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Examining the Regional Aspect of Foreign Direct Investment to Developing Countries*

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Abstract

This paper applies a general-to-specific analysis to detect regularities in the driving forces of foreign direct investment (FDI) that can explain why some regions are more attractive to foreign investors than others. The results suggest that regional differences in FDI inflows to African, Asian and Latin American countries can be fully explained by structural characteristics rather than fixed regional effects. The implication of this finding is that countries that are lagging behind other developing countries in attracting foreign capital have the opportunity to implement policies aimed at improving the investment climate for foreign investors. This also means that there is no African bias. Among a large number of return and risk variables applied in the empirical literature, growth and inflation turn out to be the only robust and significant FDI determinants across regions although the size of their impact varies.

Keywords: Foreign direct investment, Africa, Asia, Latin America, general-to-specific

JEL classifications: F21, O57

1 Introduction

During the last two decades, most developing countries have reformed their institutions, improved their infrastructure and liberalised their regulatory framework in order to attract foreign direct investments (FDI). However, Table 1 shows that FDI inflows in absolute terms remain unevenly distributed among developing countries and regions. Asia proved to be the biggest destination of FDI accounting for more than half of total FDI going to developing countries, followed by Latin America that absorbed close to one third. In Asia,

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the main part of FDI flows to East Asia, where China is the most favoured FDI destination receiving more than 20 per cent of FDI going to developing countries.[1] Africa, on the other hand, received a small and declining share of FDI. If we adjust for the economic size of the country and analyse FDI as a share of GDP, Figure 1 shows a more even distribution of FDI although regional differences persist. While East Asia took off in the 1990s, recently Africa has managed to attract further FDI inflows. Relative to its economic size, FDI to Africa is now at comparable levels with East Asia and Latin America. South Asia continues to be lagging behind. This paper sets out to analyse regional differences in FDI between African, Asian and Latin American countries.[2]

First, it reviews the subset of FDI studies that have tackled the regional aspect of the FDI decision by including regional dummies, by including interactions between regional dummies and selected explanatory variables or by analysing FDI flows on a regional basis. While the broad FDI literature has been reviewed quite frequently, this paper is the first to focus on the regional aspect of FDI and to collect regional studies in a coherent framework. This approach provides information about regularities in the driving forces of FDI across regions and points out possible region-specific variables. The findings suggest that regional dummies rarely turn out significant in elaborate models of FDI, that the significance of interactions between regional dummies and FDI determinants suggests that there is a large degree of heterogeneity between regions and, finally, that there seems to be a pool of common FDI determinants but that region-specific characteristics should also be taken into account.

Since the empirical studies reviewed in this paper vary widely in their sample selection, estimation method, time horizon and set of explanatory variables the results are not directly comparable, and it is therefore difficult to draw conclusions about why we observe differences in the regional distribution of FDI. Since there is no consensus of a theoretical framework for FDI, we let the data speak.

In the second part of the paper we apply a general-to specific analysis of the many FDI determinants that have been applied in the existing literature. We do so both in a broad cross-section of developing countries, where we also include regional dummy variables, and on a region-by-region basis. Overall, the results suggest that regional differences are not due to fixed regional effects. We find that growth and inflation are robust and significant across regions although the size of their impact varies, while other variables clearly turn out to be region-specific. While African and Asian countries are largely heterogeneous both with respect to the set of explanatory variables and their impact on FDI, Asian and

[1] In light of China's outstanding role, some studies exclude China from the sample (see UNCTAD (1994) and World Bank (1996) for further discussion). As an alternative, Jakobsen and Soysa (2006) include a China dummy that turn out positive and highly significant.

[2] A large number of studies analyse the flow of FDI to Eastern European countries. These studies are typically based on a gravity model specification of bilateral FDI flows and will not be reviewed here. Also, studies of FDI to the Middle East and North African countries are too scarce to draw meaningful comparisons.

Latin American countries are more homogeneous and can more readily be pooled as long as proper interaction terms are specified.

The paper proceeds as follows. Section 2 gives a short introduction to the ways regional differences have been modelled econometrically in the empirical FDI literature. Section 3 reviews the subset of empirical FDI studies that have set out to explain regional differences in FDI by including regional dummies, by including interactions between regional dummies and selected explanatory variables to control for heterogeneity, or undertaking regional studies that assume complete heterogeneity between regions and furthermore allow for the inclusion of region-specific variables. Section 4 applies a general-to-specific analysis of 36 potential FDI determinants in 100 developing countries on an overall as well as on a regional basis. Finally, Section 5 summarises and concludes.

2 Modelling the Regional Aspect of FDI

The regional aspect of FDI has been approached in many different ways in the empirical FDI literature. At one extreme, it has been argued that foreign investors think of countries as being completely independent and homogeneous so that FDI flows can be explained by the same set of explanatory variables and homogeneous parameters independent of the countries included in the sample:

$$FDI_{it} = \alpha + x_{it}^{'}\beta + u_{it}, \tag{1}$$

where FDI_{it} is the inflow of FDI to country i $(i = 1, ..., N)$ as a share of GDP, N is the number of developing countries in the sample at time t $(t = 1, ..., T)$, x_{it} is a vector of FDI determinants and u_{it} is an error term. In this case, regional differences in the inflow of foreign capital can be fully explained by different country characteristics captured by x_{it}. The broad FDI literature based on (1) has been reviewed quite frequently but so far no consensus about the theoretical model or the econometric specification of the FDI relation has been reached (see Bloningen (2005) for a recent survey).

