial if owned by third party, or no provisions to prevent denial	0
Safeguards	General provisions	0
	Provisions for particular sectors	0.25
	Future negotiations	0.5
	No provisions or banned	1
Subsidies (may be in separate subsidies chapter but covers services)	Provisions limiting their use	1
	Consultation	0.5
	Future negotiations to limit their use	0.25
	No provisions	0
Government procurement in services (could be in separate chapter)	Provisions on non-discriminatory access	1
	Provisions for access in some sectors	0.75
	Future negotiations	0.5
	No provisions	0
Ratchet mechanism	All subsequent unilateral liberalisation to be bound	1
	Sectoral exceptions to ratchet mechanism	0.75
	No mechanism	0
Telecommunications (scores additive)	Interconnection (access to and use of PSTN and services by service suppliers of other party)	0.5
	Unbundling	0.1
	Particular services (e.g. leased circuits, resale, number portability)	0.1
	Competitive safeguards	0.1
	Universal Service Obligations	0.1

Continued on page 11

Table 2 contd.

Financial services (scores additive)	Allocation of scarce resources (e.g. spectrum)	0.1
	Prudential carve-out	0.4
	Provision for recognition of prudential measures	0.2
	NT for access to payments and clearing systems	0.1
	New financial services	0.1
	Privacy	0.1
	Data transfer	0.1
CONTENT OF AGREEMENT	For negative list agreements, look at non-conforming measures For positive list agreements, look at specific, horizontal and MFN commitments.	
General reservations or exceptions – modes	No modes excluded by one or more parties	1
	One mode excluded by one or more parties (e.g. mode 4)	0.5
	Two or more modes excluded by one or more parties, or no provisions	0
General reservations or exceptions – measures	No measures (MFN, NT, market access) excluded by one or more parties	1
	One measure (e.g. market access) excluded by one or more parties	0.5
	More than one measure excluded by one or more party, or no provisions	0
Sectoral exclusions (out of 46 substantive sectors) (least generous treatment among members of FTA)	No sectors excluded by one or more parties	1
	1-10 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.8
	11-20 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.6
	21-30 sectors excluded by one or more parties	0.4
	31-40 sectors excluded by one or more parties	0.2
	More than 40 sectors excluded by one or more parties, or no provisions on services trade	0
Subnational exclusions	No measures at sub-national (state or provincial) level excluded	1
	Measures at local level excluded by one or more parties	0.7
	Measures at State level excluded by one or more parties	0.4
	Measures at all subnational levels excluded by one or more parties, or no provisions on services trade	0
Other general exclusions	No other general exclusions	1
	One other exclusion (e.g. for minorities, land purchases) by at least one party	0.5
	Two or more other exclusions (e.g. for minorities, land purchases) by at least one party	0

Source: Compiled by author.

Table 3 Template for scoring investment

	Category	Score
FORM OF AGREEMENT		
Sectoral coverage	Beyond services (in separate chapter)	1
	Services only (mode 3 in services chapter)	0.5
	Based on bilateral treaties	0.4
	Endeavours without specified scope	0.25
	None	0
Scope of MFN, National Treatment, etc. provisions (scores additive)	Establishment (i.e. greenfield)	0.3
	Acquisition (i.e. merger)	0.2
	Post-establishment operation	0.3
	Resale (i.e. free movement of capital)	0.2
MFN	Negative list bindings	1
	Positive list bindings	0.75
	Best endeavours	0.25
	No commitment	0
MFN exemptions	None	1
	None for new bilateral agreements	0.5
	Some for new bilateral agreements	0.25
	For all existing and new bilateral agreements, or no provisions to prevent exemptions	0
National treatment	Negative list bindings – all sectors	1
	Negative list bindings – some sectors	0.75
	Positive list bindings – all sectors	0.5
	Best endeavours	0.25
	No commitment	0
Nationality (residency) of management and board of directors (including exceptions)	Cannot restrict either	1
	Cannot restrict either, with sectoral exceptions	0.75
	Can partially restrict board of directors	0.5
	Can partially restrict management or both. Alternatively, sectoral promises to liberalise, but no general promise.	0.25
	No provisions limiting restrictions	0
Performance requirements	No local content, trade or other specified requirements (e.g. on technology transfer, or where to sell)	1
	No local content or trade requirements i.e. as in TRIMS	0.75
	Provisions more limited than TRIMS	0.5
	No provisions	0
Transparency (in services or investment chapter (scores additive)	Prior comment	0.3
	Publish (as in GATS)	0.4
	National inquiry point (as in GATS)	0.3
Denial of benefits (i.e. rules of origin)	Denial only to persons that do not conduct substantial (or any) business operations in other party	1
	Tougher treatment to specific sectors	0.75
	Tougher treatment to all sectors	0.5
	Total denial if owned by third party, or no provisions	0

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Table 3 contd.

Expropriation, etc (scores additive)	Minimum standard of treatment	0.2
	Treatment in case of strife	0.4
	Expropriation and compensation	0.4
Transfers and payments	No restrictions except to safeguard balance of payments	1
	Restrictions in other prescribed circumstances	0.5
	No provisions	0
Investor State dispute settlement	Yes	1
	No	0
Safeguards	General provisions	0
	Provisions for particular sectors	0.25
	Future negotiations	0.5
	No provisions	1
Subsidies (may be in separate subsidies chapter but covers investment)	limiting their use	1
	Consultation	0.5
	Future negotiations	0.25
	No provisions	0
Government procurement (could be in separate chapter)	Provisions on non-discriminatory access	1
	Provisions for access in some sectors	0.75
	Future negotiations	0.5
	No provisions	0
Ratchet mechanism	All subsequent unilateral liberalisation to be bound	1
	Sectoral exceptions to ratchet mechanism	0.75
	No mechanism	0
CONTENT OF AGREEMENT		
General reservations or exceptions	No measures (MFN, NT, market access) excluded by one or more parties	1
	One measure (e.g. market access) excluded by one or more parties	0.5
	More than one measure excluded by one or more party, or no provisions	0
Sectoral exclusions (out of 46 substantive sectors)	No sectors excluded by one or more parties	1
	1–10 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.8
	11–20 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.6
	21–30 sectors excluded by one or more parties	0.4
	31–40 sectors excluded by one or more parties 0	.2
	More than 40 sectors excluded by one or more parties, or no provisions on investment	0
Subnational exclusions	No measures at sub-national level excluded	1
	Measures at local level excluded by one or more parties	0.7
	Measures at State level excluded by one or more parties	0.4
	Measures at all subnational levels excluded by one or more parties, or no provisions on investment	0
Other general exclusions	No other general exclusions	1
	No other general exclusions, but some exclusions for some sectors	0.75
	One other exclusion (e.g. for minorities, land purchases) by at least one party	0.5
	Two other exclusions (e.g. for minorities, land purchases) by at least one party, or no provisions on investment	0

Source: Compiled by author.

