

Research Paper No. 2007/28

Foreign Direct Investment in Small Island Developing States

Robert Read*

May 2007

Abstract

The role of foreign direct investment (FDI) in small island developing states (SIDS) is an issue that has been neglected until relatively recently. The reasons for this lack of interest are unsurprising, given both the low absolute volume of capital flows involved and the general neglect of issues relating directly to SIDS in the mainstream theoretical and empirical economics literature. For SIDS themselves however, FDI represents an important additional source of investment capital and a potentially critical contributor to growth and development. This paper represents one of the first attempts to analyse the determinants of the inflows of FDI to SIDS. The analysis is undertaken in the context of the existing literature on the determinants of FDI inflows, incorporating insights drawn from recent research on the determinants of growth in small states.

Keywords: growth, finance, FDI

JEL classification: O16, R12, E22

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* Department of Economics, Lancaster University Management School, Lancaster, email: r.read@lancaster.ac.uk

This study has been prepared within the UNU-WIDER project on Fragility and Development, directed by Mark McGillivray and Amelia Santos-Paulino.

UNU-WIDER gratefully acknowledges the financial contributions to the project by The Australian Agency for International Development (AusAID), the Finnish Ministry for Foreign Affairs, and the UK Department for International Development—DFID.

UNU-WIDER also acknowledges the financial contributions to the research programme by the governments of Denmark (Royal Ministry of Foreign Affairs), Norway (Royal Ministry of Foreign Affairs), and Sweden (Swedish International Development Cooperation Agency—Sida).

Acknowledgements

An earlier version of this paper was prepared for the UNU-WIDER Conference on Fragility and Development, 31 November and 1 December 2006 in Lautoka, Fiji Islands. The author is grateful to Mark McGillivray and Amelia Santos Paulino for the opportunity to prepare and present the paper. The author is also grateful for the technical assistance of Didier Soopramanien. Many of the ideas and policy issues included in this paper are the direct outcome of work undertaken by the author for the Foreign Investment Advisory Service (FIAS) of the World Bank's International Finance Corporation (Sydney) on behalf of the Pacific Islands Forum Secretariat in Summer 2003 (see Read and Driffield 2004). The author is also grateful for comments received from participants at several conferences, notably Sean Duggan (formerly of FIAS), Harvey Armstrong and Geoff Bertram, on earlier versions of this paper.

Acronyms

EZZs	exclusive economic zones
FDI	foreign direct investment
MNEs	multinational enterprises
SIDS	small island developing states
UNCTC	UN Centre for Transnational Corporation
WB	World Bank
WDI	<i>World Development Indicators</i>

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UNU World Institute for Development Economics Research (UNU-WIDER)
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Typescript prepared by Liisa Roponen at UNU-WIDER

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Introduction

The role of foreign direct investment (FDI) in small island developing states (SIDS) is an issue that has been neglected until relatively recently. The reasons for this lack of interest are unsurprising, given both the low absolute volume of capital flows involved and the general neglect of issues relating directly to SIDS in the mainstream theoretical and empirical economics literature. For SIDS themselves however, FDI represents an important additional source of investment capital and a potentially critical contributor to growth and development. This paper represents one of the first attempts to analyse the determinants of the inflows of FDI to SIDS. The analysis is undertaken in the context of the existing literature on the determinants of FDI inflows, incorporating insights drawn from recent research on the determinants of growth in small states.

The paper is structured as follows. The first section outlines the theory of FDI and its contribution to economic growth through the creation of associated local linkages. This is followed by a brief overview of the salient economic characteristics of SIDS and the derivation of inferences regarding the potential of SIDS to attract FDI and generate such linkages. Section 3 provides an overview of the methodology adopted by the paper, a discussion of the choice of variables and the data sources. This is followed by an empirical analysis of FDI inflows to SIDS and attempts to derive conclusions regarding the determinants of FDI and their likely impact. The concluding section attempts to identify critical policy issues arising in the paper.

1 Foreign direct investment, linkages and economic growth

Foreign direct investment (FDI) has a potentially important contribution to make to the growth of developing economies in that it constitutes an additional source of investment capital (foreign savings). Further, flows of FDI embody additional complementary growth factors, including technology, knowhow and managerial expertise, as well as capital. FDI therefore, can be seen to be a potentially important contributor to the growth process in developing countries because it can accelerate the transfer, acquisition and absorption of new technologies and enhance the stock of human capital in recipient (host-) countries.

1.1 The theory of foreign direct investment

The most robust and comprehensive economic theory of the determinants of FDI is the 'eclectic' or OLI framework developed by John Dunning in the early 1970s (Dunning 1979). This approach attempts to explain the existence, activities and strategies of multinational enterprises (MNEs) through the synthesis of macro- and micro-economic determinants of FDI flows. In this way, Dunning's theory of international production integrates industrial economics and location theory within the broader framework of the theories of international trade and investment. The OLI framework identifies three sources of advantage that are *preconditions* for firms to engage in international production, i.e., to become MNEs: ownership (O) advantage; location (L) advantage; and internalization (I) advantage.

Ownership advantage refers to the need for MNEs to possess firm-specific competitive advantages over domestic firms in serving particular markets. These advantages may

include both tangible and intangible sources of advantage and arise from the monopoly control of these assets by MNEs, often reflecting the factor endowments and characteristics of their home countries (as in Vernon's product cycle). These O-advantages offer the potential for substantial increasing returns to scale resulting from the relatively low or zero marginal cost incurred in transferring them across international borders.

Location advantage arises from the profitable combination of MNEs' O-advantages with inputs, intermediate inputs and/or services originating from outside their home country, i.e., through international production. (If this is not the case, it would be more efficient to source these inputs domestically or import them and service overseas markets via exporting.) L-advantages therefore provide MNEs with an incentive to locate at least some part of their activities in another (host-) country rather than at home. MNE location decisions are therefore founded upon the actual and perceived competitive advantages of potential host countries. These include:

- The availability of low-cost raw materials, particularly natural resources, intermediate inputs and low-cost labour (low real wages);
- High quality human capital, including local R&D;
- A large domestic market requiring proximity of production;
- Agglomeration economies—clusters of producers and suppliers;
- Good quality infrastructure;
- Favourable government policies, including political stability; and
- A favourable 'business culture'.

O- and L-advantages are necessary but insufficient conditions for FDI since the gains arising from the direct ownership of overseas productive assets are dependent on the existence of non-negligible transaction costs generated by international market imperfections. MNEs are able to minimize the international costs of transacting and so can exploit their O- and L-advantages via internalization rather than relying upon (inefficient or imperfect) international arms-length markets—internalization (I) advantage.

Dunning's OLI approach provides a useful framework for the analysis of FDI flows and the international production strategies of MNEs. Although Dunning argues that the possession of OLI advantages is a necessary precondition for FDI to take place, they remain insufficient, given potential financial and managerial resource constraints as well as high level strategic objectives. Financial theories of international investment play no role in the OLI framework; this is consistent with the specific focus of the framework on the productive activities of MNEs that result from FDI.

1.2 A typology of foreign direct investment

Behrman identifies four principal types of FDI flows, determined by the benefits of locating in a particular host-country (Behrman 1972).

Resource-seeking FDI

These inflows are driven by the availability of particular resources in a host country, including natural resources, low-cost labour and specific skills. Natural resources including sunshine, scenery and beaches as well as cultural artefacts may also attract tourism, although this sector is often reliant upon complementary inputs of relatively low-skilled labour.

Efficiency-seeking FDI

This is driven by the international competitiveness (comparative advantage) of a host country as a location for export-oriented (export-platform) production. This type of FDI is most commonly associated with labour-intensive manufacturing but is increasingly a feature of FDI in labour-intensive service activities such as data-processing and offshore call-centres. Some degree of overlap between resource- and efficiency-seeking FDI is therefore possible.