The inability of (1) to explain the distribution of FDI across countries and regions has lead some researchers to look for new explanatory variables to be included in x_{it} (most notable is the recent inclusion of various risk variables), while others have tested alternative ways to model FDI. This paper focuses on the latter approach and reviews empirical FDI studies that allow for regional heterogeneity.

The first group of studies bases the analysis on a panel of countries belonging to different regions. In general, this group of studies base their empirical FDI specification on a variant of:

$$FDI_{ijt} = \alpha_j + x_{ijt}^{'}\beta_j + u_{ijt}, \tag{2}$$

where α_j is a regional dummy variable that takes on the value one for countries belonging to region j and zero otherwise ($j = 1, ..., J$ where J is the number of regions) and which adjusts for time invariant regional effects. In this case, x_{ijt} is a vector of explanatory variables that possibly includes interactions between regional dummies and selected explanatory variables.

The panel studies with regional dummies (reviewed in Section 3.1) explain regional differences in FDI inflows by time-invariant regional effects. If one believes that FDI flows are ultimately driven by arbitrage that leads to the equalisation of marginal productivity of production factors, see Selaya and Sunesen (2008), then this approach argues that the uneven distribution of FDI is due to some regional effect that allows the productivity of production factors in one region to differ systematically from other regions. We could think of this as "historic agglomeration effects" that have given the region a reputation or as permanent differences in production factors. If such time-invariant regional effects turn out to be important, the implication is that a country that is lagging behind today will stay behind irrespective of its ability to implement policies aimed at strengthening the institutions that are positively associated with FDI (included in x_{ijt}).

The panel studies with heterogeneous effects (reviewed in Section 3.2) use interactions between regional dummies and selected explanatory variables to allow for heterogeneity in the response to FDI determinants. One reason for such structural differences is that investors are attracted to different countries according to their motive for investing abroad.[3] If the composition of FDI in this way varies systematically across regions, it is likely that the flow of FDI to these regions will respond differently to traditional FDI determinants. Empirically, this means that the vector of explanatory variables should include interactions between the regional dummy variable and the explanatory variables thereby allowing parameter estimates to vary across regions.

The second group of studies (reviewed in Section 3.3) bases the analysis on a panel of countries that belong to the same region and estimates (1) for the region under review. This estimation method therefore allows for full heterogeneity in both α_i and β_i between regions. One reason for using this approach is that some studies aim at answering questions, which require the use of region-specific variables that might not be relevant or might not even exist for other regions. Examining the impact of transition on FDI inflows to Eastern European countries could be one example.

In the next section we review the large number of empirical studies that have modelled the regional aspect of FDI explicitly. We do so in order to detect empirical regularities in the driving forces of FDI that can inform us about the degree of heterogeneity across regions. Ultimately, this should lead to a greater understanding of what causes regional differences in the distribution of FDI.

[3] The literature typically distinguishes between market-seeking, resource-seeking, efficiency-seeking and asset-seeking FDI.

3 Review of Empirical FDI Studies

This section provides a comprehensive and structured review of empirical studies of FDI to African, Asian and Latin American countries that have taken the regional distribution of FDI into account by including regional dummy variables, by incorporating interactions between regional dummy variables and potential FDI determinants or by analysing FDI on a regional basis. These papers are typically based on panel data estimation methods where the dependent variable is FDI as a share of GDP but where the number of countries, the time dimension and the selection of explanatory variables differ widely.

3.1 Panel Studies with Regional Dummies

Table 2 summarises the findings of 10 studies that are based on (2) in that they include regional dummy variables. In general, the regional dummy variables should be interpreted relative to other developing countries. A significant African dummy thus suggests that Africa is different from other developing countries. As one exception, the regional dummies in Addison and Heshmati should be interpreted relative to developed countries. Overall, we find that only 10 out of the 17 dummy variables included in the 10 studies under review report dummy variables that are significant and robust to the inclusion of an extended set of explanatory variables.

More than half of the studies included in this review have analysed if there is a particular effect of being located in **Africa**. Jaspersen et al. (2000) and Asiedu (2002) find that African countries receive 2% and 1.3% points, respectively, less FDI than a comparable country outside the region. The African dummy in Addison and Heshmati (2003), Noorbakhsh and Youssef (2001), Ancharaz (2002) and Wilhelms and Witter (1998), on the other hand, turned out insignificant once economic, political and structural characteristics were taken into account.