Table 4 Template for scoring movement of natural persons

	Category	*Score*
FORM OF AGREEMENT		
Sectoral coverage	Beyond services and investment (separate chapter)	1
	Services and investment (in both services and investment chapters)	0.75
	Services only (mode 4 in services)	0.5
	Endeavours	0.25
	None	0
Scope	Allows permanent immigration	1
	Includes access to labour market	0.75
	Temporary movement only	0.5
	No clear scope	0.25
	None	0
Immigration	Requires changes to immigration procedures (e.g. visa quotas or eligibility criteria)	1
	Subject to existing immigration laws and procedures, or no provisions	0
MFN for mode 4 delivery	Negative list bindings	1
	Positive list bindings	0.75
	Best endeavours	0.25
	No commitment	0
MFN exemptions	None	1
	None for new bilateral agreements	0.5
	Some for new bilateral agreements	0.25
	For all existing and new bilateral agreements or no commitment on MFN	0
National treatment for mode 4 delivery	Negative list bindings	1
	Negative list bindings – some sectors	0.75
	Positive list bindings	0.5
	Best endeavours	0.25
	No commitment	0
Market access (i.e. prohibition on QRs as in GATS)	Negative list bindings	1
	Negative list bindings – some sectors	0.75
	Positive list bindings	0.5
	Best endeavours	0.25
	No commitment	0
Domestic regulation	General provisions as in GATS plus necessity test (or equivalent)	1
	General provisions as in GATS (transparency, not a disguised restriction)	0.75
	Measures in a reasonable and impartial manner	0.4
	Provisions for specific sectors e.g. professions	0.25
	No provisions	0
Transparency for mode 4 delivery	Prior comment	0.3
	Publish (as in GATS)	0.4
	(scores additive) National inquiry point (as in GATS)	0.3
Transparency for temp. movement of people	Expedite procedures	0.3
	Publish	0.4

Continued on page 15

Table 4 contd.

(scores additive)	Answer queries or comments	0.3
Recognition	General provisions as in GATS (nondiscrimination, based in international standards) plus provisions for all sectors	1
	General provisions as in GATS (nondiscrimination, based in international standards) plus provisions for specific sectors	0.75
	General provisions as in GATS (nondiscrimination, based in international standards)	0.5
	Provisions for specific sectors e.g. legal, engineering	0.25
	Endeavours	0.2
	No provisions	0
Denial of benefits (i.e. rules of origin)	Denial only to persons that do not conduct substantial (or any) business operations in other party	1
	Tougher treatment to specific sectors	0.75
	Tougher treatment to all sectors	0.5
	Total denial if owned by third party or no provisions	0
Ratchet mechanism	All subsequent unilateral liberalisation to be bound	1
	Sectoral exceptions to ratchet mechanism	0.75
	No mechanism	0
CONTENT OF AGREEMENT–SERVICE DELIVERY		
General reservations or exceptions	No measures (MFN, NT, market access) excluded by one or more parties	1
	One measure (e.g. market access) excluded by one or more parties	0.5
	More than one measure excluded by one or more party, or no provisions on movement of people	0
Sectoral exclusions (out of 46 substantive sectors)	No sectors excluded by one or more parties	1
	1–10 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.8
	11–20 sectors excluded by one or more parties (e.g. maritime, audiovisual)	0.6
	21–30 sectors excluded by one or more parties	0.4
	31–40 sectors excluded by one or more parties	0.2
	More than 40 sectors excluded by one or more parties, or no provisions on movement of people	0
Subnational exclusions	No measures at sub-national level excluded	1
	Measures at local level excluded by one or more parties	0.7
	Measures at State level excluded by one or more parties	0.4
	Measures at all subnational levels excluded by one or more parties, or no provisions on movement of people	0
Other general exclusions	No other general exclusions	1
	One other exclusion (e.g. for minorities, land purchases) by at least one party	0.5
	Two other exclusions (e.g. for minorities, land purchases) by at least one party, or no provisions on movement of people	0
CONTENT OF AGREEMENT–FACILITATION OF MOBILITY		
Skill coverage (least generous treatment among members of FTA)	All groups (including unskilled)	1
	All business persons, traders and investors, intracorporate transferees, and professionals	0.5
	A subset of the above (e.g. specialists, managers and intracorporate transferees)	0.25
	No groups	0
Short term entry (least generous U treatment among	Over 90 days or no time limit mentioned	1
	p to 90 days	0.75
	Up to 60 days	0.

Continued on page 16

Table 4 contd.

members of FTA)	Up to 30 days	0.25
	Unspecified	0.1
	No short term entry, or in the case of unbinding service provisions (e.g. endeavours)	0
Long term entry (least generous treatment among members of FTA)	5 years or more or no time limit mentioned	1
	Up to 4 years	0.8
	Up to 3 years	0.6
	Up to 2 years	0.4
	Up to 1 year	0.2
	Unspecified	0.1
	No long term entry, or in the case of unbinding service provisions (e.g. endeavours)	0
Quotas on numbers of entrants	No (or not mentioned)	1
	Yes, or in the case of unbinding service provisions (e.g. endeavours)	0
Local labour market testing or other Criteria	All such tests prohibited or not required	1
	Some such tests prohibited or not required	0.5
	No prohibitions (or not mentioned or in the case of unbinding service provisions (e.g. endeavours))	0

Source: Compiled by author.

there has been a relatively comprehensive mapping of the form of an agreement, while a few broad indicators have been selected to gauge the content. Each PTA agreement is then assigned a numerical score between 0 and 1 against each particular characteristic of form or content, with higher values indicating a more liberal agreement. These scores are of ordinal rather than cardinal importance.

The various services provisions covering cross-border trade and the movement of natural persons have been scored, along with the investment provisions, in order to account for possible substitution between the different modes of services delivery. If an agreement is particularly generous in opening up cross-border trade, for example, this could promote cross-border trade at the expense of delivery via commercial presence, and hence at the expense of FDI. The provisions governing the movement of natural persons affect the movement of individual service providers (particularly in the professions) who operate on their own account. But they also affect the longer-term movement of expatriate employees of foreign multinationals. Hence more generous provisions on the movement of natural persons could boost or reduce FDI, depending on the relative importance of mode-3 versus mode-4 delivery, and on the possibility of substituting between them.

The expected signs of the PTA variables shown in Table 1 reflect the expectation that more liberal bilateral investment provisions should boost bilateral FDI, while more liberal third-country investment provisions could reduce FDI. The signs of the provisions governing cross-border trade and the movement of natural persons are ambiguous, since it is unclear

whether these modes of delivery are general equilibrium substitutes for, or complements to, FDI. While the FDI data cover FDI in all sectors, not just in services, it is widely thought that services account for at least half of all FDI. So substitution among modes of service delivery could be expected to show up in the aggregate FDI data.