Market-seeking FDI

This is driven by the existence of an extensive and prosperous domestic market that requires firms to be located in close proximity to their customers. This also suggests that there are likely to be potential gains from economies of scale in production and distribution activities as well as in servicing the market. Tariffs and other barriers to trade may also encourage such investment in the form of ‘tariff-jumping’ FDI.

Strategic asset-seeking FDI

This is driven by the strategic objectives of MNEs to pre-empt the acquisition of strategic assets by their competitors. This strategy is often revealed in the purchase of dominant local firms in emerging markets. Access to scarce point-source natural resources may also be regarded as a strategic asset.

1.3 The contribution of FDI to economic growth

FDI was originally regarded simply as an alternative means of transferring essentially homogeneous capital between countries. The consequences for economic growth were therefore regarded as being purely the outcome of the injection of additional finance in the form of foreign savings. The literature on FDI, however, emphasizes the fundamental heterogeneity of the associated capital flows. The contribution of FDI to economic growth is therefore potentially much more substantial in that such capital flows also embody advanced technology, superior knowhow and accrued managerial expertise in a complementary ‘package’. These embedded characteristics can be expected to generate additional growth effects in host economies over and above pure capital through positive spillovers. Many developing countries experience severe constraints arising from the scarcity of domestic R&D, technology and human capital so that FDI can be seen to be a potentially critical contributor to their growth process. Inflows of FDI may accelerate the transfer, acquisition and absorption of new technologies and enhance the domestic stock of human capital, so enhancing their international competitiveness. FDI in developing countries may therefore have greater growth effects than similar investment flows to industrialized countries.

The theoretical and empirical literature on the growth impact of FDI inflows focuses on the creation of several types of local linkages in host-country economies. These arise as a result of both direct impacts in terms of employment and technology transfer as well as indirect impacts through the generation of positive and negative externalities and spillovers in the host economy. Indirect linkages are expected to stimulate greater general productivity and allocative efficiency in a host-country economy.

Direct linkage effects: employment creation and technology transfer

The most direct form of local linkage creation in host-country economies arising from inflows of FDI are the positive employment effects. These linkage effects can be measured very simply in terms of the aggregate employment impact of any particular FDI inflow. The employment creation effects may also have multiplier effects in terms of local technology or productivity spillover effects. This is based upon the expectation that the technologies utilized by foreign-owned firms (MNEs) are in some way superior to those available domestically so that they raise the productivity of the local labour employed. Inflows of FDI may have a 'crowding-out' effect on the local labour market, however, if the domestic supply of particular skills or human capital is constrained. This effect is likely to be more pronounced in developing countries where there is a greater likelihood of particular skill shortages and human capital is scarce.

Indirect linkage effects: technology spillovers

FDI inflows often introduce new technologies to host-country economies. These technologies may then be accessed by domestic firms through several mechanisms: buyer-supplier linkages, licensing, sub-contracting, labour mobility and training spillovers. All of these mechanisms are both dependent upon, as well as indicative of, the extent to which linkages are created between the foreign and domestic sectors. Less formal positive spillovers may also be generated through agglomeration and demonstration effects whereby domestic firms learn improved management and/or organizational techniques.

Indirect linkage effects: agglomeration economies

Agglomeration economies are important indirect spillover effects arising from the geographic concentration of similar, technologically-advanced enterprises. As leaders in both technological and human capital accumulation, the presence of MNEs further stimulates the potential for agglomeration by increasing the potential for technology transfer and therefore improvements in the technological capabilities of domestic firms. Agglomeration also promotes the creation of a localized pool of specialized labour skills and the potential for subcontracting. Both of these effects may give rise to additional positive externalities through demonstration effects via the transfer of knowledge and managerial skills to local firms.

Knowledge economies

Foreign investors generally possess an array of non-technological advantages that may improve the efficiency and competitiveness of host-country production activities through beneficial spillovers. These include managerial knowledge and abilities, organizational economies of scale and scope and greater efficiency in resource coordination. Perhaps the greatest potential for knowledge spillovers lies with 'demonstration effects' upon local firms.

Competition effects

FDI inflows may improve aggregate productivity through positive competition effects. These are the result of domestic firms responding to inflows of FDI by seeking to become more productive and cost-efficient, which may include beneficial demonstration effects. Increased competition arising from the presence of foreign firms may, however, have negative externality effects if they ‘crowd-out’ local firms rather than stimulate domestic competition.

2 FDI in SIDS: initial inferences

A sizeable proportion of all states in the world economy can be regarded as being relatively small and many of these are also developing economies. It is only relatively recently, however, that academics and policymakers have paid close attention to the distinctive factors influencing the growth performance of SIDS and the potential contribution of FDI in particular. Any discussion of the determinants of FDI inflows and the potential for the creation of local linkage therefore needs to consider the specific economic characteristics of SIDS.

2.1 The salient economic characteristics of SIDS

There is now a substantial literature concerning the nature and implications of the critical economic characteristics of small economies in general for their growth performance (reviewed in Armstrong and Read 2003). These characteristics can be summarized as being:

- The small size of the domestic market;
- The limited domestic resource base (both natural resources and labour supply);
- The narrowness of domestic output, exports and export markets;
- Their high degree of structural openness to trade; and
- Additional transport and communication costs of being islands, archipelagos or land-locked, e.g., SIDS.

These critical characteristics have important implications for the economic performance of small economies in the context of key variables identified in endogenous growth models:

- Openness to trade;
- Human capital formation;
- The quality of endogenous policy; and
- Convergence clubs.

Empirical analysis of the performance of small economies indicates that their growth is positively related to the sectoral structure of their domestic economic activity as well as being influenced by their location. For SIDS, being an island or archipelago, however, is not necessarily a significant constraint on growth performance. Further, many small

economies, including a number of SIDS, have demonstrated that in spite of the adverse growth implications of their critical economic characteristics, they have been able to devise appropriate domestic policies that promote growth successfully (Armstrong et al. 1998; Armstrong and Read 1998, 2002; Read 2002).

2.2 The potential of SIDS to attract inflows of FDI

Inflows of FDI to SIDS can be expected, in general, to be relatively small in absolute value terms simply because of their small size. As a consequence, the literature on FDI has not been especially concerned with the determinants of FDI flows to SIDS. Of critical importance is the ability of SIDS to attract inflows of FDI in the context of their salient economic characteristics. Further, very little is known about the domestic impact of such FDI inflows and their interaction with these economic characteristics (the only theoretical and empirical studies are by Read 2004; Read and Driffield 2004).

Dunning's approach makes it possible to identify the principal sources of location advantage that might be possessed by potential host-country SIDS. It is clear that some of the location attributes identified in section 1.1 above are very unlikely to apply to SIDS, notably abundant low-cost labour and a large wealth domestic market. This implies that any other location advantages possessed by SIDS need to be correspondingly stronger so as to compensate for their lack of these advantages relative to other potential host economies.

2.3 Motives for FDI in SIDS

The location advantages of SIDS are likely to lie principally in their endowments of natural resources and human capital, some possible agglomeration economies, infrastructure, culture and good governance. Behrman's typology of FDI, outlined in section 1.2, can therefore be utilized to identify the principal motivations for FDI in SIDS so as to capture the benefits of these location advantages.

Resource-seeking FDI in SIDS

Many SIDS may possess valuable renewable and non-renewable natural resources. For example, many SIDS in the Pacific possess sizeable exclusive economic zones (EEZs) which gives them control over abundant renewable natural marine resources. Natural resources may also offer potential for tourism although FDI in this sector is dependent upon the availability of complementary inputs of relatively low-skilled labour.