The negative **South Asian** regional dummy found in Addison and Heshmati (2003) remains after controlling for traditional FDI determinants as well as the democratic situation in these countries. However, the significant South Asian effect in Gani (2007) disappears once governance indicators (rule of law, control of corruption and regulatory quality) are adjusted for. While a number of studies have found a positive and significant **East Asian** dummy only in the case of Addison and Heshmati (2003) did it turn out to be robust to an extended set of explanatory variables. The **Latin American** dummy in Noorbakhsh and Youssef (2001), Edwards (1990) and Hein (1992) was not robust to the inclusion of other control variables, while the results in Addison and Heshmati (2003) suggest that Latin American countries receive 1.2% points more FDI than comparable countries.

3.2 Panel Studies with Heterogeneous Effects

The six papers reviewed in this section are based on the premise that the relative impact of FDI determinants should be allowed to vary across regions, and the specification therefore includes interactions between FDI determinants and the regional dummy variables like in (2).[4] The results suggest that agglomeration effects, growth and openness are equally important in all regions, whereas the return on investment, infrastructure, political instability and fiscal incentives, among others, have a heterogeneous impact on FDI across regions. We also find that region-specific factors should be taken into account.

A number of studies analyse if countries in one region are different from other developing countries. Asiedu (2002) and Kolstad and Villanger (2008) find that openness has an equal impact on FDI irrespective of regional location. Asiedu (2002) also finds that the provision of infrastructure and the return on investment have a larger impact on FDI to African than non-African countries. The latter result is confirmed by Razafimahefa and Hamori (2005). Kolstad and Villanger (2008) find that FDI to Latin America is particularly sensitive to political instability, while the absence of regulation appears to have been a particularly beneficial factor.

Another set of studies compare determinants of FDI in several regions. Asiedu and Lien (2004) find that the impact of capital controls on FDI varies by region: capital controls have no effect on FDI to African countries but affect FDI to East Asia and Latin America adversely. Chen (1998) finds that agglomeration, growth and government expenditures are equally important in Latin America and South East Asia, whereas fiscal incentives and growth of export have a heterogeneous impact on FDI in the two regions. In his comparison of Asia and Latin America, Nasser (2007) finds a great degree of heterogeneity between the two regions. While agglomeration effects are equally important in the two regions, infrastructure (telephone lines) and political instability (revolutions and assassinations) have significant but different effects in the two regions. A large number of factors (GDP, inflation, current account, schooling and political rights) only turn out significant in one of the regions.

3.3 Regional Studies

Table 3 and Table 4 review 21 regional studies of FDI that base their FDI specification on (1) for the group of either African, Asian or Latin American countries.[5] To ease interpretation and comparison, the FDI determinants have been divided into return (market

[4] Chen (1998) also uses dummy variables to compare FDI in Latin American and South East Asian countries. However, this paper is excluded since the dependent variable is FDI in per capita terms which invalidates comparisons with the other papers in the review.

[5] Kandiero and Chitiga (2003), Quazi (2007b), Chen (1998), Trevino et al. (2002a, 2002b), Vogiatzouglou (2007) and Trevino and Mixon (2004) are excluded from the review since they use absolute FDI or FDI in per capita terms as their dependent variable.

potential, factor market characteristics, domestic market access, international openness and geography) and (economic, political and commercial) risk. The overall picture arising from these studies is very much in line with the findings in Section 3.2. While growth, agglomeration and inflation are important in all regions, the impact of other FDI determinants turns out to vary with regional location. Natural resource availability, infrastructure and financial stability are important in Africa; labour costs and fiscal incentives in Asia; and fiscal balance, exchange rate stability, financial stability and political instability in Latin America.

Of the **return** variables listed in Table 3, the market potential proxies are the most frequently used. The preferred variables are GDP, population size, GDP per capita and GDP growth, which most often have a significant and positive effect on FDI.[6] The results also show strong agglomeration effects. The regions differ widely in their dependence on various factors of production. While labour costs and labour availability are relatively important in Asia, the relatively poor quality of the labour force has been an important deterrent factor for FDI to African and Latin American countries. Also, natural resource availability has been a driving force in Africa. Infrastructure turns out to be important in most regions but most often so in Africa where landlocked and geographically isolated countries face big problems in attracting foreign capital. Advancements in structural reforms and privatisation have been important for the relative attractiveness of countries in Latin America. Finally, trade openness (the most frequently used being total trade) appears to be important in all regions except Asia.

From Table 4 it is clear that the **risk** of investing abroad has only received attention recently probably due to the inability of traditional return determinants to explain the regional distribution of FDI. The economic risk variables are the most frequently included risk measures although their impact varies widely across regions. While high inflation has been a deterrent factor in most regions, financial and political instability seems to have scared away investors in African and Latin American countries. Asian countries, on the other hand, appear to have benefited from a stable or even fixed exchange rate regime. Interestingly, commercial risk is rarely accounted for in Asian and Latin American countries. An accommodating investment climate and business environment (in particular rule of law) as well as financial stability, on the other hand, have had a significant impact on FDI in African countries.

[6] A few exceptions include Campos and Kinoshita (2008), Botric and Skuflic (2006), Ancharaz (2002) and Nasser (2007) where GDP, population size or GDP per capita turn out to have a negative impact on FDI. However, these papers also include growth as an explanatory variable in which case an explanation might be that growth turns out to be the most important proxy for market potential whereas additional market size proxies capture something else (for example, the level of development).