The scoring has been applied to all the major agreements in force between countries in the econometric sample in the years leading up to 1997. These agreements are listed in Table 5. This table also shows the simple average of the scores against all possible services and investment characteristics for these agreements. The average scores suggest that among the most liberal agreements are NAFTA and its Latin American clones (particularly that between Colombia, Mexico and Venezuela), the CER agreement between Australia and New Zealand, and the agreements (EU, EFTA, EEA) among European nations. The Mercosur agreement among four Latin American countries and the ASEAN Framework Agreement on Services are also relatively liberal in their architecture, although their sectoral coverage is very limited.[4]

A simple average of liberalisation scores gives equal weight to each and every characteristic. This is most probably inappropriate, and the simple overall average has not been entered into the econometric specification. Ideally, the score for each characteristic should be entered separately, and the econometric estimates of the coefficients would then indicate which (if any) characteristics are significant. At a practical level, the high degree of multi-collinearity between many individual characteristics means that most of the individual PTA variables drop out, making it hard to draw any conclusions at all. As an alternative, factor analysis is used to identify linear combinations of individual characteristics that are not collinear with each other, but which jointly reproduce most of the variation in the original characteristics data. This is done separately for the provisions governing cross-border trade, investment and the movement of natural persons (since the expected signs of these differ) and for provisions on form and content, leading to 3x2=6 sets of factors. But even here, at least some of the factors drop out. In the final specification, the PTA variables are simple averages across these six sets of characteristics — the form and content (respectively) of the provisions governing cross-border trade, investment and movement of natural persons. This ensures that most PTA variables stay in the specification, so that lack of significance does not simply reflect lack of independent in-sample variation.

The in-sample variation in the PTA variables comes from two sources. Firstly, some agreements are more liberal than others, and so have higher scores. Second, new agreements were formed and some existing agreements experienced changes in membership during the 1988–1997 estimation period. So some pairs of countries have a positive value for their bilateral PTA variables in the years after forming or joining their agreement, but zero values for the years before. The use of such dynamic PTA dummies has been shown to be important for properly identifying the effects of PTAs (Dee and Gali 2005).

Table 5 PTA agreements and average liberalisation score[a]

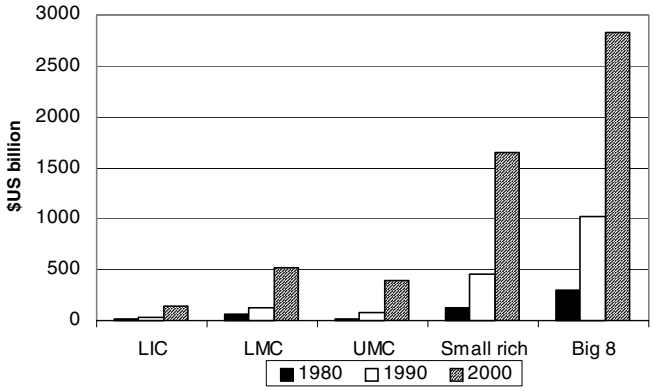
Agreement	Date	Membership dynamics	Score (0–1)
EEC/EU	1958	Austria (joined 1995), Belgium–Luxembourg, Denmark (joined 1973), Finland (joined 1995), France, Germany, Greece (joined 1981), Hungary (joined 2004), Ireland (joined 1973), Italy, Netherlands, Poland (joined 2004), Portugal (joined 1986), Spain (joined 1986), Sweden (joined 1995), United Kingdom (joined 1973).	0.54
EFTA	1960	Austria (left 1995), Denmark (left 1972), Finland (joined 1961, left 1995), Iceland (joined 1970), Norway, Portugal (left 1985), Sweden (left 1985), Switzerland, United Kingdom (left 1972).	0.53
CACM	1961	Costa Rica (joined 1962), El Salvador, Honduras, Nicaragua	0.03
EC–Switzerland	1973	EU membership, Switzerland.	0.03
EC–Iceland	1973	EU membership, Iceland	0.03
EC–Norway	1973	EU membership, Norway	0.03
Bangkok agreement	1976	Bangladesh, China (joined 2001), India, Korea, Lao PDR, Sri Lanka	0.03
LAIA	1981	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela	0.03
Sparteca	1981	Australia, Fiji, New Zealand, PNG, Solomon Is.	0.03
US–Israel	1985	Israel, United States	0.03
CER	1989	Australia, New Zealand	0.63
Mercosur	1991	Argentina, Brazil, Paraguay, Uruguay	0.47
EFTA–Turkey	1992	EFTA membership, Turkey	0.03
CARICOM–Venezuela	1992	Dominican Rep., Venezuela	0.04
Chile–Colombia	1993	Chile, Colombia	0.04
EFTA–Israel	1993	EFTA membership, Israel	0.04
CEFTA	1993	Hungary, Poland	0.03
EFTA–Romania	1993	EFTA membership, Romania	0.04
Chile–Bolivia[b]	1993	Bolivia, Chile	0.08
EEA	1994	EU membership, Iceland, Norway	0.57
NAFTA	1994	Canada (joined precursor in 1988), Mexico, United States (joined precursor in 1988)	0.60
COMESA	1994	Egypt (joined 1998), Madagascar, Mauritius,	0.08
EC–Romania	1995	EC membership, Romania	0.38
SAPTA	1995	Bangladesh, India, Nepal, Pakistan, Sri Lanka	0.03
Bolivia–Mexico	1995	Bolivia, Mexico	0.62
Costa Rica–Mexico	1995	Costa Rica, Mexico	0.59
Colombia–Mexico–Venezuela	1995	Colombia, Mexico, Venezuela	0.67
CARICOM–Colombia	1995	Colombia, Dominican Rep	0.03
ASEAN Framework Agreement on Services	1995	Indonesia, Lao PDR (joined 1997), Malaysia, Philippines, Singapore, Thailand	0.44
EC–Turkey	1996	EU membership, Turkey	0.04
Chile–Mercosur[b]	1996	Mercosur membership, Chile	0.05
Canada–Israel	1997	Canada, Israel	0.03
Israel–Turkey	1997	Israel, Turkey	0.52
Canada–Chile	1997	Canada, Chile	0.62
Bolivia–Mercosurb	1997	Mercosur membership, Bolivia	0.04

Note: a Decision 439 of Andean agreement not signed until 1998.
b Not notified to WTO.
Source: Compiled by author.

Is there a regional model of FDI in the Asia–Pacific region?