Efficiency-seeking FDI in SIDS

Efficiency-seeking FDI is founded upon interaction between scale economies and the international division of labour. It is therefore highly unlikely that most SIDS will be major beneficiaries of such inflows, given that these location advantages tend to favour the more populous developing countries. Large-scale cross-section empirical evidence tends to support the theoretical inference that the comparative advantage of SIDS is more likely to lie in niche manufacturing and service activities, including tourism (Armstrong et al. 1998; Armstrong and Read 1998, 2002).

Market-seeking FDI in SIDS

Market-seeking FDI is drawn to large and/or wealthy domestic markets where proximity to consumers is necessary or strategically desirable. In general, market-seeking FDI is unlikely to be attracted to SIDS because of the small size of their domestic markets, regardless of the level of their per incomes. Instead, markets in SIDS are more likely to be supplied (if at all) by exports from alternative low-cost regional supply sources.

Strategic asset-seeking FDI in SIDS

This is generally used to refer to FDI in strategically important firms and markets but may also be applied to access to valuable natural resources. The small size of the domestic markets in most SIDS suggests that they are unlikely to provide an arena for global or even regional strategic interaction between MNEs in spite of limited competition and the potential for monopoly profits. SIDS possessing critical deposits of strategically important natural resources, however, may be able to attract some inflows of this type of FDI.

3 Inflows of FDI to SIDS: descriptive overview

The international distribution of FDI has been the subject of extensive empirical analysis over the last four decades. Much of the focus of this literature has been inflows of FDI to the leading industrialized countries, which comprise more than 80 per cent of global flows of FDI. Inflows of FDI to developing economies account for less than 20 per cent of all flows and are currently dominated by inflows to China. The analysis of FDI in developing economies has been paid only limited attention and has tended to be the residual outcome of the analysis of global FDI flows or focused on specific developing countries, primarily China. The emphasis upon cross-flows of FDI between the leading industrialized economies reflects the importance attached to market size as a critical determinant of inflows of FDI.

It is perhaps unsurprising in this context that the flow of FDI to SIDS has been virtually ignored as a research issue given the small size of the economies of most SIDS, the small absolute values of the inflows involved and the consequently relative unimportance of such inflows in at the global level. In terms of the economic development of SIDS, however, the value and impact of FDI are likely to be non-negligible in spite of the apparently low value of these inflows. In the light of the discussion in sections 1 and 2, the impacts of FDI inflows to SIDS are likely to be constrained in their potential depth and multiplier effects. Nevertheless, such FDI can be expected to be potentially highly productive in terms of enhancing the international competitiveness of SIDS with respect to capital, technology and knowhow as well as generating positive spillover effects (externalities).

Any empirical analysis of FDI inflows to SIDS is subject to severe data limitations in that all but the most basic statistics on FDI are only available for a limited set of SIDS, so giving rise to potential sample selection bias. It is therefore informative to provide a brief summary of the available data on inflows of FDI to SIDS and also SIDS FDI stock data, prior to undertaking more in-depth statistical analysis.

3.1 Aggregate inflows of FDI to SIDS

Data on the aggregate inflows of FDI to SIDS for the 5-year period 1999-2003 are presented in Table 1 for SIDS-51 (i.e., excluding Malta and Singapore, data for which are also included). The impact of size disparities in the definition of SIDS is clearly evident in the table. Singapore alone was the recipient of more than more than

Table 1
SIDS-51, estimated FDI inflows, 1999-2003 (US\$ m.)

SIDS	Average FDI inflow, 1999-2003	FDI inflow share of SIDS total, %	FDI stock/GDP, 2003, %
Anguilla	34.8	0.3	305.8
Antigua & Barbuda	72.6	1.9	159.8*
Aruba	72.1	1.9	47.2
Bahamas	159.2	4.1	37.6
Bahrain	327.6	8.4	67.0*
Barbados	25.8	0.7	13.8
Belize	42.4	1.1	49.5
Cape Verde	24.8	0.6	23.6
Comoros	0.9	0.0	10.5
Cuba	0.9	0.0	0.3
Cyprus	479.0	12.3	55.8*
Dominica	18.2	0.5	136.9*
Dominican Rep	1,018.4	26.2	33.8
Fiji	-20.8	-0.5	12.2*
Grenada	53.0	1.4	159.8*
Guinea-Bissau	14.0	0.4	17.6*
Guyana	54.1	1.4	126.3*
Haiti	-17.7	-0.5	2.3*
Jamaica	521.6	13.4	61.6
Kiribati	6.8	0.2	168.6*
Maldives	12.6	0.3	22.7*
Mauritius	89.8	2.3	11.9*
Netherlands Antilles	-31.1	-0.8	0.3
Papua New Guinea	144.8	3.7	46.6*
St Kitts & Nevis	75.3	1.9	197.5
St Lucia	44.7	1.2	119.5
St Vincent & Grenadines	41.8	1.1	170.1*
Samoa	0.4	0.0	12.0*
Sao Tome & Principe	1.6	0.0	25.3*
Seychelles	51.2	1.3	105.1*
Solomon Islands	-5.2	-0.1	50.0*
Suriname	-57.5	-1.5	-
Tonga	3.8	0.1	18.2
Trinidad & Tobago	603.8	15.6	88.0
Tuvalu	0.0	0.0	-
Vanuatu	16.4	0.4	142.4
<i>Total SIDS-51</i>	<i>3,880.1</i>	<i>100.0</i>	
Malta	459.6	3.5**	71.1*
Singapore	8,706.6	66.7**	156.2*

Notes: * Figures are for 2004; ** Share of total SIDS-53 inflows.

Source: Calculated from UNCTC data.

two-thirds (66.7 per cent) of all inflows to SIDS-53: US\$8.7 billion out of a total of US\$13.0 billion. Inflows to SIDS-51 were dominated by The Bahamas, Bahrain, Cyprus, the Dominican Republic, Jamaica, Papua New Guinea and Trinidad and Tobago, which between them were the recipients of just over US\$3.2 billion of a total of almost US\$3.9 billion (some 83.7 per cent). The remaining 29 SIDS-51 for which data exist received an average of just 16.3 per cent of all inflows (around US\$632.7 million or just US\$21.8 million per country) during this period.

The disproportionate magnitude of these flows makes statistical analysis of the determinants of FDI inflows to SIDS in particular problematical since the results are likely to be dominated by the critical determinants in Singapore (for SIDS-53) and, to a lesser extent, the other larger SIDS. It is also important to note that in some cases—notably Fiji, Netherlands Antilles and Suriname—the FDI flows are negative and substantial.

3.2 The share of FDI in SIDS GDP

The share of FDI stock in GDP provides a means to normalize the magnitude of absolute accumulated FDI inflows so as to take into account both the population and relative wealth of the recipient economies. The FDI stock/GDP ratios for SIDS-51 are presented in Table 1. Given data availability problems, this ratio relates solely to 2003 or, in some cases, 2004. The data in the table reveal very wide variation in the FDI stock/GDP ratios among the set of SIDS-51, ranging from negligible in Tuvalu to almost 200 per cent in St Kitts and Nevis. Two concurrent explanations can be advanced for these large variations: the relative openness of the economies of most SIDS to both trade and FDI as a direct consequence of their small size; and the relative success/failure of SIDS in attracting inflows of FDI. On the basis of the openness argument, it can be argued with some degree of confidence that, for SIDS generally, a low level of FDI as a proportion of GDP (e.g., less than 25 per cent) is likely to reflect a relative failure to attract inflows of FDI and/or a policy stance unfavourable to such inflows (*pace* Cuba).

