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Foreign Direct Investment and Trade in the Eastern Caribbean Currency Union

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Abstract

This paper examines the relationship between FDI inflows and trade within the Eastern Caribbean Currency Union. It investigates the channels through which FDI impacts, trade, and the likely impact of such on GDP per capita growth of the ECCU. The paper employs pool cross-sectional regression to examine these relationships over the period 1993 to 2003. Preliminary results indicate that the relationship between FDI inflows and imports is complementary, but substitutive in respect of exports. There is however, a strong bi-directional relationship between FDI inflows and GDP per capita.

Keywords: Foreign direct investment inflows, Trade, Growth and the ECCU.

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[1] The views expressed in this paper are those of the author and do not necessarily reflect the position of the Eastern Caribbean Central Bank (ECCB) or its affiliates. All errors are my own.

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I. INTRODUCTION AND OVERVIEW

Foreign direct investment inflows to developing countries, including the member countries of the Eastern Caribbean Currency union have increased dramatically in recent decades. Research on foreign direct investment (henceforth FDI) and trade in developing countries must address at least two questions. First, what is the relationship between FDI and trade? A study of the relationship between FDI and trade has been a fairly recent phenomenon albeit a contentious issue. Within the ECCU and much of the developing world, there is the view that an influx of FDI increases imports, exploits the host country's natural resources and exported natural resource products but paid too little for the privilege (Lipsey, 1991, pp. 2-3).

The second question has to do with the impact on growth and development that might occur through any relations between FDI and the trade variables, imports and exports. World FDI inflows have grown for the better part of the last decade notwithstanding consecutive declines in 2001 and 2002. Between 1994 and 2002, FDI inflows throughout the world increased at an annual rate of 16.8 per cent. In contrast, between 1995 and 2003 world exports and imports grew by an average of 6.5 per cent and 6.7 per cent, respectively. Meanwhile, the 2004 World Bank Development Indicators reported that world output grew by 3.1 per cent on average over the period 1990 to 2002 (World Bank, 2004, p. 184).

While there is a large body of literature analysing the effect of FDI, there has been a paucity of studies on the relationship between FDI and trade and the resulting impact on growth, if any, in developing countries. On the surface, FDI represents an important part of trade, as it constitutes an injection of foreign capital and technology into the host country. While FDI has been a key component of trade in the past, the jury remains open on its impact on growth.

Chowdhury and Mavrotas (2003) used an innovative econometric methodology for three developing countries and found that growth caused FDI in the case of Chile, while there was a bi-directional relationship in the case of Malaysia and Thailand. The results of a panel data study done by Campos and Kinoshita (2002) indicated that FDI was a factor responsible for growth with such findings being robust to reverse causality tests. Lensink and Morrisey (2001) also obtained similar results.

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Studies on the impact on growth at the micro level suggest that FDI does not ignite growth and neither is there evidence of spillover benefits from the foreign-owned to domestically owned firms (Carkovic and Levine, 2002, pg. 1). At the macro-level, a preponderance of the results favours a positive role of FDI on growth. Carkovic and Levine (2002) warn against taking these results too seriously. Their comments have focused on potential problems with the models used in these studies: simultaneity bias, country-specific effects, and the routine use of lagged variables in growth regressions. To be fair, however, empirical work in macroeconomics has yet to address some of the issues with any fair degree of satisfaction.

Principally, the relationship that exists between FDI inflows and trade may be either positive or negative. According to Blomström and Kokko (1997), FDI is multi-dimensional in nature and its impact will depend on numerous factors, not to mention the outcome will be different for both investors in the participating countries and those from the outside. For instance, the character of the FDI, vertical and horizontal or import substituting and export-oriented are not likely to have the same outcomes. In general, an overall positive relationship is expected, albeit this could be influenced by critical factors such as human capital base and the level of productivity (Chowdhury and Mavrotas, 2003). In cases where FDI is a response to trade barriers then inflows of FDI and imports are likely to be substitutes. This is particularly the case when the motive of FDI is to produce abroad commodities and services that were previously undertaken in the country making the investment. Where the motive for FDI is to take advantage of factors of production in the form of productivity, lower wages and transportation costs then FDI and imports will produce a complimentary relationship (Alguacil and Orts, 2001).

The objective of this paper is to assess empirically the impact of FDI on trade and growth in the ECCU member countries over the period 1993 to 2003. Using a pooled cross-section regression technique. The paper proceeds as follows. Section II looks at the literature on FDI and trade. Section III discusses recent performance of FDI flows to the ECCU while Section IV focuses on foreign direct investment and trade. Section V discusses the theoretical framework, while Section VI presents the empirical results of the data. In Section VII we undertake a sensitivity analysis of the sample, and Section VIII provides a summary and conclusion.

According to Hassett (2003), a country that receives such inflows of capital relative to another receives a welfare gain that is associated with this trade. Thereafter, the relationship becomes a little more complex since FDI also supplies the means, other than trade, through which

multinationals assure control over international production. Consequently, FDI may create (complement) trade or it can substitute it (Forte, 2004). Recent empirical studies find a complementarity relationship between FDI and trade (Sousa and Lochard, 2004; Cuadros et al, 2004). Alguacil and Orts (2001) analysed the relationship between FDI and imports in Spain using a time series approach and likewise found a complementary relationship. For many developing countries and economies in transition, FDI have enabled and indeed strengthened the process of integration with the rest of the world's economy. It is through trade expansion and liberalization that FDI flows have engaged a multitude of multinational corporations.

In the 18th century, agriculture was the dominant sector and particularly so in the developing countries. Later in the mid-20th century manufacturing overtook this role and so FDI took a slightly different form. Today, the service sector has become the largest and possibly the fastest growing throughout the world. Trade has facilitated this process of FDI flows. Is the opposite true – that FDI in some way facilitates trade?

II. Literature Review

The literature on FDI and trade is relatively abundant. Yet, the debate on FDI and trade continues to conjure up emotions to an extent that often impedes a balanced approach to the topic. A preponderance of the literature focuses on the determinants of FDI and its influence on economic growth and development and its relation to trade is often encompassed within this debate. Julius (1991) describes two kinds of FDI. The first is where foreigners build up productive assets from scratch or they purchase the assets. The second type of FDI relates to those assets already in existence but has been purchased by foreigners presumably because they can be better utilized.

Marchant et al (2004) suggest two relationships between FDI and exports. Either FDI is a substitute for exports or both FDI and exports complement each other. The substitutive effect causes exports to decline as FDI increases while the complementary effect results in FDI and exports moving in line with each other. Graham (1997) favours the complementary relationship between FDI and exports to the extent that FDI acts as a stimulant in creating a larger production base for exports compared with production and exports being solely undertaken by the home market.

Feenstra (1998) proposed that decisions about where to invest depend not only on cost conditions existing in the host territory but also on the extent of preferential access to the local market of the host country. These factors he contends depended on the amount of trade restrictions

and other policies in existence. In fact, Feenstra believed that FDI inflows are a good thing and that it is a fallacy to think that FDI is harmful if it increases where there are trade restrictions. The conditions under which FDI is harmful to a host country are:

- ✓ Where trade restrictions take the form of tariffs
- ✓ Where FDI does not lead to any increase in wages, knowledge spillovers or technological transfer, and
- ✓ Where FDI reduces the importation of the good without necessarily eliminating it.

Empirical results remain inconclusive on the relation between FDI and trade. Turner (1990) in a study of developing countries arrived at the conclusion that a positive association exists between FDI flows and exports. This was mainly attributable to the fact that most of the FDI was export oriented in nature. Williams and Williams (1999) in an earlier study on the economies of the ECCU found a positive relationship between FDI and imports although the degree of significance varied throughout the sample period under study. Over the entire sample taken as a whole, the relationship was statistically insignificant. However, the relationship between FDI and exports revealed an unexpected sign that was statistically significant. Campbell (2001) in a study of the Barbados economy deduced that a positive relationship exists between FDI and exports, presumably due to the positive impact FDI inflows had on the current account.

III. Foreign Direct Investment in the Eastern Caribbean Currency Union

Foreign direct investment (FDI) refers to capital, usually in the form of equity, that is held by investors from one country or region in a business entity operating in a different geographical confine. Usually these investors are corporations, which hold substantial holdings of investments in the business. Krugman and Obstfeld (2003, p. 175) define FDI as capital either used to acquire control of a home company or invested in a company that foreigners already controlled.

For balance of payments purposes, the IMF defines a direct investment as the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in an enterprise resident in another economy[2] (IMF, 1993, pg 86). The idea of a foreign direct investment is that it represents the acquisition of 10 per cent or more of the assets of a

[2]Within this context, the resident entity is the direct investor and the enterprise is the direct investment enterprise.

foreign enterprise[3].

Over the past decade, the ECCU has experienced a gradual increase in FDI inflows. A similar trend was evident beginning in the late 1980s, where according to Williams and Williams (1999), FDI inflows increased from 6.4 per cent of GDP in 1986 to approximately 10.1 per cent of GDP in 1995. Traditionally, most of the FDI in the currency union originated from a few countries, mainly the US, Canada and the UK. A preponderance of FDI inflows is used to finance hotel development, telecommunications, transportation facilities and other infrastructure mainly associated with tourism development in the ECCU. FDI in the ECCU is primarily concentrated in the tourism and manufacturing sectors.