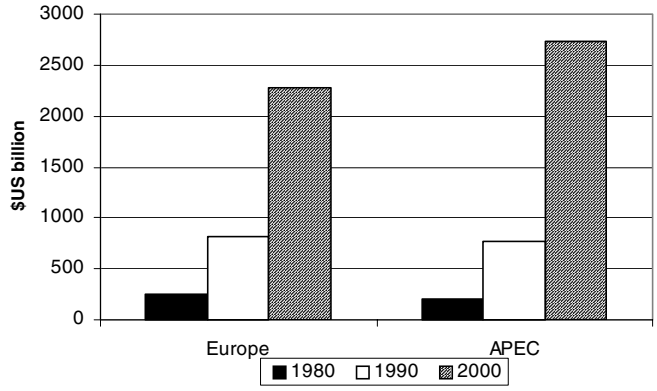
A key question is where to look — what is the appropriate definition of 'the region'? Figures 1 to 3 present recent data on inward FDI into various country groupings. Since the theoretical framework shows that host characteristics play a critical role in FDI, the grouping are of hosts and for consistency, the host countries are restricted to those that are also represented in the econometric sample. The inward FDI is from all sources, not just those sources represented in the econometric sample.

Figure 1 Inward FDI stocks into broad geographic regions



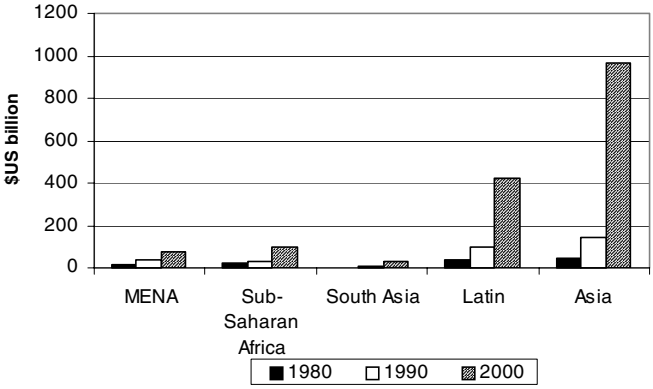
Source: http://www.unctad.org/Templates/Page.asp?intItemID=3199&lang=1.

Figure 2 Inward FDI stocks into socioeconomic groupings of regions[a]



Note: a LIC = lower income, LMC = lower middle income, UMC = upper middle income.
Source: http://www.unctad.org/Templates/Page.asp?intItemID=3199&lang=1.

Figure 3 Inward FDI stocks into 'geographic' groupings of regions[a]



Note: a MENA = Middle East and North Africa.
Source: http://www.unctad.org/Templates/Page.asp?intItemID=3199&lang=1.

Figure 1 compares the inward FDI stocks into two broad country groupings, Europe and the APEC region. (APEC members are: Australia; Brunei Darussalam; Canada; Chile; China; Hong Kong, China; Indonesia; Japan; Korea; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; The Philippines; Russia; Singapore; Chinese Taipei; Thailand; USA and Viet Nam.) Europe and APEC show a similar pattern, although the growth of FDI stocks into the APEC region was slightly higher than into Europe. Inward FDI stocks slightly more than doubled in APEC over the 1990–2000 period, while those in Europe slightly less than doubled.

Figure 2 compares inward FDI stocks into socioeconomic groupings of countries (where the lower-income, lower middle-income and upper middle-income groupings follow the World Bank definitions of these groups). FDI into the two lowest income groupings roughly trebled, while it roughly quadrupled into the upper middle-income group, over the 1990–2000 period. In all cases, this growth was from a very low base. At the other end of the spectrum, the FDI into the 'big eight' FDI countries grew by about the same rate as into Europe. These countries — Canada, France, Germany, Japan, the Netherlands, Switzerland, the United Kingdom and the United States — dominate as the main sources of accumulated FDI stocks. Figure 2 confirms that they also dominate as destinations of FDI. However, FDI stocks into the 'small rich' countries (developed countries other than the big eight) grew faster than into the big eight over 1990–2000. They grew slightly faster than into the APEC region as a whole.

Figure 3 compares inward FDI stocks into smaller 'geographic' groupings. FDI stocks in the Middle Eastern and North African (MENA) countries, sub-Saharan Africa and South

Asia are still relatively small, although stocks into sub-Saharan Africa grew two and a half times, while those into South Asia grew five-fold, over 1990–2000. FDI stocks into Latin American countries were much more significant, and trebled over the 1990–2000 period. However, FDI into 'Asia' dominated in absolute terms, and grew almost six-fold over 1990–2000. Here, 'Asia' is defined as ASEAN-plus-four — the ASEAN countries plus China, Hong Kong, Japan and Korea.

These figures suggest that in terms of volumes and growth rates, there is nothing special about the broad APEC region, although there might be something special about the Asian grouping of ASEAN-plus-four.

Tables 6–8 present the results of estimating the above specification of the determinants of FDI separately for each of the same socioeconomic or geographic country groupings of host countries. All estimating equations also included three types of fixed effects — time dummies, parent dummies and host dummies — although for brevity the coefficients on these variables are not reported. The triple indexing approach to fixed effects is advocated by Matyas (1997, 1998). Hausman tests strongly rejected the alternative, random effects specification of both parent and host effects. The specifications fit the data far better than a gravity specification estimated on similar data (Dee and Gali 2005).

In the remainder of this section, the signs of the coefficients on the bilateral and third country determinants are examined to see if FDI into any of these regions corresponds closely to one or more of the archetypes of simple or complex horizontal or vertical FDI, as summarised in Table 1. The next section examines the significance of the variables describing the investment provisions of PTAs, to see if there is any evidence of investment being 'created' or 'diverted' by these provisions.

Over the whole sample, distance has a significant negative effect on FDI, as it does for most host groupings. This suggests that the effect of distance in adding to trade costs, thus boosting FDI as an alternative way of serving the market, is outweighed by the effect of distance in adding to the set-up costs of establishing a foreign affiliate.

Over the whole sample, bilateral country size is insignificant, as it is for many host groupings, despite a strong prediction from the analytical model that it should be positively associated with FDI, no matter what the motivation for the FDI. Over the whole sample, relative bilateral factor endowments do not play a particularly strong role — relative capital stocks matter, but somewhat surprisingly, relative stocks of unskilled labour do not.