4 A General-to-Specific Analysis of FDI Flows

One of the main drawbacks in the FDI literature has been the lack of a coherent and generally accepted theoretical framework to think about FDI and to form the basis for empirical analysis. The theoretical vacuum has resulted in an ad hoc selection of FDI determinants, which complicates direct comparisons across studies. To take an example, all empirical papers have included some measure of market potential where GDP, GDP per capita, population or GDP growth are the most commonly used proxies, and valid theoretical arguments can be put forward for each of them. Which one should we pick? To what extent is it appropriate to pick the same proxy irrespective of regional belonging? And when can we expect one variable to have the same impact on FDI irrespective of regional belonging?

Since potential explanatory variables are highly correlated, it is a challenge to select several or all of them while avoiding multicollinearity in the model. We therefore use a general-to-specific model selection approach, which enables us to "test down" among the large set of explanatory variables. We use the *PcGets* software, which automatically selects an undominated, congruent model where statistically insignificant variables are eliminated and where diagnostic tests check the validity of reductions to ensure a congruent final selection. Equation mis-specification tests include residual autocorrelation, ARCH, heteroscedasticity, functional form mis-specification, and non-normality. The path is terminated when all the variables that remain are significant, or a diagnostic test fails. In some cases insignificant variables are therefore retained. We refer to Hendry (1995, Chapter 9) for further details on this data-based model selection methodology.

Based on the empirical papers reviewed in Tables 3 and 4, we have collected data on 19 return proxies and 14 risk measures to enter the general-to-specific analysis along with regional dummy variables for Africa, Asia and Latin America. Data is calculated as an average over the time period 1980-2004 for a cross-section of 100 developing countries (43 belonging to Africa, 35 located in Asia and 22 Latin American countries).[7] A list of countries can be found in Appendix. Details on the data are given in Table 5.

4.1 Empirical Findings

Table 6 reports the main results. One of the most important findings is that none of the regional variables turn out significant, which suggests that regional differences in FDI inflows can be fully explained by structural characteristics. This means that there is no African bias (see Asiedu, 2002, among others). Also, we see that growth and inflation are the only two variables that turn out significant in all specifications although their marginal

[7] Using averages over 25 years and thus eliminating the time dimension, the cross-sectional approach allows us to look for deep structural determinants of FDI. The disadvantage is that in some circumstances our results will not be directly comparable to the panel studies reviewed in the previous section. For example, it will not be possible to test for agglomeration effects by including a lagged dependent variable.

effects vary across regions. While inflation has been a deterrent factor to FDI inflows to Latin American countries, inflation has had a smaller marginal effect in Asian and African countries. Also, high economic growth rates have been relatively more important for Asian countries than African and Latin American countries.

A number of observations from Section 3 are confirmed by the general-to-specific analysis. International openness (trade) is important in all regions except Asia; the stability of the exchange rate regime is important for Asian and Latin American countries; financial and political stability (external debt, current account balance, corruption and rule of law) are important in Latin American countries; while low wages have been a comparative advantage in Asian countries. The results also indicate that the focus on economic risk in studies of FDI into Asia is misleading since political and commercial risk (political rights as well as voice and accountability) are equally important for this region.

International openness has typically been proxied by total trade as a share of GDP, the import share or the export share. Since trade is a linear combination of imports and exports it is not possible to include all three of them at the same time. Table 7 reports the results when we use the import and export shares instead of total trade as our openness proxy. The results from Table 6 are confirmed and we see that the positive effect of trade was driven by import, which was also the case in Janicki and Wunnava (2004) and Ferris et al. (1997).

Also, we find that some variables are region-specific: GDP per capita, land area, roads, international reserves and government expenditure for Africa; wage earnings, political rights and the Kaufmann voice and accountability index for Asia; and telephone, external debt, corruption and ores export for Latin America. The remaining six variables lie somewhere in between where four variables turn out significant in both Asia and Latin America (urban population, current account, change in the exchange rate, variance of the exchange rate) and two enter both the specification in Africa and Latin America (trade openness and rule of law). This suggests that Africa and Asia do not seem to be well described by the same set of variables and one should exercise caution when pooling the two regions. Latin American and Asian countries can more readily be pooled but interaction terms should still be incorporated to adjust for heterogeneity in the impact of common explanatory variables.

5 Summary and Conclusion

This paper provides a comprehensive and structured review of the part of the empirical literature that has analysed the regional differences in FDI inflows. A number of observations are worth highlighting. First, regional dummy variables rarely turn out to be robust once structural characteristics of the host country are properly accounted for. Second, the large number of significant interaction terms between regional dummies and selected

explanatory variables suggests that regions are highly heterogeneous and that investors perceive regions differently. And, third, regional studies suggest that there is a pool of common FDI determinants whose impact varies across regions but also that region-specific characteristics should be taken into account.

