FOREIGN DIRECT INVESTMENT AND GROWTH IN BARBADOS*

by

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Abstract:

Conclusive empirical evidence supporting the widely held view that developing countries should draw on foreign direct investment (FDI) to spur economic growth is surprisingly hard to come by. Our paper addresses this issue in the context of the Barbadian economy. In addition, it seeks to understand the factors explaining FDI inflows into Barbados.

1. Introduction

Globalisation of the world economy has resulted in a great increase of FDI, as developing countries see it as a source of capital and therefore, since the early 80's barriers to foreign investors have begun to ease, allowing investment. Developing countries compete for foreign investment, offering income tax holidays, import duty exemptions and subsides, Barbados is no exception (Industrialization by invitation: Lewis).

Along with this investment comes the transfer of advance technology and management skills, marketing know-how, creation of employment opportunities, and market access, which by extension increases the productivity in the host country. These skills spill over to domestic enterprises and therefore it is thought that FDI contributes more to the economy than domestic investment. In order to take advantage of this advanced technology the host country is thought by many writers to have a minimum threshold of the stock of human capital. The structure of the host country's economy is also of vital importance to the level of benefits that can be gained from FDI.

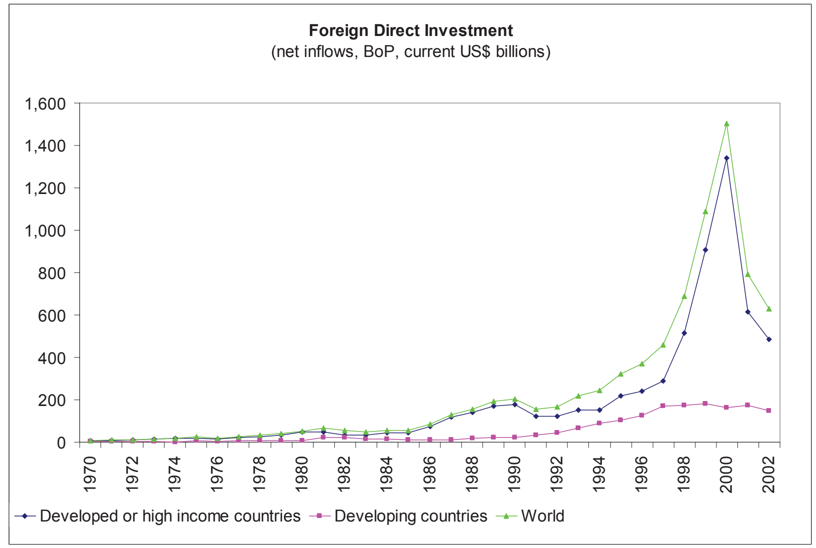
The impact of FDI on overall growth of the Barbadian economy is still in question. It is thought by other researchers that there is a positive relationship between FDI and the current, capital and financial accounts in Barbados. However, what really determines FDI into Barbados and what are the overall effects of this investment? These are question that this paper seek to answer though the use of cointegration analysis.

Section two of this paper reports on the evolution of FDI in Barbados over the review period, and is followed by a review of the literature on FDI and growth in section three. Section four sets out the model used in the analysis, followed by section five which outlines the methodology used in the analysis. Section six contains the results of the cointegration analysis and this is followed by section seven which gives some policy implications of the study and conclusions.

2. Trends in Foreign Direct Investment[1]

In the last decade FDI stock around the world has significantly increased. Figure 1 depicts the global trends in FDI inflows. Annual worldwide FDI rose gradually from US$9.1 billion at the

Figure 1



beginning of the 1970s to around US$56 billion by the mid-1980s. The momentum picked up over the next 5 year with FDI inflows expanding to just over $200 billion in 1990. This was followed by a dramatic explosion in FDI inflows over the next 10 years, as stocks reached almost $1.4 trillion by 2000. Developed countries gained most from FDI inflows, in any given year, more that three quarters of inflows went to these economies (Figure 2). Developing countries also benefited from the expansion even though their share of inflows has not increased much over the period (also Figure 2). In absolute terms, FDI flows to developing countries rose from just under $25 billion in 1990 to over $140 billion in 2002, almost a six-fold increase. In fact, Figure 3 indicates a general upward trend in FDI inflows as a percent of GDP for both groups.

[1] Tables A1 and A2 in the Appendix 1 contain the countries and their classification used in this section.

For developing countries, the ratio increased from less than a half quarter percent in 1970 to under 1 percent in 1990 and then to almost 2.4 percent in 2002.

FDI inflows among the developing countries are also quite diverse (Figure 4) with some regions showing significant increases - East Asia and Pacific (*EAP*), Latin America and the Caribbean (*LAC*) and Europe and Central Asia (*ECA*), while others attracted very little inflows – Middle East and North Africa (*MENA*), South Asia (*SA*) and South Sahara Africa (*SSA*). In fact, during the 1990s the former group accounted for over 90 percent of annual inflows to developing countries.

Figure 2

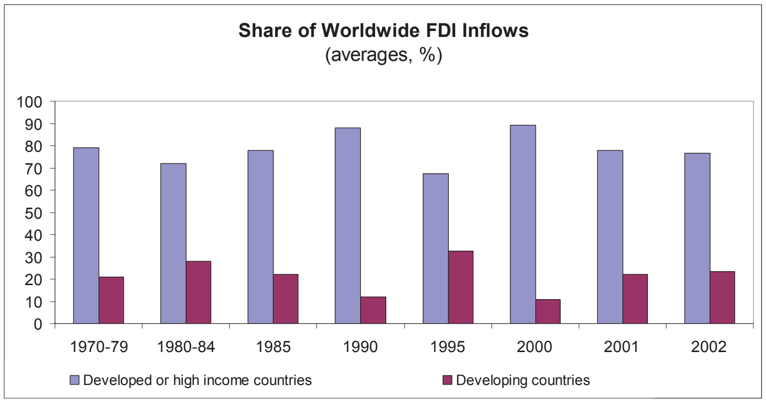
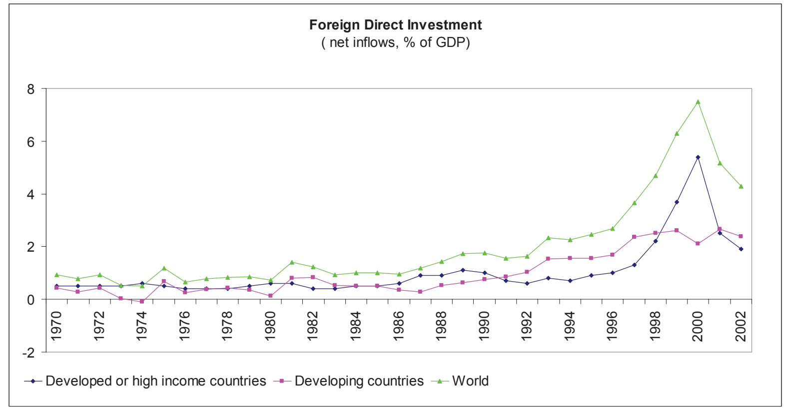
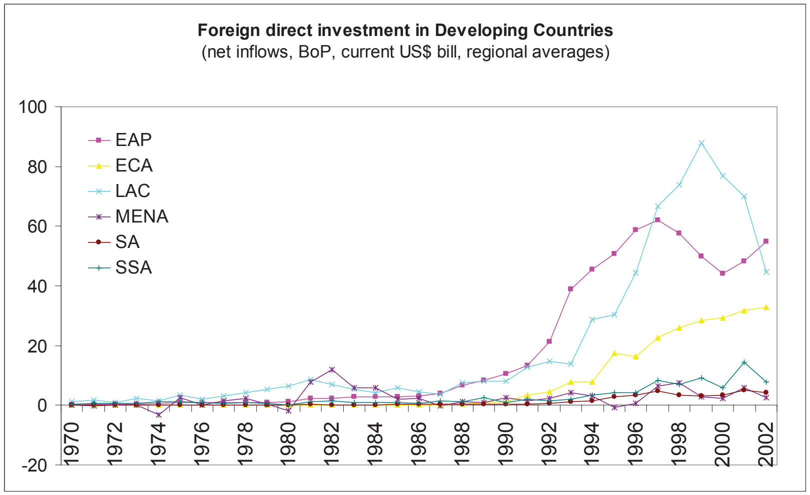


