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The Effects of Preferential Trade Agreements on Foreign Direct Investment: Evidence from the African Caribbean Pacific Region

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Abstract

Our empirical analysis utilises panel data on bilateral FDI stocks from 34 OECD countries into 45 ACP countries over the period 2000-2017 to consider the role of PTAs in attracting FDI. We control for policies relating to trade, taxes and investment, along with other explanatory variables identified in the literature. We conclude the prevalence of market seeking FDI in the ACP region, with a role for regional integration in accessing surrounding market potential. We find no significant effect of PTAs on FDI in the Caribbean, while in Africa, the effects depend on the presence of a bilateral BIT.

JEL Classification: F14, F21, R12

Keywords: Foreign Direct Investment, Preferential Trading Arrangements, Regional Integration

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1. Introduction

In this study we extend the empirical analysis of Preferential Trading Arrangements (PTAs) to include their impact on Foreign Direct Investment (FDI). The motivation to explore PTA effects beyond trade arises from two distinct developments. The first is the dramatic increase in the number and geographical spread of PTAs. According to the World Trade Organisation (WTO), the total number of PTAs exceeded 300 at the end of 2013 with a noticeable acceleration from 1990 onwards. Alongside this, the average number of participants in each PTA has increased from just two in 1990 to twelve in 2010. The second development is the extension of coverage of PTAs to include 'deep integration' provisions, which cover, for example, foreign investment, employment, competition policy, dispute settlement and standards. Such extensions indicate that PTAs' objectives go beyond trade alone which motivates our exploration of their effects on FDI.

Our empirical focus is the African Caribbean Pacific (ACP) countries, a grouping created by the Georgetown Agreement of 1975 and comprising 79 states.[1] Given the significant development constraints this group faces, FDI provides an important development opportunity (Naude & Krugell 2007, Bankole & Adewuyi 2013) and is often a motivation for PTA membership (Buthe & Milner, 2014). The ACP groups' heavy reliance on funds from abroad is well recognised. Official development assistance has declined over the years (Amendolagine et al, 2013), which has prompted efforts to obtain a more stable and long-term capital inflow through FDI (Asiedu, 2002).

The potential benefits of FDI are well known. It can, with the appropriate policy environment, serve as a catalyst for the development of local enterprise (OECD, 2002). It enables host countries to achieve investment levels beyond their own domestic saving and is an important source of modern technology (Sichei & Kinyondo 2012). It can create employment, enhance productivity and managerial skills (Asiedu 2004) and increase competition (Gastanaga et al, 1998). However, the ability of a host to attract and benefit from FDI hinges on many factors, including effective regional integration (African Economic Outlook, 2016) and strong linkages between foreign affiliates and domestic firms (Amendolagine et al 2013, Markusen & Venables 1999).

[1] Appendix Table A1 lists the ACP countries.

PTAs can play a role in attracting FDI through several channels (Medvedev, 2011). Investment provisions in the PTA itself provide a direct channel, while provisions in related areas, such as competition policy and product standards, can be indirect channels. The international locking-in of policy reforms via PTAs increases the credibility of host government's commitments to reform, thereby reducing investment risks (Buthe & Milner 2014). Greater regional integration through PTAs creates larger markets that may attract market-seeking and export platform FDI (Gnimassoun, 2019).

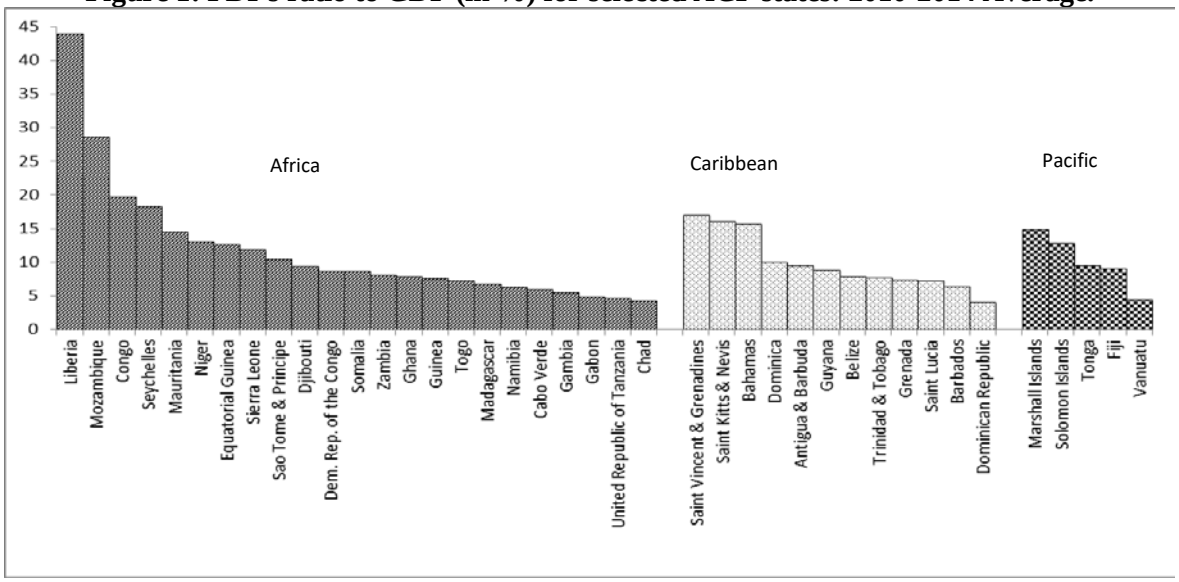
To date the ACP group's record in attracting foreign investment has been disappointing. In 2017, Africa attracted only 3 percent of global FDI, the Caribbean 0.4 percent and the Pacific just 0.1 percent. Of the FDI inflows into developing countries in 2017, the ACP group accounted for only 7.2 percent (6.2, 0.7 and 0.3 percent, respectively)[2]. The ratio of FDI to GDP varies within and across the ACP sub-groups as shown in Figure 1. Nevertheless, FDI remains an important source of foreign capital for this group, and both the IMF and World Bank have advised policy makers to pursue market liberalisation and other reforms to attract more FDI.

A common perception is that FDI in the ACP countries, particularly in Africa, is largely attracted by natural resource endowments. Although this remains true for some African countries, in others there has been growing investment into manufacturing (agro-processing, textiles, building materials, electronics), and services (telecommunications, finance, business services, hotels, restaurants). For example, over 2009-2014, 44 percent of FDI projects in Africa were in services, 32 percent in manufacturing and 24 percent in the primary sector (UNCTAD, 2014). The main extra-regional investor into Africa is Europe, followed by North America and Japan.