The trends regarding the ratios of FDI to GDP for the period 1993 to 2003 for the ECCU member countries are shown in Table 1, which also includes those of Barbados, Jamaica and Trinidad and Tobago and China for comparative purposes. The ECCU as a whole has been relatively successful in attracting FDI inflows. During the period under review inflows of FDI doubled increasing from 7.3 per cent of GDP in 1993 to 14.7 percent of GDP in 2003. In absolute terms, FDI more than tripled from EC$386.1 million to EC$1.2 billion. Throughout the period, FDI relative to GDP has shown a steady increase, except for 1996 and 2001 when declines were recorded. The fall in the ratios of FDI to GDP in 1996 represented in the main a phase of consolidation, following particularly high investments in manufacturing in Dominica in the previous year (Williams and Williams, 1999, p.135). The decline in 2001 was largely associated with declines in the service sectors and to a lesser extent in the manufacturing sector resulting from a slowdown in economic activity in the USA, the major source of FDI.

Within the ECCU territories, FDI as a share of GDP was highest for Anguilla and lowest in Antigua and Barbuda. The largest share of FDI in each of the countries occurred after 1995. In terms of volatility measured by the standard deviation (see Appendix I), FDI was most volatile in Anguilla and least so in Antigua and Barbuda. Of the other countries outside the ECCU, FDI as a share of GDP was highest in Trinidad and Tobago, which also display the greatest volatility as measured by the standard deviation. The relatively impressive performance of FDI in the region

[3] In practice, this phenomenon is far from straightforward. In general, where the holding is less than 10 per cent, the investment is considered as a portfolio investment. Notwithstanding, the 10 per cent criterion is not fixed and it is possible for a direct investor to own less than this 10 per cent but has an effective voice in the management of the enterprise. It is also possible for an investor to have more than 10 per cent ownership of the enterprise but does not have an effective voice in management. In this case, the foreign direct investment phenomenon does not

may be attributed to a number of factors. We posit two such reasons. The first may have been associated with uncertainty among foreign investors following the Asian currency crisis, which resulted in a greater inclination by investors to invest in other parts of the world. Secondly, it could have been as a result of the reforms being implemented in other developing countries including the ECCU during the period.

Table 1
Gross Direct Foreign Investment Inflows
(In per cent of GDP at Market Prices)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Anguilla	10.1	15.3	24.0	43.4	24.3	28.4	35.9	39.8	31.5	33.8	27.8
Antigua and Barbuda	3.4	5.0	6.8	4.2	4.2	4.4	6.8	7.8	8.2	7.0	12.2
Dominica	6.6	10.6	24.9	7.9	9.0	3.5	7.2	5.0	5.8	4.7	7.7
Grenada	8.6	8.1	8.5	6.3	11.2	14.1	11.3	9.6	15.4	15.0	19.3
Montserrat	8.4	11.6	5.6	0.1	6.3	6.8	23.4	10.1	2.9	5.2	6.4
St Kitts and Nevis	7.3	7.8	10.1	15.4	9.4	11.6	19.5	30.1	26.4	23.1	18.5
St. Lucia	7.2	6.6	6.4	3.7	8.9	13.6	12.9	8.5	9.6	8.2	12.6
St. Vincent and the Grenadines	13.2	19.7	11.5	15.3	31.6	28.1	17.2	11.3	6.1	10.3	14.6
ECCU	7.3	8.9	10.2	8.5	11.4	12.5	13.0	12.2	12.1	11.6	14.5
Barbados	0.8	1.1	0.9	1.0	0.9	0.9	1.0	1.0	0.9	0.9	n.a
Jamaica	1.6	2.7	2.5	2.8	2.7	4.8	6.8	5.9	7.6	5.7	n.a
Trinidad and Tobago	8.3	10.4	5.6	6.2	17.4	12.1	9.4	8.3	9.2	n.a	n.a
China	4.6	6.2	5.1	4.9	4.9	4.6	3.9	3.6	3.7	4.0	n.a

Source: ECCB, IMF CD-ROM, author's calculations

n.a. = not available

hold.

In Table 2, we show the composition of FDI flows to the ECCU for the period 1997 to 2002. "Other investments" which include the inflow of new resources arising from borrowings from parent companies or inter-company debt transfers accounted for almost 50.0 per cent of the flows to the region. It was quite possible that some portion of this amount belonged to the other categories, as there are instances where the data could not be properly disaggregated. Inflows in the form of equity accounted for 20.6 per cent of the total, while re-invested earnings held a share of 19.0 per cent of the total. Equity inflows have been for the most part associated with developments in the tourism industry. Reinvested were largely associated with the telecommunications industry and the hotel industry. Inflows attributable to land sales recorded the lowest share, 13.9 per cent.

An analysis of FDI by sectoral destination (see Table 3) shows that FDI flows to the ECCU as a whole were primarily channeled to the tourism industry for the purposes of hotel construction and related projects such as golf course development. The largest contribution was recorded occurred in 1999, associated with the construction of major resorts in some of the islands, in particular St. Kitts and Nevis.

With notable exceptions, the pattern is similar throughout most of the member countries of

Table 2
ECCU Foreign Direct Investment by Composition
(in millions of Eastern Caribbean Dollars)

Composition	1997	1998	1999	2000	2001	2002	1997 - 2002 Value	1997 - 2002 Share (%)
Equity	112.0	54.6	313.9	171.1	207.2	224.1	1,082.8	20.6
Reinvested Earnings	148.4	158.8	172.9	170.4	185.8	166.3	1,002.6	19.0
Land Sales	112.5	79.6	92.5	134.5	171.1	143.4	733.7	13.9
Other	372.5	586.5	381.6	446.0	270.3	392.5	2,449.4	46.5
Total	**745.5**	**879.5**	**960.9**	**922.0**	**834.5**	**926.2**	**5,268.6**	**100.0**

Source: ECCB

the ECCU. In Antigua and Barbuda, construction and commercial activities have accounted for 54.9 per cent and 23.5 per cent of FDI inflows respectively in 1997, respectively. In 2000, FDI inflows

for commercial activities accounted for reached a share of 35 per cent of total. In Dominica, where the contribution to tourism was relatively low, FDI inflows supported the development of manufacturing and agri-business. In 1998 and 1999, the majority of FDI inflows to Grenada were chanelled into education used for education and sporting facilities.

Table 3
ECCU Foreign Direct Investment by Sector 1/
(Per cent of Total)

Sectors	1997	1998	1999	2000	2001	2002
Tourism	60.1	74.8	87.5	68.4	70.4	69.0
Manufacturing	1.5	0.2	0.4	1.3	2.8	0.4
Transportation	--	--	0.4	--	--	--
Utilities	0.4	9.0	--	--	--	5.7
Construction	2.9	0.9	--	--	--	--
Sporting	2.1	6.2	1.2	--	--	--
Medical	--	--	--	--	0.4	0.4
Financial	--	--	--	--	0.4	1.3
Banking and Insurance	1.4	--	0.8	0.3	--	--
Commercial	2.1	0.1	--	5.2	1.3	--
Technology	--	1.3	--	--	2.4	1.5
Petroleum	1.5	0.7	0.3	--	--	--
Education	--	3.1	2.0	--	--	--
Agriculture	--	--	2.2	0.7	0.4	0.7
Other	27.9	3.7	5.2	24.2	22.0	21.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: ECCB

1/ Includes only data on Equity and Other

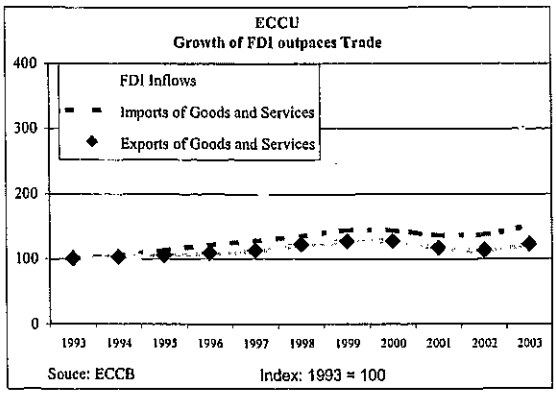
IV. Foreign Direct Investment and Trade

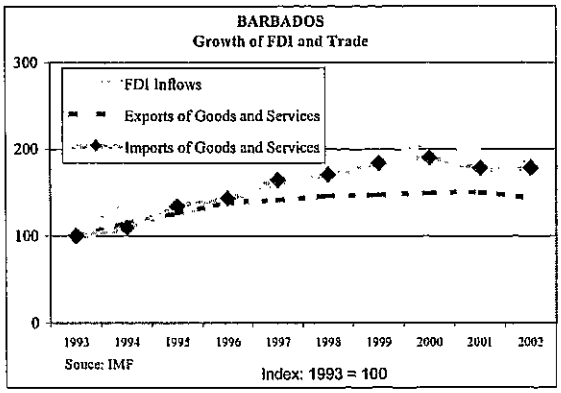
Figure 1 illustrates the performance of FDI flows, imports and exports of goods and services for five regions: the ECCU, Jamaica, Barbados, Trinidad and Tobago and China. The year 1993 was used as the base index. Appendix 2 presents the same information for the ECCU member countries. It is worth noting that the growth in FDI flows to the ECCU was much higher compared with rates in non-ECCU countries with the exception of Jamaica. This observation might be partly attributed to the ECCU's early stages of development of FDI relative to the other countries. Within the ECCU, all three aggregate measures show relatively strong growth in the latter half of the 1990s with FDI demonstrating the largest rate of increase. Neither imports nor exports demonstrated the same level of growth during the entire period. Of the individual countries of the ECCU a similar pattern was evident in Anguilla, Antigua and Barbuda, St Kitts and Nevis and St Lucia – major tourist destinations within the currency union. A similar picture was observed for Grenada except for the period 1999 to 2001 when FDI and trade moved in opposite directions. In the other territories the performance of FDI has not been as distinct. In Dominica, FDI growth reached its highest level in 1995, reflecting the significant inflows of equity capital associated with hotel and tourism development. Thereafter, the island experienced a contraction in inflows in 1998 and 2002. Also, both exports and imports showed lower growth in 2000 to 2003. In Montserrat, exogenous factors such as hurricanes and volcanic activities were responsible for the erratic trend observed. From 2001, FDI and imports have moved in opposite direction to exports. St Vincent and the Grenadines experienced slower growth in FDI since 1998 somewhat similar to Dominica.

