Foreign direct investment and growth in developing countries: evidence from the countries of the Organisation of Eastern Caribbean States

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Abstract

This paper empirically explores the relationship between foreign direct investment (FDI) and economic growth in the countries of the Organisation of Eastern Caribbean States (OECS). To reach that goal, the paper utilizes panel data consisting of annual data covering the period 1988-2013 from 34 countries, including the six OECS economies, and estimates a dynamic panel growth model using the generalized method of moments (GMM). The empirical results show that although FDI positively affects growth, its impact is minimal when considered in isolation. In other words, its significant effect is rather indirect. There is also a strong and positive interaction between infrastructural development and FDI in enhancing economic growth, but FDI crowds out domestic investment. These findings have policy implications.

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I.   Introduction

The global economic climate remains unstable, leaving the small, open economies of the Organisation of Eastern Caribbean States (OECS)[1] facing unfavourable economic conditions. The economies have been experiencing a slowdown in growth, mounting debt and fiscal imbalances. It is imperative that adequate policy measures be implemented to dampen these unhealthy trends, that is, policies be adopted that promote innovation, productivity growth, competiveness, and investment. A glimmer of hope has, however, emerged with global foreign direct investment (FDI) returning to growth. Indeed, FDI flows are expected to make a full recovery with projections of US$ 1.75 trillion for 2015 and US$ 1.85 trillion for 2016 (UNCTAD, 2014).[2]

FDI has played a pivotal role in facilitating growth and economic transformation among developing countries, including those of OECS, which have attracted large inflows over the last three decades. Moreover, FDI has become the largest single source of external finance for developing economies; it is an essential vehicle for technology transfer from advanced to developing countries, stimulates local capital investment and facilitates improvements in the human capital stock and institutions of host countries. In the context of small island developing States (SIDS), which are foreign exchange constrained, FDI plays another pivotal role —that of foreign exchange earner.[3] OECS member countries use a single currency, the Eastern Caribbean dollar, which has been pegged to the United States dollar since July 1976. Hence, foreign direct investment supplements reserves and helps the Eastern Caribbean Currency Union (ECCU) maintain its long standing peg.[4]

Most empirical research on the FDI-growth relationship is rooted in neoclassical and endogenous growth theories. The relationship has been explored through four main channels: (i) the determinants of growth; (ii) the determinants of FDI; (iii) the role of multinational firms in host economies; and (iv) the direction of causality between FDI and growth (Chowdhury and Mavrotas, 2005). Neoclassical growth theory credits FDI with making a minimal contribution to growth. Conversely, endogenous growth literature focuses on the fact that FDI contributes to economic growth by creating capital, transferring technology and augmenting the level of knowledge through training and skills acquisition (De Mello, 1997 and 1999; Blomstrom, Lipsey and Zejan, 1996; Borensztein, De Gregorio and Lee, 1998). Empirical studies generally point out that FDI is a vital source of capital that usually complements domestic private investment, enhances human capital, and is associated with new job opportunities and enhancements of technology transfers and spillovers (De Mello, 1997 and 1999). Thus, FDI serves to advance overall economic growth in developing countries.

This paper seeks to answer three questions, one fundamental and two peripheral. First, does foreign direct investment have a positive impact on economic growth in the OECS countries? Second, is the impact direct or accomplished through independent channels such as domestic investment or infrastructural development (i.e. absorptive capacities)? Third, does FDI augment a host country's capital without reducing domestic capital formation?

We specify a dynamic panel data model based on endogenous growth theory and use annual data covering the period 1988-2013 for 34 countries, with a regional dummy variable included to differentiate the OECS countries. Apart from FDI, the variables of the model include lagged per capita

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[1] For the purpose of this paper, "OECS" refers to the six sovereign nations of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines.

[2] The United Nations Conference on Trade and Development (UNCTAD) has published an annual report since 1991 covering the latest trends in foreign direct investment around the world.

[3] International tourism receipts are the predominant contributors to foreign exchange reserves in the subregion; however, the tourism industry has been plagued by volatility in recent years.

[4] The Eastern Caribbean Currency Union is a development of OECS. All of the OECS members and one associate member (Anguilla) use the Eastern Caribbean dollar (EC$ 2.70 = US$ 1).

income, domestic investment, trade openness, population growth, infrastructure availability, global financial crisis, government consumption, inflation and interaction terms. The model is estimated using the Arellano-Bond GMM estimator in order to control for potential endogeneity in the growth regression.

The paper makes two contributions to the literature. First, although quite a number of studies have been conducted on the relationship between FDI and economic growth, there is no consensus yet among economists and researchers regarding the nature of the relationship between FDI and economic growth.[5] The ambiguity in the literature highlights the need for further research on the topic, to enhance understanding of the relationship between the two variables. The present paper attempts to add to the potential domestic channels that foreign investment inflows might take to impact growth in the context of small, developing, foreign exchange constrained economies. Second, there is the paucity of studies dealing with the link between FDI and economic growth in the context of the OECS countries. This paper attempts to fill this gap too. This is done concretely by providing evidence on the FDI-growth debate, while simultaneously identifying the channels by which FDI impacts growth in these small developing sovereign States. The study is important as it can inform policymakers on the nature and extent of the relationship between FDI and economic growth in these countries.

The paper's major empirical findings include the following. FDI contributes to economic growth by augmenting capital and interacting with the host country's conditions. Infrastructural development is the channel that allows FDI to have the most impact. FDI tends to crowd out domestic investment at certain levels.

The paper is structured as follows. Section II gives a brief account of the economic conditions in and specifically FDI flows into OECS countries. Section III presents a literature review of the relationship between FDI and economic growth. Section IV sets out the methodology and describes the variables and sources used. Section V contains the results and section VI concludes.

II.   FDI in OECS countries: a background

The Caribbean has benefitted tremendously from foreign investment flows. Since the 1970s the region, specifically the OECS subregional grouping, has been the destination for billions of dollars worth of global financial flows. With most of the islands becoming sovereign States between the mid-1970s and the early 1980s, these inflows essentially financed early economic development. During the 1980s and early 1990s, developing countries lowered barriers to foreign flows and offered import exemptions, tax holidays and subsidies to compete for foreign finances globally (UNCTAD, 2002).[6] In recent years these small territories have experienced economic stagnation. Over the period 2008–2013, per capita gross domestic product (GDP) growth rates were negative. In addition, the islands are running recurrent fiscal deficits, are burdened with high debt levels and have sluggish private sectors. Table 1 compiles summary statistics that reflect that economic situation. These conditions have the potential to worsen, given the region's susceptibility to natural disasters and global economic fluctuations.

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[5] Although, as pointed out above, the bulk of the literature acknowledges FDI as a growth enhancing entity, there are a number of authors who do not agree.

[6] In its *World Investment Report, 2002* UNCTAD indicated that among 71 countries a total of 208 changes were made to FDI legislation in 2001. Most of these changes sought to liberalize financial markets.

