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Determining Factors of FDI Flows to Selected Caribbean Countries

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Abstract: Foreign direct investment (FDI) is a vital ingredient in achieving sustained growth in the Caribbean region. However, FDI inflows have been affected by issues such as market factors, trade barriers, costs factors, investment climate, political and foreign exchange stability. To this end, this paper examines the factors affecting FDI flows into Caribbean countries. We argue that Small Island Developing States in the Caribbean (SIDSC) can be affected by issues such as their small market size, high cost of energy, proneness to exogenous shocks from commodity prices, natural disasters and climate change. A point to note is that countries in the Caribbean with natural resources are expected to have biased FDI inflows. Additionally, countries throughout the Caribbean have different economic and productive structures and unique issues that can affect them based on their individual characteristics. To this end, a panel Autoregressive Distributed Lagged (ARDL) model is used to determine the factors affecting FDI inflows in the Caribbean over the period 2000 to 2019. The findings reveal that GDP growth, natural resource rents, gross capital formation and population growth are significant factors influencing growth in the Caribbean region.

Keywords: foreign direct investment; Small Island Developing States; Caribbean

1. Introduction

There are a vast number of theoretical and empirical studies on the factors that determine foreign direct investment (FDI) in a country (for some key examples, see Billington 1999; Nunnenkamp 2001; Wolff 2007; Faeth 2008; Türkcan et al. 2008; Kolstad and Villanger 2008; Mengistu and Adhikary 2011; Oladipo 2013; Taylor et al. 2013; Aziz and Makkawi 2012; Bannaga et al. 2013; Zeshan and Talat 2014; Corcoran and Gillanders 2015; Henry et al. 2014; Williams 2015; Phung 2016; Khramov 2016; Mahmoodi and Mahmoodi 2016; Daskalopoulos et al. 2016; Mamingi and Martin 2018; Sabir et al. 2019; Siriopoulos et al. 2021). An FDI is defined as "an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate)" (World Investment Report 2007, p. 245).

Looking at global trends, it can be observed that the international volume of FDI increased considerably over the second half of the 20th century. This may be explained, for example, through the globalization of markets and the changing global economic and political environment. Table 1 provides trends in FDI inflows over the last five decades. As we can see from Table 1, FDI inflows in the world have increased over the period 1970 to 2019. For example, this trend was mirrored by countries in 'East Asia and the Pacific', 'High Income Countries', 'Latin America and the Caribbean countries' and 'Middle-Income Countries'. Further, 'Least Developed Countries', 'Low-Income Countries', 'Sub-Saharan

Africa' and 'Small States' accounted for the lowest share of FDI inflows over the period 1970 to 2019, with some significant fluctuations. FDI inflows into Caribbean Small States generally increased over the period 1970 to 2019. The average FDI inflows increased by 913.79% from 1970–1980 (USD 0.232bn) to 2011–2019 (USD 2.352bn). Hence, it is important to determine whether FDI has been contributing to growth in these Caribbean States that face several vulnerabilities due to their small size, geographical vulnerabilities and limited proneness to exogenous shocks.

Table 1. Trends in FDI inflows (USD bn) 1970–2019.

Region	1970–1980	1981–1990	1991–2000	2001–2010	2011–2019
East Asia and Pacific	3.371	15.827	89.364	261.096	572.910
Europe and Central Asia	11.224	39.661	269.609	855.821	757.985
High Income	21.130	98.655	474.220	1260.413	1489.845
Latin America and the Caribbean	2.933	6.834	51.216	130.813	273.159
Caribbean Small States	0.232	0.171	1.096	3.222	2.352
Least Developed Countries	0.307	0.415	2.409	11.005	25.703
Low Income	0.241	0.213	0.949	7.301	15.513
Lower Middle Income	1.150	2.855	12.082	56.986	104.665
Middle East & North Africa	0.054	4.183	6.639	66.791	53.105
Middle Income	4.811	13.043	100.425	347.221	616.035
Sub-Saharan Africa	0.870	1.337	4.592	22.629	37.510
Small States (aggregate)	0.401	0.593	3.591	37.687	41.539
World	26.182	111.910	575.593	1614.935	2121.393

Source: World Development Indicators and authors' calculations.