Although the primary sector remains important for FDI in the Caribbean, there are also significant investment inflows into manufacturing and services. Countries endowed with natural resources (such as gold, oil and gas) attract relatively higher FDI inflows, but sectors such as telecommunications, electricity, manufacturing and business financial services are also important. The main sources of FDI are as for Africa.

[2] UNCTAD World Investment Report, 2018.

Figure 1: FDI's ratio to GDP (in %) for selected ACP states: 2010-2014 Average.



(Source: Compiled using data from UNCTADstat)

The main FDI source countries for the Pacific are the US, EU, and Australia. Mining and quarrying and fisheries (specifically in Papua New Guinea and Fiji) are the main attractors in the primary sector; garment and food processing in manufacturing; while tourism, construction and business services dominate services.

While never a major recipient of FDI, the ACP group has been active in forming trade partnerships. According to the WTO (2011), the ACP had 85 PTAs in force in 2010. Of these the African subgroup had 55 PTAs, of which 24 are intra-regional and 31 are cross-regional. Around 78 percent of these PTAs are with other developing countries. Over the same time period, the Caribbean accumulated 19 PTAs (mainly cross-regional), of which 16 are with other developing countries, while the Pacific totalled 11 PTAs.

Since PTAs were conventionally designed to address trade barriers, there exists an extensive empirical literature on their effects on trade (recent examples include Kohl & Trojanowska 2015, Foster et al. 2011, and Hayakawa & Kimura, 2015). However, the deep integration provisions have received much less investigation. Although some scholars (eg. Baltagi et al, 2008) have explored PTA effects on FDI in several regional agreements, the coverage of the ACP has been limited. Most studies on individual ACP countries or sub-regional groups have confined themselves to the traditional determinants of FDI and have focused on African countries (eg. Bankole & Adewuyi 2013, Godfred et al 2015, Naude & Krugell 2007, Asiedu 2002, Asiedu & Gyimah-Brempong, 2008, Muli & Aduda, 2017).

Our empirical analysis therefore adds to a relatively small literature on FDI in the ACP. We use panel data on bilateral FDI stocks from 34 OECD countries into 45 ACP countries over the period 2000-2012. This bilateral specification allows us to control for policy variables such as a PTA, a double tax treaty (DTT) or a bilateral investment treaty (BIT) between the OECD source and ACP host country, along with other control variables identified in the literature reviewed in the next section. Our aim is to determine whether PTAs do in fact encourage FDI in the ACP countries viewed collectively. As we shall see there are good reasons for believing they might not. We then ask whether PTAs have the same implications for FDI in each of the three regional subgroups. We finish up by considering the interactions between BITs and PTAs and exploring the role of these two policies in more detail.

2: Explaining Bilateral FDI

There are two prominent theoretical frameworks on the determinants of FDI - the "eclectic or OLI paradigm" of Dunning (2001) and the 'knowledge-capital model' of Markusen (2013). Dunning argues that firms invest abroad to exploit three advantages related to ownership (O), location (L), and internalisation (I). The ownership specific advantages arise from intangible assets of a firm that gives it a competitive advantage despite being foreign. The locational advantages are host country attributes such as resource endowments, trade and industrial policies, low cost inputs and a large market size. Host institutions may also matter (Ali et al., 2010). Internalization advantages arise when the costs to the firm of outsourcing activity through product licensing or technical assistance more than offset the costs of engaging in production abroad itself (Casson, 2018). The OLI framework therefore provides firm specific motivations for FDI (ownership and internalization) and host-country specific attractions (location). The empirical literature has largely drawn on the implications of this framework in explaining the determinants of FDI, with market size claimed as the single most important factor (Chakarbarti, 2001). Some locational advantages attract different types of multinationals, with high trade costs and large market size more important for horizontal multinationals, while low trade costs and large factor price differences are important for vertical multinationals.

The knowledge-capital model is grounded on three assumptions. Firstly, the services of knowledge-based assets (including headquarter services such as R&D, marketing and management) are fragmented from production and can easily be supplied to separately located production plants. Secondly, knowledge-based assets are skilled- whereas production is

unskilled-labor intensive. These two assumptions imply incentives for vertical FDI, with firms locating activities based on countries' relative factor endowments. Finally, knowledge-based services can be used simultaneously by separately located production facilities. This provides an incentive for horizontal FDI, with affiliate firms replicating production for sale in multiple hosts.

While the early theoretical work on FDI focussed on either vertical FDI (fragmented production process motivated by factor price differences) or horizontal FDI (replication of production processes abroad), the more recent literature (e.g. Ekholm et al 2007, Yeaple 2003, Markusen 2013) has explained the presence of MNEs that are both horizontally and vertically integrated. Export-platform FDI involves an MNE producing in a host country and selling the output in the host and in third-country markets.

Many empirical studies have sought to determine the locational factors important for attracting FDI, with market size, relatively low resource costs, low business risks, and resource availability found to be significant. The limited empirical research that considers PTA effects on FDI can be grouped into case-studies of large well-known trade arrangements (e.g. NAFTA, MERCOSUR), and cross-country regression analyses.[3]

Results from case-studies comparing FDI flows *pre* and *post* PTAs generally support an increase in FDI inflows following PTA formation. For example Blomstrom & Kokko,(1997) found a modest increase in FDI into Canada following the formation of CUSFTA, an increase in FDI inflows into Mexico following NAFTA, and in Argentina and Brazil following MERCOSUR.

In a panel data regression framework, Feils & Rahman (2008) found that NAFTA had significant effects on regional FDI inflows, while Pain (1997) concluded that the EU Internal Market Program had significantly increased intra-EU FDI from UK firms, possibly at the expense of US-bound FDI. These studies caution that the effects of PTAs on FDI are not automatic but depend on concurrent host-policy reforms and specific agreement provisions whose effects cannot be disentangled.

[3] Each methodology has its strengths and weaknesses. Single country case studies have the advantage that the data is more likely to have been reported on a consistent basis and changes in some control variables (e.g. tax policy regimes etc.) can be observed and accommodated more readily. But empirical generalisations from such studies are limited to similar contexts. The conclusions of longitudinal studies are potentially more widely generalisable, but the data used is more likely to suffer from inconsistent reporting and researchers must often consign policy differences to host and source country fixed effects.

Cross-country analysis using gravity model techniques also provide support for a positive PTA-FDI link. Cardamone & Scoppola (2012) used the knowledge-capital theory to assess the impact of all EU trade agreements (both trade and deep integration provisions) on the investment of EU firms in all (173) non-EU countries over the period 1995-2005. They found a negative impact of EU tariffs, while the host country tariff effect differed across groups of partner countries. The deep integration provisions positively affected EU FDI.