Since the empirical studies reviewed in this paper vary widely in their sample selection, estimation method, time horizon and set of explanatory variables the results are not directly comparable. We therefore let the data speak and apply a general-to specific analysis of the many determinants that have been applied in the existing FDI literature. The results suggest that regional differences are not due to fixed regional effects. We find that growth and inflation are robust and significant across regions although the size of their impact varies. The impact from inflation seems stronger in Latin America than in Asian and African countries. Also, economic growth has had a larger marginal effect in Asian countries than in African and Latin American countries. While African and Asian countries turn out to be largely heterogeneous both with respect to the set of explanatory variables and their impact on FDI, Asian and Latin American countries can more readily be pooled as long as proper interaction terms are specified. Finally, some variables appear to be region-specific: GDP per capita, land area, roads, international reserves and government expenditure for Africa; wage earnings, political rights and the Kaufmann voice and accountability index for Asia; and telephone, external debt, corruption and ores export for Latin America.

The findings in this paper suggest that foreign investors respond quite differently to common determinants of FDI across regions and also that region-specific variables are important to take into account when analysing FDI in a broad sample of developing countries. However, this paper does not offer an explanation as to why this is so. One interesting topic for future work could, for example, be to analyse FDI on a more disaggregated level to see if the observed regional heterogeneity can be explained by differences in the sectoral distribution of FDI.

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Appendix

Africa: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Congo, Cote d'Ivoire, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Iran, Jordan, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Niger, Nigeria, Oman, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Syria, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe.

Latin America and Caribbean: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago, Uruguay and Venezuela.

Asia: Albania, Armenia, Bangladesh, Belarus, Bhutan, Bulgaria, Cambodia, China, Croatia, Czech Republic, Estonia, Fiji, Georgia, Hungary, India, Indonesia, Kazakhstan, Latvia, Lithuania, Malaysia, Moldova, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Poland, Romania, Solomon Islands, Sri Lanka, Thailand, Tonga, Turkey, Ukraine and Vanuatu.

Tables and Figures

Figure 1. The Development of FDI as a Share of GDP, 1970-2006

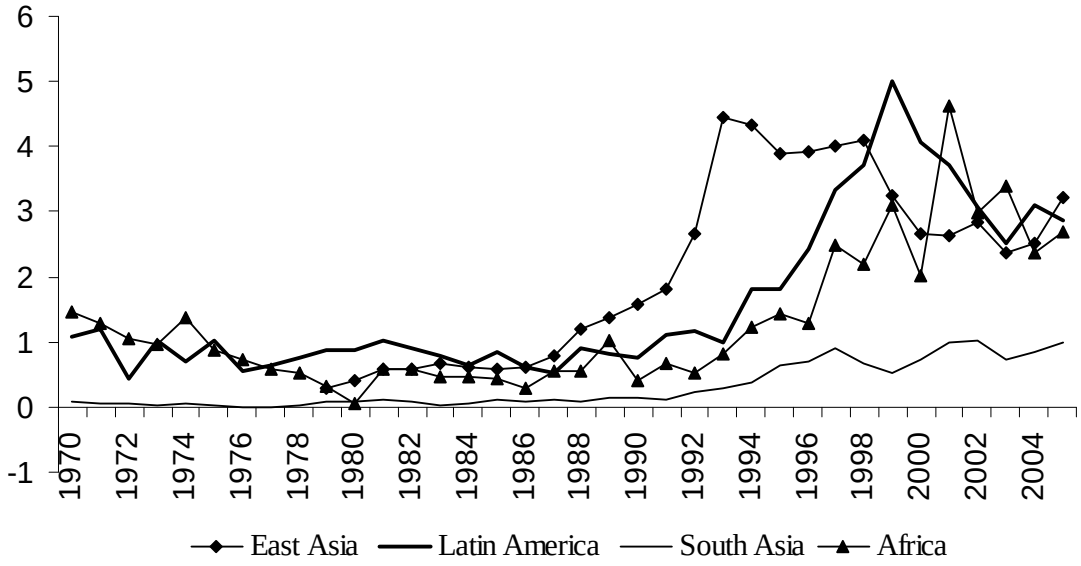

Table 1: Regional Distribution of FDI

	1970-1980	1980-1990	1990-2000	2000-2006
Developing economies (millions)	5922	20580	118185	255648
Africa	15.9	6.4	3.9	4.7
Nigeria	5.4	2.1	1.3	1.0
South Africa	1.6	0.1	0.7	0.9
Latin America	47.6	31.8	35.6	29.6
Argentina	2.2	2.8	5.8	1.7
Brazil	21.4	8.4	8.4	7.5
Mexico	7.6	11.6	7.2	7.9
Asia	29.3	43.3	56.2	53.8
East Asia	7.5	22.4	35.6	38.2
China	0.0	7.9	24.6	22.1
Hong Kong	4.5	10.4	7.6	12.3
South Korea	1.8	1.6	2.1	2.3
South Asia	1.1	1.2	2.0	3.5
South-East Asia	20.8	19.7	18.6	12.0
Indonesia	7.4	1.6	1.8	0.4
Singapore	5.1	9.3	7.2	6.1
Thailand	1.3	2.5	2.7	2.3

Note: Shows FDI as a share of total FDI going to developing countries.
Source: FDI data is from the UNCTAD database (constant 2000 US Dollars).