In this paper, we provide empirical insights on the factors that determine FDI inflows in Caribbean countries. The Small Island Developing States in the Caribbean (SIDSC) have different economic and productive structures and distinctive issues that can affect them based on their individual characteristics related to small market size and high cost of energy, as well as on their proneness to exogenous shocks from commodity prices, natural disasters and climate change. Although there is diversity among countries in the Caribbean region, these islands also have key common characteristics as well. An important factor to note is that Caribbean countries are part of the Caribbean Community (CARICOM) group, which is aimed primarily at economic integration in the region. A panel data analysis such as this one on the determinants of FDI flows to the region is pertinent to these islands' growth and development.

It is, therefore, important to determine the factors that determine FDI inflows to SIDSC as it can aid in the sustained economic growth and development of these countries. Bernal (2001) suggests that there is limited range of economic activity in SIDS, as it tends not only to be concentrated on a few export areas with a relatively high reliance on primary commodities, but that one primary product export accounts for nearly all exports. Both resource-rich (Bahamas, Jamaica, Trinidad and Tobago and Suriname under study in this paper) and resource-poor (Belize, Barbados, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines under study in this paper) SIDS are present in the Caribbean. The International Monetary Fund (2012, p. 6) defines a resource-rich country as one that has exhaustible resources (e.g., oil, gas and minerals) that comprises at least 20% of their total exports or 20% of their natural resource revenues, whilst resource-poor countries lack mineral abundant resources, which are below 20% of their total exports or natural resource revenues. The countries in the Caribbean have a heavy reliance on one sector of their economy to sustain growth regardless of their resource endowments as resource-rich SIDS focus most of their exports on resource-based areas, whilst resource-poor SIDS focus their exports heavily on primary commodities and services such as tourism. Hence, FDI can be seen as a vital asset in promoting sustained growth in the region despite their vulnerabilities.

This paper is unique as it is focused on providing insight into the factors that affect FDI inflows into SIDSC, while taking into account their natural resource rents, gross capital formation, exports, GDP growth and population growth using panel data. To study this, we employ a panel Autoregressive Distributed Lagged (ARDL) model to determine the factors affecting FDI inflows in the Caribbean over the period 2000 to 2019. Our findings reveal that GDP growth, natural resource rents, gross capital formation and population growth are significant factors influencing growth in the Caribbean region.

The paper is structured as follows. Section 2 discusses the methods and materials section, which includes the theoretical and empirical literature, the empirical specification and data for the model used. Section 3 presents the results. Finally, the paper concludes with Section 4, which summarizes the principal findings.

2. Literature Review

2.1. Theoretical Background

The first theoretical attempt to explain FDI was based on the Heckscher–Ohlin (HO) model of the neoclassical trade theory where FDI was seen as part of international capital trade (Faeth 2008; Taylor et al. 2013). The literature on the theoretical models first used to explain determinants of FDI and the incentives for investors to operate abroad flourished in the early 1960s. According to Phung (2016), the two major theories that were discussed were based on neoclassical trade theory and internalization theory, respectively. The former was introduced in the 1960s and was based on the HO trade model to explain the motives behind investors who operate production chains abroad, but export products back to their home country. In this setting, differences in factor endowments and mobility accounted for the decision as to whether or not to invest in a country. According to Phung (2016, p. 3), the theory postulates that "because of heterogeneity in countries' endowments, there exist incentives for foreign firms to transfer their abundant production factor to where the returns on the factor are higher". This postulates that foreign firms will keep locating factories in different countries until factor prices are equalized given the incentives outlined.