Table 2 attempts to distinguish between the relative attractiveness/success of SIDS-53 in securing inflows of FDI, measured as the share of FDI stock in GDP in 2003, by classifying them as *high*, *medium* and *low attractiveness*, respectively. Although the FDI attractiveness thresholds are essentially arbitrary, it is possible to discern several distinct patterns.

With some exceptions and outliers, the classification appears to reflect broader per capita income differences between SIDS. Most of the wealthier SIDS, measured in terms of per capita incomes, appear in the high and medium categories while most of the poorer SIDS appear in medium and low categories. This anecdotal analysis suggests that, in spite of their small populations, FDI inflows to SIDS remain positively correlated with the relative wealth of their domestic market.

The high attractiveness of Singapore to FDI and its overwhelming success in securing the bulk of all FDI inflows to SIDS reflects the policy importance attached to FDI as the cornerstone of economic development since 1965. Singapore's growth success has itself attracted further FDI—aided by a relatively large population (more than three million)

and a favourable location—and delivered wealth so that it is now classified as a high-income economy by the World Bank.

Of the remaining eleven SIDS classified in the high attractiveness to FDI category (FDI/GDP greater than 100 per cent), eight are located in the Caribbean, two in the Pacific and one in the Indian Ocean. This suggests that the regional location of SIDS may, in addition to influencing their growth performance (see section 2.1), also affect their relative success in attracting inflows of FDI. Caribbean SIDS also account for 50 per cent of those found to have medium attractiveness to FDI. Four of the remaining six Pacific SIDS are classified as having low attractiveness to FDI. Perhaps surprisingly, Sao Tome and Principe and Papua New Guinea are both classified as having medium attractiveness while Barbados and Mauritius are found to have low attractiveness. Sao Tome's classification is marginal (its FDI/GDP ratio was 25.3 in 2004) while the data for Barbados and Malta may reflect exogenous year-specific shocks to their FDI inflows.

Table 2
The success of SIDS-53 in attracting FDI inflows, 2003

High attractiveness: FDI stock/GDP > 100 %		
Anguilla	Antigua & Barbuda	Dominica
Grenada	Guyana	Kiribati
St Kitts & Nevis	St Lucia	St Vincent & Grenadines
Seychelles	Singapore	Vanuatu
Medium attractiveness: 100 % > FDI stock/GDP > 25 %		
Aruba	Bahamas	Bahrain
Belize	Cyprus	Dominican Republic
Jamaica	Malta	Papua New Guinea
Sao Tome & Principe	Solomon Islands	Trinidad & Tobago
Low attractiveness: FDI stock/GDP < 25 %		
Barbados	Cape Verde	Comoros
Cuba	Fiji	Guinea-Bissau
Haiti	Maldives	Mauritius
Netherlands Antilles	Samoa	Suriname
Tonga	Tuvalu	

Source: Table 1.

3.3 The accumulated stock of FDI in SIDS

The long-term contribution of FDI inflows to domestic investment and therefore the overall policy stance (openness) towards FDI and an economy's attractiveness to foreign investors may be better reflected in accumulated FDI stock data. Table 3 presents UNCTC FDI accumulated stock data since 1980 (not accounting for depreciation) for SIDS-51. The remaining 29 SIDS, therefore, shared an accumulated FDI stock of around US\$11.9 billion or just 5.4 per cent of the total.

Table 3 provides the FDI stock data for SIDS-51 in 2003 (data for Singapore and Malta provided separately). The FDI stock is again dominated by a small number of SIDS;

The Bahamas, Bahrain, Cyprus, the Dominican Republic, Jamaica, Papua New Guinea and Trinidad and Tobago had an accumulated FDI stock of US\$41.8 billion, representing 80.7 per cent of the SIDS-51 total. The remaining 29 SIDS, therefore, shared an accumulated FDI stock of around US\$9.9 billion or just 19.2 per cent of the SIDS-51 total. Some 75 per cent (US\$167 billion) of the total accumulated stock of FDI in SIDS-53 as of 2003 (US\$222.6 billion), was invested in Singapore.

Table 3
SIDS-51, estimated domestic stock of FDI, 2003 (US\$ m.)

SIDs	FDI stock, 2003	FDI stock share of SIDS total, 2003, %	FDI/Gross fixed capital formation, 2003, %
Anguilla	323.8	0.6	105.8
Antigua & Barbuda	1,106.0*	2.1	45.9
Aruba	928.1	1.8	n/a
Bahamas	1983.5	3.8	11.8
Bahrain	7,354.0*	14.2	27.8
Barbados	390.0	0.8	12.8
Belize	434.8	0.8	-0.7
Cape Verde	228.0	0.4	6.4
Comoros	196.6	0.4	3.1
Cuba	79.9	0.2	n/a
Cyprus	8,555.0*	16.5	39.0
Dominica	373.0*	0.7	44.9
Dominican Rep	8,015.5	15.5	16.3
Fiji	331.0*	0.6	6.9
Grenada	633.0*	1.2	48.4
Guinea-Bissau	48.0*	0.1	13.5
Guyana	914.5	1.8	16.8
Haiti	83.6	0.2	1.6
Jamaica	4931.6	9.5	29.6
Kiribati	134.0*	0.3	1.8
Maldives	171.0*	0.3	7.2
Mauritius	753.0*	1.5	4.9
Netherlands Antilles	7.3	0.0	n/a
Papua New Guinea	2,214.0*	4.3	15.8
St Kitts & Nevis	706.9	1.4	44.8
St Lucia	889.8	1.7	73.9
St Vincent & Grenadines	676.0*	1.3	43.4
Samoa	44.0*	0.1	n/a
Sao Tome & Principe	17.0*	0.0	4.8
Seychelles	746.0*	1.4	92.3
Solomon Islands	136.0	0.3	-2.7
Suriname	-885.1	-1.7	-11.1
Tonga	36.0	0.1	42.7
Trinidad & Tobago	8,737.7	16.9	39.7
Tuvalu	0.0	0.0	n/a
Vanuatu	415.0*	0.8	26.4
<i>Total SIDS-51</i>	<i>51,708.5</i>	<i>100.0</i>	
Malta	4,000.0*	1.8**	98.6
Singapore	166,884.0*	75.0**	46.5

Notes: * Gross fixed capital formation; ** Share of SIDS-53 FDI stock.

Source: Calculated from UNCTC data.

3.4 The share of FDI in SIDS gross fixed capital formation

An alternative measure of the relative magnitudes of FDI inflows is the share of foreign investment in gross fixed capital formation. This ratio is particularly useful with respect to analysing FDI inflows to developing countries in that it provides some indication of the relative importance of FDI in aggregate investment. Table 4 uses the data on the share of FDI inflows gross fixed capital formation presented in Table 3 to classify the importance of FDI inflows to the 31 SIDS for which data are available. As in Table 2, the classificatory thresholds are essentially arbitrary but some distinct patterns emerge from the data. Given that the SIDS are developing economies, a high share of FDI in aggregate investment may reflect a scarcity of domestic funds for investment. In addition, as in Table 2, the data may reflect the domestic policy stance (openness) towards FDI and the relative attractiveness of particular SIDS to foreign investors.