Table 2: Panel Data Models: Regional Dummies

	Africa	South Asia	East Asia	Latin America
Noorbakhsh and Youssef (2001)	(+/-)			(+/-)
Edwards (1990)			(+)	(+/-)
Asiedu (2002)	(-)			
Jaspersen et al. (2000)	(-)			
Ancharaz (2002)	(+/-)			
Gani (2007)		(-)		
Wilhelms and Witter (1998)	(-)		(+)	
Addison and Heshmati (2003)	(+/-)	(-)	(+)	(+)
Yang (2007)		(-)		
Hein (1992)			(+/-)	(+/-)

Note: (-), (+) and (+/-) indicate a significant negative, a significant positive and an insignificant regional dummy at a 10% significance level, respectively.

Table 3: Regional Studies (Return Variables)

	Africa	Asia	Latin America
Market potential			
GDP	(+/-) Ancharaz (2002)	(+/-) Frenkel et al. (2004)	(+) Bengoa et al. (2003)
	(+) Asiedu (2005,2006)		(+) Frenkel et al. (2004)
	(+) Morisset (2000)		(-) Campos and Kinoshita (2008)
Population size			(+) Tuman and Emmert (1999)
GDP Per capita	(-) Ancharaz (2002)	(+/-) Wezel (2003)	(+) Ferris et al. (1997)
	(+/-) Lemi and Asefa (2003)	(-) Nasser (2007)	(+/-) Tuman and Emmert (1999, 2004)
	(+) Asiedu et al. (2007)	(+) Quazi (2007a)	(+) Campos and Kinoshita (2008)
			(+/-) Wezel (2003)
			(+/-) Nasser (2007)
Growth	(+/-) Ancharaz (2002)	(+/-) Frenkel et al. (2004)	(+/-) Nasser (2007)
	(+/-) Jaspersen et al. (2000)		(+/-) Frenkel et al. (2004)
	(+) Onyeiwu et al. (2004)		(+/-) Tuman and Emmert (1999)
	(+) Naudé and Krugell (2007)	(+) Nasser (2007)	(+) Tuman and Emmert (2004)
Agglomeration			
FDI lagged	(+) Naudé and Krugell (2007)	(+/-) Wezel (2003)	(+/-) Tuman and Emmert (1999)
	(+) Asiedu et al. (2007)	(+) Nasser (2007)	(+) Nasser (2007)
			(+) Tuman and Emmert (2004)
			(+) Wezel (2003)
Urban Population	(+/-) Morisset (2000)		
Factor markets			
Labour market			
Size of labour force	(-) Lemi and Asefa (2003)		
Wages		(-) Wezel (2003)	(+/-) Wezel (2003)
Illiteracy rate	(+) Asiedu (2005, 2006)		
	(+) Lemi and Asefa (2003)		
	(+/-) Morisset (2000)		
	(+) Naudé and Krugell (2007)		
School enrolment		(+/-) Nasser (2007)	(+) Tuman and Emmert (2004)
			(+) Nasser (2007)
			(+/-) Tuman and Emmert (1999)
Value added (productivity)	(+) Lemi and Asefa (2003)		
Natural ressource availability	(+) Morisset (2000)		(+) Campos and Kinoshita (2008)
	(+) Onyeiwu et al. (2004)		
	(+) Asiedu (2005, 2006)		
	(+) Asiedu et al. (2007)		
Capital market			
Domestic investment	(+) Ancharaz (2002)		
	(+) Naudé and Krugell (2007)		
Real interest rate	(-) Lemi and Asefa (2003)		
	(+/-) Onyeiwu et al. (2004)		
Domestic market access			
Infrastructure			
Number of vehicles			(+) Ferris et al. (1997)
Railways/roads			(+/-) Bengoa et al. (2003)
Telephone lines	(+/-) Lemi and Asefa (2003)	(+) Nasser (2007)	(+) Nasser (2007)
	(+/-) Morisset (2000)		
	(+) Asiedu (2005, 2006)		(+) Campos and Kinoshita (2008)
	(+/-) Onyeiwu et al. (2004)		
	(+) Asiedu et al. (2007)		
Economic adjustment period			(-) Tuman and Emmert (1999)
Liberalisation index			(+) Campos and Kinoshita (2008)
Privatisation			(+) Campos and Kinoshita (2008)
Corporate taxes	(-) Onyeiwu et al. (2004)		
Trade taxes	(-) Schoeman et al. (2000)	(-) Wezel (2003)	(+) Wezel (2003)
International openness			
Import			(+) Ferris et al. (1997)
			(+/-) Tuman and Emmert (1999)
Export	(+) Lemi and Asefa (2003)		(-) Ferris et al. (1997)
			(+/-) Tuman and Emmert (1999)
Total trade	(+) Morisset (2000)		(+) Tuman and Emmert (2004)
	(+) Asiedu (2005,2006)	(+/-) Wezel (2003)	(+/-) Wezel (2003)
	(+) Onyeiwu et al. (2004)	(+/-) Nasser (2007)	(+) Nasser (2007)
	(+/-) Ancharaz (2002)		
Trade policies			
Investment treaties	(+/-) Lemi and Asefa (2003)		
MIGA	(-) Lemi and Asefa (2003)		
Free Trade Areas			(+/-) Tuman and Emmert (2004)
International tourists	(+/-) Lemi and Asefa (2003)		
Geography			
Latitude	(+) Naudé and Krugell (2007)		
Elevation	(+/-) Naudé and Krugell (2007)		
Distance or border		(-) Frenkel et al. (2004)	(-) Frenkel et al. (2004)

Note: (-), (+) and (+/-) indicate a significant negative, a significant positive and an insignificant explanatory variable at a 10% significance level, respectively.