The other mainstream theory, namely, internalization theory, was introduced by Buckley and Casson (1976). The theory suggests that as an alternative to outsourcing different parts of the production process, internalizing these processes may likely be the least costly way for Multinational Corporations (MNCs) to benefit from a foreign market due to lower transaction costs. Buckley and Casson (1976) claimed that markets for intermediate goods, such as production and marketing techniques, management skills, component parts or services, were imperfect and characterized by a high degree of risk and uncertainty, ultimately leading to high transaction costs such as information, enforcement and bargaining costs. The following two distinct forms of internalization were identified: operational internalization, involving intermediate products flowing through successive stages of production and the distribution channel—and knowledge internalization—the internalization of the flow of knowledge emanating from Research and Development (()R&D).

Dunning (1977, 1979) combined both the neoclassical trade theory and internalization theory to create the eclectic paradigm (also known as the OLI-Model or OLI-Framework) of FDI, which synthesized the reasons for firms to operate internationally (advantages) and the mode of entry (FDI, export and licensing). This has become a seminal framework and has been widely used as the foundation for empirically examining the determinants of FDI (Nunnenkamp 2001; Faeth 2008; Taylor et al. 2013; Phung 2016). According to Dunning (1998), the eclectic paradigm consists of the following three sub paradigms from which one can analyse the reasons why firms engage in FDI (or increase existing FDI): ownership (O), location (L) and internalization (I).

The first sub-paradigm ownership, closely related to the argument derived from the HO model, outlines the specific competitive advantages of foreign firms, which is one of the motives behind foreign investment (Phung 2016). Ownership advantages include trademark, production technique, entrepreneurial skills and returns to scale. These advantages range from technological advantages to specific expertise and managerial skills,

which enable foreign firms to operate profitably in the host country despite not being a local company. The greater the competitive advantages of the investing firms are, the more they are likely to engage in their foreign production. The second sub-paradigm (location) proffers that investment abroad provides MNCs with some immobile advantages that are specific to the host countries, for example, lower wage rates, natural resources and favourable business regulations. Location advantages include the existence of raw materials, low wages, special taxes or tariffs, etc. The more immobile, natural or created resources, which firms need to use jointly with their competitive advantages, the more firms will choose to augment or exploit their specific advantages by engaging in FDI. The third sub-paradigm (internalization), points to the benefit of foreign investment from acquiring companies abroad to internalize the production process of intermediate goods. This sub-paradigm argues that as long as the benefit of engaging in FDI to produce intermediate goods is higher than that of granting the right to local firms, MNCs are more likely to remain involved in these activities themselves.

World Investment Report (1998) classified the determinants of FDI and host country determinants into the three groups, namely, policy framework, business facilitation and economic factors. Nunnenkamp (2001) states that the main economic determinants of the FDI of host countries are related to resource-seeking FDI (availability of natural resources in host countries), relating to market-seeking FDI (penetration of local markets and trade barriers in various developing countries) and relating to efficiency-seeking FDI (new sources of competitiveness for firms and strengthening existing ones). Table 2 classifies important location-specific factors into three categories and is taken from Nunnenkamp (2001).

Table 2. Selected Host Country Determinants of FDI.

Overall Policy Framework		Business Facilitation
Economic and political stability		Administrative procedure
Rules regarding entry and operation of TNCs		FDI promotion (e.g., facilitation services)
Bilateral and multilateral agreements on FDI		FDI incentives (subsidies)
Privatization policy		
Economic Determinants		
1. Relating to resource-seeking FDI	**2.** Relating to market-seeking FDI	**3.** Relating to efficiency-seeking FDI
Raw materials	Market size	Productivity-adjusted labour costs
Complementary factors of production (labour)	Market growth	Sufficiently skilled labour
Physical infrastructure	Regional integration	Business-related services
		Trade policy

Source: Taken from Nunnenkamp (2001, p. 10).

Bitzenis (2003) identifies a Universal Model that consists of a theoretical model that combines all the theories of FDI. Bitzenis and Szamosi (2009) note that the opportunities a country offer change over time and multinational enterprises (MNEs) evaluate these opportunities that maximize their investment efforts. The Universal Model notes that the main objective of MNEs is profit. The theories presented in the Universal Model include market hunters, strategic market hunters, factor hunters, efficiency hunters, location hunters, exploiting ownership advantages, financial hunters, political reasons and overcoming imperfections. It is also noted that MNCs' interests are not confined to one part of the world but follow opportunities in different parts of the world at different times.