Of the thirteen SIDS included in the high importance category (FDI/GFCF in 2003 is greater than 30 per cent), twelve are classified as being high or upper-medium income economies by the World Bank (WB) and are located in relatively prosperous global regions. This would tend to support the openness over the development view outlined above. The only exception in this category is Tonga, which fits more closely with the development view in that FDI inflows are likely to substantially outweigh the low supply of local investment funds. All of the SIDS included in the medium importance category (a ratio of between 15 and 30 per cent) are relatively large and/or have relatively high per capita incomes. Four of the 13 SIDS included in the low importance category (FDI/GFCF is less than 15 per cent) are relatively prosperous—The Bahamas, Barbados, Belize and Mauritius—suggesting that they may have access to ample supplies of domestic funds for investment and are not particularly dependent upon inflows of FDI. The remaining nine SIDS in the low importance category are relatively poor (WB low and lower-middle income economies) and appear to be relatively unsuccessful in securing inflows of FDI, whether because of their policy stance towards FDI and/or their market attractiveness.

Table 4
The importance of FDI inflows in SIDS-53 gross fixed capital formation, 2003, 2004*

High attractiveness: FDI/GFCF > 30 %		
Anguilla	Antigua & Barbuda	Cyprus
Dominica	Grenada	Malta
St Kitts & Nevis	St Lucia	St Vincent & Grenadines
Seychelles	Singapore	Tonga
Trinidad & Tobago		
Medium attractiveness: 30 % > FDI/GFCF > 15 %		
Bahrain	Dominican Republic	Guyana
Jamaica	Papua New Guinea	Vanuatu
Low attractiveness: FDI/GFCF < 15 %		
Bahamas	Barbados	Belize
Cape Verde	Comoros	Fiji
Guinea-Bissau	Haiti	Maldives
Mauritius	Sao Tome & Principe	Solomon Islands
Suriname		

Note: * Aruba, Cuba, Kiribati, Netherlands Antilles, Samoa and Tuvalu omitted due to unavailability of data.

Source: Table 3.

4 Analytical methodology

The choice of dependent variable in standard analyses of the determinants of FDI inflows is generally FDI inflows at time t normalized for GDP at time t , then taking natural logs ($\ln\text{FDI}/\text{GDP}$) rather than using nominal absolute inflows of FDI. The availability of comprehensive time-series data means that it is usually possible to smooth for sizeable fluctuations in FDI inflows by using moving averages. The use of $\ln\text{FDI}/\text{GDP}$ as the dependent variable means that the focus of most empirical analyses is the determinants of the inflows of FDI and these factors are not necessarily the same as those factors explaining the stock of FDI. An alternative choice of normalized dependent variable is the log ratio of FDI inflows in gross fixed capital formation, although data on domestic investment is often harder to obtain than GDP data. The empirical analysis in this paper uses $\ln\text{FDI}/\text{GDP}$ as the dependent variable in the first instance.

It is important to note that the relationship between FDI inflows and GDP can be viewed as a proxy for the relative openness of a country to foreign investment. In turn, this relationship is likely to be highly correlated with the trade to GDP ratio, which is often used as a proxy for relative openness to trade. While countries that are open to trade may restrict inflows of FDI, countries open to FDI inflows are unlikely to pursue restrictive trade policies. Further, the trade to GDP ratio is also highly correlated inversely with size so that when using datasets incorporating small states like SIDS, it may act simultaneously as a proxy for small size.

4.1 Principal hypotheses

This study follows the broad analytical methodology of Read and Soopramanien (2003) in investigating the following hypotheses:

- That SIDS receive disproportionately lower aggregate volumes of FDI inflows because of their small size, normalizing for population, national income, investment and per capita income. This is because inflows of efficiency-seeking, market-seeking and strategic asset-seeking (but not resource-seeking) FDI are expected to be disproportionately lower.
- That the spatial distribution of FDI inflows to SIDS favours those located in more prosperous global regions and affects adversely those located in relatively poorer regions, whether using World Bank or own regional definitions. This would lend further support to the view that the growth performance of SIDS, as in the case of small states generally, is significantly affected by their broader regional location (Armstrong et al. 1998; Armstrong and Read 1998, 2000, 2001).
- That the sectoral distribution of FDI inflows to SIDS follows the pattern identified in the empirical literature on the comparative advantage of small states (UNCTAD 1997; Armstrong et al. 1998; Armstrong and Read 2000, 2001). That is, the sectors that are most likely to attract inflows of FDI are primary commodities and service activities, notably offshore financial services and tourism.

4.2 Independent variables

The primary objective of this paper is to investigate the determinants of FDI inflows in SIDS. As such, it is concerned with investigating the role of standard determinants of FDI but it also needs to capture the impact of small size over and above the use of a simple dummy variable for the SIDS.

Population and aggregate GDP can both be utilized as proxy variables for small size. The former provides an indication of both potential market size and labour force while the latter indicates the absolute wealth of particular markets as well as any threshold effects of scale economies in production and distribution. This paper follows previous growth studies of small economies in using the natural log of population as a size variable ($\ln\text{Pop}$) in that it provides a better proxy for market size *per se* than absolute GDP which cannot distinguish between low populations and low levels of development.

The paper also makes use of a SIDS dummy variable. This is intended to pick up any SIDS-specific effects with respect to the set of small economies as a whole, possibly including the impact of islandness. It is important to note at this point that SIDS, in spite of their nomenclature highlighting the commonality of their size and islandness, are in fact a rather heterogeneous group. The SIDS group actually includes several non-island states—Belize, Guinea-Bissau, Guyana and Suriname—as well as other states that are not necessarily strictly islands. Further, several large and/or relatively developed states are classed as SIDS—Cuba, Dominican Republic, Malta and Singapore—which are several orders of magnitude larger than the smallest, such as Tuvalu which has a population of around 11,500. Malta and Singapore feature in most statistics on SIDS but are not now included in the official 51 SIDS. These two sets of SIDS are referred to as SIDS-53 and SIDS-51. This paper is not concerned with the appropriate definitions and eligibility of states for membership of SIDS but the robustness of the empirical analysis may be affected by such definitional inconsistencies and anomalies.

The wealth of a particular market is expected to be a critically important factor in attracting market-seeking FDI. Market wealth can be measured in two ways: using aggregate GDP or per capita incomes. Earlier studies of the determinants of FDI make use of aggregate GDP data as a measure of market size. More recently, per capita income data have been found to have a stronger relationship with FDI (see Loree and Guisinger 1995; Globerman and Shapiro 1999). This is perhaps unsurprising as per capita income can be regarded as a more precise measure of consumer wellbeing than GDP. The availability of per capita income data however, is a common problem in the analysis of small economies generally; and this is also the case with SIDS. This paper follows the methodology adopted by Armstrong and Read and makes use of WB income group data from the *World Development Indicators* for many of the smallest economies where precise income-level data are not available. This approach provides a means of increasing the number of SIDS included in the study and limits problems of sample selection bias that result from incorporating only the largest economies in the empirical analysis. All countries in the global dataset are therefore classified in one of the four WB income groups: high income; upper-middle income; lower-middle income; and low income. An income dummy is then included in the equation (WBYG), with a numeric indicating the specific income group (high = 4; upper-middle = 3; lower-middle = 2; and low = 1). One income group is omitted in the regression.

The measurement of the policy stance of host countries towards FDI inflows is difficult to quantify meaningfully, as in the case of trade policy. This paper adopts openness to trade, measured by the simple ratio of total trade (exports plus imports) to GDP, as a proxy for the policy stance towards FDI and therefore the relative attractiveness of a host country as a potential location, particularly for export-platform (efficiency-seeking) FDI. Natural logs are taken, to give $\ln\text{TRADE}$. It is recognized that the inclusion of this variable is likely to be correlated inversely with size but it is the only simple policy stance variable available given that the alternative measure of openness to FDI (FDI/GDP), is already being used as the dependent variable.