Table 4: Regional Studies (Risk Variables)

	Africa	Asia	Latin America
Economic risk			
Inflation	(-) Naudé and Krugell (2007)		(+/-) Tuman and Emmert (1999, 2004)
	(-) Asiedu (2005, 2006)	(+/-) Nasser (2007)	(-) Nasser (2007)
	(-) Onyeiwu et al. (2004)	(+/-) Frenkel et al. (2004)	(-) Campos and Kinoshita (2008)
			(-) Bengoa et al. (2003)
			(+/-) Frenkel et al. (2004)
Variance of inflation	(+/-) Lemi and Asefa (2003)		
Current account balance		(+/-) Nasser (2007)	(+) Nasser (2007)
Exchange rate			
Exchange rate variability	(+/-) Lemi and Asefa (2003)	(+/-) Wezel (2003)	(+/-) Wezel (2003)
	(-) Ancharaz (2002)		(+/-) Tuman and Emmert (1999, 2004)
Fixed exchange rate dummy		(+) Frenkel et al. (2004)	(+/-) Frenkel et al. (2004)
Financial stability			
External debt	(-) Lemi and Asefa (2003)	(+/-) Wezel (2003)	(+/-) Wezel (2003)
	(+/-) Onyeiwu et al. (2004)		(-) Bengoa et al. (2003)
Debt service record	(-) Ancharaz (2002)		(+) Baumgarten and Hausman (2000)
International reserves	(-) Onyeiwu et al. (2004)		
Overall indices			
Index of economic freedom			(+) Bengoa et al. (2003)
ICRG		(+/-) Wezel (2003)	(+) Wezel (2003)
Euromoney		(+) Frenkel et al. (2004)	(+/-) Frenkel et al. (2004)
		(+/-) Wezel (2003)	(+/-) Wezel (2003)
Political risk			
Political instability			
Political risk index	(-) Naudé and Krugell (2007)		(-) Baumgarten and Hausman (2000)
Political violence	(-) Asiedu (2005, 2006)	(+) Nasser (2007)	(-) Nasser (2007)
			(-) Tuman and Emmert (1999, 2004)
Political freedom index	(+) Lemi and Asefa (2003)		(+/-) Ferris et al. (1997)
	(+/-) Onyeiwu et al. (2004)		(+) Tuman and Emmert (2004)
Political rights		(+/-) Nasser (2007)	(+) Nasser (2007)
Executive constraints			(-) Campos and Kinoshita (2008)
Corruption			
Corruption index	(-) Asiedu et al. (2007)		
	(-) Asiedu (2005, 2006)		
Government size	(+/-) Ancharaz (2002)		
	(+) Naudé and Krugell (2007)		
Accountability	(-) Naudé and Krugell (2007)		
Commercial risk			
Investment climate			
Openness to FDI	(+) Asiedu (2006)		
	(+) Asiedu et al. (2007)		
Expropriation (settler mortality)	(+/-) Naudé and Krugell (2007)		
Business environment			
Bureaucratic quality			(+/-) Campos and Kinoshita (2008)
Institutional quality	(+/-) Ancharaz (2002)		
Regulatory burden	(+) Naudé and Krugell (2007)		
Rule of law index	(+) Naudé and Krugell (2007)		(+) Campos and Kinoshita (2008)
	(+) Asiedu (2005, 2006)		
	(+) Asiedu et al. (2007)		
Financial risk index			(+/-) Campos and Kinoshita (2008)

Note: (-), (+) and (+/-) indicate a significant negative, a significant positive and an insignificant explanatory variable at a 10% significance level, respectively.