Figure 3



Prior to 1986, FDI inflows to the EAP region showed marginal expansions, rising from US$0.2 billion in 1970 to just over US$3 billion. However, the region became the number 1 destination for FDI to developing countries, as inflows rose at a phenomenal rate to reach US$62.1 billion. Fortunes reversed following the 1997 Asian crisis and inflows fell to US$44 by 2000 but have since risen. The most favoured countries in this region during recent times have been China, Hong Kong, Singapore and, to lesser extent, Austria. Collectively they accounted for over 85 percent of inflows to the region during 2002, and on approximately 74 percent over the period 1990 to 2002. Prior to 1990, Austria was the preferred destination followed by Singapore and China. In terms of contribution to output, the picture is very much the same with those receiving the most FDI inflows also recording the highest FDI to GDP ratios. However, Vietnam and Vanuatu, though there are not among the top FDI recipients, have relatively high ratios reflecting the importance of FDI in those economies.

Figure 4



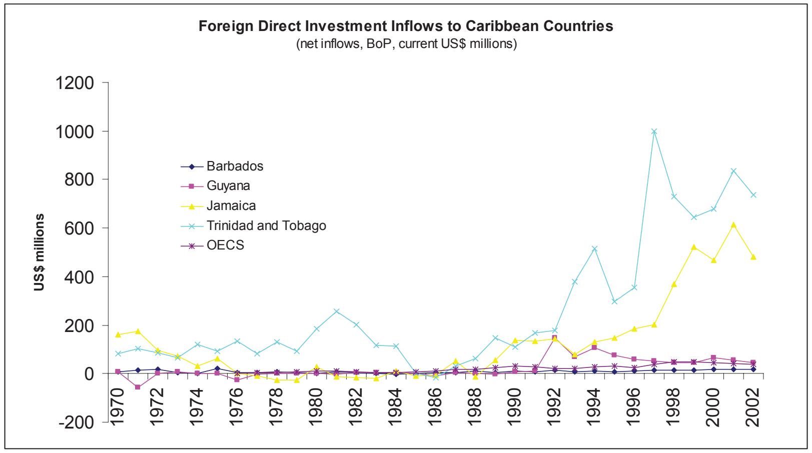
The ECA region saw almost no FDI inflows prior to the 1990s except in the case of Poland and Turkey, where the cumulative inflows over the previous 2 decades amounted to US$54 million and US2.2 billion, respectively (which is quite a small amount in comparison to its Eastern counterpart, for example, cumulative inflows to Singapore totalled US21.8 billion for the same period). In fact, only Turkey had recorded inflows before 1985. However, consistent with world trends, FDI began to flow to the region in significant amounts from the early 1990s onwards and by 2002 total inflows had reached almost US$33 billion. Poland and the Czech Republic were the main recipients of these flows followed by Hungary and the Russian Federation. Together they accounted for over 60 percent over the period 1995-2002.

From the early 1970s, the *LAC* region has been a preferred destination for foreign capital inflows and has only been out-performed, in this regard, by the *EAP* during the period 1990-97. Between 1970 and 1981, FDI inflows to the region rose steadily from just over US$1.1 billion to nearly US$8.6 billion. However, the region's poor economic performance coming into the 80s and mounting debt burdens, which culminated in a debt crisis in 1982, saw FDI inflows contracting significantly. However, as the debt crisis was brought under control and region began to address issues of macroeconomic imbalances, inflows again took off and by 1999 inflows reached US$88.9 billion making it number one developing region for foreign investment. Brazil, Mexico and, to a lesser extent, Argentina have been the preferred destinations, accounting for over 70 percent of inflows to the region.

The Caribbean sub-region share of FDI inflows to LAC has steadily declined over the sample period, from approximately 23 percent in 1970 to 1.7 percent in 1999. It has since risen to 3.2 percent. This is most likely reflecting the competition from its Latin American counterparts, as inflows to the Caribbean has increased over the sample period but nothing in comparison to the Latin American countries (Figure 5). Among the Caribbean countries, Trinidad and Tobago has over the years managed to attract the majority of FDI inflows, followed by Jamaica, while the other inlands receive marginal flows (Figure 6). FDI inflows to Trinidad and Tobago ranged from US$65.6 million to as high as US$258.1 million during 1970 to 1981. However, as the economy entered into a recession in 1983, occasioned by falling oil prices, FDI inflows began to dry up with only US$1.2 million being recorded in 1985. As the economic situation improved so did the flows and by 1997 almost US$1 billion in FDI entered Trinidad and Tobago, and although inflows have slowed somewhat they continue to be quite significant with about US$737 million for 2002. FDI inflows have made a significant contribution to GDP of the Trinidadian economy throughout the review period, rising to a record level of 17.4 percent 1997 before declining to roughly 9.4 percent in 2002.

Figure 5

Figure 6



The Jamaican economy has also attracted very little FDI compared with the rest of the world, with FDI outflows actual occurring during the first half of the sample period, while inflows were also non-existence. However, coming in to the 1990s the situation improved and inflows to Jamaica increased almost steadily to reach US$613.9 million in 2001.

In comparison to its neighbours, Barbados has received very little FDI during the sample period, as net inflows rose from US$8.4 million in 1970 to US$17 in 2002 with a high of US$18.4 in 2000. Early flows of FDI were mostly capital equity and between 1955 and 1957 averaged $3 million per annum, and by the mid 1960's approximately $10.1 million per year (Watson, 1974). In the period 1968 to 1979, FDI net inflows were approximately $26.7 million per annum, with emphasis during this period being placed on the manufacturing and tourism sectors, which took over from sugar as the key drivers of the Barbados economy. From 1980 onwards, FDI inflows averaged $54.8 million per annum, with the public utilities sector accounting for most of this investment.

An analysis of the pattern of FDI inflows to Barbados, between 1977 and 1985 was conducted by Codrington (1987). He noted that during this period approximately 45 per cent of total inflows went to public utilities, 24 percent to insurance companies, 13.7 per cent to oil companies and 10.3 per cent to manufacturing. During this period, the tourism sector continued to attract significant FDI, and as early as 1970 the sector was driven by growth in luxury establishments, which were mostly foreign owned. Leading sectors at the time such as construction and sugar attracted little investment.

In the manufacturing sector, during the mid 1960's FDI inflows were on average BDS $1 million on an annual basis, mostly in the areas of clothing, food processing and miscellaneous products. During the 1970's there was a shift towards the textiles, chemicals and the food and beverages sub-sectors. An entity to support the development of the manufacturing sector, the Industrial Development Corporation, was established in 1969, and to attract FDI, a tax holiday of ten years was offered to potential investors.

During 1955–1976, the majority of investment in the hotel sub sector was foreign owned. Inflows from the UK and North America were used to upgrade and construct hotels. Of note is the Hotel Aids Act of 1956, which exempted building materials and equipment for hotels from customs duties and also permitted a seven-year tax holidays. Two years later, the Board of Tourism was established and this offered further incentives to help promote FDI in the tourism sector. By the 1970's North America and United Kingdom interests controlled a considerable proportion of available capacity. However, in the early 1980's the sector suffered from recessionary conditions and Codrington *et. al.* (1985) noted that FDI averaged only \$1.4 million, most of which were in the form of long term loans. Improvements came for the sector in 1990-1994 where investment was averaging \$8.3 million per year.