Table 1
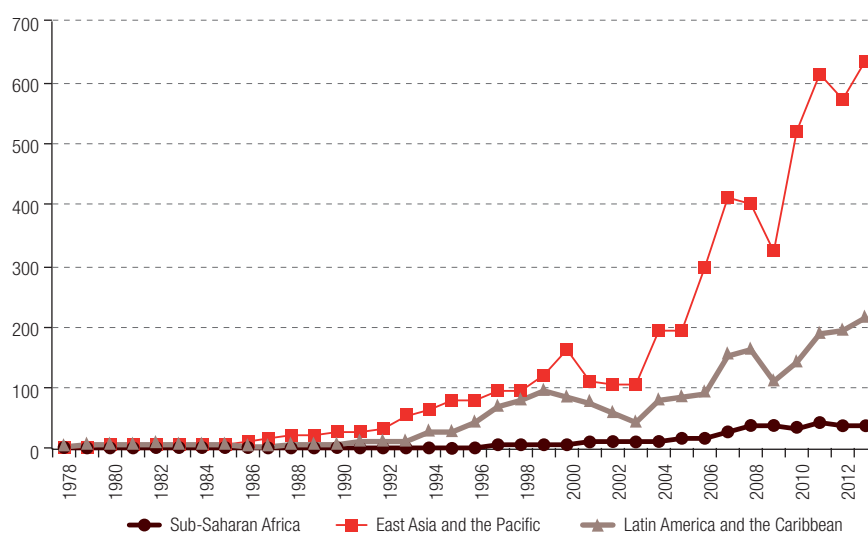### Selected Caribbean economies: FDI and some macro-aggregates statistics

	Period Averages					
	Per capita GDP (current US$)	Per capita GDP growth (percentages)	Real GDP growth (percentages)	Inward FDI (current US$, millions)	Current account balance (percentage of GDP)	Gross public debt (percentage of GDP)[a]
Period: 1988-2007						
Antigua and Barbuda	8 885	3.0	4.5	88.6	-10.31	101.6
Dominica	3 843	2.7	2.6	21.5	-14.99	68.5
Grenada	4 020	3.4	3.6	44.8	-16.49	58.5
Saint Kitts and Nevis	7 315	3.3	4.3	53.2	-16.7	111.5
Saint Lucia	4 221	3.4	4.8	72.5	-13.21	39.6
Saint Vincent and the Grenadines	3 278	4.1	3.7	46.7	-15.13	55.6
Period: 2008-2013						
Antigua and Barbuda	13 744	-3.9	-2.8	110.8	-15.83	90.7
Dominica	7 008	0.6	0.8	29.8	-18.388	67.0
Grenada	7 598	-1.1	-0.7	74.4	-23.39	98.1
Saint Kitts and Nevis	13 806	-1.2	0.0	123.0	-17.61	138.2
Saint Lucia	7 039	-0.8	0.4	114.1	-16.94	66.3
Saint. Vincent and the Grenadines	6 298	-0.3	-0.2	115.7	-30.19	66.6

Source: World Bank, World Development Indicators; and International Monetary Fund (IMF), World Economic Outlook (WEO) Database.

[a]   Data only available from 1990 onwards.

FDI flows are recovering after the 2007 financial crisis slowed global economic activity. Annual FDI inflows grew exponentially from US$ 208 billion in 1990 to US$ 1.5 trillion during the pre-crisis period of 2005-2007 (UNCTAD, 2014). Figure 1 shows the magnitude of these flows to selected regions.
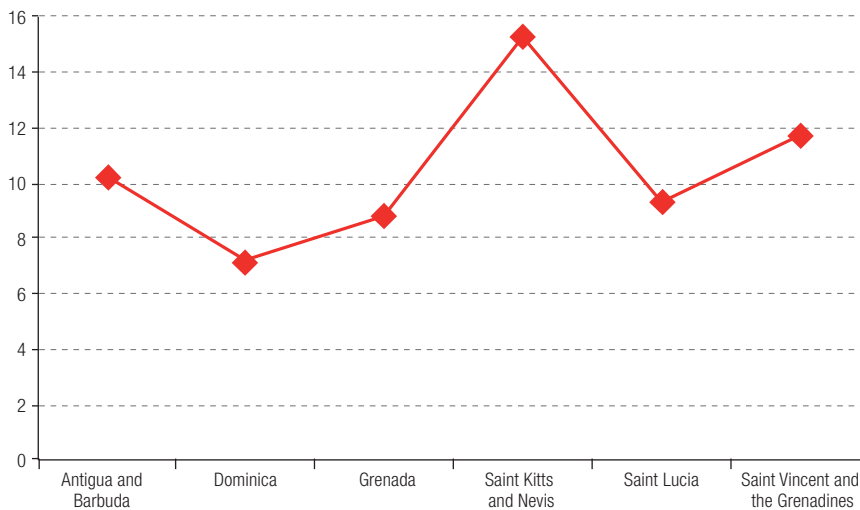
Figure 1
FDI inflows by region, 1978-2013
(Current US$, billions)

Source: World Bank, World Development Indicators.

Flows vary significantly by region, indicating the areas that have offered the highest returns on capital with a reasonable amount of risk. Flows to Central America and the Caribbean increased by 64% in 2013, although this figure excludes offshore financial centres. The OECS countries will once again expect to benefit as these flows boost their slumping growth rates. While the growth miracles these islands experienced during the tourism boom of the 1980s and 1990s are now long gone, that past experience means that increased growth, fuelled by FDI, is a reasonable expectation. Compared to other developing regions, Caribbean economies receive substantial FDI flows relative to their size. According to our sample, foreign investment in Latin America and the Caribbean was equivalent to 4.4% of regional GDP on average. As figure 2 indicates, this metric is frequently above 10% in OECS; it averaged 11.19% for the period covered by this paper. Saint Kitts and Nevis registered the highest FDI to GDP ratio for the period, with 15.59%, followed by Saint Vincent and the Grenadines (13.47%) then Antigua and Barbuda (10.70%).

Figure 2
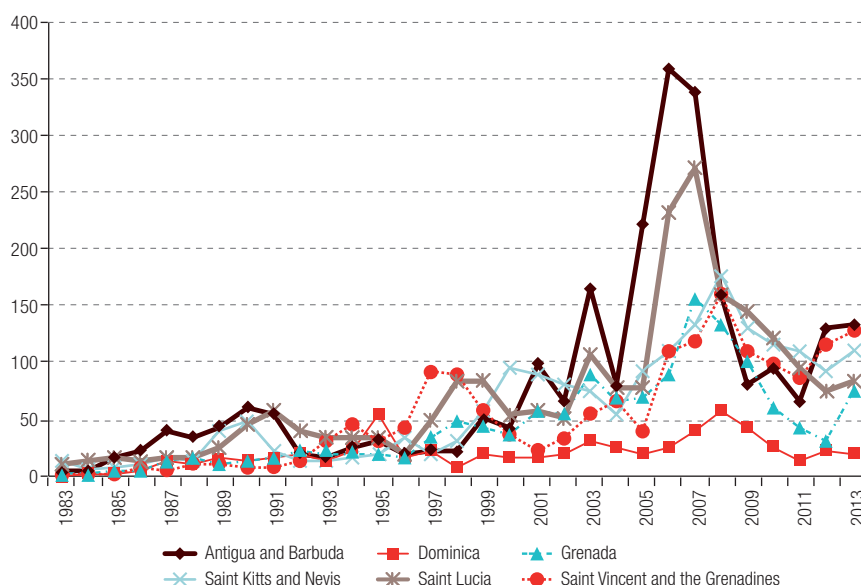Average FDI for the period 1983-2013
(Percentages of GDP)

Source: World Bank, World Development Indicators.

Modern growth theory predicts a positive interaction between FDI and economic growth as foreign investment flows improve local conditions (human capital, physical capital, institutions) and transfer productivity-enhancing technology to the host countries. We must model these assumptions to test if these predictions will hold true in this region. This paper therefore provides evidence for and against the plethora of regional policies used to attract FDI. The OECS countries' share of inflows is presented in figure 3, revealing that, on average, flows are not evenly distributed among countries. The main recipients are Antigua and Barbuda and Saint Lucia, with Saint Kitts and Nevis also receiving a stable and substantial flow of inward FDI.