Demirhan and Masca (2008) note that the absence of a generally accepted theoretical framework has led researchers to rely on empirical evidence for explaining the emergence of FDI. Faeth (2008) presented a comprehensive review of the theoretical models outlined in the literature over time that are used to explain the determinants of FDI. Similarly to Demirhan and Masca (2008), Faeth (2008) concludes that FDI should not be explained by any one theory, but more broadly by a combination of ownership advantages or agglomeration economics, market size and characteristics, cost factors, transport costs and protection and risk factors and policy variables. Faeth (2008) further mentions that many empirical studies have already taken that approach, even when focusing on specific theories or aspects of FDI.

2.2. Empirical Evidence

In early research, Billington (1999) conducted an empirical analysis into the location of FDI using a multi-country model with seven industrialized countries and a multi-region model of 11 regions of the UK. The findings reveal that at the country level, market size variables, such as income and growth, unemployment, the level of the host country imports, corporate tax and interest rates, are significant determinants of the location of FDI. It is noted that there is a positive relationship between population density, unit labour costs and unemployment levels at the regional level for ()FDI.

Lall et al. (2003) examined the impact of economic and structural/location variables on short- and long-term FDI from the United States to the Caribbean. They found that in the long run, FDI depends on the exchange rate, market size and other structural/locational variables, for example, education and political rights. Interestingly, it was also found that skilled labour and cultural similarity toward the United States impacted favourably on FDI inflows to the Caribbean.

A study by Türkcan et al. (2008) examined the relationship between FDI and economic growth using a panel dataset for 23 OECD countries for the period 1975–2004 by employing a two-equation simultaneous equation system with GMM. The findings reveal that FDI and growth are important determinants of each other. Using the GMM method, the coefficient of 1-year lagged FDI growth is insignificant but positive and significant after two lags. It was also noted that the coefficient of both the 1-year lag and 2-year lagged GDP growth is positive and significant. Furthermore, the export growth rate is a statistically significant determinant of FDI and economic growth as there is an endogenous relationship between FDI and economic growth. FDI positively affects the economic growth rate and the economic growth rate also positively affects FDI inflows. However, it has been found that economic growth stimulates the growth rate of FDI inflows more than the growth rate of FDI stimulates economic growth.

In another study, Kolstad and Villanger (2008) examined the determinants of FDI flows in the Caribbean using panel data over the period 1980–2002 using OLS regression for data from 135 countries, of which 13 are Caribbean countries. Kolstad and Villanger (2008) found that the Caribbean does not experience low inflows of FDI and receives more FDI than comparable countries in other regions. When compared to Africa, the Caribbean region is relatively favoured by foreign investors. Kolstad and Villanger (2008) also determined that FDI inflows are sensitive to political instability and the absence of regulation has been beneficial in attracting FDI to the Caribbean. On the other hand, Kolstad and Villanger (2008) found that Caribbean countries obtained more FDI than other comparable regions within the sample and that the countries stability was sensitive to these inflows. The researchers note that improving stability in Caribbean countries such as Haiti, Guyana, Dominica and Grenada will increase their FDI inflows, and the reverse also holds where foreign investors withdraw FDI from countries if they become unstable. They also found that the lack of regulation appears to be advantageous in attracting FDI to the Caribbean.

Another study by Oladipo (2013) examined whether FDI positively influences long-run growth using a panel of sixteen (16) countries from the LAC region using the Granger non-causality test procedure. Quarterly data from Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Peru,

Venezuela, Trinidad and Tobago, Jamaica and the Bahamas are used in the study. The variables used were GDP growth and FDI inflows as a percentage of GDP. It is found from Granger causality that FDI Granger causes GDP growth in Trinidad and Tobago, Dominican Republic and Jamaica. Oladipo (2013) noted that for Trinidad and Tobago, economic growth is a prerequisite for attracting and absorbing FDI.