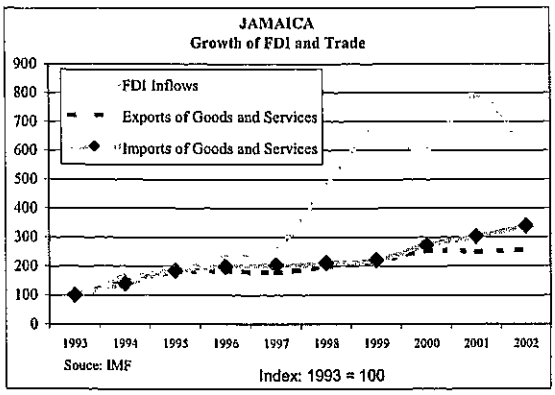
In all the cases considered, FDI and the trade variables seem to follow a discernible upward trend. Such visual analysis may suggest that FDI and trade provide a complimentary relationship rather than one of substitution.

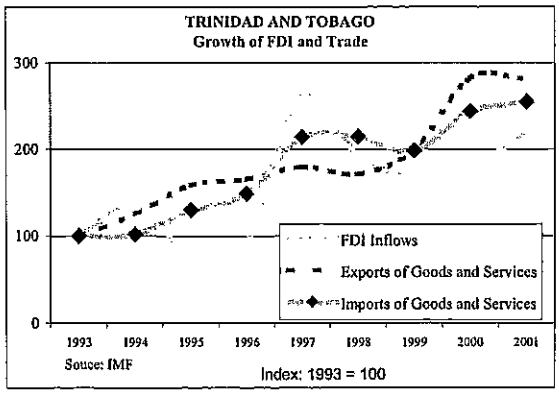
Foreign Direct Investment and Trade in the Eastern Caribbean Currency Union

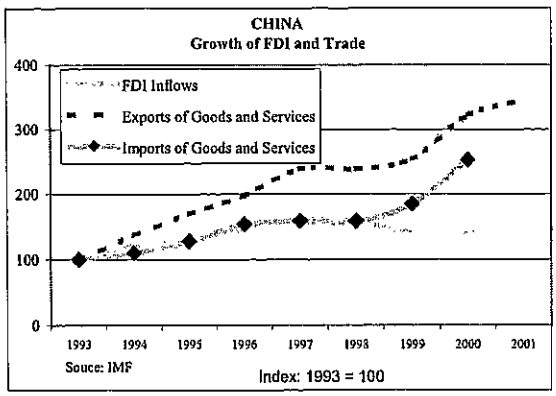
Figure 1:











V. THEORETICAL FRAMEWORK

A. *Theoretical Model*

In this framework of analysis, we use pooled cross-section regression analysis to investigate empirically the relationship between FDI inflows and trade variables, namely imports and exports within the eight member countries[4] of the currency union. As mentioned earlier, many years of research investigating the relationship between FDI remains inconclusive. The literature provides for a large number of determinants of FDI inflows, exports and imports. It is not the intent of the paper to provide a full review of the models of FDI but to capture the pertinent aspects related to our investigation.

In Section I we discussed the *a priori* causality relationships between FDI, exports and imports. GDP per capita (GDP) is one of the variables we used in the model to reflect market size, although it may be regarded as an indicator of the level of development of a market (Kolstad and Villanger, 2004, p.7). The real exchange rate (RER) is useful as a gauge for the price of nontradable goods in relation to import prices. It is also expected to be inversely related to exports and directly related to FDI (Marchant et al, 2004, p .6). The idea is that a strong currency relative to other currencies makes exports more expensive abroad thus lowering domestic exports. Meanwhile, a strong domestic currency increases the purchasing power abroad and is likely to make FDI more attractive. Inflation is seen as a good indicator of macroeconomic stability.

As a proxy for openness, we use the sum of imports and exports as a percentage of GDP (IMPEXP) that is the standard measure of trade openness in the literature (Kolstad and Villanger, 2004, p.4). To assess the degree of involvement of government in the public sector, we used government consumption as a percent of GDP (GOV). *A priori,* we would think that a reduction in government consumption via privatization would result in increased FDI (Flexner, 2000, p. 15). World interest rates (WIR) is expected to show an inverse relationship to FDI as higher interest rates increase the cost of foreign investors in the host country and this is likely to have a negative impact on the level of FDI. The growth in world GDP (WGDP) is a proxy for foreign income and is expected to be directly related to FDI as well as exports.

Based on some of these theoretical findings, we obtained the following set of simultaneous equations:

[4] These countries are Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines.

$$FDI_{it} = \alpha_0 + \alpha_1 IMP_{it} + \alpha_2 EXP_{it} + \alpha_3 IMPEXP_{it} + \alpha_4 RER_{it} + \alpha_5 GDP_{it} + \alpha_6 GOV_{it} + \alpha_7 INFL_{it} + \alpha_8 WIR_{it} + \alpha_9 WGDP_{it} + \alpha_{10} DEBT_{it} + \alpha_{11} FDI_{i,t-1} + \varepsilon_{it} \quad (1)$$

$$EXP_{it} = \beta_0 + \beta_1 EXP_{i,t-1} + \beta_2 RER_{it} + \beta_3 GDP_{it} + \beta_4 WGDP_{it} + \beta_5 FDI_{i,t} + \mu_{it} \quad (2)$$

$$IMP_{it} = \omega_0 + \omega_1 IMP_{i,t-1} + \omega_4 EXP_{it} + \omega_3 RER_{it} + \omega_4 GDP_{it} + \omega_5 FDI_{it} + \eta_{it} \quad (3)$$

$$GDP_{it} = \delta_0 + \delta_1 FDI_{i,t-1} + \delta_2 EXP_{it} + \delta_3 WGDP_{it} + \delta_4 GOV_{it} + \delta_5 DEBT_{it} + \delta_6 GDP_{i,t-1} + \psi_{it} \quad (4)$$

where:

i denotes a country and t denotes a time period. ε_{ij}, μ_{it}, η_{it} and ψ_{it} represent the unexplained random or stochastic errors. All other variables are defined in Table 4.

B. *Data Analysis and Estimation Procedure*

The regressions consist of annual observations which covered the period 1993 to 2003. Table 4 presents a description of the variables used in the model and the source of the data. As a means of correcting for country size, we divided FDI flows by population size instead of GDP, which is usually the case. Kolstad and Villanger (2004) saw this approach as normal. All the variables were measured in natural logarithms. Therefore, the estimated coefficients measure elasticity. STATA was the econometric software used in the study.

TABLE 4

DESCRIPTION OF THE DATA

SYMBOL	DESCRIPTION	SOURCE
FDI	Foreign Direct Inflows per capita[5]	ECCB, IMF CD-ROM
GDP	Domestic Real GDP per capita	ECCB, IMF CD-ROM
IMP	Imports of goods and services to GDP	ECCB, IMF CD-ROM
RER	Real Exchange Rate (EC$ per US$)[6]	ECCB and IMF IFS Statistics website
EXP	Exports of goods and services to GDP	ECCB, IMF CD-ROM
IMPEXP	Imports plus Exports of goods and services to GDP	ECCB, IMF CD-ROM
INFL	Inflation rates (at end of period)[7]	ECCB, IMF CD-ROM
GOV	Central Government expenditure to GDP	ECCB
DEBT	External Debt to GDP	ECCB, IMF CD-ROM, Planning Institute of Jamaica, Economic Bulletin of Central Bank of Trinidad and Tobago
WIR	World interest rates[8]	IMF[9]
WGDP	World Growth in GDP[10]	WEO

Appendix 3A shows the correlation matrix for the economies of the ECCU. Notice that the largest correlation coefficients involving FDI inflows are with the index for GDP, imports and the index for openness in descending order. The highest correlation coefficients of imports are openness, government expenditure and exports. It is worth noting that the most important correlation coefficient of exports in our matrix is openness. The correlation coefficients involving economic growth (GDP per capita) are with imports and openness. In Appendix 3B we exclude Montserrat from the analysis. The coefficients involving FDI are largest and indeed stronger for imports, GDP per capita and openness. Openness and exports show the largest correlation with imports, while the most important correlation coefficient for exports remains the index of openness. For our growth

[5]Mid-year population estimates were used to calculate items in per capita terms.