There was a large influx of FDI into the subregion in 2006/2007 in preparation for the ninth edition of the International Cricket Council (ICC) Cricket World Cup, hosted by Antigua and Barbuda, Grenada, Saint Kitts and Nevis, and Saint Lucia. The majority of FDI inflows to the OECS countries have gone into the tourism sector, with very little foreign investment flows reaching other sectors. In addition, these inflows originated in a limited number of countries (specifically Canada, the United States, and the European Union), consequently economic shocks in these countries quickly have a knock-on effect on the small island States.

Figure 3
FDI inflows to the OECS countries, 1983-2013
(Current US$ millions)

Source: World Bank, World Development Indicators.

III. Literature review

There is a broad body of literature that focuses on the links between FDI and economic growth or the impact of FDI on the economy. This literature builds on neoclassical theory, according to which FDI only had an impact on capital accumulation, leaving long-term growth unchanged. Long-term growth was only possible through the exogenous variables of technological progress and population growth. Modern endogenous growth models explore the spillover effects of FDI, which include: (i) technological transfer; (ii) productivity gains; (iii) market expansion and other host country enhancements. Hence, the increased interest in the absorptive capacities of developing countries to exploit the long-term growth potential of FDI inflows.

1.   FDI flows and growth

The theoretical literature provides conflicting views concerning the effect of FDI on growth. This conflict has extended into the realm of empirical research and is reflected in divergent findings. Studies such as Schneider and Frey (1985) found positive and statistically significant relationships between FDI and growth. Conversely, Nigh (1986) and Balasubramanyam, Salisu and Sapsford (1996) are among the studies that reported no significant effect of FDI on the path of economic growth. Bornschier, Chase-Dunn and Rubinson (1978) study the effects of foreign investment and aid on economic growth using annual data from 76 less developed countries for the period 1960-1975 and the ordinary least squares (OLS) method. The findings suggest that the stocks of direct foreign investment and foreign aid have the cumulative effect of decreasing the relative rate of economic growth. The effects are small in the short term and larger in the long term. The 1978 study suggested that future studies could focus on the use of longitudinal data sets, the control of initial correlation between foreign

investment and growth, and the use of both stock and flow measures of foreign investment in the models. Modern studies have taken those suggestions into consideration and advanced the empirical analysis.

Undoubtedly, these research suggestions have resulted in even greater insight into the FDI-growth nexus. Fry (1993) posits that the effect of FDI on growth differs markedly from one group of countries to another. Fry (1993) studies the benefits of FDI from a sample of 16 developing countries. Using annual data from 1966-1988, he estimates the real rate of gross national product (GNP) growth with an iterative three-stage least squares. His initial findings indicate that FDI did not exert a significantly different effect from domestic investment on economic growth. However, when the country sample was split, five Pacific Basin countries had a positive and significant FDI-growth relationship. The results of the remaining 11 countries (the control group) were contradictory, with a negative sign attached to the FDI variable. It appears that the FDI-growth link depends on some country-based specifics. Borensztein, De Gregorio and Lee (1998) develop and test a model based on the expanding endogenous growth theory. Their framework is based on an economy where output is a function of the exogenous environment, physical capital and human capital. They tested the effect of FDI on economic growth utilizing annual data on FDI flows from industrial countries to 69 developing countries over the period 1970-1989. Using the seemingly unrelated regressions (SUR) technique, their results indicate that FDI is an important vehicle for technology transfer, contributing to growth more than domestic investment. Another conclusion from their study is that, unless the host country has attained a minimum threshold stock of human capital, FDI will not be more productive than domestic investment. Therefore, the exclusion of human capital and country specific effects in growth regressions tend to alter FDI findings, even in regions with high FDI inflows. A Caribbean-based study by Williams and Williams (1998) lends support to this hypothesis. By developing a macroeconomic model that encompasses investment, savings and trade in growth equations, they evaluated the impact of FDI on the economies in the Eastern Caribbean Central Bank (ECCB) region. The annual data covered the period 1980-1996 and was estimated using an iterative three-stage least squares (TSLS) method. The coefficient of FDI in the growth equation was found to be statistically insignificant. They found that the FDI-growth nexus appears to be channeled through domestic investment, particularly private investment. Consequently, FDI has a positive impact on gross capital formation, imports and a modest positive effect on saving.

According to Carkovic and Levine (2002) the macroeconomic findings on growth and FDI must be viewed with scepticism, as past studies did not control for simultaneity bias, country-specific effects, and the use of lagged dependent variables. In an effort to remedy these methodological shortfalls, they use GMM panel estimators proposed by Arellano and Bover (1995) and Blundell and Bond (1998) to exploit the time-series variation in the data and control for endogeneity. The authors use data from 72 countries (developed and developing)[7] over the period 1960-1995, averaged over seven five-year periods. Their findings suggest that FDI does not exert a robust, positive influence on economic growth, even when the interaction between human capital and FDI is taken into account. Similarly, Griffith, Waithe and Craigwell (2008) analyse the significance of FDI inflows to the development of Caribbean States, with a focus on the relationship between FDI and growth. Their methodology sought to assess FDI-based policy issues in the Barbadian economy. The evidence indicated that although the Caribbean has a relatively high FDI/GDP ratio, FDI had fallen short of expectations; there had been no structural changes that had yielded additional trade and value-added production. The impact of FDI appears to be constrained by limited knowledge transfers and weak research and development spillovers.

Mohan and Watson (2012) provide evidence about the nature and pattern of Caribbean FDI flows. Using a Hausman-Taylor procedure, the researchers estimate a Gravity model with annual panel

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[7] Despite its contributions to the literature, this paper was criticized heavily for pooling less developed countries with developed countries in the growth regression (Blonigen and Wang, 2004).

data from 12 Caribbean Community (CARICOM) and eight OECD countries between 2000-2007.[8] The model included variables to measure the distance between the capital cities of countries, GDP, trade, stock market capitalization and private sector credit, among other explanatory variables. The model results suggested that home-country GDP, stock markets, and private sector credit were the most important for increased FDI inflows. The authors recommend, in particular, that all stock markets in the region should be developed, since the empirical study shows that it increases FDI flows. Intra-regional investment flows through CARICOM would benefit from more modern trading systems.

2.   FDI: causal linkages and long-term growth

The literature is not limited to the realm of growth regressions. Indeed, other frameworks have also been used to examine the linkages between FDI and economic growth. Braithwaite and Greenidge (2005) examine the impact of FDI on the overall growth of the Barbadian economy. Their annual time series data spanned 1970-2003 and was investigated using cointegration analysis. The researchers estimate an unrestricted vector autoregressive model (VAR), applying the Johansen test for cointegration on the VAR with two lags. The results from the cointegrating vector suggest that real FDI inflows have a significant positive impact on real GDP in the long run. It therefore follows that in the short term such inflows may even slow growth, particularly, as more domestic funds are made available to the private sector meaning that it is less reliant on foreign investment flows.