Medvedev (2011) found, using a panel of 153 countries, that PTA membership was associated with increased net FDI inflows during 1980-2004. This is the most comprehensive study of PTA-FDI links because all PTAs are included. However, the selection of net FDI inflows as the dependent variable has the drawback of precluding the estimation of bilateral flows and the influence of explanatory variables of interest in such a context. Medvedev introduced two variables to capture surrounding market potential; the sum of the GDPs of PTA members and the average distance between host and all PTA members. Both these variables were found to be positive and significant.

Yeyati et al (2004) estimated an augmented gravity model on bilateral FDI flows from 20 OECD countries into 60 host nations during 1982-1999. Regional integration was captured by a dummy variable, with the GDPs of PTA members summed to capture the host's extended market. Both these variables were significant in explaining FDI. Jaumotte (2004) also finds a significant and positive effect of the extended market size created by mainly South-South PTAs on FDI inflows into a sample of 71 developing countries during 1980-1999. Likewise, Buthe & Milner (2014) found that PTAs increased flows of FDI into 122 developing countries and that PTAs with investment clauses or dispute settlement mechanisms attract comparatively more FDI.

Dee & Gali (2005) use a gravity equation to estimate the effects of trade and non-trade provisions of 18 PTAs on trade (among 116 countries over 1970-1997) and FDI inflows (among 77 countries over 1988-1997). While the use of subjective weights in their 'liberalisation index' is a limitation, this work does acknowledge the differences in breadth and depth among different PTA's, an aspect largely ignored in approaches using binary dummy variables. Osnago et al. (2016) use information on the provision content of PTAs and find that deeper trade agreements increase vertical FDI.

The bulk of the studies concentrating on the ACP have focused on African countries or African economic sub-groups, although little of this work has considered the role of PTAs in generating

FDI (Bankole & Adewayi, 2013). Most empirical work has focused on the effects of traditional host country characteristics such as market size, natural resources, infrastructure, governance and the investment environment (e.g. Bartels et al 2014, Godfred et al., 2015, Naude & Krugell, 2007, Asiedu, 2002 and 2006). In a sample of 16 West African countries, Bankole & Adewuyi (2013) find support for the role of BITs in attracting FDI, but find no such role for PTAs. From a micro-economic perspective, Kinda (2013) provides evidence using firm-level data for 30 SSA countries that horizontal FDI is encouraged by higher trade regulations and is sensitive to financial and human resource constraints, whereas vertical FDI is more responsive to infrastructure and institutional constraints.

In the Caribbean setting, Kolstad & Villanger (2008) conclude that FDI inflows are particularly sensitive to political instability and are discouraged by stringent regulations, a finding they link to the presence of tax havens. Tuman & Emmert (2004) studied the determinants of US FDI into Latin American and Caribbean countries and found that stable, more open economies with higher growth and higher human capital attracted US FDI, while membership of a trade agreement had no effect. Gani & Clemes (2015) assess the factors attracting FDI into a panel of 9 Pacific Island countries, finding that the business environment (cost of doing business, legal rights etc.) is important for FDI.

In the next section we draw on this review to select our variables and to anticipate the likely outcomes. While most of the variables that explain FDI elsewhere also explain FDI in the ACP countries, there are interesting differences as we shall see. It also turns out that there are differences across the African, Caribbean and Pacific subgroups.

3: Econometric Specification & Data

This study estimates an augmented gravity equation explaining bilateral FDI stocks between OECD sources and ACP hosts, using panel data from 2000-2017. While traditionally used for explaining bilateral trade, the gravity equation works almost as well for bilateral FDI (Bergstrand & Egger, 2007). Our equation specification is as follows:

$$FDI_{ijt} = \beta_0 + \beta_1 ACPGDP_{jt} + \beta_2 OECDGDP_{it} + \beta_3 TO_{jt} + \beta_4 IR_{jt} + \beta_5 NRR_{jt} + \beta_6 LF_{jt} + \beta_7 SMP_{jt} + \beta_8 NPTA_{jt} + \beta_9 Dist_{ij} + \beta_{10} OH_{ij} + \beta_{11} BIT_{ijt} + \beta_{12} DTT_{ijt} + \beta_{13} PTA_{ijt} + \alpha_i + \alpha_j + \alpha_t + \varepsilon_{ijt} \quad (1)$$

The dependent variable is the FDI stock (FDI_{ijt}) from each of the 34 OECD source countries (*i*) in each of the ACP host countries (*j*) in year *t*. Altogether, there are 305 country pairs in our sample[4]. The bilateral stock, rather than the flow, of FDI is selected as the dependent variable as it allows more country pairs to be included. There is no consensus in the literature on the appropriateness of either measure, however, and both flow and stock data has been used. The FDI stocks do have the advantage of being a closer proxy for the level of activity of foreign firms in the host country (Stein & Daude, 2007; Wacker, 2016), and are less sensitive to single large transactions that can arise from mergers and acquisitions.[5]

When it comes to identifying the determinants of inward FDI, we have the challenges of dealing with both the different forms of FDI – horizontal, vertical, export platform, and fragmented vertical - and the many potential channels through which a PTA could affect its location. For example, the tariff-jumping motive for horizontal FDI could be eroded by a PTA which at the same time encouraged vertical FDI motivated by resource cost differences.

Our explanatory variables are suggested by the literature and the UNCTAD's categorisation of FDI determinants in its World Investment Report (2011). Equation (1) includes host country characteristics: market size ($ACPGDP_{jt}$); trade openness (TO_{jt}); investment risk (IR_{jt}); resource abundance, captured by natural resource rent (NRR_{jt}); human resource availability, captured by the labor force (LF_{jt}); surrounding market potential (SMP_{jt}); and the number of PTAs of which the host country is a member ($NPTA_{jt}$). Also included are the source country GDP ($OECDGDP_{it}$) and dummies denoting bilateral treaties such as a BIT, a PTA or a DTT. Additionally we control for the bilateral distance ($Dist_{ij}$) and time difference in the form of the 'overlap in office hours' (OH_{ij}) between each country pair. α_i, α_j and α_t are unobserved source, host and time specific effects, respectively, and ε_{ijt} is the stochastic error term. The explanatory variables used in our model and their expected relation to FDI are summarised in Table 1. Appendix Table A4 presents the summary statistics of all non-dummy variables used in our estimation.

[4] See Tables A2 and A3 in the Appendix for the number of partners for each ACP and OECD country. We consider only positive FDI stocks.