[6] Calculated as follows: (nominal exchange rate/US consumer prices)*domestic consumer prices

[7] Period average for non-ECCU countries

[8] The US Federal funds rate used.

[9] Data for 1993 was obtained from www.federalreserve.gov/fomc/fundrate.htm. Rates appear to have remained unchanged in 1993 relative to 1992. Hence, we used the data for 1992.

[10]This was calculated using the growth in OECD countries.

variable, the correlation coefficients are largest for openness, exports and imports. Our exclusion of Montserrat is influenced by our a priori belief that the island experienced a number of severe exogenous shocks that were at least in part responsible for the erratic behaviour amongst FDI and the trade variables.

In Figures 2, 3 and 4, we present the cross plots of FDI inflows against imports, exports and GDP per capita (GDP), respectively for the period 1993 to 2003 for the ECCU economies with and without Montserrat. Included in each graph are the lines of best fit and the 95 per cent confidence band represented by the shaded region. Considering Figures 2A and 2B, we see there is an unambiguous link between FDI inflows and imports into the currency union where the link appears to be stronger in the latter representation when we exclude Montserrat. The relationship is similar in Figures 4A and 4B which depict a discernible positive trend in the relation between FDI inflows and GDP per capita. The positive trend is less pronounced in the link between FDI inflows and exports as seen in Figures 3A and 3B. We are mindful however, that this correlation might be driven by the presence of common determinants, leading to an erroneous interpretation of a complimentary relationship. To help avoid this spurious result, we included a number of other variables apart from imports, exports and GDP per capita.

The estimation procedure used is iterative three-stage least squares, which is able to correct for heteroscedasticity across country equations and exploit contemporaneous correlated disturbances[11] (Fry et al, 1995, pp. 14-16). The instruments are the lagged dependent variables, the world real interest rate, lagged growth rates, lagged imports plus exports as a percentage of GDP and the growth of output in OECD countries.

[11] This means that each pair of cases has their own covariance.

FIGURE 2A: FDI Flows against Imports in the ECCU Countries by Years (1993-2003)

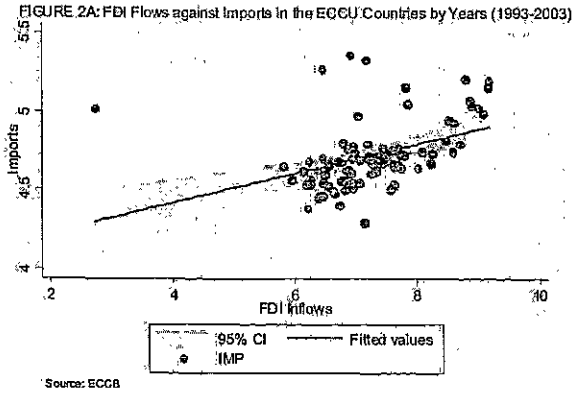


FIGURE 2B: FDI Flows against Imports in the ECCU Countries by Years (1993-2003) (Montserrat excluded)

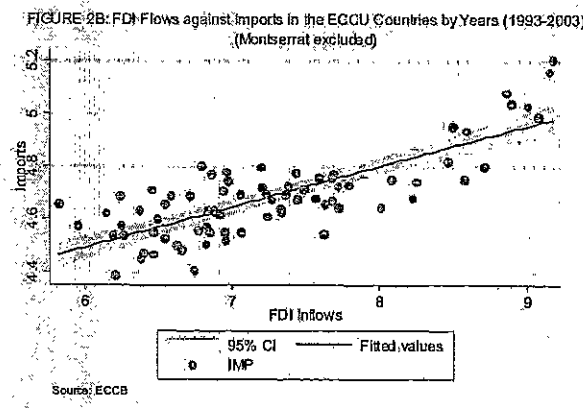


FIGURE 3A: FDI Flows against Exports in the ECCU Countries by Years (1993-2003)

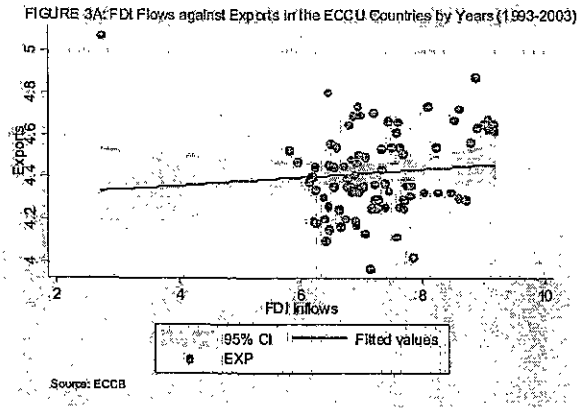


FIGURE 3B: FDI Flows against Exports in the ECCU Countries by Years (1993-2003) (Montserrat excluded)

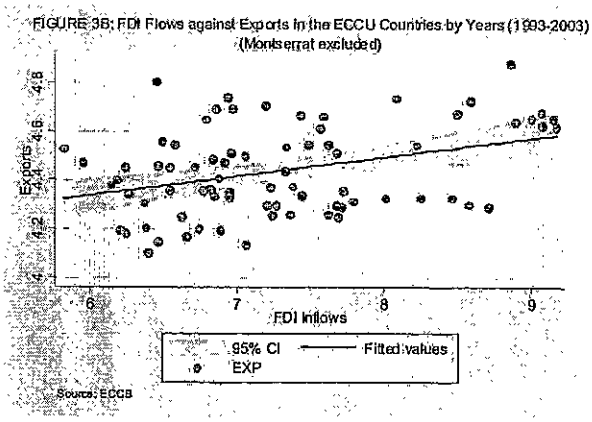


FIGURE 4A: FDI Flows against Growth in the ECCU Countries by Years (1993-2003)

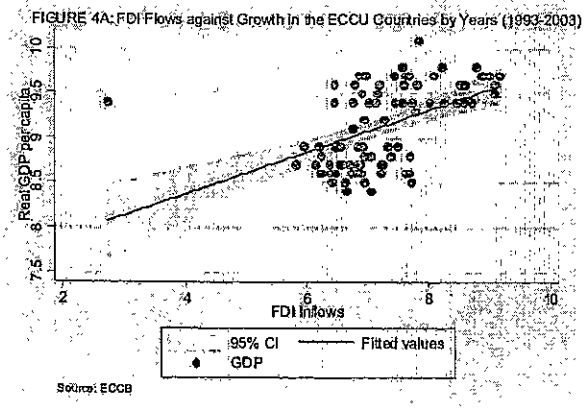
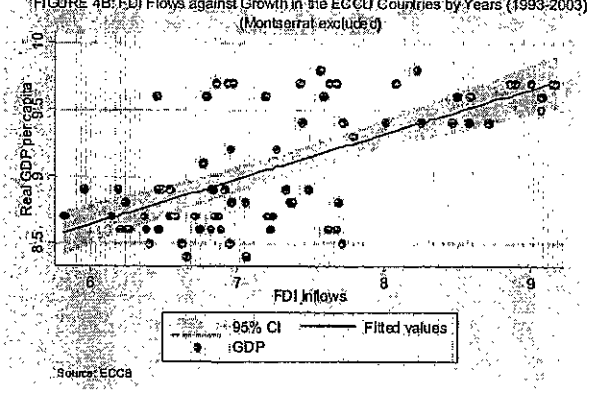


FIGURE 4B: FDI Flows against Growth in the ECCU Countries by Years (1993-2003) (Montserrat excluded)



VI. Empirical Results and Analysis

A. *Empirical Results for FDI*

Let us now turn to our core results, which we show in Table 5. Empirical FDI results show that exports and imports are statistically significant and positively influence FDI. Indeed, these results seem to demonstrate a complementary relationship between FDI and trade in the currency union. A 1% increase in exports is associated with a 14.4% increase in FDI, ceteris paribus. Mohamed (2003) also found that FDI had a positive effect on exports in a study on four developing countries: Egypt, Morocco, Tunisia and Turkey. Similarly, an increase in imports was associated with a 29.4% increase in FDI. Goldberg and Klein (1997) arrived at a similar finding when they investigated the impact of FDI on imports for Latin America and Southeast Asian countries[12]. They concluded that increased trade in intermediate inputs from source countries supports FDI inflows.

With respect to output (GDP) in the currency union, there was a positive relation between FDI and GDP per capita and the result was statistically significant. Although the literature remains inconclusive on a definite association, Lim (2001) noted that the prevailing view supports a positive correlation between FDI inflows and GDP[13]. Our results indicate that a 1% increase in real per capita GDP is associated with a 1.0% increase in FDI inflows.

Exchange rates were found to positively influence FDI but not statistically significant. Meanwhile, the coefficients on world GDP growth (WGDP) and lagged values of FDI yielded the expected positive signs with results that were statistically significant. The regression results show a significantly negative effect between government spending as a percent of GDP and FDI inflows. A 1% increase in government expenditure was associated with 1.3 % decline in FDI inflows, ceteris paribus. In part, these results emphasize the importance of credible and permanent fiscal discipline in managing the public sector. The coefficients on inflation and the external debt to GDP ratio, though of the expected sign, were not statistically significant.