It is also interesting to investigate the sectoral distribution of FDI in SIDS, especially in the light of the empirical findings regarding the sectoral sources of growth in small economies generally. Sectoral data on FDI are only available for five SIDS however, whether in terms of stocks or flows; the Dominican Republic, Guyana, Jamaica, Mauritius and Trinidad and Tobago. Instead, this study follows Read and Soopramanien (2003) and uses the sectoral breakdown of GDP as a proxy. The reasoning underlying the use of this proxy is that small economies generally have very high levels of openness to trade so that the sectoral structure of domestic output almost directly reflects their pattern of comparative advantage. The use of a sectoral share variable therefore provides additional information concerning the policy stance and comparative advantage of an economy, both of which are expected to influence FDI inflows. The sector variable enters with a numeric as follows: primary = 1; manufacturing = 2; services = 3.

The empirical analysis also includes an island variable over and above the SIDS variable. This is because the literature on small economies has long asserted that 'islandness' is a source of disadvantage—hence the creation of the SIDS classification. Although islandness is hypothesized as having a significantly negative impact upon economic growth, and therefore by implication on FDI inflows as well, there remains no significant statistical evidence to support this view. Nevertheless, islandness is a potential source of additional transport and coordination costs, particularly in far-flung archipelagos such as those found in the Pacific. Given that some SIDS are not in fact islands, in spite of their classification, and because many other island states of varying sizes exist, the islandness variable is included and is expected to have a negative effect on FDI inflows.

Other studies of the determinants of growth in small economies, primarily the work of Armstrong and Read, find that regional location has a significant effect on the growth performance of small economies. Those located in relatively prosperous regions (such as Western Europe) as well as those in close proximity to large and wealthy markets (such as the Caribbean) tend to perform better than those located in relatively less dynamic regions (see the comparison between small economies in East Asia and Sub-Saharan Africa in Armstrong and Read 2001). This study therefore follows Armstrong and Read by including a regional dummy to capture any possible location effects on FDI inflows, using the eight WB regions. For the purposes of this analysis, the two very broad regional groups—Eastern Europe and Central Asia and East Asia and the Pacific—are split. This is particularly important in the case of the Pacific, as opposed to East Asia, because of the preponderance of SIDS in that region. The ten regional dummies (WBReg) are allocated a numeric as follows: Sub-Saharan Africa = 1; South Asia = 2; Middle East and North Africa = 3; Eastern Europe = 4; Central Asia = 5; Latin America and the Caribbean = 6; East Asia = 7; The Pacific = 8; Western Europe = 9; and North America = 10.

The final model is therefore of the form:

$$\ln FDI/GDP = f \{ \ln Pop, SIDS-53, WBYG, \ln Trade/GDP, Sector, Island, WReg \}.$$

4.3 Data sources

The standard source for data on FDI flows, stocks and economic and financial performance indicators of MNEs is the UN Centre for Transnational Corporation (UNCTC), located within UNCTAD. The UNCTC collects and publishes a limited range of FDI data for 37 of SIDS-53 and 35 of SIDS-51. Not all of the SIDS FDI data are necessarily easily available for all years, notably FDI stock data and FDI as a share of GDP. The data for the remaining variables are derived from World Bank *WDI*.

5 Inflows of FDI to small states: empirical evidence

The model described in section 4 is used to apply an iterative stepwise regression procedure on the independent variables. The algorithm selects those independent variables that best fit the model. If another variable is introduced, the model selects the best variable and, in the event of two independent variables being correlated, it only includes the better predictor. The results of the final version of the iterative stepwise regression procedure are presented in Table 5.

Table 5
Estimation results

	Unstandardized coeff.		Standardized coeff.		
	Beta	Std error	Beta	t-Statistic	Significance
Independent variables					
Constant	-2.280	0.899		-2.535	0.013
lnTrade	0.812	0.200	0.316	4.069	0.000
WReg3 (MENA)	-1.979	0.365	-0.409	-5.418	0.000
WBYG1 (Low)	-0.530	0.211	-0.201	-2.512	0.013
WReg2 (SA)	-1.253	0.474	-0.196	-2.645	0.009
WReg9 (WE)	1.954	0.669	0.442	2.921	0.004
WBYG4 (High)	-1.328	0.607	-0.334	-2.187	0.031
Excluded variables					
	Beta	t-Statistic	Significance	Partial correlation	Colinearity tolerance
WBYG2 (LM)	-0.129	-1.400	0.164	-0.132	0.596
WBYG3 (UM)	0.124	1.458	0.148	0.137	0.699
SIDS-53	0.530	0.657	0.513	0.062	0.791
Island	0.083	1.064	0.290	0.100	0.837
Sector3 (Serv)	0.200	0.206	0.837	0.020	0.560
Sector2 (Man)	0.015	0.175	0.861	0.017	0.661
Sector1 (Prim)	0.026	0.331	0.741	0.031	0.835
WReg4 (EE)	0.001	0.014	0.989	0.001	0.867
WReg6 (LAC)	0.144	1.618	0.108	0.152	0.636
WReg7 (EA)	-0.048	-0.641	0.523	-0.061	0.908
WReg5 (CA)	-0.018	-0.234	0.815	-0.022	0.920
lnPop	-0.118	-1.369	0.174	-0.129	0.683
Model diagnostics					
	R	R ²	Adjusted R ²	Std error	
	0.654	0.428	0.397	0.99809	

N = 174

Note: The order in which the independent variables appear in the table represents their ordinal ranking in terms of the explanatory power of the equation.

5.1 The determinants of FDI inflows to SIDS: initial analysis

The key results of the model are that openness to trade, as measured by the ratio of trade to GDP, and location in Western Europe are found to have a positive and significant impact on inflows of FDI. The WB high- and low-income groups along with a location in the Middle East and North Africa and South Asia however, have a negative and significant impact on FDI inflows. The remaining income and regional location variables along with the sectoral, SIDS-53, islandness and population variables were all excluded from the model during the stepwise iteration process. The R^2 is 42.8 per cent, which is reasonably acceptable for a cross-section analysis of this kind.

Given that the analysis was undertaken for FDI inflows for a global dataset of countries, it is useful, in the first instance, to consider the general implications of these findings. The results support the view that the key determinants of FDI inflows are per capita income levels and regional location. Given that both high and low WB income groups are found to be negative and significant suggests that much of the FDI inflows are market-seeking in newly industrializing or emerging economies (found in the upper- and lower-middle income groups) or efficiency-seeking investments founded upon openness to trade.

The positive and significant sign on location in Western Europe alone might appear to be surprising but this result tends to support the ripple effect of the EU on regional growth and FDI activity. Proximity to the prosperous EU market, particularly location within the EU itself, is evidently an important factor in the FDI decision. The negative and significant signs on the Middle East and North Africa and South Asian regions are unsurprising given that they are not, as yet, important destinations for export-oriented FDI and are also characterized by greater economic and political risk.

5.2 Findings regarding FDI inflows to SIDS

The interpretation of the findings with specific reference to inflows of FDI to SIDS and the derivation of any policy implications with regard to them needs to consider the variables both excluded by the model as well as those that are found to be significant.

The impact of size on FDI Inflows to SIDS

The two variables used to incorporate size in the model are population (lnPop) and SIDS status. Both are hypothesized to be inversely related to inflows of FDI but neither is found to be significant. The population variable is found to have the right sign but is not significant. Membership of SIDS-53 has the wrong sign and is insignificant. These results suggest that small size in itself should not necessarily be viewed as a barrier to attracting inflows of FDI. This result replicates the statistical analyses of the economic growth performance of small economies undertaken by Armstrong and Read, where small size is not found to be significant. Following Armstrong and Read, it is important to note, however, that the upwards size bias in many global datasets, including FDI data, generates sample selection bias so that the actual impact of small size is therefore likely to be underestimated.