The critical interaction and third-country variables suggest that over the whole sample, the motivations for FDI are mixed. The signs of the own-country interaction variables are consistent with complex vertical FDI, but the third-country endowment variables suggest an export platform motivation, while the third-country interaction variables are consistent with

Table 6 Econometric results for bilateral FDI stocks into broad regions[a]
Dependent variable: Log of outstock from source country; time period 1988–97; unbalanced panel; fixed effects estimation

Variable	All hosts	Europe	APEC
Motives for FDI – bilateral			
dis = distance between d and i	–0.00018***	–0.00096***	–0.00013***
G = bilateral size of d plus i	0.05	0.11	–0.28*
S = similarity in size of d and i	1.08***	0.70	0.43
k = $\ln(K_d/K_i)$	1.09***	2.36***	–0.22
h = $\ln(H_d/H_{i)}$	0.20	0.04	0.39*
l = $\ln(L_d/L_i)$	–0.05	3.94***	–2.01***
gamma = G*k	–0.03**	–0.22***	0.04
phi = ln(dis)*(k–l)	–0.07***	0.04	–0.08**
risk	0.39***	–0.72***	0.10
– third-country			
wG = bilateral size of d and j	1.04***	1.18*	2.08***
wS = similarity in size of d and j	–0.31	1.41	7.52***
wk = $\ln(K_d/K_j)$	5.36***	2.97	5.68***
wh = $\ln(H_d/H_j)$	0.44*	1.05***	–0.12
wl = $\ln(L_d/L_j)$	–8.26***	–6.67***	–5.18***
wgamma = wG*wk	0.10	0.11	–0.03
wphi = $\ln(dis_{dj})$*(wk–wl)	–0.93***	–0.68**	–0.77***
wrisk	0.04	–0.01	–0.18**
FTA variables[b] – bilateral			
cb_f_ave	–1.74*	0.50	Dropped
cb_c_ave	3.61***	–2.44	–10.42***
i_f_ave	5.35***	0.20	16.22***
i_c_ave	2.20*	1.84	25.29***
mp_f_ave	–4.98***	–2.33	9.61***
mp_c_ave	–4.63***	2.14	–31.88***
– third-country			
wcb_f_ave	11.01***	5.44	7.48**
wcb_c_ave	7.12*	12.64**	4.05
wi_f_ave	–17.20***	–11.58	–15.18**
wi_c_ave	–10.12**	–15.20**	–5.22
wmp_f_ave	10.38*	5.18	7.28
wmp_c_ave	0.62	2.70	1.10
Status of FTA variables	Stable	Unstable	Unstable
R squared	0.82	0.86	0.83
Reset test – F value	39.99***	58.13***	21.29***

Notes: a Fixed effects not reported. Estimated using robust standard errors. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level. Reset test Ho: model has no omitted variables.

b cb = cross-border trade, i = investment, mp = movement of natural persons, f = form, c = content, ave = average.

Source: Estimated by author.

Table 7 Econometric results for bilateral FDI stocks into socioeconomic groupings[a]
Dependent variable: Log of outstock from source country, time period 1988–97, unbalanced panel, fixed effects estimation

Variable	Big eight	Small rich	Upper middle income	Lower middle income	Lower income
Motives for FDI – bilateral					
dis = distance between d and i	–0.00009***	–0.00021***	–0.00011***	–0.00018***	–0.00002
G = bilateral size of d plus i	–0.85**	–0.64*	0.23	1.31***	0.89
S = similarity in size of d and i	–0.64	0.52	1.55*	2.17***	0.90
k = $\ln(K_d/K_i)$	2.88**	0.39	4.16***	2.55**	5.16***
h = $\ln(H_d/H_i)$	0.01	–0.07	0.71**	–0.24	0.38
l = $\ln(L_d/L_i)$	1.52**	1.48**	2.70**	–2.81**	0.43
gamma = G*k	–0.11**	–0.05	–0.13**	–0.11**	–0.14
phi = ln(dis)*(k–l)	0.19***	–0.01	–0.26***	–0.16***	–0.43***
risk –1.02***	0.17	0.46***	–0.60	1.31**	
– *third-country*					
wG = bilateral size of d and j	–0.80	1.00*	0.85	3.06**	–0.61
wS = similarity in size of d and j	9.14***	–2.25	–24.26***	0.73	8.84
wk = $\ln(K_d/K_j)$	3.49	7.24***	5.04	11.39***	13.00***
wh = $\ln(H_d/H_j)$	0.09	1.27***	1.76**	–0.41	–0.67
wl = $\ln(L_d/L_j)$	–7.18***	–9.20***	–2.42	–6.25*	–12.28***
wgamma = wG*wk	0.22	–0.03	–0.49	–0.39	–0.06
wphi = $\ln(dis_{dj})$*(wk–wl)	–0.92***	–0.72***	0.20	–0.88**	–1.02***
wrisk	–0.13	.27**	0.51**	–0.13	0.70***
FTA variables[b] – bilateral					
cb_f_ave	5.84***	–5.76***	Dropped	766.12***	Dropped
cb_c_ave	10.96***	8.12***	–3.60	–0.94	–4.29
i_f_ave	12.60***	11.87***	–28.93**	639.30***	10.13
i_c_ave	12.21***	–3.18	Dropped	Dropped	Dropped
mp_f_ave	Dropped	–13.19***	8.63	–42.77***	Dropped
mp_c_ave	–33.05***	–0.60	23.11	90.32***	Dropped
– *third-country*					
wcb_f_ave	2.61	13.65***	30.13***	3.62	–4.41
wcb_c_ave	11.54**	5.30	–33.15**	–8.72	23.93**
wi_f_ave	1.33	–13.75*	–81.28***	–12.36	–0.14
wi_c_ave	–3.58	–7.07	18.71	26.59**	14.42
wmp_f_ave	–10.47	6.03	76.21***	22.28	–22.34
wmp_c_ave	–5.71	–1.62	–0.55	–27.79***	–30.33**
Status of FTA variables	Stable	Stable	Unstable	Unstable	Unstable
R squared	0.89	0.83	0.79	0.81	0.91
Reset test – F value	27.87***	29.48***	4.09***	3.22**	0.55

Notes: a Fixed effects not reported. Estimated using robust standard errors. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level. Reset test Ho: model has no omitted variables.

b cb = cross-border trade, i = investment, mp = movement of natural persons, f = form, c = content, ave = average.

Source: Estimated by author.

Table 8 Econometric results for bilateral FDI stocks into 'geographic' groupings[a]
Dependent variable: Log of outstock from source country, time period 1988–97, unbalanced panel, fixed effects estimation