World interest rates showed a negative relationship with FDI and were significant at the 5% level. Holding all other factors constant, a 1% increase in world interest rates was associated with a reduction of FDI inflows by 0.3%, ceteris paribus. Also, the results show that the coefficient on the

[12] A sample of Latin American countries alone yielded no significant results. In fact, imports were unresponsive to FDI.

[13] Alfaro (2003) using cross-country regressions on a wide range of countries found that the relationship between FDI and growth was positive for the manufacturing sector, but negative in the primary sector. FDI flows to the service sector had a positive effect on growth but the results were not significant. See also Calvo and Blanca

degree of openness (IMPEXP) shows a negative relationship that is highly statistically significant. In part, this openness reflects vulnerability to external shocks.

B. *Empirical results for Exports*

In regards to the FDI-export relationship, empirical results for the export equation did not support FDI results. Specifically, the results show that FDI negatively influence exports and is highly significant at the 1% level. The parameter estimate indicates that a 1% increase in FDI inflows was associated with a 0.1% decrease in exports, ceteris paribus. Based on the empirical results, FDI appears to act as a substitute for exports and suggests that FDI inflows have played a significant influence in decreasing exports. The findings somewhat contradict the general theory[14] (Pacheco-López, 2004) on the relationship between FDI and exports as well as the preponderance of empirical studies (Cuadros et al, 2004).

Why do we expect FDI to have a positive impact on exports? FDI inflows are likely to impact exports through improvements in technology, efficiency, productivity and increased domestic investments. Within the context of the currency union, we expect a positive relation perhaps because more than 60 per cent of FDI goes to tourism thereby adding capacity. How then do we explain a negative relationship between FDI and exports? Perhaps this is due to a high a level of price discounting over the period studied – terms of trade effect. Perhaps it might be due to overcapacity in the tourism industry or low room occupancy or both? Another possible factor might have to do with the duration of construction and the final initiative of a large hotel project that can sometimes take up to five years to completion – two to three years for construction and another one to two years for training and so forth. As such the effect of FDI inflows may not be felt until some years after. Or is it a case that the investment flows are going into the non-traded sectors?

Empirical findings for output in the currency union were of the correct sign and statistically significant. The results in Table 5 indicate that a 1% increase in output was associated with a 0.2% increase in exports of goods and services. Empirical results show that real exchange rate and growth in industrialized countries were of the expected sign although in the former the results were not statistically significant.

(2003) and Wada and Graham (2001).

[14] The basic idea is that exports will stimulate FDI inflows to the host country. This increase in FDI flows are will encourage further exports.

TABLE 5: REGRESSION RESULTS OF FDI FLOWS, EXPORTS, IMPORTS AND OUTPUT
SAMPLE: ALL ECCU COUNTRIES

Variables	FDI	IMPORTS (IMP)	EXPORTS (EXP)	GDP PER CAPITA (GDP)
Constant	-179.91 ***	0.92 *	0.31	-7.44 ***
	(6.96)	(1.63)	(0.53)	(6.68)
FDI	-	0.04 **	-0.06 ***	0.09 ***
		(1.99)	(3.34)	(3.59)
IMP	29.40 ***	-	-	-
	(7.20)			
EXP	14.38 ***	0.12	-	0.39 ***
	(5.56)	(1.41)		(2.94)
IMPEXP	-42.63 ***	-	-	-
	(6.62)			
RER	0.73	-0.62	0.65	-
	(0.36)	(1.36)	(1.31)	
GDP	1.05 ***	0.09 *	0.19 ***	-
	(5.17)	(1.79)	(4.18)	
GOV	-1.26 ***	-	-	0.12 *
	(3.52)			(1.85)
DEBT	0.20	-	-	-0.01
	(1.46)			(0.23)
INFL	-0.11	-	-	-
	(1.34)			
WIR	-0.31 **	-	-	-
	(2.32)			
WGDP	0.44	-	0.10 **	0.08
	(2.29)		(2.20)	(1.31)
$FDI_{(t-1)}$	0.20 **	-	-	-
	(2.55)			
$IMP_{(t-1)}$	-	0.59 ***	-	-
		(7.03)		
$EXP_{(t-1)}$	-	-	0.47 ***	-
			(5.26)	
$GDP_{(t-1)}$	-	-	-	6.45 ***
				(10.62)
Adjusted R^2	0.73	0.65	0.49	0.83
Number of observations	77	77	77	77

Note:
t-statistics appear in parentheses for each variable where:
* = significant at the 10% level
** = significant at the 5% level
*** = significant at the 1% level

C. *Empirical results for Imports*

In the import equation, the estimated coefficient of FDI inflows yielded a positive sign, which was statistically significant. The results indicate that a 1% increase in FDI inflows was associated with a 0.04% increase in imports. Therefore, this result provides statistical evidence of a bi-directional relation between imports and FDI. Meanwhile, domestic output had a positive and statistically significant impact on imports, ceteris paribus. A 1% increase in output per capita was associated with a 0.1% increase in imports, holding other variables constant. The data also show that a depreciation (more foreign currency per EC dollar) of the exchange rate had a negative impact on imports, albeit the effect was not statistically significant. This result was consistent with those found by Williams and Williams (1999, p.139).

D. *Empirical results for Output*

In the output equation, all variables take on their expected sign. Our results indicate that FDI inflows have a positive and statistically significant impact on real per capita GDP in the currency union. With a 1% increase in FDI inflows, per capita GDP in the region increases by 0.1%, ceteris paribus. The findings are consistent with those of Chowdhury and Mavrotas (2003) who found a bi-directional relationship between FDI and GDP. The regressions show a positive and significant effect between government spending and per capita GDP. However, the relationship between debt to GDP and output per capita is negative but not statistically significant.

VII. Sensitivity Analysis of the Sample

In the previous section we show that for the ECCU region as a whole, the impact of FDI on imports, exports and growth was statistically significant and positive. We also found a bi-directional relationship between FDI inflows and imports, and FDI inflows and growth. How robust are these results? There are at least four important concerns in this respect. The first concerns the possible biases in our estimates due to omitted variables. FDI may be associated with other important variables such as domestic investment, expectations, governance and domestic financial development. Also, a combination of variables is important, that is, interaction terms. For example, it maybe the case that an interaction term between FDI and imports might influence exports whereas FDI on its own might not. The second concern is how do we account for the impact of exogenous shock such

as hurricanes, volcanic eruptions and terrorism, which occurred during the period investigated?[15] It may be possible that in these periods FDI inflows were mainly used for replacing old capital stock, and not additions to the existing stock. If this were the case, then new investments would not necessarily result in greater exports[16]. Thirdly, how does the results vary over different periods?[17] Our fourth concern has to with the validity and reliability of the main data in our analysis: FDI, exports and imports. Undaunted, we decided nevertheless to check if our results hold for an additional set of countries with various combinations. It is our hope that we will address some of these concerns.

Appendix 4A shows the results after we run the estimation from the sample of ECCU countries excluding Montserrat[18]. Appendix 4B shows the estimation results for the entire ECCU territories along with three other Caribbean countries: Jamaica, Barbados and Trinidad and Tobago. Appendix 4C illustrates the results of the estimation after Montserrat is excluded from the sample of all the countries. In Appendix 4D Trinidad and Tobago is excluded from the sample on the assumption that a high proportion of FDI inflows to that country goes into its primary sector, as opposed to the services sector which attracts a relatively significant amount of FDI in most of the countries in the sample.

Our results appear quite robust to sample modifications. It is important to note that when the other countries are included with the ECCU, with and without Montserrat and Trinidad and Tobago, our results indicate that FDI has a negative impact on growth. These results are shown in Appendices 4A, 4B, 4C and 4D. In each case the results are statistically significant. There may be several explanations for this seemingly perverse result. It is likely that the period of study represented an exceptional case compared to what one would normally expect. Many of the countries in the Caribbean underwent some form of structural adjustment to their economies in the late 1980s, the effects of which may have lingered into the 1990s. The validity of the data also comes into question.

[15] With access to a longer data set and additional information, we can overcome this with the use of dummy variables to indicate periods when there were exogenous shocks.

[16] The construction of the Marriott hotel in St Kitts and the closure of the Jack Tar hotel might be such an example.

[17] At the time of writing, data preceding our sample period was being collected.

[18] During this period of study, Montserrat had undergone at least two major volcanic eruptions and suffered extensive damages from at least one major hurricane.

VIII. Summary and Conclusions

Historically, FDI flows to the currency union have largely originated from the United States, concentrated in the services sector and to a lesser extent in manufacturing. Tourism accounts for more than two-thirds of the services sector-oriented inflows. Throughout the last decade inflows to the currency union have been steadily increasing notwithstanding major international turbulences.

In this paper, we have tried to infer the economic impact of FDI in the Eastern Caribbean currency union. This is done by using a pooled cross-section analysis of data from the member countries of the ECCU to estimate the impact of FDI inflows on trade variables (imports and exports) and on GDP per capita.

The empirical evidence suggests that FDI has a positive impact on imports and vice versa. The results imply that a complimentary relation exists between the two variables. The relationship is also bi-directional. Similarly, exports do have a positive impact on FDI flows and this is highly significant. Our results also indicate a bi-directional relationship between FDI flows and GDP per capita in the region, the policy implications of which should not be overlooked. The impact of FDI inflow on exports is found to be negative over the sample period. One such explanation according to Pacheco-López (2004) is that not much of a linkage takes place between FDI and local industries. The high import content of FDI flows has tended to weaken local industries and has often led to closure of some of these firms with the potential for weakening the export base. This has been the case to some extent in the manufacturing sector.