The impact of income levels on FDI inflows to SIDS

Inflows of FDI are found to be negative and significantly related to host countries being classified in the low WB income group. This finding is unsurprising and in accord with underlying expectations in that low-income countries tend to offer few attractions to foreign investors owing to their generally smaller markets, poorly developed levels of human capital, weak infrastructure and greater associated risk. The only exception to this tends to be valuable resource endowments which attract inflows of resource-seeking FDI. Both the upper-middle and lower-middle income variables are insignificant although it is important to note that the former has a positive sign while the latter has a negative one. These findings suggest that those SIDS with per capita income levels in the upper- and lower-middle WB income groups are likely to be able to attract greater FDI inflows than those in the Low income group but that the former are more successful in doing so. The negative and significant impact of the high WB income groups on FDI inflows is slightly puzzling given that its effect is hypothesized to be strongly positive.

The impact of openness to trade on FDI inflows to SIDS

The openness to trade variable (lnTrade) is found to be the most important determinant of FDI inflows in the model, having a positive and significant impact. This finding supports the general view that an open trade policy stance has a favourable effect and may be positively correlated with a country's openness to FDI inflows. In addition, the importance of the trade openness also suggests the critical importance of efficiency-seeking FDI in aggregate FDI as part of the ongoing process of globalization. The positive sign and significance of the trade openness variable with respect to SIDS also conform to *a priori* reasoning derived from an understanding of the salient economic characteristics of small states in general. This suggests that SIDS, among other small states, are likely to be relatively favourable locations for inflows of FDI because of their inherent openness to trade. It is useful draw a distinction here between structural and policy openness (see Armstrong and Read 1998). Although small states are generally highly open in a structural sense, the policy stance of their individual governments towards trade, and by implication FDI, may still vary. This suggests that the policy stance of SIDS towards trade and FDI inflows remains critically important.

The impact of sectoral structure on inflows of FDI to SIDS

None of the three sectoral variables are found to be significant with respect to FDI inflows. This result contrasts with the significant role of services (positive) and agriculture (negative) found in analyses of the determinants of growth in small states generally. In addition, the signs of all of the sectoral variables are found to be positive but insignificant. In the case of the primary sector, this may reflect the volume of natural resource FDI relative to FDI in the agricultural sector. It is important to note that the inability to obtain good sectoral level data on FDI inflows, particularly for SIDS, led to the use of a simple proxy based upon the sectoral structure of GDP. These data may simply not be an adequate proxy for the sectoral distribution of FDI inflows.

The impact of islandness and SIDS status on inflows of FDI to SIDS

Islandness has long been hypothesized in the literature to be a significant and insurmountable disadvantage to economic growth success of small economies. Nevertheless, empirical support for this popular hypothesis has not been forthcoming. In recognition of this long-standing view, islandness was included as an additional independent variable along with SIDS status.

SIDS status is misleading, however, to the extent that it neither includes all small island developing states nor is its membership confined to islands! Further, membership of the category has been extended to 12 non-politically sovereign small island entities, again to the exclusion of others. As such, SIDS status incorporates small size, islandness and developing status, all of which might be expected to have a negative impact on inflows of FDI. In spite of the SIDS variable representing a composite of possibly ‘undesirable’ characteristics, it was excluded from the model in an earlier iteration. Further, although SIDS status is insignificant, its sign is actually positive in the model.

The islandness variable is included to represent island status, encompassing all islands regardless of size. The definition of islandness nevertheless remains open to debate, given large size (Australia) and whether only partial occupation of one or more islands is sufficient to confer such status (e.g., the Dominican Republic/Haiti, Brunei, etc.). The results of the model, however, negate some of this controversy in that the island variable is found to be small, positive and insignificant. This supports the findings of other empirical studies which have failed to find that islandness has a negative and significant impact on economic performance.

The impact of location on FDI inflows to SIDS

Of the three location variables found to be significant determinants of FDI inflows, none contain substantial numbers of SIDS; Cyprus and Malta are in Western Europe, Bahrain in Middle East and North Africa and the Maldives in South Asia. This result is therefore quite important for SIDS in that location in the Caribbean proximate to continental North America and in the Pacific remote from most major markets is neither found to be beneficial nor disadvantageous.

5.3 An alternative model

In the light of these results, a second version of the regression model is utilized, with FDI as a share of gross fixed capital formation (FDI/GFCF) replacing FDI/GDP as the dependent variable. The reason underlying this choice lies in the close association and correlation between the original dependent variable and the trade openness variable (Trade/GDP). FDI/GFCF offers a potential means to circumvent these problems. As stressed earlier, data availability is a very real constraint with regard to the statistical analysis of small economies, including SIDS. Data on the share of FDI in gross fixed capital formation are only available for ten small economies but only four SIDS out of $n = 94$ so that the results lack statistical robustness. In addition, the correlation between FDI/GFCF and FDI/GDP for this subsample is extremely high at 0.955 with 95 per cent significance. As such, the high correlation together with the minimal number of SIDS included in the regression negate the initially perceived advantages of this alternative model.

5.4 The results in the context of previous empirical studies

There is a plethora of large-scale cross-country statistical analyses of the determinants of FDI. None of these studies, with the exception of Read and Soopramanien (2003) however, focus specifically upon the inclusion and analysis of these determinants with respect to small economies (those with populations below three million). This paper is the first to attempt to tackle these determinants with specific respect to small island

developing states (SIDS). Several papers investigate the determinants of FDI with respect to a selection of small economies or SIDS; for example Jayaraman and Choong (2006) focus on the case of Fiji.

Read and Soopramanien (2003) find lower inflows of FDI in small economies than in larger ones in absolute terms but not necessarily in relative terms. Further, aggregate income and per capita income levels are found to have little impact on their own, although the effect of income is much greater when taken in combination with population. This suggests that the income determinant of FDI dominates the (small) size determinant. The Read and Soopramanien study, however, does find that the sectoral determinants of FDI are significant, with FDI inflows being positively associated with the presence of large substantial natural resource and service sectors but inversely related to agriculture. The results for manufacturing were inconclusive. These results confirm early work by Armstrong and Read.

Jayaraman and Choong (2006) use a VAR model estimated in a maximum likelihood framework to analyse the determinants of FDI flows to Fiji for the period 1970-2001. This time-series analysis finds that the growth rate of GDP per capita, real income per capita, openness (trade/GDP) and the real exchange rate are all significant at the 5 per cent level.

In comparison, the findings of the current paper are perhaps less conclusive than those of Read and Soopramanien, owing primarily to the non-inclusion of an aggregate GDP measure to capture the simultaneous effects of size and scale. The insignificance of the sectoral variables here may be the result of using an iterative stepwise regression procedure rather than a standard linear regression analysis so that the sectoral effects are being picked up rather better by another variable, possibly openness to trade (not used by Read and Soopramanien). The findings of Jayaraman and Choong could be tested for the full set of SIDS using panel data analysis although the derivation of general results is likely to be very difficult, given widespread problems with the availability of the data.

6 Summary and conclusions

FDI is identified in the growth literature as providing a critical impetus to economic growth because it embodies technology, knowhow and organizational techniques in addition to financial capital. As such, FDI offers a potentially important means of stimulating growth in developing countries. This paper attempts to investigate the determinants of FDI in small island developing states (SIDS).

The initial overview of the data on FDI in SIDS highlights several important points, notably the highly skewed distribution of FDI inflows and the existing FDI stock. Discounting the distorting effects of Malta and Singapore, FDI inflows and stocks in SIDS still remain dominated by the largest countries while most other SIDS are host to low absolute levels of FDI. There still appear to be size, income and location biases with respect to relative inflows of FDI, whether expressed as a proportion of GDP or gross fixed capital formation—although it is important to note that these do not, in general, appear as significant in the empirical analysis.