FDI have been the dominant source of investment in the public utilities sector. Codrington *et al.* (1985) noted that during the 1950's, the Barbados Light and Power Co., a subsidiary of a British company at the time, was funded by inflows from the United Kingdom. It was not until the 1960's, however, that telecommunications after being acquired by a Canadian firm received any substantial FDI inflows. FDI flowing to this sub-sector was on average \$5.6 million during the 1970's, and were used to upgrade and expand services. An increase in FDI to the public utilities sector was seen in the 1980's, with an average inflow of approximately \$38.7 million per year, and in the 1990's of approximately \$28 million per year (Belgrave and Ward, 1997).

3. Literature Review

Across the globe, economist, researchers, and economic thinkers alike all accept the conventional importance of FDI to the economic growth and development of market driven economies. With the advent of globalisation and trade liberalisation, policy makers must examine this question in order to put in place the correct policies to encourage or guard against FDI inflows. Numerous authors from various countries and sub regions have research the validity of this convention given the particular circumstances of the country or region under study. Where the validity was accepted or confirmed, economic writers ventured a step further and explained the critical factor (determinants) which gives impetus to growth in foreign investment flows in the domestic economy.

3.1 Determinants of FDI

In their study of FDI flows into China between 1980 and 1998, Kerr and Peter (2001) utilised an error correction model (ECM), which revealed some of the pertinent features of the short-run determinants of FDI in China. It was found that the rate of growth in FDI is a function of its owned lagged dependent variable, the rate of change in wages and the tax mix ratio, the openness ratio and the exchange rate. The insignificance of interest rates was found to be inconsistent with other studies on countries such as Mexico. Consistent with a priori expectation, Kerr and Peter found that wages and the exchange rate coefficient are both negatively related to FDI inflows. Notably, any depreciation of the Yen against the US dollar encourages FDI inflow into China. Taxes were also found to have a negative relationship with FDI inflows, however, unlike the other variables whose coefficients were statistically significant at the five percent level the taxes coefficient was significant at the ten percent level. The most interesting findings in Kerr and Peter's study was the positive effect of changes in the openness ratio as this finding advanced the theories that free trade induces FDI inflows. As explained by Kerr and Peter the importance of utilizing a proxy lending ratio of interest and the direct tax is to capture the proximate rate of return for the FDI.

Flexner (2000) examined the determinants FDI inflows to Bolivia over the period 1990-1998 by OLS regression of the FDI to GDP ratio on the real effective multinational exchange rate, the ratio of real external debt to real GDP, government spending to real GDP and inflation. According to Flexner findings, an increase in the effective multinational exchange rate (i.e. a depreciation of the Boliviano) will lead to an increase in FDI. This result is consistent with Kerr and Peter (2001). With the exception of the ratio of government spending to GDP and inflation, all of the other variables exhibited their expected sign. Capitalisation inflows were found to have a relatively strong impact on FDI inflows, where as the external debt/GDP ratio had a negative impact on FDI. Apart from the incorrect signs for inflation and government spending/GDP the coefficients were also statistically insufficient.

Ewe-Chee Lim in her qualitative surveillance of the literature concluded that the determinants of FDI are disputed in the empirical literature. In part this is due to the various specifications of FDI by the authors, which are affected by various factors. The lack of consensus is also due to the paucity of accurate data (particularly regarding developing countries notwithstanding Barbados) on the determinants, namely labour cost and quality, investment/regulatory climate and the degree of openness.

Some of the determinants found to have a positive relationship with FDI included transport cost, business/investment climate, and capitalization inflows. Conversely, variables such as low labour cost and marginal direct tax rates tend to have a negative relationship with FDI. The impact on the degree of openness according to Lim (2001) was generally mixed.

Griffith (1998) in her investigation of sectoral trends of investment in the Barbadian economy, utilized cointegration analysis to ascertain the extent of the functional dependence of investment on the lagged rate of real output growth, the real exchange rate, the lagged ratio of external debt service payments to exports of goods and services, government investment to GDP ratio, real change in domestic credit and changes in the terms of trade. The results of this study was largely inconclusive as the coefficients of the lagged ratio of real output growth, the real exchange rate, real change in domestic credit and changes in the terms of trade were statistically insignificant. The other variables such as the lagged ratio of external debt service payments to exports of goods and services, government investment to GDP ratio and interest rate on loans and the current account balance to GDP ratio as a proxy for the terms of trade were however estimated, along with the real exchange rate, using OLS.

Griffith found that seventy-four percent of the variation in the rate of investment in the non-tradable sector is explained by the debt service ratio in the previous period, the rate of government investment and the rate of interest. While the real exchange rate, the current account deficit ratio and the rate of government investment, account for ninety-three percent of the variation in investment in the traded sector in Barbados.

For the non-tradable sectors with the exception of the interest rate variable the signs were consistent with a priori expectation. None the less, a positive relationship between investments and interest rates was found by Mckinnon-Shaw (1973) and Galbis (1976) and Fry (1980) to be typical in developing countries.

However, the results of the model for the traded sector were less impressive with two of the three variables carrying the wrong sign rendering the 'good fit' suspect. Despite the general inclusive nature of the Griffith (1998) study it vindicates the need for large amount of work on this area in Barbados and hence justifies the relevance of this author investigation of the determinants of FDI in Barbados.

3.2 The Impact of FDI on Growth

The question of whether FDI impact positively on growth is a very pertinent one given today's global community. It is conventionally accepted by many researchers and economist that FDI play an important role in an economy's growth; however, the importance of this relationship depends on the technological and economic circumstances of the country or region under investigation. This literature review on FDI and growth has uncovered some very interesting and yet controversial results. It will take into account these various findings and capture those variables that are relevant to Barbados.

Ewe-Chee Lim (2001) summarised the literature on foreign investment and growth in a paper entitled "Determinants of, and the relation between foreign direct investment and growth: A summary of the recent literature". The paper establishes that many of the research done on the impact of FDI on growth stress the importance of technological spillovers. It purports that various theoretical studies have found that one way in which FDI impacts on growth is through FDI acting as a medium for the transferring of advanced technology.

Lim reviewed a study done by Findlay (1978), which hypothesises that FDI increases the rate of technical process in the host country through a contagion effect. This is reiterated in studies done on growth theory, which show the importance of improvements of technology, efficiency and productivity in stimulating growth. This line of thought is also made stronger by empirical evidence, which shows that the FDI efficiency spillovers exist. However, the magnitude of such spillovers is still being investigated.

Lim also reviewed some suggestions on the determinants of the size of these magnitudes and according to the literature one of the variables that determines the spillover magnitude is the host countries ability to absorb foreign technology, which can be measured by the technological gap between the host and the foreign investor. Another determinant sited was the type of investment climate in the host country (Moran, 1998).

Lim also pointed to studies done by Dees (1998) and De Mello (1996). The writer found that a recurring theme in these studies as well as others is the need for the host country to have a certain threshold of development in order to take full advantage of technological spillovers.

Another study, which purports the transfer of technology through FDI as playing as crucial role in the growth of an economy, was done by Borensztein *et. al.* (1998). The study examined the effects of foreign direct investment on economic growth through cross-country analysis, using data on FDI flows from industrial countries to 69 developing countries. They reported that FDI facilitated the process of transfer of technology in the recipient countries. This is measured by 'capital deepening' in the form of an increase in the number of varieties of capital goods available (this concept of capital deepening is also explored at length in Romer 1990; Grossman and Helpman, 1991; and Barro and Sala-I-Martin, 1994). Borensztein *et. al.* (1998) also suggested that FDI contribution to growth is more than domestic investment. They also found that higher FDI productivity only holds true if the host country has a minimum threshold stock of human capital proxied by the initial level of average years of the male secondary schooling (similar results are reported in Barro and Lee, 1993). This study found that there is a positive effect and there was no crowding out of domestic investment. It must be noted however that this is not necessarily the case as capital inflows can also have a negative impact on domestic investment. This may occur because multinational corporations may be competing on the same domestic market and therefore will displace domestic firms as they have better knowledge and stronger capital base.