Variable	MENA	Sub-Saharan Africa	South Asia	Latin America	Asia
Motives for FDI – bilateral					
dis = distance between d and i	0.00047***	–0.00037***	–0.00045*	–0.00018***	–0.00008***
G = bilateral size of d plus i	–5.01	4.13***	–0.79	–0.64	0.64*
S = similarity in size of d and i	3.52	.68	–2.68	–0.52	2.38***
k = $\ln(K_d/K_i)$	17.58***	–3.49	.87	–1.29	3.05***
h = $\ln(H_d/H_i)$	0.47	0.34	0.84	–0.06	0.52**
l = $\ln(L_d/L_i)$	–18.98***	9.67***	–1.25	1.18	–3.86***
gamma = G*k	–0.18	–0.22*	0.15	0.03	–0.15***
phi = ln(dis)*(k–l)	–1.65***	0.80***	0.05	0.06	–0.17***
risk –0.11	–0.11	1.53	–0.04	0.08	
– third-country					
wG = bilateral size of d and j	8.01**	–0.61	–5.18**	1.35	2.58***
wS = similarity in size of d and j	4.21	54.53***	–0.83	11.64	9.07***
wk = $\ln(K_d/K_j)$	–5.01	6.12	3.58	9.89	5.71**
wh = $\ln(H_d/H_j)$	–0.06	3.04**	–1.00	0.64	–0.18
wl = $\ln(L_d/L_j)$	1.92	–14.06*	–20.23***	–6.38	–5.63***
wgamma = wG*wk	0.15	0.59	1.14***	0.24	–0.02
wphi = $\ln(dis_{dj})$*(wk–wl)	0.48	1.59	–2.30***	–0.47	–0.86***
wrisk	0.03	0.47	0.21	0.59***	–0.27***
FTA variables[b] – bilateral					
cb_f_ave	Dropped	Dropped	Dropped	Dropped	Dropped
cb_c_ave	Dropped	Dropped	Dropped	0.11	8.87
i_f_ave	Dropped	Dropped	10.15	–36.21***	–17.79
i_c_ave	Dropped	Dropped	Dropped	Dropped	Dropped
mp_f_ave	Dropped	Dropped	Dropped	Dropped	Dropped
mp_c_ave	Dropped	Dropped	Dropped	32.49**	Dropped
– third–country					
wcb_f_ave	–2.83	2.76	–37.66***	7.63	–5.02
wcb_c_ave	–18.95	2.08	30.94*	–13.92	–8.72
wi_f_ave	36.20	24.95	65.34**	–18.74	10.36
wi_c_ave	18.48	–13.90	18.06	22.34 3	4.94***
wmp_f_ave	–27.43	–46.27	–66.42	22.06	–7.10
wmp_c_ave	–0.43	26.64	–34.48	–16.70	–29.00***
Status of FTA variables	Stable	Stable	Unstable	Stable	Stable
R squared	0.87	0.92	0.96	0.87	0.83
Reset test – F value	4.59***	3.29**	5.63***	6.30***	13.08***

Notes: a Fixed effects not reported. Estimated using robust standard errors. ***significant at the 1% level; ** significant at the 5% level; *significant at the 10% level. Reset test Ho: model has no omitted variables.

b cb = cross-border trade, i = investment, mp = movement of natural persons, f = form, c = content, ave = average.

Source: Estimated by author.

simple vertical FDI. This mixed finding, and lack of significance of some key variables, also motivates the search for a clearer picture among smaller groupings of host countries.[5]

A clearer picture fails to emerge when looking at Europe or the broad Asia–Pacific region. Using the signs of the coefficients that are significant, both regions appear to have the same mix of motivations as the whole sample. In Europe, perversely, FDI increases with the relative unskilled labour abundance of the parent country, and decreases as the host becomes less risky (measured as a higher value of the risk variable). In the Asia–Pacific region, FDI reduces as bilateral size increases, also contrary to the theoretical framework. This suggests possible mis-specification of the motivations explaining FDI into Europe and the broad Asia–Pacific region.

When looking at the big eight investors, the signs of the significant coefficients are consistent with FDI into the region being driven by vertical or complex vertical motivations, although this region has the same perverse signs as Europe for unskilled labour and country risk. It also has a perverse sign on bilateral country size, suggesting that those smaller countries that 'return-invest' into the big eight sources of FDI are not driven by the desire to defray set-up costs in a big market. Their motivation is more likely to be related to marketing activity. In the small rich countries, there is little in the bilateral variables to distinguish the motivation for FDI, although the third-country variables are consistent with a mix of export platform and vertical motivations. Again, there is a perverse sign on bilateral country size.

Looking at the three lower socioeconomic groupings, only in the lower middle-income group does FDI appear to be attracted by the unskilled labour abundance of the host country. Interestingly, this country grouping includes China. The other variables suggest a mix of motivations for FDI into the lower middle and lower income groups. They suggest a complex vertical motivation for FDI into the upper middle-income group, although the lack of significance of third-country effects means that this evidence is weak.

Turning to smaller 'geographic' groupings, there is similar weak evidence of a complex vertical motivation for FDI into MENA and sub-Saharan African countries, although the latter group has a perverse sign on the unskilled labour endowment variable. There is no clear motivation for FDI into South Asia discernable from the third-country interaction variables.

For the Latin American group, there seems little in the new economic geography to explain FDI into the region. Distance, risk, and unexplained heterogeneity (via the fixed effects) appear to carry all the explanatory power.

By contrast, FDI into the Asian group appears to fit the new economic geography explanation best. The interaction and third-country variables still suggest a mix of motivations — complex vertical, simple vertical and export platform. But most of the other variables are also significant, and none have a perverse sign. In particular, relative endowments of capital, skilled and unskilled labour all play a role, consistent with fine divisions of comparative advantage implicit in the network pattern of production and trade described in the introduction.

Thus it appears that there could be a pattern of FDI unique to the Asian region. This is not because FDI into the region falls neatly into one of the archetypes of complex FDI identified by Baltagi, Egger and Pfaffermayr (2005). Rather, it is that FDI in the region responds relatively clearly to the forces of economic geography that are present in their model, unimpeded by other considerations. While comparative advantage is an important driving force, it is mitigated by considerations of economies of scale and transport costs. The resulting patterns of FDI (and trade) reflect complex horizontal and vertical motivations. This pattern emerges most clearly for the Asian grouping of ASEAN-plus-four, not for APEC as a whole.

Do the investment provisions of PTAs play a role?

The influence of PTAs is assessed not just by looking at the formal statistical significance of the PTA variables. They are also subject to considerations of model mis-specification. Although the empirical specifications include all variables suggested by the formal analytical model, the Reset tests suggest that with one exception (the lower- income group), some variables are omitted. Furthermore, the formal tests of significance are made using robust standard errors, which correct for heteroskedasticity (especially in the variable measuring bilateral size). But calculating robust standard errors using residuals that include the influence of omitted variables could mean that the PTA variables appear to be significant, when in reality they are proxying for omitted variables. Indeed, in several of the specifications, PTA variables appear significant using robust standard errors, but are insignificant when normal standard errors are used. Because of their dummy variable nature, the PTA variables are susceptible to this instability in a way that the other variables are not. Accordingly, Tables 6–8 also report the status of the PTA variables as being stable or unstable, according to whether the significance changes when normal rather than robust standard errors are used.

On this basis, attention is paid to the PTA variables for the big eight and small rich country hosts, and for the developing countries divided along geographic rather than socioeconomic lines. These are the specifications in which the significance of the PTA variables is insensitive to the choice of standard errors. The PTA variables have quite different patterns of significance across these different groupings.