These results provide some support for more liberal policies towards FDI inflows. However, it should be remembered that FDI flows are not beneficial under all conditions. There is a notion that tight policies towards FDI result in lack of competition and high import tariffs, which indirectly leads to excessive profits to foreign direct investors. This can restrict growth. At the same time, too much liberalisation may lead to excessive tax concessions, access for FDI to some of the more vulnerable or non-competitive areas of the economy which can have negative consequences for growth. The quality of the flows of FDI is equally or even more important than the quantity. Therefore it is important that the region negotiate vigorously to ensure that it minimizes or eliminates unreasonable concessions, as implicitly implied under the Multilateral Investment Agreement (MIA) under the WTO 2000[19].

[19] According to Das (2003), former director of UNCTAD's trade program, the basic tenets of the MIA is that it gives full rights for foreign investors to invest and establish themselves in all sectors (excluding perhaps,

In sections VI and VII we highlighted a number of important concerns in undertaking this particular study. In addition to that, this paper makes no attempt to distinguish between the various schools of thought on economic growth. Specifically, it is beyond the scope of this paper to infer from the findings whether the impact of FDI on trade and on growth is a long run or short-run phenomenon. Notwithstanding, our investigation suggests that the ECCU provides an appropriate platform as the effects we find are mainly positive and statistically significant.

An important issue is that if FDI substitutes for exports, then what determine exports in the context of the ECCU? Is it tourist arrivals or tourist receipts? Future research will focus on disaggregating exports and look at tourist arrivals or tourist receipts against FDI to determine the results. For instance, what is the share of tourist arrivals or receipts to the region relative to the share of FDI to the region? Perhaps to get a full picture of the impact of FDI it may be useful to estimate a relationship for the determination of foreign assets in the ECCU. Also, there are important potential improvements in terms of measurement that should be pursued. For instance, better measurements for terms of trade would certainly contribute to more precise estimates of the effects of FDI on trade and on growth.

defense) in any WTO member country, get treatment for the Foreign Direct Investment (FDI) at least on the same level as accorded to the domestic investments, and effective implementation of the obligations undertaken in the agreement

IX. REFERENCES

Alfaro, Laura. "Foreign Direct Investment and Growth: Does the Sector Matter?" Harvard Business School, April 2003. Internet site: http://www.people.hbs.edu/lalfaro/fdisectorial.pdf (Accessed October 24, 2004).

Alguacil, M.T., and Orts, V. "Time Series Analysis of Inward Foreign Direct Investment and Imports in Spain." University of Jaume I, September 3, 2001. Internet site: http://www.etsg.org/ETSG2001/papers/C2_2.pdf (Accessed October 14, 2004).

Blanca, Sanchez-Robles, and Calvo, Martha Bengoa. "Foreign Direct Investment, Economic Freedom and Growth: New Evidence Latin America." Economics Working Paper 4, Universidad de Cantabria, Cantabria, 2003. Internet site: http://rru.worldbank.org/PapersLinks/Impact-Foreign-Direct-Investment/ (Accessed October 24, 2004).

Blomström Magnus, and Kokko, Ari. "Regional Integration and Foreign Direct Investment. A Conceptual Framework and Three Cass." Policy Research Working Paper 1750, The World Bank, April 1997. Internet site: http://www.worldbank.org/html/dec/Publications/Workpapers/WPS1700series/wps1750/wps1750.pdf (Accessed October 14, 2004).

Campbell, Trevor. "Foreign Direct Investment (FDI) Inflows and their Impact on Barbados' Current Account: Implications for Substitute/Complements Between FDI and Exports." Research Department, Central Bank of Barbados. Presented at Canadian Economic Association (CEA) 2001 Annual Meeting, McGill University, Montreal, Canada, May 31 to June 3, 2001.

Campos, Nauro, F. and Kinoshita, Yuko. "Foreign Direct Investment As Technology Transferred: Some Panel Evidence From the Transition Economies." The Manchester School, Vol. 70 No. 3 June 2002. Internet site: http://www.staff.ncl.ac.uk/n.f.campos/msjune2002.pdf (Accessed October 14, 2004).

Carkovic, Mary, and Levine, Ross. "Does Foreign Direct Investment Accelerate Economic Growth?" University of Minnesota, May 2002. Internet site: http://www.worldbank.org/research/conferences/financial_globalization/fdi.pdf (Accessed October 13, 2004).

Central Bank of Trinidad and Tobago. "Economic Bulletin." Central Bank of Trinidad and Tobago, Trinidad. Various issues.

Central Bank of Trinidad and Tobago. "Research and Data. Selected Economics Statistics." Central Bank of Trinidad and Tobago, Trinidad. Internet site: http://www.central-bank.org.tt/rnd/statistics/data/eco_glance.htm (Accessed October 21, 2004).

China Daily. "Foreign Direct Investment picks up in December" (2004-01-14 23:46). Internet site: http://www2.chinadaily.com.cn/en/doc/2004-01/14/content_298953.htm (Accessed August 16, 2004).

Chowdhury, Abdur, and Mavrotas, George. "FDI and Growth: What Causes What?" Paper to be presented at the WIDER Conference on "Sharing Global Prosperity", WIDER, Helsinki, 6-7 September 2003. August 2003. Internet site: http://www.wider.unu.edu/conference/conference-2003-3/conference-2003-3-papers/Chowdhury-Mavrotas-1408.pdf (Accessed October 14, 2004).

Cuadros, A, Orts, V, and Alguacil, M.T. "Openness and Growth: Re-Examining Foreign Direct Investment, Trade and Output Linkages in Latin America." April 2004. Internet site: http://www.nottingham.ac.uk/economics/research/seminars/creditseminar.pdf (Accessed October 14, 2004).

Das, Bhagirath Lal. "A critical Analysis of the Proposed Investment Treaty in WTO." Global Policy Forum, July 2003. Internet site: http://www.globalpolicy.org/socecon/bwi-wto/wto/2003/07critical.htm (Accessed October 25, 2004).

Federal Reserve Board. Internet site: http://www.federalreserve.gov/fomc/fundrate.htm (Accessed: August 12, 2004).

Feenstra, Robert C. "Facts and Fallacies about Foreign Direct Investment." University of California and National Bureau of Economic Research. Revised, December 1998. Internet site: http://www.econ.ucdavis.edu/faculty/fzfeens/pdf/fdi2.pdf . (Accessed: August 16, 2004)

Flexner, Nikolai. "Foreign Direct Investment and Economic Growth in Bolivia, 1990-1998." Economic Policy Division, Central Bank of Bolivia. La Paz, Bolivia: April 2000. Internet site: http://econwpa.wustl.edu/eps/mac/papers/0309/0309009.pdf (Accessed: August 16, 2004).

Forte, Rosa. "The Relationship Between Foreign Direct Investment and Trade. Substitution or Complementarity? A Survey." CETE, Faculdade de Economia da Universidade do Porto, March 2004. Internet site: http://www.fep.up.pt/investigacao/workingpapers/04.03.22_WP140_Rosa%20Forte.pdf (Accessed: October 13, 2004).

Fry, Maxwell J, Claessens, Stijn, Burridge, Peter, and Blanchet, Marie-Christine. "Foreign Direct Investment, Other Capital Flows, and Current Account Deficits: What Causes What?" Policy Research Working Paper 1527. The World Bank, October 1995.

Goldberg, Linda, S., and Klein, Michael, W. "Foreign Direct Investment, Trade and Real Exchange Rate Linkages in Southeast Asia and Latin America." Working Paper 6344, NBER, Cambridge, Massachusetts, December 1997. Internet site: http://papers.nber.org/papers/w6344.pdf (Accessed: October 24, 2004).

Graham, Edward M. "Working Together: Foreign Direct Investment and Trade." Economic Reform Today, Globalization, Trade and Democracy, Number 3, 1997. Internet site: http://www.cipe.org/publications/fs/ert/e25/grahae25.htm (Accessed: August 16, 2004).

Graham, Edward, M., and Wada, Erika. "Foreign Direct Investment in China: Effects on Growth and Economic Performance." Institute for International Economics, Washington, D.C., 2001. Internet site: http://rru.worldbank.org/PapersLinks/Impact-Foreign-Direct-Investment/ (Accessed October 24, 2004).

Hassett, Kevin A. "The Role of Trade and Foreign Direct Investment in Development." Prepared Remarks, University of Michigan Law School, April 2003. Internet site: http://www.wdi.bus.umich.edu/global_conf/papers/revised/Hassett_Kevin.pdf (Accessed: October 13, 2004).

International Monetary Fund (IMF). *Balance of Payments Manual,* 5th edition. Washington DC, USA: International Monetary Fund, 1993.

International Monetary Fund (IMF). *IMF IFS Statistics*. Internet site: http://www.imf.org/: http://ifs.apdi.net/imf/ifsbrowser.aspx?branch=ROOT. (Accessed: August 8, 2004).

International Monetary Fund (IMF). *IMF IFS Statistics* CD ROM.