Apart from the level of technological development of the host country, some writers have also highlighted the level of financial market development as a prerequisite to FDI having a positive effect on growth. Hevmes and Lensink (2003) investigated how the development of the host country financial system is a prerequisite for FDI to have a positive impact on economic growth. They suggested that this is important because the financial system enhances the efficient allocation of resources and also improves the country absorptive capacity regarding FDI inflows. Using 67 countries they found that 37 had well developed financial markets that facilitated FDI and therefore the contribution to economic growth was positive. The rest of the countries had weak financial systems and thus there was not a positive effect on economic growth through FDI. They concluded that the domestic financial system should be developed in order to take advantage of large FDI inflows and for such to have a significant impact on economic growth.

Similar results were found in a study done by Alfaro *et al.* (2002), using cross-country data from 1975-1995. They found that FDI alone play an uncertain role in contributing to growth, however with the aid of a well-developed financial market, FDI can have a positive significant effect on growth. A number of proxies were used to measure the financial development, they are liquid liabilities of the financial system, commercial-central bank assets, private credit and bank credit (Levine 2000).

On the other hand, Akinlo (2004) investigated the issue of FDI and growth in Nigeria using a production function in which FDI is incorporated as a factor of production, and found that exports, labour and human capital also had significant effects on growth in Nigeria, while financial development (M_2/GDP), have a significant negative effect on economic growth, because financial development increased capital flight. It concluded that lagged foreign capital had a small but statistically insignificant influence on growth and suggested that the FDI might have been better serve in the manufacturing sector rather that the extractive sector.

Others have argued that FDI contribution will also depend on the social conditions (Buckley *et al.* 2002), that being the quality of the environment. This looks at the rate savings, the degree of openness and the level of technological development within the host country.

Agrawal (2000) investigated the economic impact of FDI in South Asia and found that there is a strong complementary effect on investment. The study purports, that growth through FDI can occur by additional employment and by improving technology and human capital. Agrawal (2000) used the production function and incorporated foreign capital. In concluding, he found that higher rate of growth of exports and higher investment rate causes a higher rate of GDP growth. The study found that FDI had a negative impact on growth and suggest that, FDI flows might be leading, that is, immiserizing growth (Brecher and Diaz-Alejandro, 1977) in South Asia. In other words, FDI in South Asia caused capital flight rather than investment. The author then examined whether the impact of FDI on growth changed over time and found that this was the case. The study concluded that FDI impact on growth became positive over the period 1980-96 and increasing so beyond that time.

The impact of FDI on growth, with a focus on Bolivia, was conducted by Flexner (2000). It utilised OLS to estimate the determinants of and the impact of FDI on growth. The study found that the ratio of external debt to GDP, the real relative multilateral exchange rate, and capitalisation inflows (represented by a dummy variable), were significant in determining FDI flows. It also found that FDI, the ratio of private sector credit to GDP, the ratio of government spending to GDP, and the terms of trade had a significant impact on economic growth in Bolivia. The author also agreed with the thought of many others that FDI positively affects growth by through an increase in total investment and improved productivity.

Closer to home, Belgrave and Ward (1997) investigated the impact of FDI on the manufacturing sector in Barbados, using data from 255 firms over the period 1985 to 1995, and employing the Bhagwati's hypothesis which says that the impact of FDI depends on the specified trade strategy the host country uses. They found that the firm's success was not determined by FDI inflows and even after the sample was separated by sector the results were the same.

Williams and Williams (1998) examined FDI flows to the Eastern Caribbean, using pooled data. FDI was found to have positive impacts on savings, imports and investment. The impact on imports however was sensitive to the period of estimation. The study also reported that FDI had an impact on the export of goods and services however the coefficient was a negative one. They concluded that the FDI nexus appears to be through gross capital formation and in particular private investment.

4. Data and Model Specification

Based on the above discussion, we formulated a growth function (equation 1), which includes real FDI inflows, *rFDI*, along with real government consumption, *rGC*, the real effective multilateral rate, *REER*[2], the level of financial development, *fd* (proxied by real broad money), real gross domestic investment, *rGDI*, and the rate of inflation π.

$$rGDP = h(rFDI, rGC, REER, rGDI, fd, \pi) \qquad 1$$

We expect FDI will have a positive impact on economic growth as the majority of such flows are directed toward improving infrastructure, mainly in the tourism sector. Government consumption is used as a proxy to measure the impact of government policy on economic growth. It is assumed that this variable includes expenditures that do not directly affect productivity, but entails distortion of private decision. It is expected that distortionary government policies will have a negative effect on economic growth, since government policies such as distortionary taxes leads to a higher level of government consumption which in turn leads to a lower level of per capita output, thus slower growth rate. Since domestic investment is normally concentrated in capacity building areas such as education, health and transportation, it is expected to lead to an increase in both physical and human capital stocks and hence the rate of economic growth. The real effective exchange rate is used as a proxy for the terms of trade and thus we expect a positive impact on growth. The inclusion of the financial development variable is consistent with the notion that the financial system plays a pivotal role in economic development and as such we expect it to have a positive influence on growth.

On the question of the determinants of FDI within the context of Barbados, we hypothesised, guided by the above literature review, that the main factors determining FDI in Barbados are likely to be the ratio of international reserves to the stock of external debt, real relative exchange rate, the level of government spending, the level of economic development and inflation. Although it was not discussed explicitly above, inflation is chosen to gauge macroeconomic stability. In fact, the literature argues that ability to control inflation should reduce investment

[2] REER for Barbados is calculated by taking the ratio of the foreign price level of the major trading partners to the domestic multiplied by the exchanged rates. For more detailed calculation see Greenidge, Moore and Skeete (2004).

risks and enhance FDI. The ratio of net international reserves to external debt is an indicator of a country's level of solvency, as too high a level will deter investors. The real effective exchange rate captures the profitability of the tradable-goods and is an indicator of external competitiveness. Real government consumption provides a good measure of the level government involvement in economic activity. It is expected that a reduction in government consumption, through privatisation or other means, limits the 'crowding out' of private investment, which should stimulate FDI inflows. Thus, the model to investigate the determinants of FDI can be written as:

$$rFDI = f(REER, {}^{NIR}\!/_{DEBT}, rGC, rGDP, \pi) \qquad 2$$

The real effective multilateral rate should be negatively correlated with real FDI inflows. *NIR/DEBT* is the ratio of international reserves to external debt in real terms and should be positively signed. *R*eal government consumption captures the extent of fiscal adjustment and should have a negative coefficient. Real gross domestic product is a proxy for the level of economic development. The inflation rate is expected to carry a negative sign.

Clearly these two functions are inter-related, as there are variables that are common to both, and are therefore part of the same system. In fact, with the exception of *NIR/DEBT*, all the variables in equation 2 are contained in equation 1. We could even have included *NIR/DEBT* in equation 1, as many commentators argued that any growth model for a developing country should include some measure of the level foreign reserves as this can constraint growth (see Bynoe-Lewis and Craigwell, 1998). A decline in a country's foreign reserves reduces its ability to import goods and services essential for production and impedes its ability to honour foreign debts, both of which retard economic growth. Thus, we decided to estimate the two equations as a system using cointegration analysis in order to avoid issues of simultaneity and to be able to deal with any concerns of causality.