FDI into the big eight is positively related to the investment provisions of the PTA agreements that the big eight sign with the source countries, and is not deflected by the investment provisions of PTA agreements that those source countries might sign with third parties. Both the form and the content of the investment provisions matter.[6]

Furthermore, FDI into the big eight is positively related to the provisions covering cross-border trade in services in the agreements with source countries, suggesting that cross-border trade in services and foreign direct investment are general equilibrium complements rather than substitutes for those source countries. This may not be surprising. Cross-border trade is an important mode of delivery for services such as insurance, and insurance is a necessary adjunct activity to many other activities, including FDI in both services and manufacturing. Finally, FDI into the big eight is negatively related to the content of the provisions covering the movement of natural persons in the agreements with source countries. This suggests that the movement of natural persons and FDI are general equilibrium substitutes for those source countries, in terms of accessing the markets of the big eight. FDI into the big eight is also boosted by the provisions governing cross-border trade that the source countries sign with third parties. This probably reflects the headquarters role of the big eight.

FDI into the small rich countries is positively related to the form of the investment provisions of agreements that they sign with source countries, and inversely related to the form of provisions governing cross-border trade and the movement of natural persons, though positively related to the content of the cross-border provisions. The FDI into small rich countries is deflected by the form of the cross-border or investment provisions that the source countries sign with third parties. In the case of the investment provisions, this means that the FDI into the small rich countries is reduced. The relative magnitudes of the coefficients mean that if the source countries sign agreements with all third parties that are equally as generous in the form of their investment provisions as the agreements they sign with each small rich country, then each small rich country will on average suffer investment diversion that slightly exceeds investment creation.

FDI into MENA countries and sub-Saharan Africa appears to be unaffected by the services or investment provisions of PTAs. This is largely because the provisions signed by these countries to date have been minimal — as reflected by all the bilateral PTA variables being dropped. By the same token, FDI into these countries is not deflected by the services and investment provisions of PTAs that source countries might sign elsewhere. The results are similar for South Asia, although South Asia is somewhat affected by PTAs that its FDI source countries sign with third parties. However, not all these latter results are robust.

As noted in a previous section, the Latin American countries have signed PTAs that contain some of the most liberal services and investment provisions. Despite this, the form

of those investment provisions seems to deflect rather than attract FDI. The specifications that use more disaggregated measures of PTA provisions give some small insight into this result. The negative impact does not come from the provisions governing nationality requirements, performance requirements, transparency, denial of benefits (that is, rules of origin, which are typically very liberal for investment), expropriation, investor-state dispute settlement, government procurement, or the incorporation of a ratchet mechanism. These are provisions that are given a heavy weight in the second two factors from factor analysis, whereas it is the first factor (which gives heavy weight to all other provisions governing form) that is responsible for the negative impact on FDI. However, lack of in-sample variation in the individual PTA characteristics precludes verifying which particular characteristic is responsible for this effect.

Finally, FDI into the ASEAN-plus-four group is not significantly affected by the services or investment provisions of the PTA agreements that these countries sign with source countries. However, it is positively affected by the investment provisions of the PTA agreements that the source countries sign with third countries. This is further evidence that FDI into the Asian grouping has network characteristics. If the PTAs that the source countries sign with third countries facilitate investment linkages within a network, they can also boost rather than deflect bilateral investment. Moreover, FDI into the Asian grouping is negatively affected by the provisions that source countries sign with third parties governing the movement of natural persons. This is consistent with the movement of natural persons being a general equilibrium substitute for FDI (as found elsewhere), in the Asian context in which FDI with third parties is a complement to bilateral FDI within the network.

The estimated effects of the services and investment provisions of PTAs on FDI within the whole sample can be seen to be dominated by the effects on the FDI into the big eight and the small rich countries. This is not surprising. What is more revealing from a policy perspective is to see how the services and investment provisions of PTAs interact with host country characteristics across the different regional groupings. This is done in the concluding section.

Conclusions

The first aim of this paper was to determine empirically whether there was a unique regional model of FDI (somewhere) in the Asia–Pacific (or APEC) region, driven by complex 'network' behaviour of multinational corporations. There does appear to be a pattern of FDI unique to the region. This is not because FDI in the region falls neatly into a single archetypal pattern, but rather because FDI responds relatively clearly to the forces of economic geography, unimpeded by other considerations. While comparative advantage is an important

driving force, it is mitigated by considerations of economies of scale and transport costs. The resulting patterns of FDI (and trade) reflect complex horizontal and vertical motivations. This pattern emerges most clearly for the Asian grouping of ASEAN-plus-four, not for APEC as a whole.

The second aim of this paper was to determine empirically whether the investment provisions of preferential trade agreements have had any influence on regional investment behaviour.

In terms of attracting FDI, the clear winners from the investment and services provisions of PTAs appear to be the big eight — the countries that are also the main sources of accumulated FDI. The big eight do not suffer from investment diversion.

The small rich countries have been able to attract FDI by incorporating investment provisions into PTAs with source countries, although this effect can be offset by provisions in the same agreements that boost forms of service delivery that substitute for FDI. More importantly, the small rich countries have suffered investment diversion when the FDI source countries have incorporated investment provisions into PTAs with third countries.

The African and South Asian groupings of developing countries have not been major players in signing PTAs over the estimation period, but they have also been largely insulated from any investment diversion when their source countries sign PTAs with third parties. And although many countries in the Latin American group have signed NAFTA-style PTAs with strong investment provisions, this appears not to have attracted FDI into the region.

Finally, the phenomenal growth of FDI into the Asian region appears not to have been driven by the investment or services provisions of PTAs signed with their bilateral source countries. But the network nature of regional investment among the ASEAN-plus-four means that individual members have been insulated from any investment diversion when their source countries have signed PTAs with third parties. This is because the investment that the FDI sources make in third countries can be a general equilibrium complement to bilateral investment within the overall Asian network.

This last finding is particularly striking. It means that when FDI and trade are sufficiently driven by fundamentals, in a way that takes advantage of fine divisions of comparative advantage, but subject to considerations of economies of scale and transport costs, the resulting network patterns of investment do not need to be boosted by investment provisions of PTAs. Further, the network patterns can be sufficiently strong to insulate a country from investment diversion when the FDI source countries play the PTA game elsewhere. This is in strong contrast with the findings for Latin America. When FDI and trade are not sufficiently driven by fundamentals, the investment provisions of PTAs signed with source countries have little real effect.

Thus the investment provisions of PTAs pose neither a threat nor a promise to FDI in the Asian region. But a very real threat may come from the trade provisions of PTAs. In contrast to investment provisions, the trade provisions do not have generous rules of origin. PTAs that require 'substantial transformation' or 40 per cent value added to ensure that an exporter is eligible for preferential treatment in the importing country are inimical to fine divisions of comparative advantage. On this issue, the last word belongs to Victor Fung (2005):

> From a business standpoint, the supply chain should be structured not just to qualify for favourable 'rule of origin' treatment, but in the optimal way to create a product, namely the most cost-effective way for the final consumer. Why should I worry about where the point of 'substantive transformation' is? Why should I worry about it occurring in any particular location on order to qualify for duty-free treatment? The whole world should trade on the basis of economics. If the future world trading regime is to mirror economic reality and to allow the use of modern business strategies, we need a single, over-arching framework for trade.