Research by Taylor et al. (2013) examined the factors that attract FDI into oil-producing economies from 1996 to 2010. The authors' utilized panel OLS to estimate the determinants of FDI for an unbalanced panel of 47 developing countries, which comprised 18 oil producers and 29 non-oil producing developing countries. The findings of the paper indicate that market size, trade openness and business facilitation were found to be significant factors attracting FDI to the oil producing countries. The authors also test the hypothesis of an FDI bias toward oil-producing/exporting countries over non-oil producing/exporting countries. Taylor et al. (2013) found that countries with higher growth prospects attract FDI. Using a dummy variable, findings also reveal that oil-producing developing countries have received higher FDI inflows than other non-oil producing countries. Furthermore, oil-producing countries with larger local markets, greater trade openness and business facilitation attract more FDI inflows. On the other hand, non-oil producing countries, with larger markets, greater business facilitation measures and political stability have received more FDI. The results suggest that there is a foreign investor bias toward oil-producing/exporting countries.

Another study by Khramov (2016) examined the role of gross capital formation, income and regional affiliation in FDI distribution using fixed effects modelling for 117 countries. The results indicate that different income groups have different marginal effects on gross capital formation and the first lag of FDI on FDI. Khramov (2016) finds that a particular income group predetermines a level of incoming FDI. The findings also suggest that the FDI level for lower-income countries has a stronger association with the previous year's FDI level rather than for richer countries and that the richer the country is, the more valuable gross capital formation is in attracting ()FDI.

Daskalopoulos et al. (2016) used an instrumental variable panel framework to determine whether International Financial Reporting Standards (IFRS) and sovereign credit ratings impact foreign direct investment in 142 countries by employing fixed effects, random effects and two stage least squares. The results indicate that IFRS and credit rating agencies have a positive and significant impact on FDI on an aggregate panel dataset, and also when the dataset is disaggregated into both the developed and developing countries under study. Other factors affecting FDI include GDP, unemployment and corruption levels.

Additionally, Mahmoodi and Mahmoodi (2016) examined the causal relationship between FDI, exports and economic growth for eight European developing countries from 1992 to 2013 and eight Asian developing countries from 1986 to 2013 for FDI, exports and GDP using a Panel Vector Error Correction model. The results indicate that there is bidirectional causality between GDP and FDI, and unidirectional causality from GDP and FDI to exports in the short run for European countries. There was also bidirectional causality between exports and economic growth in the short run for Asian countries. Long-run causality exists from export and FDI to economic growth and also from economic growth and export to FDI for both of the European and Asian countries.

Research by Kumari and Sharma (2017) investigated the key determinants of FDI inflows for a panel of 20 developing countries from south, east and south-east Asia for the period 1990 to 2012. Seven explanatory variables, namely, market size, trade openness, infrastructure, inflation, interest rate, research and development and human capital, and two models, namely, the fixed-effect model and random effect model, were considered. The findings indicate that market size, trade openness, interest rate and human capital yield significant coefficients in relation to FDI inflow in developing countries, with market size being the most significant determinant of FDI inflow. A similar finding was obtained in country-specific empirical studies on the negative impact of inflation and the interest rate

on FDI in Ghana (Asiamah et al. 2019) and the positive effects of human capital on FDI in Jordan (Alalawneh 2020).

A recent study by Siriopoulos et al. (2021) examined the factors affecting foreign direct investment from the perspective of governance quality and the adoption of International Financial Reporting Standards of the Gulf Cooperation Council (GCC), which includes countries such as Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates using panel data. Techniques such as Random Effects, Fixed Effects and Arellano–Bond dynamic estimation methods were used and their results indicate that the adoption of IFRS significantly contributes to foreign direct investment, along with factors such as confidence in law, control over corruption along with economic growth.

2.3. FDI Determinants for SIDS in the Caribbean

FDI is a vital ingredient in achieving sustained growth in the Caribbean region, especially since these Small Island States face various vulnerabilities due to their small size, physical vulnerabilities and exposure to external shocks. Hence, based on the foregone discussion in the previous section, these SIDSC can identify key areas to promote FDI inflows to sustain their economic growth. For SIDSC, factors such as GDP growth, population growth, exports, natural resource rents and gross capital formation are used as explanatory variables in explaining FDI flows. These factors are also considered in this study contingent upon data availability, and this is further discussed in the data section.