5. Methodology

Most macroeconomic time series are often integrated of order one, yet others tend to be stationary (e.g. interest rate spreads) and still others even tend to be integrated of order two (e.g. price indices in some countries), thus analysing the stationary properties of a time series is a natural start to cointegration analysis because it allows us to know whether the levels (in case of *I(1)* variables) or the first differences of a variable (when it is *I(2)*) should be included in the long-run relationships. Thus, before embarking on cointegration analysis it is first necessary to ascertain whether or not the variables are stationary. To do this, unit root tests are conducted to check the degree of integration. The first is the augmented Dickey-Fuller (ADF), where the null hypothesis is that the concerned variable contains a unit root against the alternative hypothesis that it is stationary (does not have a unit root). To explain the ADF test for unit root consider the following equation:

$$y_t = c + bt + \theta y_{t-1} + e_t \qquad 3$$

where c, b and θ are parameters, t is time trend and e_t is assumed to be white noise. If $\theta = 1$ and $b = 1$, y is a non-stationary series. If this is true then equation 3 and corresponding tests do not have the usual properties and the equation is estimated as:

$$\Delta y_t = c + bt + \lambda y_{t-1} + e_t \qquad 4$$

where $\lambda = \theta - 1$. The ADF test controls for higher-order correlation by adding lagged difference terms of the dependent variable y so that equation 4 becomes:

$$\Delta y_t = c + \theta y_{t-1} + \theta_1 \Delta y_{t-1} + \theta_2 \Delta y_{t-2} + ... + \theta_k \Delta y_{t-k} + e_t \qquad 5$$

However, the method of correcting for higher-order correlation reduces the degrees of freedom and this can significantly affect the power of the test, especially in small samples. Thus, we also applied the Phillips-Perron, *PP*, (1988) test to confirm the results of the ADF test. The *PP* test makes a correction to the t-statistic of the θ coefficient from the AR(1) version of equation 5 to account for the serial correlation in the errors. Both tests are commonly used in empirical analysis.

Yet, one potential problem with both the ADF and PP tests is that they take a unit root as the null hypothesis. In this regard, they have a high probability of falsely rejecting the null hypothesis of non-stationarity when the data generation process is close to a stationary process (see for example Blough, 1992; and DeJong *et al*., 1989). This is because in finite samples it has been found that some unit root processes display behaviour closer to stationary white noise than to a non-stationary random walk, while some trend-stationary processes behave more like random walks. Hence, unit root tests with high power against any stationary alternative will have a high probability of a false rejection of the unit root when applied to near stationary processes. With this in mind, we also utilise the KPSS test describe in Kwiatkowski *et al.* (1992) in order to confirm the validity of the ADF and PP test results.

If it is found that these variables are non-stationary the focus will then be testing for the existence of long-run relationship between the variables. To do this we will utilised the procedure developed by Johansen (1988 and 1991) as well as Johansen and Juselius (1992 and 1994). This approach is suited to detect stationary linear combinations (i.e. cointegration relationships) between *I(1)* variables. The starting point is the multivariate vector autoregressive (VAR) model of the levels of the *I(1)* variables at lag length *L*:

$$z_t = A_1 z_{t-1} + A_2 z_{t-2} + \ldots. + A_l z_{t-l} + \mu + \delta t + \varepsilon_t \qquad 6$$

with ε_t being a *(n x 1)* vector of independently normally distributed errors, μ the (n x 1) vector of constant terms, δ the (n x 1) coefficient vector of a linear deterministic time trend, A_i the *(n x n)* matrices of coefficients, and Z_t is the combined variables of equations 1 and 2. This model is equivalent to the VECM:

$$\Delta z_t = \Gamma_1^* \Delta z_{t-1} + \ldots. + \Gamma_l^* \Delta_{t-l+1} + \Pi^* z_{t-l} + \mu + \delta t + \mu_t \qquad 7$$

where $\Gamma_i^* = -(I - A_1 - \ldots. - A_i), i = 1,2,\ldots,(l-1)$

and $\Pi^* = -(I - A_1 - \ldots. - A_l)$,

Johansen showed that equation 7 can be transformed into a VECM dependent on the levels in period (t – 1), which is more useful for our purposes:

$$\Delta z_t = \sum_{i=1}^{l-1} \Gamma_i \Delta z_{t-i} + \Pi z_{t-1} + \mu + \delta .t + \mu_t \qquad 8$$

where $\Gamma_i \equiv -(A_{i+1} + \ldots. + A_l), i = 1,2,\ldots.,(l-1),$ and $\Pi \equiv -(I - A_1 - \ldots - A_l) = \Pi^*$.

z' is the *(T x n)* matrix of *I(1)* variables (*T* being the number of observations, *n* the number of *I(1)* variables), Δ the difference operator, Γ_i the *(n x n)* vector of short-run coefficients of the first of variables in period *t – i*. The *z*-variables with a time subscript thus represent the (n x 1) – vector of realisations of all *I(1)* variables in the period indicated.

As to matrix Π, the case where Π has reduced rank *r*, 0 < *r* < *p* is of particular interest. In this case Π can be decomposed into a *(p x r)* matrix *α* of adjustment coefficients and a *(p x r)* matrix *β* of cointegrating vectors such that $\Pi = \alpha\beta'$. The case *r = 0* means that there is no stationary linear combination between the *I(1)* variables implying that a VECM does not yield any additional information compared to a vector auto-regressive model (VAR) in first differences. In turn, the case *r* = *p* can only occur if all *p* variables are in fact stationary in levels. The matrix of cointegrating vectors, β then reduces to a (*p x p*) identity matrix. The *(r x 1)* vector $\beta' z_{t-1}$ represents the *r* cointegration relationships each of which equals zero in equilibrium.

There are two commonly used tests to determine the rank of Π suggested by Johansen (1988). The first is called trace test based on:

$$trs(r) = -T \sum_{i=r+1}^{p} \ln(1 - \hat{\lambda}_i) .$$

In this test the null hypothesis is $H_0 : \hat{\lambda}_{r+1} = \hat{\lambda}_{r+2} = \ldots. = \hat{\lambda}_p = 0$, the alternative hypothesis $H_1 : \hat{\lambda}_{r+1} \neq 0$. Finding the correct number of cointegrated vectors thus implies a sequence of tests starting with the hypothesis that there is no cointegrating relation, i.e. with *r = 0*. If the null is rejected, H_1 is considered to hold and prevails as a pre-condition in the next test, the one of the hypothesis that all but the largest $\hat{\lambda}_i$-values equal zero. If one rejects again, the test is carried out for all but the two largest $\hat{\lambda}_i$-values, and so on. The sequence stops when the null cannot be rejected for the first time, e.g. in the test involving all but three largest $\hat{\lambda}_i$-values. Then the test results as *r = 3*. The asymptotic distributions and corresponding critical values are derived in Johansen (1988, 1991, and 1994).

The second rank test is called $\lambda_{\max}$-test with the $\lambda_{\max}$-statistic defined as

$$\lambda_{\max}(r) = -T\ln(1-\hat{\lambda}_{r+1}) .$$

As the statistic suggests, it is tested here whether $\hat{\lambda}_{r+1}$, the next smaller neighbour of $\hat{\lambda}_r$, equals zero given that $\hat{\lambda}_r$ does not. Again, it starts with *r = 0* in order to check first whether the biggest eigenvalue is significant and thus if there is any cointegration in the VECM at all. The sequence stops when rejection fails for the first time. Critical values are also derived in Johansen (1988, 1991, and 1994).

In context of the VECM, we can also investigated what is referred to in the econometrics literature as causality or exogeneity. In particular, a variable is said to be weakly exogenous to the system if disequilibrium changes (deviations of the cointegration relation from zero) do not affect the variable, i.e. there is no feedback from the disequilibrium back on the level of the particular variable.