[5] Wacker (2016) reviews the alternative measures of the activities of multinational corporations and concludes that "foreign direct investment (FDI) stock data is indeed a good proxy for measuring most real economic activities of multinational firms". Bellack (1998) and Lipsey (2007) also provide detailed discussions of the issues involved in the choice of stocks over flows and the measurement of FDI in general.

Table 1: Description and Source of Variables

Variable	Description	Source		
Dependent Variable				
FDI*	Foreign Direct Investment Stock of OECD country into ACP country, in millions of USD.	International Direct Investment Statistics database: OECD		
Independent Variables			*Expected Sign*	*Reference*
Host GDP* (*ACPGDP*)	ACP country GDP, PPP (constant 2011 international $)	WDI	+	Chakrabarti (2001)
Source GDP* (*OECDGDP*)	OECD country GDP, PPP (constant 2011 international $)	WDI	+	Chakrabarti (2001)
Host Labor Force* (*LF*)	Size of labor force of host country.	WDI	+	Noorbuksh et al (1999)
Host Trade Openness (*TO*)	Share of exports and imports of goods and services as a % of GDP of the ACP country	WDI	+/-	
Host Natural resource rent* (*NRR*)	Sum of the natural resource (oil, natural gas, coal, mineral, forest) rents received by ACP country as a % of GDP	WDI	+	Asiedu, 2006
Host Investment risk* (*IR*)	A measure of economic freedom based on both quantitative and qualitative factors	Heritage Foundation	+	Blonigen et al, 2007
Bilateral PTA	Preferential Trade Agreement	WTO	+/-	
Bilateral BIT	Bilateral Investment Treaty	UNCTAD	+	Hallward-Driemeier, 2003
Bilateral DTT	Double Taxation Treaty	UNCTAD	+	Barthel et al (2009) and
Bilateral Distance* (*Dist*)	Bilateral Great circle distance (in kilometres)	CEPII	+/-	Head et al (2009);
Bilateral Time difference (*OH*)	Overlap in office hours	www.timeanddate.com	+	Stein & Daude (2007)
Host Surrounding Market Potential* (*SMP*)	The sum of inverse-distance weighted GDPs of nearby markets. (See Appendix for details on calculation)	GDP Data from WDI Distance from CEPII	+	Medvedev (2011); Blonigen et al (2007)
Host number of PTAs (*NPTA*)	The total number of PTAs of which the host is a member	WTO	+/-	Buthe & Milner (2008)

Note: * indicates variables transformed by logs.

Two explanatory variables deserve further comment. Distance may encourage FDI as an alternative to exports due to transportation costs, but it may also reduce FDI prospects, if unfamiliarity with laws, institutions and culture increase with distance. As such, the expected sign on this variable is ambiguous. While the importance of geographical distance is well recognised in empirical models of FDI, less attention has been paid to the economic effects of time zone differences, which matter for activities that are intensive in information and require frequent interaction. While new communications technologies have reduced the financial cost of distant interaction, they cannot overcome the problem of time difference. Head et al (2009) call this the 'synchronization effect', which has a negative effect on FDI location. But they also highlight a 'continuity effect' that arises because branches operating in separate time zones allow a company to be active over a longer part of the day. Since these effects oppose each other, the link between time difference and FDI is ambiguous. In order to differentiate these effects we include as our measure of time difference, the number of office hours (assumed to be from 9am to 5pm) that overlap between host and source country. A positive sign then indicates that the synchronization effect dominates, a negative sign that it is the continuity effect that prevails.

4: Empirical Analysis: Results and Discussion.[6]

A natural starting point in a panel regression is pooled OLS which regresses the dependent variable on an intercept and the explanatory variables using both the cross-sectional and time variation in the data. But the ACP states consist of rather heterogeneous groups of countries, suggesting the likelihood of unmeasured country-specific characteristics that are not captured by our explanatory variables, in which case pooled OLS (which ignores these fixed effects) yields biased and inconsistent estimates (Baltagi, 2008). Country fixed effects were therefore introduced via a dummy variable for each host (ACP) and source (OECD) country[7] and (1) was estimated by OLS with robust standard errors. Empirical tests on the residuals revealed the presence of heteroscedasticity and autocorrelation, which are often of concern in panel data

[6] An issue that arises with the use of macroeconomic time series data is that of stationarity, but as discussed in the Econometric Appendix we are able to rule out any concerns about spurious regressions here.

[7] The F test on the significance of country fixed effects rejected the null hypothesis of no significant difference across countries ($F = 27.46$, $p=0.00$) at the 5 percent level of significance, indicating that pooled OLS is not appropriate.

due to the inclusion of both time and cross-country information.[8] Furthermore, because of concerns in the literature on endogeneity (through two way causality) between the dependent and independent variables in an FDI equation, we tested for such possibilities for the variables ACPGDP and trade openness. The results indicate that endogeneity should not be an issue in our sample. [9]

Equation (1) was re-estimated using the feasible generalised least squares (FGLS) estimator, which allows us to simultaneously account for the presence of heteroscedasticity and autocorrelation (Medvedev, 2011), and Table 2 presents the results. Three alternative specifications of the BIT and PTA dummies are considered. Column (1) includes single PTA and BIT dummies, while (2) includes separate regional PTA dummies and (3) does the same for the BIT dummy (Africa and Caribbean only).

Table 2: FGLS estimation: base model and decomposition of PTA and BIT by region

	Dependent variable Log (FDI)		
Regressors	**(1)**	**(2)**	**(3)**
ACP GDP[1]	1.560***	1.494***	1.560***
	(0.127)	(0.120)	(0.127)
OECD GDP[1]	0.379	0.478*	0.381
	(0.280)	(0.269)	(0.277)
TO	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)
IR[1]	0.404**	0.467***	0.374**
	(0.185)	(0.171)	(0.179)
NRR[1]	0.003	0.012	0.004
	(0.022)	(0.021)	(0.022)
LF[1]	0.119	0.168	0.121
	(0.209)	(0.201)	(0.206)
SMP[1]	0.080	0.099	0.088
	(0.063)	(0.063)	(0.062)
Dist[1]	-0.899***	-0.973***	-0.893***
	(0.260)	(0.265)	(0.266)
OH	0.080*	0.134***	0.086**
	(0.041)	(0.041)	(0.041)

[8] The Breusch Pagan test results for heteroscedasticity (χ^2 = 86.25, p =0.00) rejected the null hypothesis of homoscedasticity at the 5 percent level of significance. The Woodridge test for autocorrelation indicated the presence of serially correlated residuals (F (1,267) = 78.4, p=0.00).