International Monetary Fund. "Trinidad and Tobago: 2003 Article IV Consultation - Staff Report." IMF Country Report No. 03/232. International Monetary Fund, July 2003, corrected August 2003. Internet site: http://www.imf.org/external/pubs/ft/scr/2003/cr03232.pdf (Accessed: October 21, 2004).

International Monetary Fund (IMF). *World Economic Outlook (WEO) Database April 2004.* Internet site: http://www.imf.org/external/pubs/ft/weo/2004/01/data/dbaoutc.cfm?SD=1990&ED=2005&R1=1&R2=1&CS=5&SS=2&OS=C&DD=0&OUT=1&C=001-110&S=NGDP_RPCH-PCPIPCH&&x=55&y=11&CMP=1 (Accessed: August 11, 2004).

Johnston, Louis, and Williamson, Samuel H. "The Annual Real and Nominal GDP for the United States, 1789 - Present." Economic History Services, March 2004. Internet site: http://www.eh.net/hmit/gdp/gdp_answer.php (Accessed: August 11, 2004).

Julius, DeAnne. "Foreign Direct Investment: The Neglect Twin of Trade." Occasional Papers No. 33. Group of Thirty, Washington, DC. 1991.

Kolstad, Ivar, and Villanger, Espen. "Determinants of Foreign Direct Investments in Services." CMI Working Paper WP 2004:2. Internet site: http://www.cmi.no/publications/2004/wp/wp2004-2.pdf (Accessed: August 16, 2004).

Krugman, Paul R. and Obstfeld, Maurice. *International Economics, Theory and* Policy, 6th edition. USA: Addison-Wesley, 2003.

Lim, Ewe-Ghee. "Determinants of, and the Relation between, Foreign Direct Investment and Growth: A Summary of the Recent Literature." IMF Working Paper WP/01/175, Middle Eastern Department, International Monetary Fund, November 2001. Internet site: http://www.imf.org/external/pubs/ft/wp/2001/wp01175.pdf (Accessed: October 24, 2004).

Lipsey, Robert E. "Foreign Direct Investment in the US and the US Trade." NBER Working Paper No. 3623, Cambridge, Massachusetts, February 1991. Internet site: http://papers.nber.org/papers/w3623.v5.pdf (Accessed: October 13, 2004).

Lensink, Robert, and Morrissey, Oliver. "Foreign Direct Investment: Flows, Volatility and Growth in Developing Countries." Globalisation and Poverty, 2001. Internet site: http://www.gapresearch.org/finance/DESGver2.pdf (Accessed: October 14, 2004).

Marchant, Mary A, Manukyan, Tigran, and, Koo, Won. "International Trade and Foreign Direct Investment: A Focus on the Free Trade Area of the Americas." Internet site: http://cnas.tamu.edu/publications/powerpoint/papers/Marchant.pdf (Accessed: August 16, 2004).

OECD. "Trends and Recent Developments in Foreign Direct Investment." Directorate for Financial and Enterprise Affairs, June 2004. Internet site: http://www.oecd.org/dataoecd/37/39/32230032.pdf (Accessed: August 16, 2004).

Pacheco-López, Penélope. "Foreign Direct Investment, Exports and Imports in Mexico, " Studies in Economics0404, Department of Economics, University of Kent. 2004. Internet site: http://www.kent.ac.uk/economics/papers/papers-pdf/2004/0404.pdf (Accessed: August 16, 2004).

Soliman, Mohamed. "Foreign Direct Investment and LDCs Exports: Evidence from the MENA Region." University of Sharjah, Preliminary, October 2003. Internet site: http://www.erf.org.eg/tenthconf/Trade_Background/Soliman.pdf (Accessed: October 24, 2004).

Sousa, José de, and Lochard, Julie. "Foreign Direct Investment, Trade and Monetary Integration." 31 Preliminary Draft, 31 August 2004. Internet site: http://nis.fsv.cuni.cz/phddocs/lochard2004.pdf (Accessed: October 14, 2004).

Turner, Philip. "Foreign Direct Investment in the Developing World: the Experience of the 1980s." Paper prepared for the XXVII Meeting of Technicians of Central Banks of the American Continent, Caracas, Venezuela, 18th – 23rd November 1990. Bank for International Settlements, CH-4002 Basel, Switzerland. 5th October 1990.

UNCTAD. "World Investment Report 2003" FDI policies for Development: National and International perspectives. Overview. United Nations. New York and Geneva, 2003. Internet site: http://www.unctad.org/en/docs/wir2003overview_en.pdf (Accessed: august 16, 2004).

Venkataramany, Sivakumar. "Determinants of Foreign Direct Investments in India: An Empirical Analysis of Source Countries and Target Countries." Ashland University, USA. Internet site: http://blake.montclair.edu/~cibconf/conference/DATA/Theme2/India.pdf (Accessed: August 16, 2004).

Williams, Oral, and Williams, Sheila. "The Impact of Foreign Direct Investment Flows to the Eastern Caribbean Central Bank Unified Currency Area." *Savings and Development.* Quarterly Review – No. 2 – 1999 – XXIII. Milan, Italy.

World Bank. "2004 World Development Indicators." Internet site: http://www.worldbank.org/data/wdi2004/tables/table4-1.pdf (Accessed: August 25, 2004).

X. APPENDICES

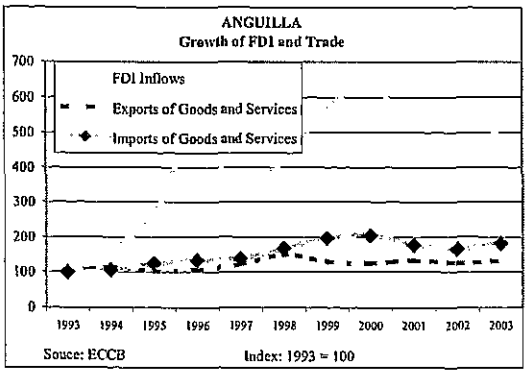
Appendix 1: Share of FDI (per cent of GDP)

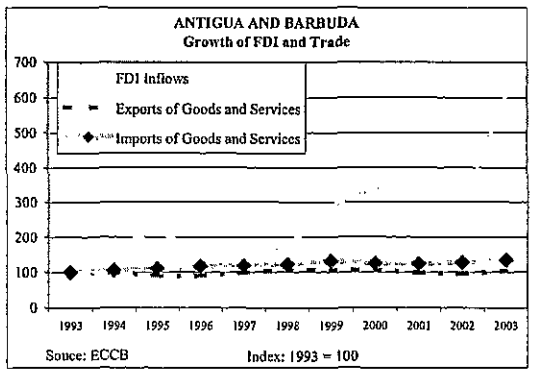
	Descriptive Statisitcs			
	Mean	STD	Min	Max
Anguilla	31.6	10.0	10.1	43.4
Antigua and Barbuda	6.8	2.5	3.4	12.2
Dominica	8.4	5.8	3.5	24.9
Grenada	12.3	3.9	6.3	19.3
Montserrat	7.4	6.0	0.1	23.4
St Kitts and Nevis	18.2	7.8	7.3	30.1
St. Lucia	9.4	3.1	3.7	13.6
St. Vincent and the Grenadines	16.2	7.7	6.1	31.6
ECCU	11.8	2.1	7.3	14.5
Barbados	0.9	0.1	0.8	1.1
Jamaica	4.9	2.1	1.6	7.6
Trinidad and Tobago	9.7	3.5	5.6	17.4
China	4.3	0.8	3.6	6.2

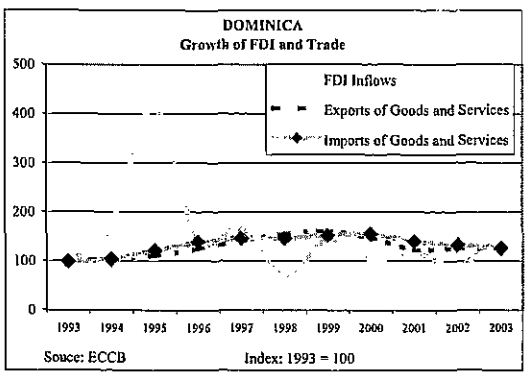
Source: ECCB, IMF CD-ROM, author's calculations

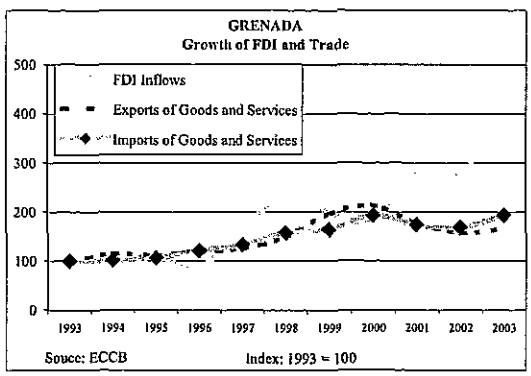
n.a. = not available

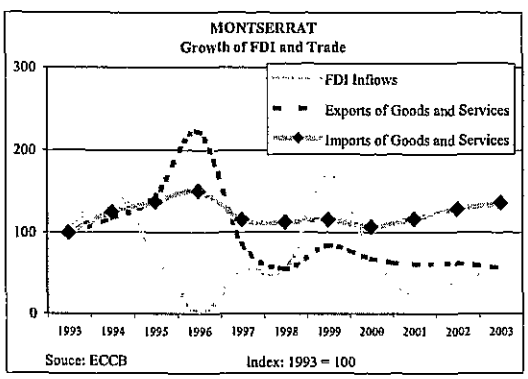
Appendix 2: Growth of FDI and Trade for ECCU countries