The final issue to be decided on is the lag length of the model. Here, the literature suggests that a good strategy is minimisation of some information criterion subject to achieving Gaussian residuals. There are three commonly used information criteria: The Akaike information criterion (AIC) is defined as (Akaike 1973):

$$AIC = \ln\left|\hat{\Omega}\right| + 2k/T$$

The Schwarz information criterion (SC) is defined as (Schwarz 1978):

$$SC = \ln\left|\hat{\Omega}\right| + k(\ln T)/T$$

The Hannan-Quinn information criterion (HQC) is defined as (Hannan and Quinn 1979):

$$HQC = \ln\left|\hat{\Omega}\right| + 2k\left[\ln(\ln T)\right]/T$$

They sometimes yield contradictory results and in this regard we will give more credence to the *SC* as the literature suggests that it behaves better in small sample in that it is likely to choose the more parsimonious model compared with the other two criteria. Nevertheless, it is still necessary to check that the residuals of the chosen model are not auto-correlated, do not suffer from heteroskedasticity and are normally distributed.

The Johansen procedure to determine the number of cointegrating relationships only informs on how many unique cointegrating vectors span the cointegration space but does not necessarily deliver unique estimates of these vectors in the reduced-rank regression. In order to eliminate this possibility and to extract the structural relationships "hidden" in the cointegration space, we need additional assumptions, so-called identifying restrictions.

6. Estimation and Results

The data series for 1970 – 2003 used for the model specified in section four of this paper was obtained from the World Development Indicators 2004, and expressed in real terms by deflating them with the GDP deflator. The variables are then expressed in their natural logs. It must be noted that inflation is expressed as $\log(1+\pi)$ because of some negative values within the data set.

Table 2 Stationary Tests

Variable	Level	Δ	Variable	Level	Δ
ln*rGDP*	-0.972 [-1.092] {0.656++}	-4.179*** [-4.175***] {0.052}	ln*REER*	-0.022 [-0.741] {0.479++}	-2.975** [-2.973**] {0.135}
ln*rFDI*	-2.659* [-2.757*] {0.409+}	-8.562*** [-9.468***] {0.239}	ln*rGDI*	-2.085 [-2.096] {0.436++}	-6.338*** [-6.353***] {0.090}
ln*rGC*	-1.070 [-0.673] {0.751+++}	-6.567*** [-11.17***] {0.317}	ln*FD*	4.204 [2.071] {0.642++}	-5.169*** [-5.169***] {0.305}
π	-2.423 [-2.319] {0.593++}	-5.746*** [-10.873***] {0.500++}	ln*NIR/Debt*	-3.073*** [-1.327] {0.242}	-3.342** [-6.338***] {0.250}

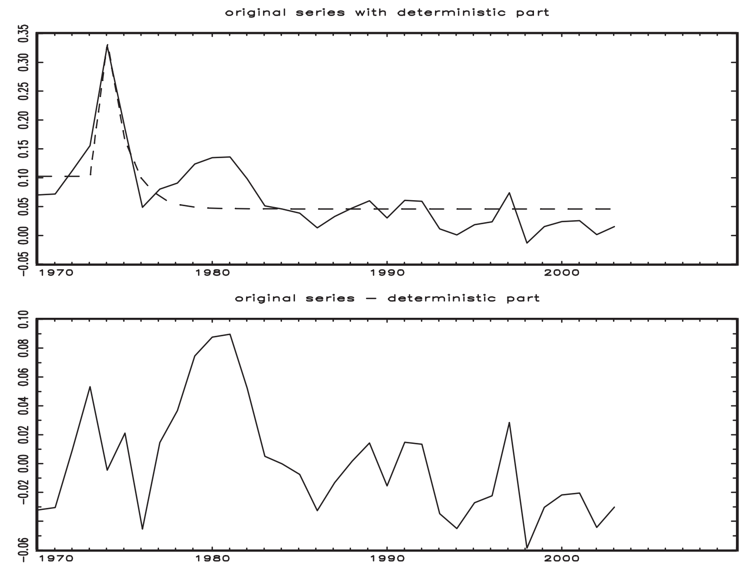
Notes: Δ denotes the first difference of the original series. The first row for each group of statistics gives the ADF test statistic, the second row contains the PP test statistic in square brackets and the third row shows the KPSS test statistic in curly brackets. *, ** and *** are the MacKinnon critical values for rejection of the null hypothesis of a unit root at the 10%, 5%, and 1% levels, respectively, for both the ADF and PP tests. +, ++, +++ are the critical values for the LM test statistic of the KPSS test and denotes rejection of the null hypothesis of stationary at the 10%, 5%, and 1%, respectively (based upon the asymptotic results presented in KPSS 1992 Table 1, pp. 166).

The results of unit root tests are presented in Table 2. The three tests agree, at the 5 percent significance level or higher, that *lnRGDP*, *lnREER, lnrGDI, lnrGGC, lnrFDI* and *lnFD* are all *I(1)* variables. In the case of *lnNIR/DEBT*, the ADF and KPSS tests suggest that it may be stationary, while the PP statistic points to non-stationarity. A visual inspection of the data (see appendix 1) shows a structural break in 1991; prior to 1991 the ratio had been declining and after 1991 it trended upwards. The series is clearly non-stationary in theses sub-periods and unit root tests confirm this. We therefore treated *lnNIR/DEBT* as an *I(1)* variable.

For the inflation rate the three tests all suggest that it is non-stationary. However, we were not comfortable with this conclusion, as this is not consistent with stylised facts about the inflation in Barbados. An inspection of the inflation chart (see appendix 1) also casts doubt on this result as for most of the period the series appears to be quite stable. Thus, one would expect it to be *I(0)*. The cause for this discrepancy can be a result of the 38-percentage point increase in inflation in 1974 attributed in extraordinary increases in international oil prices. As can been seen from the chart, inflation fell in 1975 as oil prices came under control and continue to reach average normal levels from 1976. Thus, we would expect inflation to be *I(0)*. To account for the shock to inflation in the unit root tests we followed the procedure in Saikkonen and Lütkepohl (2002) and Lanne *et al.* (2002) where a shift function is added to equation 4 and the deterministic term is first estimated by a generalised least squares (GLS) under the unit root null hypothesis and subtracted from the original series. Then an ADF type test is carried out on the adjusted series, which also includes terms to correct for estimation errors in the parameters of the deterministic part. The critical values for the new ADF statistic are given in Lanne *et al*. (2002). See Saikkonen and Lütkepohl (2000 and 2002) for more details on the specification of the various shift function.

The top panel of Figure 7 shows the original inflation series along with the estimated deterministic component and confirms that we have adequately captured the oil shock. The bottom panel shows the inflation series less that less that deterministic component. The ADF test on the adjusted inflation series produced a test statistic of -3.52, which being smaller that the 1 percent critical value of greater in absolute value 3.48, confirms that inflation is indeed *I(0)*.

Figure 7:



To investigate the impact of FDI on growth we began by first estimating an unrestricted VAR with a maximum lag of 3. Then a length test is done (Table 3). The AIC criterion chose two lags while the SC and HQ selected 1. Since a VAR of order 1 in levels is a VECM of order 0, thus contains no additional dynamics beside the error correction term, we decided to go with the AIC choice of 2 lags in the VAR, which implies 1 lag on the VECM and allows for some dynamics. The Johansen test for cointegration is applied on the VAR with 2 lags. Also, since visual inspection of the plots (Appendix 1) shows that most of the series are trended, we decided to include a trend in the Johansen test and then check its significance. Both the trace and maximum eigenvalue statistics (Table 4) suggest that there is at least 1 cointegrating relationship. With this in mind, we estimated the VECM shown in equation 9. The results are presented in Table 5. The first panel gives the cointegrating vector and the second and third panels show the error-correction model for growth and real FDI, respectively, along with some diagnostic statistics.