With regard to GDP growth, it was found that increased GDP growth (*gdpgr*) can lead to increased levels of FDI as it serves as a criterion when examining the performance of an economy (see Mahmoodi and Mahmoodi 2016; Türkcan et al. 2008; Chowdhury and Mavrotas 2006; Saha 2005; Choe 2003).

Additionally, it is expected that increased population growth (*popgr*) would stimulate FDI in these developing countries as it can provide a means of lower labour costs and add to the labour force for the production of goods and services. Billington (1999) noted that densely populated areas provide low unit wage costs and tend to encourage FDI. Aziz and Makkawi (2012) indicated that data for 56 African and Asian countries that population growth positively influences FDI. Given that Caribbean countries are not densely populated, however, an increase in population would increase the human capital by adding to the labour force, which can be used by foreign investors to increase the output of goods and services produced.

Furthermore, exports (*lexports*) are likely to have a positive effect on FDI as increased exports are likely to stimulate increased investment, which, in turn, increases revenues. Mahmoodi and Mahmoodi (2016) noted that there is unidirectional causality from GDP and FDI to exports in the short run for European countries and bidirectional causality between exports and economic growth in the short run for Asian countries.

Natural resource rents (*nrr*) are expected to positively influence FDI and, further, a natural resource discovery with an increase in its price becomes attractive to investors and can lead to an inflow of FDI into a country. Therefore, countries with a higher content of natural resources are more likely to have a biased inflow of FDI (see Heshmati and Davis 2007; De Groot and Ludena 2014).

It is expected that increased gross capital formation (*gcf*) due to increased investment can trigger increased economic growth, which is attractive to the inflow of FDI. Khramov (2016) noted that the richer the country is, the more valuable gross capital formation is in attracting FDI.

In Table 3 we provide the expected signs and the explanation of each of the variables in the model. In the next section, we provide information about the statistical model and approaches used to estimate our model.

Table 3. Theoretical association and expected signs.

Variable	Expected Sign	Explanation
lexports	Positive	An increase in exports from a country stimulates an increase in FDI. Increased revenues would be available to multinational corporations providing FDI as a result of increased exports.
gdpgr	Positive	An increase in GDP growth can lead to increased levels of FDI as countries with higher levels of economic growth are expected to have higher inflows of FDI.
popgr	Positive	Increased population growth can increase FDI as there would be lower labour costs, which would add to the labour force for the production of goods and services.
nrr	Positive	An increase in natural resource rents increases FDI as a boom such as a natural resource discovery or increase in its price becomes attractive to investors and can lead to an inflow of FDI into a country.
lgcf	Positive	An increase in gross capital formation can lead to further FDI. The basis for this is that gross capital formation would be supported by increased FDI, after which, increases in gross capital formation can attract further FDI as investors receive gains from their investments, which can lead to further investment.

2.4. Empirical Model and Data

Based on the theoretical explanations and data on variables available, we present FDI as a function of the following:

$$fdi = (lexports, gdpgr, popgr, nrr, lgcf) \tag{1}$$

Based on the aforementioned factors, a balanced panel dataset was constructed for the period 2000–2019 in order to identify the determinants of FDI for nine (9) Caribbean countries including Bahamas, Belize, Barbados, Jamaica, St. Kitts and Nevis, St. Lucia, Trinidad and Tobago, St. Vincent and the Grenadines and Suriname for the period 2000–2019. Due to data limitations, information on a broader category of variables (a wage index, debt service, liquidity levels, the corruption perception index, credit ratings, percentage of labour force with tertiary level education, growth rate of the labour force, the unemployment rate, government taxes as a percentage of GDP and ease of doing business) are not included.