[9] A common problem in testing endogeneity is the identification of valid instruments for the endogenous variables. A valid instrument should be highly correlated with the endogenous explanatory variable but not with the error term, and we used a one period lag of the suspect endogenous variables as an instrument to test for possible endogeneity using the Durbin-Wu-Hausman test. The null hypothesis of exogenous variables was not rejected for host GDP or trade openness (see Table A8). Other variables that may give rise to endogeneity problems are PTA and BIT, but due to the difficulty in obtaining valid instruments for these variables and the inappropriateness of using their lagged forms, we do not test for their exogeneity here.

BIT	0.034	0.055	
	(0.076)	(0.078)	
DTT	1.193***	1.279***	1.181***
	(0.104)	(0.107)	(0.104)
PTA	-0.157		-0.144
	(0.162)		(0.163)
NPTA	0.029	0.031	0.013
	(0.033)	(0.032)	(0.031)
PTA-Africa		-0.558***	
		(0.169)	
PTA-Caribbean		0.995***	
		(0.333)	
PTA-Pacific		1.171	
		(0.779)	
BIT-Africa			-0.033
			(0.122)
BIT-Caribbean			0.050
			(0.285)
Constant	-18.614***	-19.572***	-18.702***
	(4.067)	(3.993)	(4.042)

Notes: Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. Standard errors are in brackets.

All regressions in Table 2 confirm that host economy size has a significant positive effect on FDI, but surrounding market potential has no significant effect for this aggregate of countries. Greater investment risk (a lower value of the index), has a significant, negative effect on FDI. The negative coefficient on Dist suggests that FDI, like trade, is discouraged by unfamiliarity with the laws, institutions and cultures of more distant countries. In terms of resource endowments, both NRR and LF have the expected sign, but are not significant. The overlap in office hours is positive and significant in all equations, indicating the dominance of the synchronization effect noted earlier. Source country GDP is only significant in equation 2[10].

Turning to the effects of international treaties, the presence of a DTT has a significant and positive effect as expected. The insignificant coefficient on the BIT dummy, which persists even when we introduce separate regional dummies for Africa and the Caribbean[11], is consistent with some other results in the literature (Aisbett, 2009; Bellak, 2013). Falvey & Foster-McGregor (2018) find that the significant impact of BITs is in establishing new bilateral FDI links rather than expanding existing relationships. However, given that BITs are widely

[10] Given the possibility of a lagged effect of GDP (host or parent) on current FDI, we included a one-year lag of these variables and re-estimated our base model. Neither variable was significant, with very little change in the other coefficients.
[11] In the Pacific, only PNG is signatory to a BIT.

used instruments for protecting and attracting FDI, we explore the relationship between BITs and FDI further below.

Hosts who are members of more PTAs do not necessarily receive more FDI, other things equal, which is consistent with the insignificant result on openness. The presence of a bilateral PTA has no significant impact on bilateral FDI. Trade can be a complement or substitute for FDI, depending on the type of FDI, and it is not implausible that the diverse ACP group attracts a variety of types. To investigate if aggregation masks any significant sub-group PTA-FDI relationships, we regionalise our PTA dummy, and re-estimate. While the estimated coefficients on the other variables are largely unaffected[12], regionalisation of the PTA variable reveals significant differences across the sub-groups. In Africa, the PTA variable is negative and significant, indicating that as African countries open their markets through PTAs, source country firms prefer to trade rather than to invest. The opposite appears to be true in the Caribbean, where PTAs significantly encourage FDI. However, there is no evidence of any PTA-FDI relation for the Pacific.

To further investigate any regional patterns, Table 3 presents the results from estimating equation 1 on our regional sub-samples. Caution is warranted in drawing conclusions from these results because of the reduction in sample size, particularly for the Pacific.

Table 3: FGLS estimation results by regions

Dependent variable Log (FDI)			
Regressors	Africa	Caribbean	Pacific
ACP GDP$_{-1}$	1.480***	0.029	-0.549
	(0.171)	(0.346)	(0.739)
OECD GDP$_{-1}$	-0.388	0.009	2.359***
	(0.345)	(0.759)	(0.879)
TO$_{-1}$	-0.003	-0.006***	0.004
	(0.001)	(0.002)	(0.005)
IR$_{-1}$	0.480**	0.775	1.198*
	(0.237)	(0.489)	(0.641)
NRR$_{-1}$	0.021	0.014	0.005
	(0.042)	(0.031)	(0.117)
LF$_{-1}$	-0.026	2.561***	1.055**
	(0.016)	(0.615)	(0.582)
SMP$_{-1}$	0.689***	0.033	-0.336
	(0.178)	(0.096)	(0.232)

[12] Except that OECD GDP becomes significant.

Dist[1]	-0.747**	-1.073	-12.353***
	(0.339)	(1.242)	(4.109)
OH	0.140*	0.362	1.850***
	(0.079)	(0.374)	(0.392)
NPTA	0.037	-0.027	0.014
	(0.056)	(0.062)	(0.093)
BIT	0.035	0.271	
	(0.090)	(0.179)	
DTT	1.032***	1.045**	6.649***
	(0.116)	(0.464)	(1.169)
PTA	-0.355*	-0.027	0.415
	(0.193)	(0.437)	(1.170)
Constant	-18.589***	-25.484**	80.363**
	(4.346)	(15.903)	(39.366)
N	2181	550	131

Notes: Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. Standard errors are in brackets.

Despite marginal changes, the coefficient estimates for Africa (2181 observations on 212 country pairs) have the same signs and significance as in the base model, except that surrounding-market potential is now significant and positive. It seems FDI in Africa is encouraged by a larger host economy with strong surrounding market potential, low investment risk, a high office-hours overlap and a DTT between host and source. A bilateral PTA discourages FDI consistent with Table 2.

The Caribbean estimates (550 observations on 57 country pairs) show greater differences from the base estimation. For these countries FDI is unaffected by their individual market sizes, distance, and willingness to grant preferential access, both bilaterally and in general. But FDI is attracted by the availability of labor and a DTT. For these countries greater openness (TO) discourages FDI consistent with the substitution of trade for FDI in more open economies. Contrary to Table 2, a PTA has no significant effect on FDI in the Caribbean.

Similarly, neither host market size nor surrounding market potential appears to attract FDI in the Pacific (131observations on 18 country pairs). Multinational firms from large OECD countries are more likely to invest in the Pacific. They are encouraged by a larger host labor force or a DTT, but are discouraged by investment risks, distance and a small overlap in office hours.

Such mixed results for the PTA variable and the absence of any significant effects for the BIT variable leads us to consider the overlap between them, distinguishing between PTAs that contain foreign investment and dispute settlement provisions (PTA+IP) and those that do not (PTA-IP). BITs and investment provisions in PTAs have filled a policy void arising from the absence of multilateral protection of investment equivalent to the WTO protections of trade (Swenson, 2009). We expect PTA's with these provisions to attract more FDI. But we are also interested in how such provisions relate to a BIT. Are the two substitutes or do they target different types of FDI? The estimation results are shown in Table 4.