Table 3	Lag Length Selection Criteria		
Lag	AIC	SC	HQ
0	-9.908963	-9.538902	-9.788332
1	-17.98887	-14.65832*	-16.90320*
2	-18.55798*	-12.26694	-16.50726

* indicates lag order selected by the criterion
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 4: Johansen Rank Test

Null	Alternative	Max. Eigenvalue	Trace
r = 0	r = 1	46.841* (0.027)	134.26** (0.003)
r ≤ 1	r = 2	33.714 (0.154)	87.422 (0.063)
r ≤ 2	r = 3	20.784 (0.590)	53.708 (0.265)
r ≤ 3	r = 4	17.472 (0.419)	32.924 (0.340)
r ≤ 4	r = 5	9.981 (0.621)	15.452 (0.537)
r ≤ 5	r = 6	5.470 (0.530)	5.470 (0.530)

P-values are in parenthesis, * and ** denotes rejection of the null hypothesis at the 5 per cent, and 1per cent levels respectively.

Table 5:

Cointegrating Vector:

$$\ln rGDP_t = 3.732 + \underset{(2.36**)}{0.045} \ln rFDI_t - \underset{(-1.63*)}{0.105} \ln rGC_t + \underset{(7.30***)}{0.384} \ln FD_t + \underset{(2.59**)}{0.108} \ln rGDI_t + \underset{(6.105***)}{0.099} \ln \left({NIR}/{Debt} \right)_t$$

VECM for ln*rGDP*:

$$\Delta \ln rGDP_t = 0.003 + \underset{(2.39**)}{0.358} \Delta \ln rGDP_{t-1} - \underset{(-2.07**)}{0.017} \Delta \ln rFDI_{t-1} + \underset{(3.26***)}{0.264} \Delta \ln FD_{t-1} + \underset{(1.824*)}{0.038} \Delta \ln \left({NIR}/{Debt} \right)_{t-1}$$
$$- \underset{(-2.931***)}{0.485} ECM_{t-1}$$

$\bar{R}^2 = 0.58$ $DW = 1.74$ $Norn = \underset{(0.706)}{0.695}$ $LM = \underset{(0.378)}{0.778}$ $RR = \underset{(0.902)}{0.015}$ $HET = \underset{(0.265)}{1.244}$

VECM for ln*rFDI*:

$$\Delta \ln rFDI_t = 0.08 - \underset{(-4.15***)}{0.645} \Delta \ln rFDI_{t-1} - \underset{(-2.58**)}{0.054} \Delta \ln \pi_{t-1} + \underset{(2.01**)}{0.812} \Delta \ln \left({NIR}/{Debt} \right)_{t-1}$$

$\bar{R}^2 = 0.45$ $DW = 2.09$ $Norn = \underset{(0.292)}{2.465}$ $LM = \underset{(0.586)}{0.297}$ $RR = \underset{(0.404)}{0.696}$ $HET = \underset{(0.573)}{0.318}$

Notes: T-statistics are shown in parentheses. For the diagnostics the F-statistic for the respective test are shown (unless indicated otherwise) and the associated P-value in square brackets. *DW* is the Durbin-Watson statistic. *SC* is the Lagrange multiplier test of residual serial correlation (Chi-square of degree 1). *FF* is the Ramsey's RESET test for incorrect functional form using the square of the fitted values (Chi-square of degree 1). *Norn* is the test for normality of the residuals based on the Jarque-Bera test statistic (Chi-square of degree 1). *HET* is the Heteroskedasticity test based on the regression of squared residuals on squared fitted values.

In deriving the long-run estimates we normalised each of the variables in the cointegrating vector and then checked as to which normalisation produced a VECM in which the error-correction term was significant. It turned out that the normalisation on real GDP was the only case where error-correcting term (*ECM*) was significant. Therefore, we estimated the long run relationship by normalising on LRGDP. Note that since inflation is *I(0)* is does not enter the cointegrating space. Also, in order to improve on the estimates in the error correct models we used a general to specific approach where statistically insignificant coefficients are progressively eliminated to arrive at a more parsimonious representation. In both cases the model passes all the diagnostics tests, including normality of the residuals, no serial correlation or heteroskedasticity and no misspecification.

The results from the cointegrating vector suggest real FDI inflows have a significant positive impact on real GDP in the long run. The estimated coefficient implies that a 10 percent increase in real FDI would cause real GDP to rise by roughly half a percentage point. Also showing positive significance effects in the long-run are real gross domestic investment, financial development and the real stock of international reserves to real external debt. The former has an elasticity of 0.11 and is significant at the 5 percent level. The result for financial development indicates that a one percentage point increase in this variable would lead real GDP to rise by roughly 0.4 of a percentage point. This implies that financial development, proxied by broad money expansion, plays a vital role in economic growth. The coefficient of the international reserves to external debt variable signifies that a 10 percentage point increase in the level of reserves to debt would lead to real GDP expanding by nearly 1 percentage point. Finally, real government consumption has a negative coefficient, which is consistent with the pro-market view that growth in government consumption constrains overall economic growth through distortionary fiscal policy. Thus, underscores the importance of credible and permanent fiscal adjustments for stimulating economic growth.

Results from the short-run dynamics supporting the cointegrating relationship show that the error-correcting term is significant in the equation for changes in real GDP, confirming the normalisation above. The coefficient on the error-correcting term suggests that approximately half of the deviation from long-run equilibrium is corrected each year. This also implies that the effects of a shock that disturbs the equilibrium between variables will take roughly 2 years to dissipate. Moreover, when the system is in disequilibrium, it is output the responds to restore equilibrium. The results also suggest that short-term movements in real FDI inflows have a significant negative, but small impact on the growth rate of real GDP. Thus, real FDI inflows tend to impact negatively on growth in the short-run but over time its influence is positive. It also appears that improvements towards financial development are good for growth in the short-run. The results also suggest a degree of inertia in growth; if real output increased by 1 percentage point in the previous period, all things being equal, it can be expected to rise by approximately 0.4 percentage points in the current period. The question of solvency (NIR/DEBT) appears to have short-run affects as movements towards greater solvency is good for current period growth.

The results of VECM estimates for real FDI suggest that short-term increases in the rate of inflation discourage inflows, while improvements in the level of solvency encourage inflows. There is also a partial adjustment of real FDI to the change in the previous period by about -0.65. Also, the fact that the error-correction term is insignificant in the FDI VECM implies that FDI inflows are weakly exogenous to the system. In other words, FDI inflows do not respond to long-run disequilibrium, which can be caused by shocks to any of the variables of the system. Moreover, since short-term fluctuations in economic growth do not appear to have any significant affect on FDI flows, but at the same time short-term movements in growth is affected by changes in FDI, it implies that uni-directional causality runs for FDI flows to growth.

7. Concluding Remarks

This paper investigates the relationship between FDI inflows and growth using cointegration analysis. The results suggest that such inflows contribute to growth in the long-run although in the short-run it may actually slow growth. It also shows that as more domestic funds becomes available to the private sector that groups relies less on FDI inflows. Furthermore, keeping inflation low and ensuring that debt accumulation is inline with foreign earning are also important to encouraging FDI inflows. The findings also suggested that is would be futile to rely on FDI inflows to correct short-term imbalances between growth and its fundamentals.

Also, the results indicate that the level of financial development in Barbados is critical to the continued growth of the economy. This variable is also cited in the literature as one of the determinants of the level of FDI. Foreign investors feel more comfortable operating in a market that encourages growth and therefore as a policy suggestion the government should take a keen interest in the development of our limited financial sector.