Motivated by the results and model specification of Carkovic and Levine (2002), Hansen and Rand (2005) test the Granger causal relationship between FDI and growth. They specify a VAR model for the logarithm of GDP and the FDI-to-GDP ratio. Annual data from 31 developing countries (11 from Latin America, 10 from Africa, and 10 from Asia) over the period 1970-2000 were used for the analysis. The results suggest bidirectional causality between FDI and GDP, confirmed by using a fixed effects estimator with country-specific trends. They conclude that FDI is growth enhancing much in the same way as domestic investment. Limiting his focus to two specific regions, Al Nasser (2010) also offers causal evidence on the foreign investment and economic growth relationship, by examining the effects of FDI on economic growth through a comparative study between Latin America and Asia, using annual panel data to analyse 14 Latin American countries from 1978 to 2003. Using Granger causality tests, he explores the link between FDI and economic growth, finding evidence of unidirectional causality that runs from economic growth to FDI for Asian countries, while causality is bidirectional in Latin America. Adeniyi and others (2012) examine the causal linkage between FDI and economic growth in Côte d'Ivoire, Gambia, Ghana, Nigeria, and Sierra Leone. Accounting for financial development over the period 1970-2005, they present a trivariate framework which applies Granger causality tests using a vector error correction model (VECM). Their results show that the level of financial sophistication matters for the benefits of FDI to register on economic growth in small developing countries. Additionally, the causal link between FDI and growth varies across the countries depending on other financial development indicators, an indication of the considerable heterogeneity in the underlying economic structures of those countries.

Mamingi and Borda (2015) examine the determinants of economic growth in the OECS countries, including FDI as an enhancer of growth. Clear distinctions are made between the short- and long-term impacts of the variables. The autoregressive distributed lag (ARDL) bounds testing procedure is used to estimate and test the model. With regard to the FDI component, the results based on the error correction models varied among the countries. For example, it was observed that a positive long-term relationship existed between FDI and growth in Antigua and Barbuda, a negative relationship was

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[8]   The Caribbean Community (CARICOM) countries used were: Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. The Organization of Economic Cooperation and Development (OECD) countries represented were: France, Germany, Hungary, Luxembourg, Mexico, the Netherlands, the United Kingdom and United States.

observed in Saint Lucia, while the variable had an insignificant impact on economic growth in Saint Vincent and the Grenadines. The major determinants of growth were found to be trade openness, FDI, government consumption, private consumption, population growth, the fertility rate and inflation.

Whether FDI flows are useful for a country's development or whether they actually cause more harm than benefit remains a matter of debate. Indeed, there is still no consensus among researchers and economists as to the nature of relationship between FDI and economic growth. Based on the literature, it appears that econometric techniques, model specifications and country- or region-specifics tend to significantly influence empirical results on the matter. The ambiguity in the literature highlights the need for further research to enhance our understanding of this economic relationship. It is expected that, as the theoretical underpinnings and statistical techniques expand, the accuracy and consistency of the empirical findings in the FDI-growth literature will improve. There is no lack of research on the relationship between FDI and growth in advanced, emerging and developing countries. There is a knowledge gap with regard to which potential domestic channels that foreign flows might take in order to have the greatest impact on growth, specifically in small island developing States. This paper seeks to fill this gap, among others.

IV. Methodology and data

1. Model

The starting point of our model is a production function where the level of a country's output is estimated using FDI as the main input to capture conceptually the fraction of goods and services produced by foreign firms, and domestic investment as the main input to measure locally produced goods and services. Our model is rooted in the endogenous growth theory formulated by Borensztein, De Gregorio y Lee (1998), according to which FDI contributes to growth through technological advancements, and improvements in human capital, institutions, and infrastructure. To assess empirically the relationship between FDI and growth, we specify the following model:

$$
\begin{aligned}
gp_{it} = \gamma + \beta_1 pc_{it-1} + \beta_2 FDI_{it} + \beta_3 \left(FDI * K \right)_{it} + \beta_4 \left(FDI * TL \right)_{it} \\
+ \beta_5 \left(FDI * TT \right)_{it} + \beta_6 K_{it} + \beta_7 TL_{it} + \beta_8 TT_{it} + \beta_{9j} X_{itj} + \varepsilon_{it}
\end{aligned}
\tag{1}
$$

where i is the cross section unit representing the countries in the sample, t denotes the time dimension, j stands for variable index, gp is the real per capita GDP growth rate, pc_{it-1} is the lagged value real income per capita, FDI is the net foreign direct investment measured as a percentage of GDP, K is our measure of domestic investment (gross capital formation to GDP ratio), TT is trade openness measured as (imports + exports) / GDP, TL stands for telephone lines per 100 people, used as a proxy for infrastructure availability in the host country, X is a matrix of control variables which include population growth (a proxy for financial development), inflation and government consumption, and ε_{it} is the error term which is the sum of the regular error term and the individual random effect error term.

We also include the interaction terms $FDI\,x\,K$, $FDI\,x\,TT$ and $FDI\,x\,TL$ to examine the interactions between FDI and domestic investment, trade and infrastructural development. Our foreign investment by domestic investment term will allow us to measure the extent to which FDI either substitutes or complements domestic investment in enhancing economic growth. The literature suggests that the stock of human capital is important for absorbing knowledge for the growth enhancing spillovers of FDI. Barro and Lee (1994), in particular, have shown the significance human capital (educational attainment) as a source of economic growth. The inclusion of a human capital element in this framework should

improve the explanatory power of the model and align it with the present literature. However, a complete dataset for the relevant human capital proxies, such as mean years of schooling and secondary school enrolment rates, could not be sourced for the countries under consideration.

Two other variants of model (1) were tested in order to check the robustness of the results of the key model (see table 3 below).

2.   Growth determinants

Many different factors contribute to economic growth. In this section, we briefly discuss the variables used in the estimation of equation (1). For more detailed discussions of the determinants of economic growth see Barro (1996) and Mamingi and Borda (2015).

(a)   Level of GDP

The economic performance of a country or region can be captured by a number of measures, which include widely-used income measurements, such as GDP or GDP per capita (measured either in level or growth terms). However, the measures suffer from some shortcomings, most notably that they do not account for overall welfare and tend to overestimate national wealth. Notwithstanding these issues, we use per capita real GDP growth as the measure of economic activity.

(b)   Population growth

According to neoclassical growth models, higher population growth rates have a negative effect on the steady state level of output, because a portion of the economy's investments must go towards the provision of capital for new workers as opposed to raising capital per worker. Thus, population growth was included in the regression to account for this relationship.

(c)   Trade openness

In this paper trade openness is measured as total trade (exports plus imports) as a percentage of GDP. The literature suggests that more open economies benefit from the diffusion of technology, economies of scale, and specialization opportunities. These factors ultimately lead to economic growth in the domestic economy.

(d)   Inflation

Inflation is negative for many reasons, and obscures the economic decision-making process and, by extension, economic growth. When prices are stable individuals make well-informed consumption and investment decisions and use resources more efficiently. To capture this price volatility, we use the growth rate of the consumer price index. Its relationship with economic growth is expected to be negative.

(e)   Government consumption

This variable measures government expenditure on goods and services. Such spending is considered non-productive and to have a dampening effect on the growth rates of GDP per capita. Government consumption expenditure as a share of GDP is used to capture these outlays.

(f) Financial development

The literature suggests that the development of financial markets and institutions are a critical part of economies' growth process (Levine, 1997). Financial systems mobilize savings and facilitate risk management and trading, among other things. These functions, through the channels of capital accumulation and technological innovation, positively affect growth. Therefore, given the links between the financial system and economic growth, we use a proxy (the ratio of private sector credit to GDP) which is expected to be positively related to growth outcomes.

(g) Investment

Studies have shown that investment is an important determinant of economic growth (Barro, 1991). Neoclassical growth models posit that a higher investment to output ratio raises the steady state level of output per worker and, thus, economic growth. Here we measure this domestic investment as the ratio of gross fixed capital formation to GDP. We expect there to be a significant positive relationship with growth.