Table 5: List of Variables

Variable	**Description**	**Source**
GDP	GDP in constant 2000 US dollars	WDI (2007)
Population	Population, total (millions)	WDI (2007)
GDP per capita	GDP per capita in constant 2000 US dollars	WDI (2007)
Growth	Growth of GDP in constant 2000 US dollars	WDI (2007)
Urban population	Urban population (% of total population)	WDI (2007)
Size of labour force	Labour force, total (millions)	WDI (2007)
Labour earning	Estimated earned income (male plus female)	UNDP
Education	Education index (lies between 0 and 1)	UNDP
Fuel	Fuel exports (% of merchandise exports)	WDI (2007)
Ores	Ores and metals exports (% of merchandise exports)	WDI (2007)
Land area	Total land area in square kilometres	WDI (2007)
Return to investment	log(1/GDP per capita)	WDI (2007)
Roads	Total network in kilometres	WDI (2007)
Telephone lines	Telephone mainlines per 1,000 people	WDI (2007)
Internet	Internet users per 1,000 people	WDI (2007)
Taxes	Tax revenue (% of GDP)	WDI (2007)
Import	Import (% of GDP)	WDI (2007)
Export	Export (% of GDP)	WDI (2007)
Total trade	Trade, total (% of GDP)	WDI (2007)
Inflation	Inflation, consumer prices (annual %)	WDI (2007)
Current account balance	Current account balance (% of GDP)	WDI (2007)
Change in exchange rate	Change in real exchange rate: exch(t)-log exch(t-1)	WDI (2007)
Variance of exchange rate	Variance of real exchange rate: std of exch	WDI (2007)
External debt	External debt, total (% of GDP)	WDI (2007)
Debt service record	Debt service, total (% of GNI)	WDI (2007)
Reserves	Reserves, total (includes gold, current US$)	WDI (2007)
Government expenditure	Government final consumption expenditure (% of GDP)	WDI (2007)
Political risk	Std of government expenditure	WDI (2007)
Corruption		Kaufmann et al. (2007)
Voice and accountability		Kaufmann et al. (2007)
Bureaucratic quality		Kaufmann et al. (2007)
Government efficiency		Kaufmann et al. (2007)
Rule of law index		Kaufmann et al. (2007)

Table 6: PcGets Results: Return and Risk Variables (Trade)

	All countries	**Africa**	**Asia**	**Latin America**
GDP per capita		-0.001***		
		[0.0001]		
Growth	0.423**	0.419***	1.330***	0.417***
	[0.186]	[0.119]	[0.383]	[0.043]
Urban population			0.188***	-0.055***
			[0.0669]	[0.003]
Earn	-0.205*		-0.695***	
	[0.107]		[0.197]	
Ores				0.055***
				[0.004]
Landarea		0.738***		
		[0.233]		
Roads		-0.014**		
		[0.007]		
Telephone	0.031***			0.026***
	[0.011]			[0.002]
Tax rate	-0.009			
	[0.007]			
Trade	0.010	0.033***		0.014***
	[0.011]	[0.006]		[0.003]
Inflation	-0.016***	-0.005***	-0.041***	-0.217*
	[0.003]	[0.001]	[0.007]	[0.001]
Current account	-0.339***		-0.675***	0.185***
	[0.097]		[0.166]	[0.033]
External debt	-2.861**			-1.095***
	[1.092]			[0.331]
Change in exchange rate	-0.077**		-0.270***	-0.002***
	[0.031]		[0.071]	[0.006]
Variance of the exchange rate	-0.226**		0.805**	0.134***
	[0.110]		[0.361]	[0.021]
International reserves		-3.475**		
		[1.602]		
Government expenditure		6.047**		
		[2.350]		
Corruption	-3.181**			-1.728***
	[1.395]			[0.263]
Law	3.387***	0.677*		0.759***
	[1.241]	[0.344]		[0.237]
Political rights			1.682**	
			[0.712]	
Voice and accountability			7.202***	
			[1.759]	
RSS	816	18	344	4
Number of observations	100	43	35	22
Adjusted R-squared	0.39	0.78	0.64	0.88

Note: A constant term is included but not reported. Diagnostic tests include residual autocorrelation, ARCH, heteroscedasticity, functional form mis-specification and non-normality. ***, ** and * indicate significance on a 1, 5 and 10 percent significance level. Standard errors are in paranthesis.

Table 7: PcGets Results: Return and Risk Variables (Import and Export)

	All countries	**Africa**	**Asia**	**Latin America**
GDP per capita		-0.001***		
		[0.0003]		
Growth	0.431**	0.412***	1.330***	0.472***
	[0.207]	[0.118]	[0.383]	[0.041]
Urban population			0.188***	-0.056***
			[0.0669]	[0.003]
Earn			-0.695***	
			[0.197]	
Ores				0.066***
				[0.005]
Landarea		0.556**		
		[0.218]		
Roads		-0.020**		
		[0.007]		
Telephone	0.035***			0.034***
	[0.012]			[0.003]
Import	0.0061	0.064***		0.037***
	[0.042]	[0.011]		[0.005]
Inflation	-0.014***	-0.005***	-0.041***	-0.003***
	[0.003]	[0.001]	[0.007]	[0.001]
Current account	-0.338***		-0.675***	0.171***
	[0.105]		[0.166]	[0.035]
External debt	-2.553**			-0.747*
	[1.117]			[0.340]
Change in exchange rate	-0.063**		-0.270***	-0.029***
	[0.029]		[0.071]	[0.006]
Variance of the exchange rate	-0.227**		0.805**	0.161***
	[0.111]		[0.361]	[0.021]
International reserves		-5.112***		
		[1.915]		
Government expenditure		7.910***		
		[2.561]		
Corruption	-3.454**			-1.557***
	[1.372]			[0.191
Law	2.870**			
	[1.271]			
Political rights			1.682**	
			[0.712]	
Voice and accountability			7.202***	
			[1.759]	
Number of observations	100	43	35	22
Adjusted R-squared	0.38	0.78	0.64	0.87

Note: See Table 6.