The empirical analysis applies an iterative stepwise regression procedure to a global dataset to test for the effects of (small) size, income, openness to trade, islandness and location as well as SIDS status on inflows of FDI expressed as a share of GDP. While recognizing the limits imposed by the availability of data for some SIDS and many other small economies, the results do not find the size, islandness and sectoral structure variables to be significant determinants of FDI inflows. Openness to trade, income and location, however, are found to have significant effects on FDI inflows. The results suggest that countries classified in the highest and the lowest of the WB income groups (high and low) attract lower flows of FDI as a share of GDP. While the latter result might be expected, the former appears to be counterintuitive. It may, however, reflect the large volume of current efficiency-seeking FDI flows that are being invested in industrializing countries as part of the globalization process. Location in Western Europe is found to have a positive and significant effect on inflows of FDI while Middle East and North Africa and South Asia have significant and negative effects.

The empirical findings, while requiring fine-tuning, do suggest some important policy implications with respect to FDI inflows in SIDS. These implications have much to do with the insignificance as well as the significance of some key variables.

- *Size*: Small size in itself is not found to be a significant barrier to attracting inflows of FDI. The population size variable is found to be negative but insignificant. This finding is in accord with the general literature on small economies where small size, whether measured by population or an alternative variable, is not found to be significant.
- *Income*: Relative FDI inflows are significantly and negatively related to countries in the highest and lowest of the WB income groups. FDI inflows are positively related to the upper-middle income group and negatively related to the lower-middle income group but insignificant in both cases. The critical implication for SIDS is that they are unlikely to attract much in the way of market-seeking FDI and, particularly with respect to the least developed SIDS, only low levels of efficiency-seeking FDI. This does not however, negate the potential for FDI inflows seeking valuable natural resources.
- *Openness to trade*: This is found to be a positive and significant determinant of FDI inflows at the global level. Openness to trade measured as a share of GDP is subject to an inherent bias in that it is inversely correlated with size such that it tends to underestimate the importance of openness for larger economies and overestimate its importance for smaller ones. Nevertheless, the structural openness of SIDS appears attractive to foreign investors and may explain the higher than expected relative inflows of FDI. Openness therefore compensates to some extent for small size. For many SIDS, however, openness over a sustained period of time has still not resulted in the attraction of particularly large volumes of FDI. The wide variations in FDI stocks and shares of FDI inflows in gross fixed capital formation among SIDS suggest that trade openness on its own is not necessarily a sufficient remedy for low levels of FDI. It is important to note that the dependent variable, $\ln(\text{FDI}/\text{GDP})$, could be regarded as a proxy for openness to inflows of FDI, although there is considerably greater variation in this variable among SIDS than in their openness to trade. This might indicate that the policy stance of many SIDS towards FDI maybe be more restrictive than that towards trade openness.

- *Sectoral structure*: The relative size of the three major sectors in an economy is found to have a positive but insignificant impact on FDI flows. This contrasts with the earlier findings of Read and Soopramanien (2003). In the absence of extensive sectoral data on FDI inflows, these sectoral structure variables are intended to capture the effects of openness and comparative advantage in SIDS. It is possible that the trade openness variable is itself capturing these effects, a variable not used in the earlier study.
- *Islandness*: This variable is included to capture fully the effects of an island location of FDI inflows and is applied to the global dataset. The islandness variable is found to have a positive but insignificant effect on FDI inflows. This result is consistent with empirical findings elsewhere on small economies but runs counter to the inferences of much of the (descriptive) literature on islands. The SIDS variable encapsulates small size, islandness and developing status in a single variable but, like islandness, it is found to have a positive but insignificant effect on FDI. This may be at least partly explained by the flexibility applied to the granting of SIDS status with respect to size, islandness and income levels.
- *Location*: Relative inflows of FDI are found to be significantly related to location in some World Bank regions. Notably, location in Western Europe has a positive and significant impact on inflows of FDI while Middle East and North Africa and South Asia have a negative and significant effect. Given the small number of SIDS located in the latter two regions and their preponderance elsewhere, including Western Europe, these results suggest that the location of the greater proportion of SIDS does not influence their prospects for inflows of FDI.

Bibliography

- Armstrong, H. W., R. Jouan de Kervenoael, X. Li, and R. Read (1998). 'A Comparison of the Economic Performance of Different Micro-states and between Micro-states and Larger Countries'. *World Development*, 26 (4): 539-56.
- Armstrong, H. W., and R. Read (1998). 'Trade and Growth in Small States: The Impact of Global Trade Liberalization'. *World Economy*, 21 (4): 563-85.
- Armstrong, H. W., and R. Read (2000). 'Comparing the Economic Performance of Dependent Territories and Sovereign Micro-States'. *Economic Development and Cultural Change*, 48 (2): 285-306.
- Armstrong, H. W., and R. Read (2001). 'Explaining Differences in the Economic Performance of Micro-States in Africa and Asia'. In P. Lawrence and C. Thirtle (eds), *Africa and Asia in Comparative Development*. Basingstoke: Palgrave Macmillan, 128-57.
- Armstrong, H. W., and R. Read (2002). 'The Importance of Being Unimportant: The Political Economy of Trade and Growth in Small States'. In S. M. Murshed (ed.), *Issues in Positive Political Economy*. London: Routledge, 71-88.
- Armstrong, H. W., and R. Read (2003). 'The Determinants of Economic Growth in Small States'. *The Round Table*, XCII (368): 99-124.

- Behrman, J. R. (1972). *The Role of International Companies in Latin America: Autos and Petrochemicals*. Lexington MA: Lexington Books.
- Dunning, J. H. (1979). 'Explaining Patterns of International Production: In Defence of the Eclectic Theory'. *Oxford Bulletin of Economics and Statistics*, 19 (1): 1-29.
- Globerman, S., and D. M. Shapiro (1999). 'The Impact of Government Policies on Foreign Direct Investment: The Canadian Experience'. *Journal of International Business Studies*, 30 (3): 513-23.
- Jayaraman, T. K., and C.-K. Choong (2006). 'Foreign Direct Investment in the South Pacific Island Countries: A Case Study of Fiji'. *World Review of Science, Technology and Sustainable Development*, 2 (4): 75-85.
- Loree, D. W., and S. E. Guisinger (1995). 'Policy and Non-Policy Determinants of US Equity Foreign Direct Investment'. *Journal of International Business Studies*, 26 (2): 281-99.
- Read, R. (2002). 'Growth, Economic Development and Structural Transition in Small Vulnerable States'. In S. M. Murshed (ed.), *Globalization and the Obstacles to the Successful Integration of Small Vulnerable Economies*. London: Routledge, 171-84.
- Read, R. (2004). *FDI and the Creation of Local Linkages in Small States*. World Bank Knowledge Brief. Sydney / Washington, DC: International Finance Corporation / World Bank (FIAS).
- Read, R., and N. Driffield (2004). *Linkages and Flow-On Impacts of Foreign Investment in Pacific Island Economies: Final Report*. Report for the Pacific Islands Forum Secretariat. Sydney: FIAS.
- Read, R., and D. Soopramanien (2003). 'FDI in Small States: An Exploratory Investigation'. Paper presented at the 28th IESG Annual Conference 'International Factor Mobility, Trade and Growth', 9 and 10 September. Birmingham: University of Birmingham.
- UNCTAD (1997). *The Vulnerability of Small Island Developing States in the Context of Globalization: Common Issues and Remedies*. Geneva: UNCTAD, SIDS.
- UNCTC. *SIDS FDI Data*. Geneva: UNCTAD.
- World Bank. *World Development Indicators*, CD-ROM. Washington, DC: World Bank.