3. Data

Data for this paper were obtained from two main sources, although FDI and growth data are available from various sources. Data on FDI, GDP, population growth rates, government consumption, domestic capital investment, trade of goods and services were taken from the 2015 edition of the World Development Indicators (WDI) produced by the World Bank. The financial development and infrastructure availability proxies were also obtained from this database. The World Development Indicators are an accurate and world-renowned open source for development and country-specific data, and are widely used by academics, researchers, and policymakers for analytical purposes. The inflation figures for our sample countries were taken from the World Economic Outlook database of the International Monetary Fund (IMF), because the inflation data for the periods covered by our study was not available from the WDI database. The IMF database is another well-known and reliable data source which we also used to corroborate our FDI, growth and other indicators.

Our panel consists of 34 countries (including the six sovereign OECS countries), using annual data for the period 1988-2013.[9] The sample size was enlarged primarily by including the countries of Latin America and the Caribbean in order to generate valid estimates using the Arellano-Bond estimator. The summary statistics of the main variables for the countries under consideration are set out in table 2. FDI averaged 11.19% of GDP.

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[9] The countries in the sample are: Antigua and Barbuda, Argentina, the Bahamas, Barbados, Belize, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Dominica, the Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Japan, the Republic of Korea, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia, Portugal, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, and Uruguay.

Table 2
Summary statistics for the six OECS countries, 1988-2013

Variable	Mean	Standard deviation	Minimum	Maximum
Antigua and Barbuda				
Infrastructure availability (telephone lines per 100 persons)	38.79	9.32	17.59	49.33
Percentages				
Per capita growth rate	1.42	5.34	-13.01	12.15
Population growth rate	1.34	1.06	-1.50	2.79
Inflation	2.88	1.94	-0.55	6.80
Percentages of GDP				
Trade openness (total trade)	138.88	30.85	102.03	189.41
Gross capital formation	32.39	7.37	20.88	45.10
Government consumption	18.96	1.87	15.32	22.52
Financial development (domestic credit to private sector)	61.59	9.94	45.10	80.00
Foreign direct investment	10.71	7.23	3.34	31.61
Dominica				
Infrastructure availability (telephone lines per 100 persons)	24.50	5.83	11.15	33.96
Percentages				
Per capita growth rate	2.22	3.08	-1.96	9.50
Population growth rate	-0.02	0.40	-0.87	0.44
Inflation	2.25	1.98	-0.05	7.67
Percentages of GDP				
Trade openness (total trade)	102.04	18.77	78.76	135.08
Gross capital formation	23.57	8.12	12.04	41.21
Government consumption	18.41	2.51	14.07	22.03
Financial development (domestic credit to private sector)	50.77	6.09	33.16	59.21
Foreign direct investment	7.79	4.19	2.52	24.14
Grenada				
Infrastructure availability (telephone lines per 100 persons)	24.87	6.12	9.18	32.85
Percentages				
Per capita growth rate	2.37	4.64	-6.94	12.95
Population growth rate	0.24	0.56	-1.34	1.13
Inflation	2.62	1.81	-0.44	8.03
Percentages of GDP				
Trade openness (total trade)	94.54	16.71	71.08	127.58
Gross capital formation	32.23	7.01	16.35	46.29
Government consumption	16.03	2.97	11.67	22.44
Financial development (domestic credit to private sector)	63.91	12.33	42.69	84.88
Foreign direct investment	9.72	3.93	3.94	20.64
Saint Kitts and Nevis				
Infrastructure availability (telephone lines per 100 persons)	36.87	8.82	17.19	50.07
Percentages				
Per capita growth rate	2.28	3.85	-6.73	9.89
Population growth rate	1.04	0.59	-0.75	1.57
Inflation	3.26	2.22	0.23	8.68
Percentages of GDP				
Trade openness (total trade)	106.33	22.73	76.31	143.68
Gross capital formation	43.57	8.76	26.54	58.79
Government consumption	17.39	2.37	10.81	21.22
Financial development (domestic credit to private sector)	55.27	7.24	38.01	67.72
Foreign direct investment	15.60	6.34	6.89	30.64

Table 2 (concluded)

Variable	Mean	Standard deviation	Minimum	Maximum
Saint Lucia				
Infrastructure availability (telephone lines per 100 persons)	21.53	6.64	8.18	31.91
Percentages				
Per capita growth rate	2.46	5.34	-4.73	21.55
Population growth rate	1.27	0.26	0.77	1.89
Inflation	2.94	1.96	-0.26	5.86
Percentages of GDP				
Trade openness (total trade)	124.13	24.27	97.06	182.50
Gross capital formation	26.44	4.19	18.70	37.77
Government consumption	14.80	1.64	12.07	17.88
Financial development (domestic credit to private sector)	77.75	20.24	52.70	113.17
Foreign direct investment	9.84	4.74	3.25	23.78
Saint Vincent and the Grenadines				
Infrastructure availability (telephone lines per 100 persons)	18.16	4.34	7.51	25.26
Percentages				
Per capita growth rate	3.09	4.34	-3.42	13.92
Population growth rate	0.12	0.17	-0.07	0.60
Inflation	2.74	2.56	0.13	10.12
Percentages of GDP				
Trade openness (total trade)	107.34	23.47	82.70	158.78
Gross capital formation	27.37	3.34	23.16	35.68
Government consumption	18.56	3.55	15.06	28.48
Financial development (domestic credit to private sector)	45.18	8.04	29.41	55.34
Foreign direct investment	13.48	7.15	3.87	31.55

Source: Prepared by the authors.

V. Empirical results

1. Panel estimation

We apply the generalized method of moments (GMM) to estimate the dynamic panel model. The model contains potentially endogenous regressors; specifically, the literature suggests the presence of bidirectional causality between FDI flows and per capita GDP. Although they share similar traits (colonial history, economic structure, etc.), the OECS countries differ in many aspects (such as their political environments, ideologies, cultures, geographic sizes and compositions, and, to a certain extent, climatic conditions) which justifies the presence of country-specific effects in the regression model. These effects are part of the error term of model (1), i.e. there are random individual effects. In addition, the presence of the lagged dependent variable gives rise to serial correlation. Arellano and Bond (1991) have developed a GMM method that exploits the linear moment restrictions that follow from the assumption of no serial correlation in the errors, in an equation which contains individual effects, no strictly exogenous variables[10] and lagged dependent variables. Using the Arellano-Bond difference GMM estimator solves the aforementioned issues identified in the model.

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[10] A Hausman specification test reveals, for example, that FDI is not an exogenous variable in model (1). Result available upon request.

A problem that often arises when the instrumental variable estimation method is used is the issue of weak instruments. Weak instruments will likely cause the instrumental variable estimators to be biased, just as in a least squares estimation for this particular model. The presence of unobserved country-specific characteristics may indicate that our internal instruments are unsuitable; hence lagged levels of the regressors might be invalid instruments for equation (1). However, our difference estimator eliminates the country-specific effects by taking first differences of equation (1). Moreover, by including real GDP growth of the United States and the European Union in the instruments list, the resulting instruments are valid and uncorrelated with the error term. The validity of these instruments is assessed using a Hausman test for endogeneity, which revealed that the selected variables were good instruments. We specify the model for robust standard errors to correct for any possible heteroscedasticity in the data-generating process. Thus, we do not report the Sargan test for overidentifying restrictions, since only in the presence of a homoscedastic error term does the Sargan test have an asymptotic chi-squared distribution. So, under the assumption of the robust standard errors model, the asymptotic distribution of the Sargan statistic is not known and therefore not computed. We also report the Arellano-Bond test for serial correlation in the first-differenced errors, which will provide evidence of the validity of the moment conditions used by the estimator.