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Appendix 1

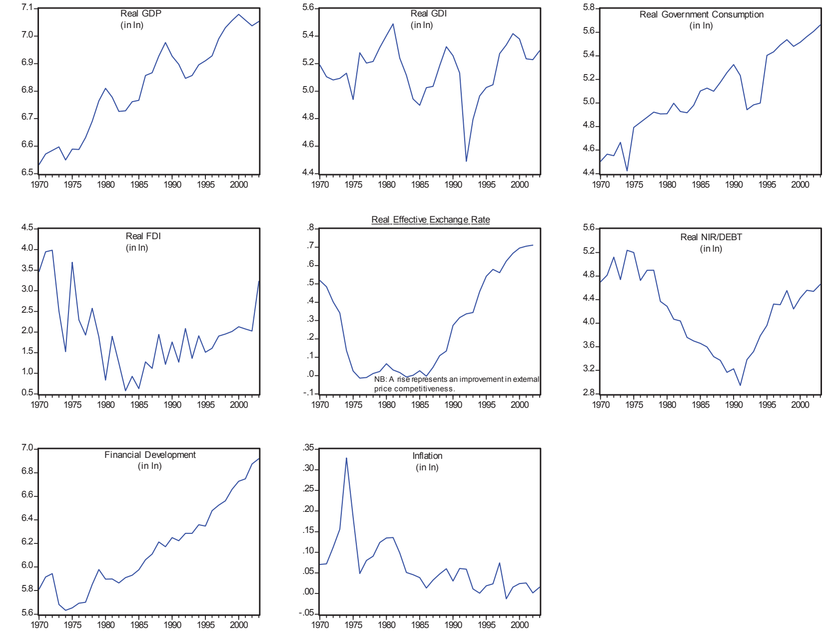

Table A1: Countries Classification according to Developed and Developing Economies

Developing Economies Based on 2002 GNI per capita ≤ $9,076				**Developed Economies** Based on 2002 GNI per capita >$9,076	
Low-income: $735 - less		**Middle income:** between $735 and $9,075		**High income OECD**	**High income non-OECD:**
Afghanistan	São Tomé and Principe	Albania	Mexico	Australia	Andorra
Angola	Senegal	Algeria	Micronesia, Fed. Sts.	Austria	Antigua and Barbuda
Azerbaijan	Sierra Leone	American Samoa	Morocco	Belgium	Aruba
Bangladesh	Solomon Islands	Argentina	Namibia	Canada	Bahamas, The
Benin	Somalia	Armenia	Islands	Denmark	Bahrain
Bhutan	Sudan	Belarus	Oman	Finland	Barbados
Burkina Faso	Tajikistan	Belize	Palau	France	Bermuda
Burundi	Tanzania	Bolivia	Panama	Germany	Brunei
Cambodia	Timor-Leste	Bosnia and Herzegovina	Paraguay	Greece	Cayman Islands
Cameroon	Togo	Botswana	Peru	Iceland	Channel Islands
Central Africa	Uganda	Brazil	Philippines	Ireland	Cyprus
Chad	Uzbekistan	Bulgaria	Poland	Italy	Faeroe Islands
Comoros	Vietnam	Cape Verde	Romania	Japan	French Polynesia
Congo, Dem. Rep.	Yemen, Rep.	Chile	Russian Federation	Korea, Rep.	Greenland
Congo, Rep.	Zambia	China	Samoa	Luxembourg	Guam
Côte d'Ivoire	Zimbabwe	Colombia	Saudi Arabia	Netherlands	Hong Kong, China
Equatorial Guinea		Costa Rica	Serbia and Montenegro	New Zealand	Isle of Man
Eritrea		Croatia	Seychelles	Norway	Israel
Ethiopia		Cuba	Slovak Republic	Portugal	Kuwait
Gambia, The		Czech Republic	South Africa	Spain	Liechtenstein
Georgia		Djibouti	Sri Lanka	Sweden	Macao, China
Ghana		Dominica	St. Kitts and Nevis	Switzerland	Malta
Guinea		Dominican Republic	St. Lucia	United Kingdom	Monaco
Guinea-Bissau		Ecuador	St. Vincent and the Grenadines	United States	Netherlands Antilles
Haiti		Egypt, Arab Rep.	Suriname		New Caledonia
India		El Salvador	Swaziland		Puerto Rico
Indonesia		Estonia	Syrian Arab Republic		Qatar
Kenya		Fiji	Thailand		San Marino
Korea, Dem. Rep.		Gabon	Tonga		Singapore
Kyrgyz Republic		Grenada	Trinidad and Tobago		Slovenia
Lao PDR		Guatemala	Tunisia		Taiwan
Lesotho		Guyana	Turkey		United Arab Emirates
Liberia		Honduras	Turkmenistan		Virgin Islands (U.S.)
Madagascar		Hungary	Ukraine		
Malawi		Iran, Islamic Rep.	Uruguay		
Mali		Iraq	Vanuatu		
Mauritania		Jamaica	Venezuela, RB		
Moldova		Jordan	West Bank and Gaza		
Mongolia		Kazakhstan			
Mozambique		Kiribati			
Myanmar		Latvia			
Nepal		Lebanon			
Nicaragua		Libya			
Niger		Lithuania			
Nigeria		Macedonia, FYR			
Pakistan		Malaysia			
Papua New Guinea		Maldives			
Rwanda		Marshall Islands			
		Mauritius			
		Mayotte			

Based of the World Bank's World Development Indicators 2004 and on their classification.

Table A2. Developing Countries Classification According to Regions

East Asia and Pacific	**Europe and Central Asia**	**Latin America & Caribbean**	**Middle East and North Africa**	**South Asia**	**South Sahara Africa**
American Samoa	Albania	Argentina	Algeria	Afghanistan	Angola
Cambodia	Armenia	Belize	Djibouti	Bangladesh	Benin
China	Azerbaijan	Bolivia	Egypt, Arab Rep.	Bhutan	Botswana
Fiji	Belarus	Brazil	Iran, Islamic Rep.	India	Burkina Faso
Indonesia	Bosnia and Herzegovina	Chile	Iraq	Maldives	Burundi
Kiribati	Bulgaria	Colombia	Jordan	Nepal	Cameroon
Korea, Dem. Rep.	Croatia	Costa Rica	Lebanon	Pakistan	Cape Verde
Lao PDR	Czech Republic	Cuba	Libya	Sri Lanka	Central African Republic
Malaysia	Estonia	Dominica	Morocco		Chad
Marshall Islands	Georgia	Dominican Republic	Oman		Comoros
Micronesia, Fed. Sts.	Hungary	Ecuador	Saudi Arabia		Congo, Dem. Rep.
Mongolia	Kazakhstan	El Salvador	Syrian Arab Republic		Congo, Rep.
Myanmar	Kyrgyz Republic	Grenada	Tunisia		Côte d'Ivoire
Northern Mariana Islands	Latvia	Guadeloupe	West Bank and Gaza		Equatorial Guinea
Palau	Lithuania	Guatemala	Yemen, Rep.		Eritrea
Papua New Guinea	Macedonia, FYR	Guyana			Ethiopia
Philippines	Moldova	Haiti			Gabon
Samoa	Poland	Honduras			Gambia, The
Solomon Islands	Romania	Jamaica			Ghana
Thailand	Russian Federation	Mexico			Guinea
Timor-Leste	Serbia and Montenegro	Nicaragua			Guinea-Bissau
Tonga	Slovak Republic	Panama			Kenya
Vanuatu	Tajikistan	Paraguay			Lesotho
Vietnam	Turkey	Peru			Liberia
	Turkmenistan	St. Kitts and Nevis			Madagascar
	Ukraine	St. Lucia			Malawi
	Uzbekistan	St. Vincent and the Grenadines			Mali
		Suriname			Mauritania
		Trinidad and Tobago			Mauritius
		Uruguay			Mayotte
		Venezuela, RB			Mozambique
					Namibia
					Niger
					Nigeria
					Rwanda
					São Tomé and Principe
					Senegal
					Seychelles
					Sierra Leone
					Somalia
					South Africa
					Sudan
					Swaziland
					Tanzania
					Togo
					Uganda
					Zambia
					Zimbabwe