The estimates for the full ACP group are consistent with the base model - neither PTAs with investment provisions nor those without impact on FDI. For Africa, PTA+IP has a significant negative effect on FDI. Perhaps the FDI encouraged by these investment provisions facilitates trade and acts as a substitute for other FDI. Both coefficients are insignificant for the Pacific; while PTA-IP encourages FDI in the Caribbean. There is no evidence here that investment provisions in PTAs encourages FDI in any of these regional groupings.[13]

Table 4: FGLS estimation results: Decomposition of PTA by provision

	Dependent variable Log (FDI)			
Regressors	**ACP**	**Africa**	**Caribbean**	**Pacific**
ACP GDP[1]	1.550***	1.482***	0.040	-0.549
	(0.127)	(0.173)	(0.334)	(0.739)
OECD GDP[1]	0.402	-0.368	-0.025	2.359***
	(0.279)	(0.349)	(0.737)	(0.879)
TO	-0.001	-0.003	-0.007***	0.004
	(0.001)	(0.001)	(0.002)	(0.003)
IR[1]	0.420**	0.534**	0.938*	-1.198*
	(0.181)	(0.240)	(0.502)	(0.641)
NRR[1]	0.005	0.010	0.014	0.005
	(0.022)	(0.042)	(0.030)	(0.117)
LF[1]	0.133	-0.029	2.228***	1.055*
	(0.208)	(0.017)	(0.603)	(0.582)
SMP[1]	0.089	0.724***	0.014	-0.336
	(0.063)	(0.178)	(0.099)	(0.232)
NPTA	0.022	0.043	-0.010	0.014
	(0.032)	(0.056)	(0.062)	(0.093)
Dist[1]	-0.909***	-0.652**	-2.541**	-12.353***
	(0.268)	(0.349)	(1.165)	(4.110)
OH	0.081*	0.146*	0.009	1.850***
	(0.041)	(0.082)	(0.356)	(0.392)

[13] The splitting of the PTA dummy in this way does affect some coefficients in our two smaller regional samples. Investment risk becomes positive and significant in the Caribbean, but switches to negative and significant in the Pacific. Distance is now also negative and significant in the Caribbean.

BIT	0.032	0.022	0.067	
	(0.077)	(0.089)	(0.200)	
DTT	1.186***	1.072***	1.432***	6.649***
	(0.105)	(0.119)	(0.543)	(1.169)
PTA+IP	-0.123	-0.694**	0.198	-0.415
	(0.234)	(0.294)	(0.446)	(1.169)
PTA-IP	-0.175	-0.311	2.000**	0.113
	(0.168)	(0.200)	(0.948)	(5.408)
Constant	-19.021***	-20.419***	-7.758*	88.996**
	(4.102)	(4.442)	(15.168)	(39.949)

Notes: Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. Standard errors are in brackets.

Given the popularity of BITs as a policy device for attracting investment and the mixed empirical findings on their success both here and in the literature, we decided to broaden the investigation of BITs. As there are few BITs in effect in the Pacific, we confine attention to the Africa and the Caribbean sub-groups and consider them separately. The signs and significance of the estimated coefficients on the control variables in Table 5 are mostly consistent with our previous results, except that distance and overlap in office hours become insignificant in both Africa and the Caribbean. The significant negative effect of TO again implies that Caribbean countries which are more open to trade are less attractive to FDI.

In Table 5 we interact BIT separately with PTA-IP and PTA+IP and include all these variables in the regressions. There is no evidence of a significant positive effect of a BIT on FDI into Africa, although when the BIT is combined with a PTA without investment provisions it partly offsets the significant negative effect of this PTA on FDI. A PTA with investment provisions has no significant effect on FDI, except if it is supported by a BIT when it has a significant negative effect. This reinforces the view that the investment provisions in PTAs in Africa are not about attracting FDI in general. In a region where trade and FDI appear to be substitutes, it seems that these investment provisions may be designed to facilitate trade-enhancing FDI at the expense of FDI more generally.

Conversely, the significant positive coefficient on PTA-IP suggests that trade and FDI are complements in the Caribbean. However, when employed in combination with a BIT, this positive effect is almost halved, as the BIT rather perversely seems to discourage the type of FDI attracted by the PTA. A PTA with investment provisions has no significant effect on FDI unless it is employed in combination with a BIT when there is some evidence of a significant positive effect.

It has been claimed that BITs, like PTAs, may also have signalling and commitment effects that affect other FDI relationships. In Table 5, we test this by adding NBIT which indicates the total number of BITs signed by the host country. We do not find any such effect in Africa or the Caribbean. Since the FDI sources in our sample are all OECD countries, regressions (3) and (6) in Table 5 examine whether this signalling is confined to BITs with OECD countries. Our results reveal this to be the case for the Caribbean. An increase in the number of BITs with OECD countries provides greater confidence to OECD investors in general in this region. However, for African countries, while more BIT's with OECD countries does not matter much, their involvement in BIT's with countries other than OECD members increases overall OECD investor confidence in investment in Africa.

Table 5: FGLS estimation results: Further analysis of of BITs

Regressors		**Africa**			**Caribbean**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ACP GDP[1]	1.428***	1.380***	1.394***	0.212	0.068	-0.221
	(0.174)	(0.175)	(0.181)	(0.338)	(0.344)	(0.367)
OECD GDP[1]	-0.382	-0.433	-0.414	-0.363	0.396	-0.344
	(0.364)	(0.378)	(0.372)	(0.728)	(0.745)	(0.769)
TO	-0.003	-0.003	-0.001	-0.007***	-0.009***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
IR	0.506**	0.547**	0.554**	0.817*	0.967**	0.964*
	(0.240)	(0.240)	(0.241)	(0.473)	(0.491)	(0.514)
NRR	0.035	0.035	0.035	-0.005	0.002	-0.012
	(0.050)	(0.050)	(0.050)	(0.044)	(0.045)	(0.045)
LF	-0.025	-0.022	-0.024	1.706***	2.028***	2.492***
	(0.017)	(0.017)	(0.017)	(0.581)	(0.556)	(0.574)
SMP	0.750***	0.631***	0.579***	0.027	0.041	0.015
	(0.178)	(0.186)	(0.189)	(0.095)	(0.095)	(0.096)
Dist[1]	-0.572	-0.479	-0.467	-1.141	-0.958	-0.771
	(0.347)	(0.330)	(0.328)	(1.218)	(1.198)	(1.272)
OH	0.111	0.118	0.127	0.469	0.525	0.580
	(0.085)	(0.085)	(0.086)	(0.373)	(0.377)	(0.392)
DTT	1.051***	1.114***	1.136***	1.990***	1.862***	1.716***
	(0.123)	(0.121)	(0.122)	(0.559)	(0.551)	(0.562)
PTA+IP	-0.284	-0.226	-0.228	0.610	0.050	0.285
	(0.360)	(0.355)	(0.356)	(0.436)	(0.431)	(0.461)
PTA-IP	-0.719***	-0.746***	-0.733***	3.386***	3.223***	3.279***
	(0.268)	(0.264)	(0.265)	(0.945)	(0.945)	(0.994)
NPTA	0.051	0.020	0.001	-0.011	-0.048	-0.089
	(0.057)	(0.050)	(0.059)	(0.061)	(0.064)	(0.067)
BIT	0.053	0.049	0.050	-0.022	0.057	-0.270
	(0.099)	(0.102)	(0.106)	(0.218)	(0.230)	(0.231)
NBIT		0.017			0.034	
		(0.010)			(0.029)	