Based on the variables available, we consider that FDI is a function of the following key variables:

$$fdi_{it} = \beta_0 + \beta_1 lexports_{it} + \beta_2 gdpgr_{it} + \beta_3 popgr_{it} + \beta_4 nrr_{it} + \beta_5 lgcf_{it} + \varepsilon_{it} \tag{2}$$

where *lexports* are exports, *gdpgr* is GDP growth as a percentage of GDP, *popgr* is population growth as a percentage of GDP, *nrr* is natural resource rents as a percent of GDP and *lgcf* is gross capital formation. *i* indicates each country under study, *l* indicates that the variable is logged and *t* denotes time.

Our data have been collected from various sources. FDI net inflows as a percent of GDP (*fdi*) were obtained from World Development Indicators, as were annual GDP growth (*gdpgr*), annual population growth (*popgr*) and total natural resource rents as a percent of GDP (*nrr*). Exports (*lexports*) in USD 000s were obtained from World Integrated Solutions (WITS) using mirror data to obtain a balanced current dataset and this variable was logged. Gross capital formation (*lgcf*) data were obtained from UNSTATS and converted to USD 000s for each country from national currency units using the nominal exchange rate, after which, this variable was also logged. Due to collinearity issues, a dummy variable that classifies countries by their resource endowments is not included in the specification. Note

that the dataset was not updated to 2020 as data for some variables under study are only available until 2019. A summary of the variables employed in the model is presented in Table 4.

Table 4. Summary of variables under study 2000–2019.

Variable	Obs.	Mean	Std. Dev.	Min	Max
fdi (%)	180	6.92	6.36	−10.26	23.68
lexports (logged US$000s)	180	5.81	0.67	4.80	7.31
gdpgr (%)	180	2.07	3.33	−5.60	14.44
popgr (%)	180	0.92	0.70	−0.11	3.43
nrr (%)	180	3.59	6.30	0	31.66
lgcf (logged *USD 000s*)	180	5.89	0.50	4.97	6.74

Note: The variables for exports and gross capital formation are logged ('*l*').

In this paper, we employ an ARDL approach using the Pooled Mean Group (PMG) estimator. Although the results are not presented here due to brevity, we find that the variables are integrated of order *I(0)* and *I(1)* using the Levin, Lin, Chu (LLC) and Im, Peseran, Shin (IPS) tests. Pesaran et al. (1999) note that the PMG estimator has identical long-run coefficients; however, the coefficients and error variances differ across groups in the short run. We check whether or not the hypothesis of slope homogeneity is rejected by estimating a mean-group (MG) estimator and comparing the model using a Hausman test. The Hausman statistic is 2.78, suggesting that the PMG estimator is preferred.

3. Empirical Results

The results from the PMG estimator are presented in Table 5. The results indicate particularly strong statistical relationships in the long run (using the Kao test for cointegration revealed that cointegration is present in the model). The PMG results show that there is a positive and statistically significant relationship between *fdi* and *gdpgr* in the long run (coef. = 0.228). These findings are similar to those of Türkcan et al. (2008), who found that FDI and economic growth are significant determinants of each other for OECD countries. The findings from Oladipo (2013), Chowdhury and Mavrotas (2006), Saha (2005) and Choe (2003) also reveal that countries with higher growth rates attract more FDI. The findings from Oladipo (2013) examined whether FDI positively influences long-run growth using a panel of sixteen (16) countries from the LAC region using a Granger non-causality test procedure and notes that for Trinidad and Tobago, economic growth is a prerequisite for attracting and absorbing FDI.

The results from the PMG estimator note that there is also a positive and statistically significant relationship between *fdi* and *popgr* in the long run. Billington (1999) noted that attempts to attract FDI are most likely to be successful if the target location is densely populated and there is a low unit wage cost. An increase in the population would increase the availability of workers, which would translate to lowering wage costs for firms, other things constant, which is an attractive incentive for multinational firms.

There is also a positive and significant impact of *lgcf* on *fdi*. Khramov (2016) examined the role of gross capital formation, income and regional affiliation in FDI distribution using fixed effects modelling for 117 countries and indicated that different income groups have different marginal effects of gross capital formation and the first lag of FDI on FDI.