According to Granger and Newbold (1974), many economic time series are non-stationary and regression models using this type of data are often qualified as spurious regressions. However, our panel data set has time dimensions that are large enough to study the issue of stationarity. We apply panel unit root testing before we estimate our proposed specification. Recent literature indicates that panel-based unit root tests have higher power than tests based on individual time series. There are five main tests: Levin, Lin and Chu (2002), Breitung (2000), Im, Pesaran and Shin (2003), Fisher-type tests based on augmented Dickey-Fuller and Phillips-Perron tests and, lastly, Hadri (2000). In this paper we concentrate on the Levin-Lin-Chu (LLC) unit root test for panels. The LLC test assumes that there is a common unit root process, thus ρ_i is identical across the cross-sections, $\rho_i = \rho = 1$. To repeat, under the null hypothesis there is a unit root, while under the alternative, there is no unit root. The LLC test considers the following basic augmented Dickey-Fuller (ADF) specification:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{P_i} \beta_{ij} \Delta y_{it-j} + \gamma_{mi} d_{mt} + e_{it} \qquad (2)$$

where y is the variable of interest, i is unit index, t stands for time index, d represents deterministic elements, $m=1,2,3$ represents models that contain no constant, a constant (individual specific effects), or both a constant and trend, respectively, $\alpha = 1 - \rho$ is the parameter of interest, and P_i is the lag order. The null and alternative hypotheses referred to above can be expressed as follows:

$$H_0: \alpha = 0 \qquad (3)$$

$$H_1: \alpha < 0 \qquad (4)$$

We use the Schwarz information criterion to determine the optimal lags. The LLC test results were indicative of stationarity for most of the variables in our panel, with the exception of our financial development proxy and trade openness which are I (1). According to Hayakawa (2009) GMM estimators perform well, even in the presence of non-stationary variables.

2.   Results and analysis

Apart from examining the impact of FDI in isolation, this paper also studies its interaction with the stock of infrastructure, trade and domestic investment (physical capital) to identify a channel through which FDI may contribute to growth. We account for pre-existing economic conditions and host country

macroeconomic indicators by including variables such as inflation rate, government consumption and financial development. We present the results of the regressions for all countries in the sample in table 3 and interpret them below.

Table 3
Dynamic panel data estimation results: FDI and real per capita GDP growth

Dependent variable: real GDP per capita growth	Regressions		
Independent variables	1.1	1.2	1.3
Constant	0.717	0.721	1.4
	(2.595)	(2.356)	(1.466)
Lagged per capita income	0.190***	0.145***	0.113**
	(0.054)	(0.057)	(0.055)
Domestic investment	0.191***	0.245***	0.261***
	(0.068)	(0.062)	(0.060)
Foreign direct investment	0.003		-0.028
	(0.040)		(0.108)
Trade openness	0.034*	0.024	0.033*
	(0.019)	(0.018)	(0.019)
Population growth	-1.287**	-1.499***	-1.796***
	(0.514)	(0.525)	(0.465)
Infrastructure		-0.025	0.012
		(0.049)	(0.067)
Cricket World Cup 2007			1.670
			(1.487)
OECS regional dummy			0.226*
			(0.122)
FDI and infrastructure		0.005***	0.005**
		(0.001)	(0.002)
FDI and domestic investment		-0.006*	-0.006*
		(0.003)	(0.003)
FDI and trade openness		0.001	0.001
		(0.001)	(0.001)
Financial intermediation			-0.075*
			(0.040)
Global financial crisis		-1.914***	-1.793***
		(0.655)	(0.614)
Inflation			-0.0003
			(0.0005)
Government consumption	-0.337**	-0.306**	-0.232*
	(0.133)	(0.128)	(0.124)
Observations	816	816	816
Serial correlation test (p-value)[a]	0.195	0.138	0.098
Wald test (chi-square)[b]	100.49	421.47	338.62

Source: Prepared by the authors.
Note: Produced using the Arellano-Bond first difference GMM estimator, time dimension: 1988-2013 and cross-section dimension: 34 countries. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Standard errors are reported in parentheses. Equations (1.1), (1.2) and (1.3) are variants of equation (1).
[a]   The null hypothesis is that the first-differenced errors exhibit no second-order serial correlation.
[b]   The null hypothesis is that all parameters except the constant are zero.

In the first specification, using a 10% level of significance, the results of regression (1.1), taking into account the explanatory variables of FDI, trade openness, population growth, domestic investment, government consumption and lagged per capita income, indicate that the impact of FDI is not significant. On the contrary, domestic investment positively and significantly affects economic growth; a 1% rise in domestic investment brings about a 0.191% increase in real per capita growth. At the 10% level

of significance, trade openness also has a positive and significant impact on economic growth, with a 1% increase in trade openness producing a 0.034% increase in economic growth. This result is not surprising as trade liberalisation is known to be a significant contributor to economic growth, for example countries like China and Mexico enjoy strong export-led growth. In the context of the OECS countries, trade importance can be explained by the theory of comparative advantage which holds that trade leads to more efficient usage of a country's resources by importing products and services that are too costly to produce domestically. The practical failures of import substitution and the influence of international bodies, such as the International Monetary Fund (IMF), the World Bank and the World Trade Organization (WTO), have resulted in developing countries favouring outward-looking strategies. As expected, the impact of population growth was found to be negative and highly significant in all model specifications. According to Barro (1996), once the population is growing, a portion of its income must be used to provide capital for new workers, rather than to raise capital per worker. Interestingly, a study by Thacker, Acevedo and Perrelli (2012) found that Eastern Caribbean countries, such as Antigua and Barbuda, could enhance their output per capita by focusing on increasing their capital per worker ratio.

In regression (1.2) we include the interactions between FDI and trade, domestic investment and infrastructure availability, which replace the FDI variable. Including the interaction terms improves the overall fit of the regression. We also control for the impact of the global financial crisis on real growth and capital flows with a dummy variable. At the 10% level of significance, the FDI and domestic investment term enters the regression with a negative impact. There is evidence of the crowding-out effect. The interaction between FDI and infrastructure availability yields a positive and statistically significant impact on economic growth. In isolation, the impact of the variable of host country infrastructure, as measured by telephone lines per 100 people, is negative but not statistically significant. In fact, the majority of public infrastructure development in the region seeks to provide basic amenities and road networks for the growing populations. A smaller fraction aims to create an investment environment with favourable conditions for economic growth. Hence, the findings suggest that infrastructure investment in developing economies, like the OECS countries, has not reached a sufficient level to have growth-inducing effects. The positive and high significance of the interaction term (FDI and infrastructure) indicates that channelling FDI through infrastructure development may spur economic growth. A one unit increase in the value of this FDI-to-infrastructure interaction was found to raise per capita growth by some 0.005 percentage points. The FDI and trade interaction was not found to be statistically significant but entered with a positive sign. Although we would expect FDI to expand trade, the high level of leakage (through imports) might be reducing the expected positive contribution of this channel. Domestic investment is again positive in this regression and remains robust throughout all specifications. Trade is not significant in (1.2) but maintains its positive sign. We re-introduce the FDI variable alongside the interaction terms and other host country characteristics to test whether FDI affects growth directly or through the interactions.