BIT*PTA+IP	-0.531**	-0.614**	-0.601**	0.455	0.486	0.857*
	(0.265)	(0.264)	(0.265)	(0.466)	(0.470)	(0.486)
BIT*PTA-IP	0.567**	0.565**	0.565**	-1.768*	-1.737*	-1.725*
	(0.243)	(0.237)	(0.236)	(0.959)	(0.938)	(0.999)
N of OECD			0.009			0.125***
BITs			(0.024)			(0.046)
N of other			0.029**			-0.082
BITs			(0.011)			(0.053)
BIT* NRR	-0.046	-0.044	-0.047	0.018	0.028	0.042
	(0.047)	(0.047)	(0.047)	(0.056)	(0.058)	(0.058)
Constant	-20.153***	-18.608***	-18.403***	-11.674	-16.487	-22.415
	(4.534)	(4.516)	(4.478)	(15.511)	(15.470)	(15.905)

Notes: Significance levels: *10% **5% ***1%. [1]Control variables that are expressed in natural logarithms. Standard errors are in brackets.

Finally, the regressions in Table 5 also explore whether BITs are of particular importance in the natural resources sector. Some authors have emphasised that the risk of expropriation may be higher (e.g. Aisbett 2009 and Tobin & Busch 2010) in this sector, while others have noted that BITs may be irrelevant if hosts and foreign investors find alternative ways to protect their interests (Hajzler 2014).[14] To investigate this we introduce an interaction variable (BIT*NRR). Since its coefficient is insignificant, our results offer no support for the general notion that BITs stimulate FDI in resource-abundant ACP countries.

5: Summary and Conclusions

This study examined the determinants of bilateral FDI from OECD source countries into ACP host countries, with a focus on the role of PTAs. Our estimating equation included standard variables identified in the literature as important for explaining FDI, plus additional determinants including a measure of surrounding market potential and the office hours overlap between source and host.

Our empirical investigations confirmed the importance of domestic market size in attracting foreign investors, for the ACP overall and the African and Caribbean subsamples. This indicates a prevalence of market-seeking FDI and shows that FDI into the ACP is not just about natural resources. Surrounding market potential was only significant for the African subsample,

[14] Yackee (2009) notes the prevalence of sophisticated investment contracts in the natural resources and infrastructure concession sectors, which provide more deal-specific provisions than the ambiguous one-size-fits all BIT provisions.

but this does support the importance of regional integration to unlock the market potential in this otherwise rather fragmented group of countries. FDI into the ACP is sensitive to investment risks. Both greater bilateral distance and a smaller office-hours overlap reduce FDI, the latter demonstrating that the synchronization effect dominates the continuity effect. The presence of a double tax treaty has a significant and positive impact on FDI in the ACP and each of its three subregions.

Decomposition of the ACP group into its regional subsamples revealed differences in the patterns of significant explanatory variables. While the small sample sizes for the Caribbean and Pacific subgroups, particularly the latter, suggest caution in drawing inferences, it does seem that foreign investors in the different regions may have quite different motivations. We can offer no support here for any notion that the ACP may benefit from developing common policies for attracting FDI.

While encouraging FDI is not the premier aim of a PTA, it often appears as a secondary objective. However, our only evidence that PTAs encourage FDI is confined to PTAs without investment provisions in the Caribbean. PTAs both with and without investment provisions seem to discourage FDI in Africa. There is no evidence of any significant effect in the Pacific. It seems that the FDI affected by PTAs is a substitute for trade in Africa and a complement to trade in the Caribbean. Perhaps the investment provisions are designed to attract small investments of a trade facilitating type which are insufficient in volume to offset the trade-substituting FDI that the PTA displaces in Africa. But resolving this issue awaits the availability of more disaggregated FDI data.

Consistent with some other studies, we found no evidence that a bilateral BIT encouraged FDI in the full ACP sample or the African and Caribbean sub-samples. To explore further we interacted BIT with two variables denoting the presence of a bilateral PTA, with and without investment provisions. In Africa a BIT in combination with a PTA generates a positive effect on FDI only if that PTA is without investment provisions. This reinforces the view that the investment provisions in a PTA and a BIT are somehow aimed at different types of investments in Africa. In the Caribbean there was some evidence of a positive effect if the PTA contained investment provisions, but the effect was negative in their absence. A similar interaction between BITs and a host's resource rent earnings produced nothing of significance. What further analysis did reveal was a possible signalling role for BITs, however, restricted to BITs signed with OECD countries in the Caribbean and countries outside the OECD in Africa.

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Data Appendix

Table A1: List of ACP countries

AFRICA: Angola, Cape Verde, Comoros, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo (Brazzaville), Congo (Kinshasa), Cote d'Ivoire, Djibouti, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Republic of Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe

CARIBBEAN: Antigua and Barbuda, Belize, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago

PACIFIC: Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Solomon Islands, Samoa, Timor Leste, Tonga, Tuvalu, and Vanuatu

Table A2: Number of ACP partners for each OECD country

OECD Country (# ACP partners)			
Australia (4)	Finland (1)	Japan (1)	Slovenia (4)
Austria (1)	France (38)	Korea (27)	Spain (3)
Belgium (4)	Germany (13)	Mexico (1)	SR (1)
Canada (8)	Greece (6)	Netherlands (38)	Sweden (5)
Chile (2)	Hungary (3)	Norway (26)	Switzerland (3)
Denmark (15)	Iceland (1)	NZ (3)	UK (18)
Estonia (3)	Italy (43)	Portugal (4)	US (28)