The *nrr* variable also has a positive and significant impact on *fdi* as expected. This is especially relevant to resource-based exporters in the Caribbean, such as Trinidad and Tobago, Suriname and Guyana. The findings, therefore, support De Groot and Ludena (2014) and Taylor et al. (2013) as there is a bias of FDI inflows into countries with higher natural resources. Heshmati and Davis (2007) also state that natural resource-rich countries attract FDI drawing reference to Africa where most FDI is concentrated in the oil-producing sector. Omitogun et al. (2018) noted the oil price fluctuations on FDI inflows in developing oil-exporting countries using Nigeria from 1970 to 2015. The findings reveal that oil price

fluctuations do not favour FDI in Nigeria both in the long run and short run, which shows that changes to the oil price changes FDI inflows.

Table 5. Determinants of FDI using PMG estimator.

	Coef.	*p*-Value
Long-run est.		
lexports	−0.853	0.418
gdpgr	0.228 **	0.021
popgr	5.331 ***	0.000
lgcf	12.987 ***	0.000
nrr	0.914 ***	0.001
Short-run est.		
ECC	−0.658 ***	0.000
Δ*lexports*	3.539	0.437
Δ*gdpgr*	0.067	0.684
Δ*popgr*	−7.118	0.281
Δ*lgcf*	−9.273	0.299
Δ*nrr*	31.033	0.150
Const.	−46.906 ***	0.000

Notes: ECC stands for Error Correction coefficient. ** $p < 0.05$; *** $p < 0.01$. A Generalized Method of Moments (GMM) estimator (Arellano and Bond 1991; Baum et al. 2003) is also used for comparative purposes. FDI is determined by a positive and significant impact of the previous period's FDI. The GDP growth and population growth variables are also found to be positive and statistically significant in this specification (results are available upon request).

4. Conclusions

The objective of this study was to investigate the factors that influence FDI inflows into the Caribbean. In this study, panel data for the period 2000 to 2019 were considered for nine Caribbean countries including Bahamas, Belize, Barbados, Jamaica, St. Kitts and Nevis, St. Lucia, Trinidad and Tobago, St. Vincent and the Grenadines and Suriname. The best model involved the use of exports, GDP growth, population growth, gross capital formation and natural resource rents as explanatory variables.

Overall, the determinants of FDI in SIDSC are GDP growth, population growth, gross capital formation, natural resource rents and the previous period's FDI. Specifically, the results from the PMG estimator show that there is a positive and significant relationship between FDI and both GDP growth and gross capital formation in the long run. There is also a positive and significant relationship between FDI and population growth in the long run. As expected, natural resource rents also have a positive and significant impact on FDI. This is especially relevant to resource-based exporters in the Caribbean such as Trinidad and Tobago, Suriname and Guyana. For comparative purposes, a Generalized Method of Moments (GMM) estimator was used, and it was found that FDI is determined by the previous period's FDI along with GDP growth and population growth.

Policymakers in Caribbean countries with natural resource rents can offer incentives for FDI agents such as tax breaks to stimulate FDI inflows with proper environmental regulations in place to prevent negative externalities on the environment. It is critical that Caribbean countries increase their growth in order to stimulate FDI flows, as this would make room for bivariate causality. Additionally, since GDP growth and gross capital formation contribute to FDI inflows, steps can be undertaken by policy makers to stimulate investment via improving the Ease of Doing Business index and providing relevant incentives for increasing capital in the economy.

Given that population growth is a significant factor in attracting FDI, policymakers in Caribbean countries can implement legislation to allow for immigrant labour to be used to fill gaps that might not be able to be filled by locals until the required skills from foreign workers can be transferred to the local labour force.

Furthermore, higher natural resource rents influence FDI inflows in Caribbean countries. Hence, there must be an appropriate policy and fiscal agenda, such as tax breaks and royalties to facilitate the attractiveness in natural resource rents in these countries. For instance, countries with oil and natural gas resources implement measures to attract international companies to extract these commodities from their acreage for production. Further research can also be carried out based on a sectoral view of FDI inflows in the Caribbean region on a country basis. This would lead to country-specific analysis on FDI flows where further inroads and analyses can be made.

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