Unlike equation (1.2), equation (1.3), which is the key model, includes financial development (represented by the proxy of domestic credit to the private sector as a percentage of GDP) and inflation, in addition to reintroducing the FDI variable. Equation (1.3) also incorporates a regional dummy variable for the OECS economies to quantify the growth differential between these countries and the others in the sample, and the dummy variable of the 2007 Cricket World Cup to capture the impact of that event on GDP growth in those islands. FDI impact is negative but not significant in this final specification, suggesting that its absolute economic effect is realized through independent channels. Concentrating on the primary effects, a 1% increase in domestic investment boosts economic growth by 0.260%. Once more, trade openness positively affects economic growth. Growth of 1% in trade openness leads to a 0.033% increase in economic growth. The trade openness results are generally consistent across the three variants of the model. Another consistent outcome is the negative and significant impact of population growth; a 1% increase in population growth depresses economic growth by some 1.796%. Unlike regression (1.2), infrastructure availability is positive but again enters with no significance (see above). As expected, the global financial crisis depressed economic growth.

The literature indicates that the growth effects of FDI are influenced by the host country's characteristics such as its fiscal position, financial development and macroeconomic environment, represented by the proxies government consumption as a percentage of GDP, financial development or domestic credit to the private sector, and inflation. All these characteristics negatively affect economic growth. A 1% increase in government consumption depresses economic growth by 0.232%. Financial development was also found to impact negatively on economic growth. This is inconsistent with the literature that indicates a positive correlation between the financial sector and growth (King and Levine, 1993). This could be a result of financial acceleration, where the worsening credit market conditions in the region have lead to adverse growth outcomes. Moreover, the finance-growth nexus in the sample countries displays demand-following as opposed to supply-leading characteristics. The sign of the coefficients measuring financial sector development is largely dependent on the proxy used. Gordon (2009), for example, finds that other financial development measures do enhance economic growth in the CARICOM countries. The impact of inflation on economic growth is negative but negligible. As was suggested above, the rate of inflation indicates the soundness of macroeconomic policies. The sample economies appear to have enjoyed price stability for most of the review period. Interestingly, the OECS economies have enjoyed consistently low inflation because of fixed exchange-rate regime (pegged to the United States dollar). The rate of inflation in those economies is fuelled by import prices, but, overall, price increases have not significantly depressed domestic output. Our dummy variables (the Cricket World Cup and OECS region) entered equation (1.3) with the expected positive signs, but only the OECS regional dummy was statistically significant. The Cricket World Cup dummy was insignificant, suggesting that the capital inflows surrounding the event did not influence growth homogenously in all OECS countries. The significance of the regional dummy variable indicates that, on average, growth in the OECS countries was 0.226 percentage points higher than that of the other groups in the sample. With regard to the interaction of FDI with other variables, two significant impacts were observed with domestic investment and infrastructure availability. It can be argued that the positive impact of FDI on economic growth is essentially achieved through the channel of infrastructure development. This interaction means that the effect of FDI on economic growth varies depending on the different levels of infrastructure available in the host country. The interaction of FDI with trade openness is null. Trade openness seems to evolve independently of FDI. The interaction between FDI and domestic investment is examined below.

3. FDI and domestic investment

We further examine the contribution of FDI to growth by analyzing its relationship with (total) domestic investment. The interaction between FDI and domestic investment was found to be negative, with a statistically significant coefficient. The negative coefficient for the interaction term suggests that domestic investment is crowded-out by foreign investments. The magnitude of the substitution effect was found to be less than 1%. Hence, FDI fosters economic growth by augmenting the capital stock of the host country when the FDI-to-GDP ratio is below 43:50.[11] Above this threshold, FDI completely crowds-out the positive impact of domestic investment on economic growth.

There is undoubtedly a marked reduction in domestic capital investments in the presence of large FDI projects, owing to several factors. Topping the list is local firms' competitive disadvantage compared to efficient multinational corporations. Unlike local firms, multinational corporations tend to benefit from favourable fiscal incentives, placing the former at a competitive disadvantage. The production of substitute goods is also a factor behind this crowding-out effect. The main recipient of foreign investment flows into the OECS countries is the tourism sector; however, given the number of all-inclusive resort projects, investment opportunities in the industry have been limited. Moreover, the

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[11] The threshold level for the FDI-to-GDP ratio is obtained by solving the equation 0.261 - 0.006 x = 0. Values greater than the threshold (43:50) would completely nullify the impact of a 1 unit increase in the domestic investment rate on economic growth.

countries have not fully exploited potential backward linkages in the sector. It was hoped that the tourism boom would create links with the local agricultural sector and other light industries, but this policy goal has not been realized; the only factor of production that has been abundantly provided to the sector is labour, and this excludes employees in management and specialist positions.

4.   Overall impact of FDI on economic growth

Although we alluded to the impact of FDI on economic growth above, we did not put the primary and secondary effects of FDI together. Using the observations for the OECS countries and concentrating on equation (1.3), we see that FDI enters the regression alone as well as with other variables. The impact of a 1% change in FDI from table 3 is given by

$$\frac{\partial gp_{it}}{\partial FDI_{it}} = -0.028 - 0.006 * \overline{K} + 0.001 * \overline{T} + 0.005 * \overline{IA} = 0.035 \tag{5}$$

where K stands for domestic investment, TT represents trade openness, IA is infrastructure availability and the bar indicates that they were evaluated at the mean.

The results of equation (5) cannot however be accepted at face value. Some of the coefficients, precisely two, were not found to be statistically significant. Eliminating these expressions give rise to:

$$\frac{\partial gp_{it}}{\partial FDI_{it}} = -0.006 * \overline{K} + 0.005 * \overline{IA} = -0.048 \tag{6}$$

This suggests that a 1% increase in FDI leads to a 0.048% decline in economic growth. Although the impact is small, it is still negative. Braithwate and Greenidge (2005) uncovered a similar result for Barbados, with FDI negatively affecting growth in the short term and positively in the long term.

VI. Conclusions and policy implications

A number of studies indicate that FDI affects economic growth through several important channels. They acknowledge that the effect of FDI is limited by the absorptive capacities of the host countries; therefore the impact differs across regions. This paper has examined the effect of FDI on economic growth in the OECS countries for the period 1988-2013 in an attempt to gain a better understanding of the growth-inducing benefits of FDI.

The main conclusion of the paper is that FDI does positively impact growth when host country conditions are adequate. This impact was not found to be significant when considered in isolation and, when it was evaluated for the OECS countries, it was found to be negative overall, proving the inadequacy of the absorptive capacity of the economies. The interaction between FDI and public infrastructure development was found to positively and significantly influence economic growth. Foreign investment projects usually boost demand for energy and modern telecommunications, road and transport systems. These developments, especially those related to telecommunications, transport and energy, increase productivity and efficiency, leading to a rise in output. Therefore, policies that seek to improve infrastructure could ultimately lead to sustainable development and a higher standard of living for residents. The region must also work to attract FDI that explores alternative business ventures rather than the tourism-based projects to which the region has limited itself for decades.

Efforts should be made to lure research and development, manufacturing and technology-based firms to the region. The industrialization by invitation strategy proposed by Lewis (1950) is still valid today, but has never been explored in the region. In addition to granting fiscal incentives as Lewis

suggested, more attention could be focused on developing human capital stock, infrastructure availability and access to raw materials. The literature suggests a strong positive relationship between FDI and human capital, indicating that investing in human capital could extract better outcomes from foreign investments. Most of the human capital training in the region has not been in growth-inducing fields, such as technology or engineering, so OECS policymakers should increase investments in education and skills training, particularly in the targeted areas of technology and the sciences, in an effort to spur innovation, productivity and, as a result, long-term economic output.

Domestic investment is crowded out by FDI as it reduces investment opportunities and diverts the host country's productive capacities. The cost of credit has had a negative impact on the region for a long time, but recent action by the Eastern Caribbean Central Bank to reduce minimum deposit interest rates was a direct attempt to reduce the cost of borrowing and stimulate local investments.