Table A3: Number of OECD partners for each ACP country

ACP country (# OECD Partners)			
Angola (10)	Dominican Rep. (15)	Mauritania (3)	St Lucia (4)
Bahamas (11)	Equatorial Guinea (5)	Mauritius (10)	St Vincent & Grenadines (3)
Barbados (8)	Ethiopia (7)	Mozambique (8)	Tanzania (9)
Belize (7)	Fiji (7)	Niger (4)	Togo (6)
Benin (6)	Gabon (6)	Nigeria (13)	Tonga (3)
Burkina Faso (4)	Gambia (3)	Papua New Guinea	Trinidad & Tobago (8)
Burundi (2)	Ghana (11)	Rwanda (3)	Uganda (9)
Cameroon (8)	Kenya (13)	Samoa (3)	Vanuatu (4)
Cent. African Rep. (3)	Liberia (10)	Senegal (5)	Zimbabwe (8)
Chad (3)	Madagascar (4)	Sierra Leone (6)	
Congo (5)	Malawi (6)	Solomon Is. (2)	
Cuba (4)	Mali (4)	South Africa (24)	

Calculation of Surrounding Market Potential

Our approach follows the Blonigen et al (2007) measure of surrounding market potential except that we only include other countries within a specific sub-region, rather than all countries everywhere. The sub-regions are defined as the five economic groupings of the African countries (West Africa, Central Africa, Eastern & Southern Africa, Eastern African Countries), the Caribbean and the Pacific. The weights are calculated as a simple inverse function where the shortest bilateral distance within the region is assigned weight of 1, and all other bilateral distances receive a weight that declines as per the equation below:

$$weight_{ij} = (\text{shortest bilateral distance}_{kj})/(\text{bilateral distance}_{ij})$$

where $distance_{ij}$ is the distance between country *i* and *j*, and the closest country to *j* in that region is *k*. This weight is then multiplied by the GDP (PPP) of country *i*. The inverse distance weighted GDP of all other countries (excluding *j*) in the sub-region of country *j* are summed to give the surrounding market potential of country *j*.

Table A4: Summary Statistics

Variable (in values)	Mean	St Deviation	Maximum	Minimum
FDI (US$M)*	948.4	4047.5	63654	-1459.8
ACP GDP (PPP, $M)*	56802	140242	1027416	451
OECD GDP (PPP, $M)*	1475113	2875518	17652819	9448
TO (%)	78.6	35.5	351.1	20.7
IR*	55.5	9.1	77.0	21.4
NRR (% of GDP)*	14.4	18.1	100.4	0
LF (millions)*	6.73	10.0	59	0.04
NPTA	3.3	1.1	6	1
SMP* (PPP,$M)*	152933	178625	1086846	2806
Distance*	7559	3140	17615	1482
OH	5.0	2.8	8.0	0

*Variables transformed into logs in all estimations. ACP GDP, TO, IR, NRR, LF, SMP and NPTA are host country specific variables and are averaged over the host countries and not as country pair variables. A similar treatment applies to OECD GDP, while Dist, OH and FDI are averaged as country pair variables.

Econometric Appendix

Tests for stationarity

The Im-Pesaran-Shin (IPS) unit root test is used as it allows the autocorrelation coefficient to vary across cross-sections. It calculates a standardised t-bar test statistic based on the averaged augmented Dickey Fuller statistics for panels (Im et al, 2003). The results are summarised in Table A5, where the null hypothesis of a unit root is rejected for all variables except for ACP GDP, OECD GDP and SMP. With the dependent variable (FDI) as a stationary process, the

inclusion of these three non-stationary variables does not raise concerns of spurious correlation[15]. Moreover, two of these non-stationary variables (ACP GDP and SMP) are also cointegrated (see Table A6), and the residuals from the FGLS estimation of equation 1 are stationary (see Table A7).

Table A5: Panel Unit Root Test – IPS

Variable	Statistic	Variable	Statistic
Log(FDI)[1]	-3.1193***	Log NRR	-1.3668**
Log(ACP GDP)	-2.1436	TO	-1.8348**
Log(OECD GDP)	-1.1542	Log IR	-2.3677***
Log(LF)	-1.9588***	Log SMP	-1.5708

Significance levels: *10% **5% ***1%. [1] includes constant and trend. Automatic lag selection based on Schwarz Information Criterion.

Table A6: Pedroni Residual Cointegration Test (ACP GDP and SMP)

	Panel Statistic	Group Statistic
Variance-Statistic	1.8327**	
rho-Statistic	2.3413	3.2914
PP-Statistic	-0.8309***	-1.7199**
ADF Statistic	-0.5274***	-4.9392***

The Pedroni (1999) Residual Cointegration test employs 4 panel statistics and 3 group statistics, reported above. It tests the null hypothesis of no cointegration against the alternative hypothesis of cointegration. * denotes the significance level - * 10%, **5%, ***1%. The null of no cointegration is rejected in 3 panel statistics and two of the group statistics, providing evidence of cointegration between ACP GDP and SMP which are both host country variables. Because our dataset has country pair dummies, we have treated these host country variables as host variables and not country pair variables.

Table A7: Unit root test on residuals of base equation

Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-23.416	0.0000	257	2226
Null: Unit root (assumes individual unit root process)				
IPS W-stat	-9.06945	0.0000	237	2166

Table A8: Endogeneity test results

Variable	Results
Host GDP	χ^2 =0.181019 p=0.6705
	F=0.175205 p=0.6756
TO	χ^2 =0.691901 p=0.4055
	F=0.67651 p=0.4109

Fixed or Random effects? The unobserved country specific factors can be incorporated into the estimation through a fixed effects model (FEM) or a random effects model (REM). In a FEM, these unobserved characteristics are subsumed in the intercept and hence each country has a different intercept, while in a REM they are considered as part of the error term (Baltagi, 2008).

[15] We re-estimated our equation after first-differencing the three non-stationary variables, and except for the coefficient size of ACP GDP and OECD GDP, the magnitude and significance of all other variables show very little difference.

The time invariant individual specific effects are allowed to be correlated with the regressors in a FEM whereas they are purely random in a REM. The Hausman specification test (χ^2 = 72.59, p = 0.00) rejects the null hypothesis that a REM provides consistent estimates and hence, the FEM is selected. Year effects are jointly insignificant (F=1.35, p=0.16) at the 5% level and hence a one way FEM is estimated. Additionally, the FEM is an appropriate specification when the focus is on a specific set of countries making inference conditional on these observed countries (Baltagi (2008)).[16]

[16] A FEM can be estimated in different ways, including within-transformation, between-effects or LSDV approach. The latter was chosen as it allows time invariant variables to be included.