Data Annex

The FDI data were the same as used by Dee and Gali (2005). The data came from two sources. The main source was United Nations Conference on Trade and Development (UNCTAD) which publishes bilateral investment data for various continents in a series of volumes.

- Volume 1: *World Investment Directory 1992 Asia and the Pacific*. Country tables provide data on FDI flows and stocks for 21 countries during the 1980s (UNCTAD 1992a).
- Volume 2: *World Investment Directory 1992 Central and Eastern Europe*. Country tables provide data on FDI flows and stocks for 26 countries during the 1980s (UNCTAD 1992b).
- Volume 3: *World Investment Directory 1993 Developed economies*. Country tables provide data on FDI flows and stocks for 22 countries during the 1980s (UNCTAD 1993).
- Volume 4: *World Investment Directory 1994 Latin America and the Caribbean*. Country tables provide data on FDI flows and stocks for 24 countries during the 1980s (UNCTAD 1994).

- Volume 5: *World Investment Directory 1996 Africa*. Country tables provide data on FDI flows and stocks for 53 countries during the late 1980s and early 1990s (UNCTAD 1997a).

- Volume 6: *World Investment Directory 1996 West Asia*. Country tables provide data on FDI flows and stocks for 15 countries during the late 1980s and early 1990s (UNCTAD 1997b).

- Volume 7: *World Investment Directory 2000 Asia and the Pacific*. Country tables provide data on FDI flows and stocks for 23 countries during the 1990s (UNCTAD 2000).

The second source was the OECD, which collects FDI data for OECD reporter countries and a number of OECD and non-OECD partner countries. For many developed countries, the OECD data were used to extend the UNCTAD bilateral data which ended at 1991. The OECD data are available electronically. The above UNCTAD investment directories are not available electronically, although two subsequent ones are. UNCTAD use a country-specific definition of FDI and the OECD uses a semi-standardised definition of FDI — the OECD benchmark definition.[7] The bilateral FDI data have a number of limitations.

- There is little consistency in the attribution of nationality to transit investment, i.e. FDI undertaken by a regional headquarters rather than a parent company.

- The coverage is limited, even in developed countries.[8]

- The data are sporadic for developing and under developed countries.

- Stock data are imputed from flows data by simple cumulative addition, with no allowance for depreciation.

The GDP data measure gross domestic product at purchasing power parity (PPP). Most of the GDP data were sourced from the World Bank's World Development Indicators (WDI 2001). Insufficient data were available for some economies and some years, and data were supplemented from the IMF and the OECD (IMF 2001 and OECD 2001).

The GDP data were converted to current international dollars using PPP conversion factors from the WDI. The data were insufficient for some economies and some years. In these cases, PPP conversion factors were estimated by extrapolating the data backwards. GDP at PPP was then calculated by dividing GDP in local currency units by the PPP conversion factors.

The primary source of the distance data was Boisso and Ferrantino (1997), who calculate the distance between the two largest cities. Distance is measured in kilometres and

is the great circle distance or 'as the crow flies'. Data were not available for a number of smaller economies, and data for the missing economies were taken from Haveman (2000), who measures the distance between capital cities.

The remaining data came from essentially the same sources as Baltagi, Egger and Pfaffermayr (2005). Capital stock data were estimated using the same perpetual inventory method as them from data on real gross fixed capital formation taken from WDI. Skilled and unskilled labour forces were computed by applying skilled and unskilled labour proportions to total labour force data, where the latter also came from the WDI. Unlike Baltagi, Egger and Pfaffermayr, the skilled and unskilled labour proportions were taken from the Barro and Lee data-set (available at http://www.cid.harvard.edu/ciddata/ciddata.html), since this had better coverage of developing countries than WDI. Skilled labour was defined as those with 'higher school attained' (rather than 'higher school complete'). Country investment risk data came from the International Country Risk Guide (available at http://www.prsgroup.com/icrg/icrg.html).

FDI source countries: Australia, Austria, Belgium–Luxembourg, Brazil, Canada, Chile, China, Colombia, Denmark, Finland, France, Germany, Iceland, India, Italy, Japan, Korea, Malaysia, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Romania, Singapore, Spain, Sweden, Switzerland, Thailand, United Kingdom, United States.

FDI destination countries: Algeria, Angola, Argentina, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belgium–Luxembourg, Belize, Bolivia, Brazil, Burundi, Cameroon, Canada, Central African Republic, Chile, China, Colombia, Congo (Rep), Costa Rica, Cote d'Ivoire, Cyprus, Denmark, Dominican Rep, Ecuador, Egypt, El Salvador, Ethiopia, Fiji, Finland, France, Gabon, Germany, Ghana, Greece, Guatemala, Guinea, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Korea, Kuwait, Lao PDR, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Morocco, Mozambique, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Solomon Is, South Africa, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Syrian Rep, Tanzania, Thailand, Togo, Trinidad Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Zambia, Zimbabwe.

Notes

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1 Blonigen (2005) gives a recent comprehensive review of the empirical literature on FDI determinants.

2 The findings on the effects of host country trade restrictions on FDI have been more variable. This is not surprising, since theory suggests that the impact of host trade restrictions on inward FDI is ambiguous.

3 Export platform FDI from *d* to *i* would increase with similarity, while horizontal and complex vertical FDI would increase with the size of *d* relative to *i*. However, vertical FDI would decrease with the *d* to *i* size ratio.

4 Content has been scored so that it reflects current commitments for all years in which an agreement is in force, even if (as in the case of the ASEAN Framework Agreement on Services and the EC/EU agreement) commitments have become more generous over time. Indeed, the first sectoral commitments under the ASEAN Framework Agreement were not made until 1997, two years after the architecture of the agreement was signed. But even on current commitments, the ASEAN Framework Agreement on Services scores very poorly on content, so this feature of the scoring is not expected to influence the results.

5 Note that splitting the sample by source countries gave the same mixed and indeterminate results as for the sample as a whole.

6 Although Japan is a member of the big eight, it is largely exempt from this assessment because it had signed no PTAs over the period.

7 Not all OECD countries comply with the OECD benchmark definition, which requires 10 per cent or more of the ordinary shares or voting power for investment to be 'direct'. The OECD uses the 'fully consolidated' system, that is the subsidiary of an subsidiary is automatically a subsidiary.

8 The UK statistics exclude oil and the financial sector in most years. Given the importance of the United Kingdom as a financial centre of the world and as an oil trading country, this leads to a serious underestimation of the United Kingdom's foreign investment.

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