The OECS countries are quite open with regards to trade and, even though there are no incentives or programmes to bolster exports, this variable still exerts a positive and significant impact on growth. With multiple trade agreements at their disposal, OECS countries can explore export markets for their products. In particular, increasing intraregional trade will reduce foreign dependence and the external vulnerabilities the region faces. The FDI-to-trade channel was not found to be significant, but it is a positive relationship that can be exploited. FDI has augmented trade but the net effect has been more imports (a negative component of GDP). As expected, government consumption negatively influences growth. If not monitored, such expenditure could lead to economic instability. Since the OECS countries already have massive debt-to-GDP ratios and recurrent fiscal imbalances, more prudent fiscal management is needed to promote macroeconomic stability in those countries. Governments' role should be that of a facilitator rather than main economic actor; public expenditure should focus on creating an innovative and entrepreneurial environment that fosters growth and technological advancement.

Bibliography

Adeniyi, O. and others (2012), "Foreign direct investment, economic growth, and financial sector development in small open developing economies", *Economic Analysis and Policy*, vol. 42, No. 1, Amsterdam, Elsevier.

Al Nasser, O. (2010), "How does foreign direct investment affect economic growth? The role of local conditions", *Latin American Business Review*, vol. 11, No. 2, Taylor & Francis.

Arellano, M. and S. Bond (1991), "Some tests of specification for panel data: Monte Carlo evidence and application to employment equations", *Review of Economic Studies*, vol. 58, No. 2, Oxford University Press.

Arellano, M. and O. Bover (1995), "Another look at the instrumental variable estimation of error-components models", *Journal of Econometrics*, vol. 68, No. 1, Amsterdam, Elsevier.

Balasubramanyam, V., M. Salisu and D. Sapsford (1996), "Foreign direct investment and growth in EP and IS countries", *Economic Journal*, vol. 106, No. 434, Royal Economic Society.

Barro, R. (1996), "Determinants of economic growth: a cross-country empirical study", *NBER Working Paper Series*, No. 5698, Cambridge, Massachusetts, National Bureau of Economic Research (NBER).

____(1991), "Economic growth in a cross-section of countries", *The Quarterly Journal of Economics*, vol. 106, No. 2, Oxford University Press.

Barro, R. and J. Lee (1994), "Sources of economic growth", *Carnegie Rochester Conference Series on Public Policy*, vol. 40, Amsterdam, Elsevier.

Blomstrom, M., R. Lipsey and M. Zejan (1996), "Is fixed investment the key to economic growth?", *The Quarterly Journal of Economics*, vol. 111, No. 1, Oxford University Press.

Blonigen, B. and M. Wang (2004), "Inappropriate pooling of wealthy and poor countries in empirical FDI studies", *NBER Working Paper*, No. 10378, Cambridge, Massachusetts, National Bureau of Economic Research (NBER).

Blundell, R. and S. Bond (1998), "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, vol. 87, No. 1, Amsterdam, Elsevier.

Borensztein, E., J. De Gregorio and J.-W. Lee (1998), "How does foreign direct investment affect economic growth?", *Journal of International Economics*, vol. 45, No. 1, Amsterdam, Elsevier.

Bornschier, V., C. Chase-Dunn and R. Rubinson (1978), "Cross-national evidence of the effects of foreign investment and aid on economic growth and inequality: a survey of findings and a reanalysis", *American Journal of Sociology*, vol. 84, No. 3, Chicago, The University of Chicago Press.

Braithwaite, K. and K. Greenidge (2005), "Foreign direct investment and growth in Barbados", Bridgetown, Central Bank of Barbados [online] http://www.centralbank.org.bb/Portals/0/Files/WP2005-13.pdf.

Carkovic, M. and R. Levine (2002), "Does foreign direct investment accelerate economic growth?", *University of Minnesota Department of Finance Working Paper*, Minnesota, University of Minnesota.

Chowdhury, A. and G. Mavrotas (2005), "FDI and growth: a causal relationship", *WIDER Working Paper Series*, No. 25, Helsinki, World Institute for Development Economics Research (UNU-WIDER).

De Mello, L. (1999), "Foreign direct investment-led growth: evidence from time series and panel data", *Oxford Economic Papers*, vol. 51, No. 4, Oxford, Oxford University Press.

____(1997), "Foreign direct investment in developing countries and growth: a selective survey", *Journal of Development Studies*, vol. 34, No. 1, Taylor & Francis.

Fry, M. (1993), "Foreign direct investment in a macroeconomic framework: finance, efficiency, incentives, and distortions", *Policy Research Working Paper*, No. 1141, Washington, D.C., World Bank.

Gordon, L. (2009), "The role of financial development for economic growth in Caribbean islands", *MPRA Paper*, No. 49566, Munich, University Library of Munich.

Granger, C. and P. Newbold (1974), "Spurious regression in econometrics", *Journal of Econometrics*, vol. 2, No. 2, Amsterdam, Elsevier.

Griffith, R., K. Waithe and R. Craigwell (2008), "The significance of foreign direct investment to Caribbean development", St. Augustine [online] http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.485.9604&rep=rep1&type=pdf.

Hansen, H. and J. Rand (2005), "On the causal links between FDI and growth in developing countries", *WIDER Working Paper*, No. 31, Helsinki, World Institute for Development Economics Research (UNU-WIDER).

Hayakawa, K. (2009), "On the effect of mean-nonstationarity in dynamic panel data models", *Journal of Econometrics*, vol. 153, No. 2, Amsterdam, Elsevier.

King, R. and R. Levine (1993), "Finance and growth: Schumpeter might be right", *Policy Research Working Paper Series*, No. 1083, Washington, D.C., World Bank.

Levine, R. (1997), "Financial development and economic growth: views and agenda", *Journal of Economic Literature*, vol. 35, No. 2, Nashville, Tennessee, American Economic Association.

Lewis, A. W. (1950), "The industrialisation of the British West Indies", *Caribbean Economic Review*, vol. 2, No. 1.

Mamingi, N. and P. Borda (2015), "The determinants of economic growth in the countries of the Organisation of Eastern Caribbean States", *Journal of Eastern Caribbean Studies*, vol. 40, No. 2, Bridgetown Sir Arthur Lewis Institute of Social and Economic Studies.

Mohan, P. and P. Watson (2012), "CARICOM foreign direct investment flows" [online] https://sta.uwi.edu/salises/pubs/documents/CARICOMForeignDirectInvestment.pdf.

Nigh, D. (1986), "Political events and foreign direct investment decision: an empirical examination", *Managerial and Decision Economics*, vol. 7, No. 2, Wiley.

Schneider, F. and B. Frey (1985), "Economic and political determinants of foreign direct investment", *World Development*, vol. 13, No. 2, Amsterdam, Elsevier.

Thacker, N., S. Acevedo and R. Perrelli (2012), "Caribbean growth in an international perspective: the role of toursim and size", *IMF Working Paper*, No. 12/235, Washington, D.C., International Monetary Fund (IMF).

UNCTAD (United Nations Conference on Trade and Development) (2014), *World Investment Report 2014: Investing in the SDGs: An Action Plan* (UNCTAD/WIR/2014), New York, United Nations.

____(2002), *World Investment Report, 2002. Transnational Corporations and Export Competitiveness* (UNCTAD/WIR/2002), New York, United Nations.

Williams, O. and S. Williams (1998), "Foreign direct investment flows to the Eastern Caribbean Central Bank Region", Bridgetown, Central Bank of Barbados [online] http://www.centralbank.org.bb/Portals/0/Files/WP1998-15.pdf.PDF.