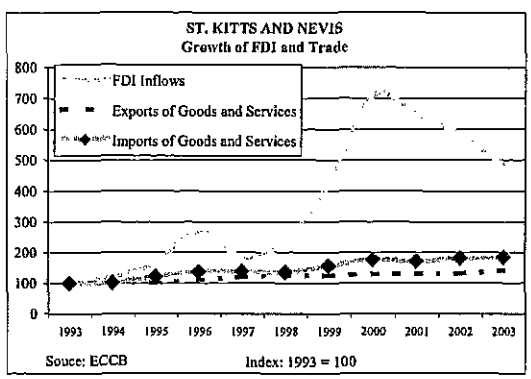




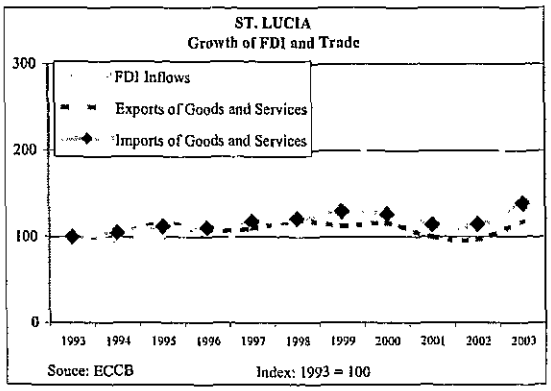


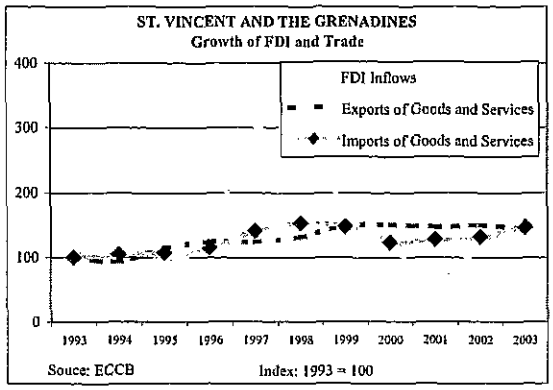






Appendix 2: Growth of FDI and Trade for ECCU countries





Appendix 3A
FDI Inflows on Trade in ECCU Economies, 1993-2003: Correlation Matrix

	fdi	gdp	IMP	RER	EXP	IMPEXP	INFL	GOV	debtgdp	WIR	WGDP
FDI Inflows	1										
GDP per capita	0.4967	1									
Imports	0.3973	0.6232	1								
Real exchange rate	0.2963	0.3088	0.0719	1							
Exports	0.0763	0.475	0.3572	0.1168	1						
Openness	0.3057	0.6829	0.9129	0.0928	0.7039	1					
Inflation	0.0397	0.1708	0.1773	-0.1891	0.1754	0.2063	1				
Government Expenditure	0.063	0.233	0.6332	-0.011	-0.2074	0.3963	-0.0234	1			
Debt-GDP	-0.295	-0.2522	-0.3449	-0.1816	-0.2248	-0.3482	-0.1788	0.1999	1		
World Interest rates	-0.0754	-0.0383	-0.0445	-0.2048	0.135	0.0172	0.0257	-0.2339	-0.1898	1	
World GDP	0.1126	0.0537	0.0877	-0.0896	0.1863	0.1377	-0.0181	-0.0858	-0.0896	0.5277	1

Source: ECCB

Appendix 3B
FDI Inflows on Trade in ECCU Economies (excluding Montserrat), 1993-2003: Correlation Matrix

	fdi	gdp	IMP	RER	EXP	IMPEXP	INFL	GOV	debtgdp	WIR	WGDP
FDI Inflows	1										
GDP per capita	0.6626	1									
Imports	0.81	0.6779	1								
Real exchange rate	0.3244	0.3708	0.2628	1							
Exports	0.3743	0.7407	0.6445	0.1796	1						
Openness	0.6715	0.7807	0.9219	0.244	0.89	1					
Inflation	0.2308	0.2328	0.2125	-0.1858	0.0997	0.1791	1				
Government Expenditure	0.2	-0.0218	0.1098	0.189	-0.327	-0.1033	-0.0743	1			
Debt-GDP	-0.4126	-0.2146	-0.4982	-0.1738	-0.3475	-0.4705	-0.195	0.413	1		
World Interest rates	-0.0896	-0.0551	0.0355	-0.2454	0.0866	0.0645	0.0016	-0.306	-0.2063	1	
World GDP	0.1148	0.0486	0.1632	-0.1031	0.1391	0.1671	-0.0142	-0.1581	-0.1022	0.5277	1

Source: ECCB

APPENDIX 7A: REGRESSION RESULTS OF FDI FLOWS, EXPORTS, IMPORTS AND OUTPUT
SAMPLE: ALL ECCU COUNTRIES* EXCLUDING MONTSERRAT

Variables	FDI	IMPORTS (IMP)	EXPORTS (EXP)	GDP PER CAPITA (GDP)
Constant	-70.92	2.12 ***	0.17	-7.75 ***
	(1.34)	(6.81)	(0.42)	(9.80)
FDI	-	0.17 ***	-0.04 **	0.13 ***
		(13.49)	(2.33)	(4.80)
IMP	13.11 *	-	-	-
	(1.70)			
EXP	3.63	0.56 ***	-	0.73 ***
	(0.63)	(7.63)		(6.07)
IMPEXP	-15.39	-	-	-
	(1.15)			
RER	0.80	-0.09	0.32	-
	(0.55)	(0.35)	(0.96)	
GDP	0.99 ***	-0.17 ***	0.19 ***	-
	(4.99)	(4.52)	(4.12)	
GOV	-0.14	-	-	0.06
	(0.53)			(0.67)
DEBT	-0.02	-	-	0.09 ***
	(0.22)			(2.71)
INFL	0.01	-	-	-
	(0.19)			
WIR	-0.10	-	-	-
	(1.20)			
WGDP	0.24 *	-	0.06 **	0.10 **
	(1.94)		(2.08)	(2.24)
$FDI_{(t-1)}$	0.13 *	-	-	-
	(1.69)			
$IMP_{(t-1)}$	-	0.10 *	-	-
		(1.79)		
$EXP_{(t-1)}$	-	-	0.56 ***	-
			(6.37)	
$GDP_{(t-1)}$	-	-	-	5.56 ***
				(11.18)
Adjusted R^2	0.82	0.80	0.75	0.92
Number of observations	66	66	66	66

Note:
t-statistics appear in parentheses for each variable where:
* = significant at the 10% level
** = significant at the 5% level
*** = significant at the 1% level

APPENDIX 4B: REGRESSION RESULTS OF FDI FLOWS, EXPORTS, IMPORTS AND OUTPUT
SAMPLE: ALL COUNTRIES

Variables	FDI	IMPORTS (IMP)	EXPORTS (EXP)	GDP PER CAPITA (GDP)
Constant	-97.81 ***	-0.21	0.81 *	-9.48 ***
	(5.69)	(0.55)	(1.88)	(7.03)
FDI	-	0.05 ***	-0.06 ***	-0.10 ***
		(2.82)	(3.04)	(3.44)
IMP	16.01 ***	-	-	-
	(6.27)			
EXP	8.30 ***	0.38 ***	-	-0.16
	(4.46)	(6.07)		(1.16)
IMPEXP	-24.74 ***	-	-	-
	(5.60)			
RER	-1.73 ***	0.07	-0.12 **	-
	(7.56)	(1.40)	(2.02)	
GDP	1.09 ***	-0.04	0.05	-
	(7.06)	(1.06)	(1.17)	
GOV	-0.24	-	-	-0.15 **
	(0.77)			(1.67)
DEBT	-0.19	-	-	0.05
	(1.49)			(0.76)
INFL	-0.10	-	-	-
	(1.44)			
WIR	-0.27 *	-	-	-
	(1.93)			
WGDP	0.45 **	-	0.10 **	0.05
	(2.53)		(2.22)	(0.49)
$FDI_{(t-1)}$	0.24 ***	-	-	-
	(3.23)			
$IMP_{(t-1)}$	-	0.67 ***	-	-
		(13.04)		
$EXP_{(t-1)}$	-	-	0.81 ***	-
			(14.81)	
$GDP_{(t-1)}$	-	-	-	8.91 ***
				(22.49)
Adjusted R^2	0.86	0.90	0.84	0.92
Number of observations	103	103	103	103

Note:
t-statistics appear in parentheses for each variable where:
* = significant at the 10% level
** = significant at the 5% level
*** = significant at the 1% level

APPENDIX 4C REGRESSION RESULTS OF FDI FLOWS, EXPORTS, IMPORTS AND OUTPUT
SAMPLE: ALL COUNTRIES EXCLUDING MONTSERRAT

Variables	FDI	IMPORTS (IMP)	EXPORTS (EXP)	GDP PER CAPITA (GDP)
Constant	0.31 (0.01)	1.02 *** (4.16)	0.29 (0.78)	-11.22 *** (7.62)
FDI	-	0.19 *** (15.09)	-0.03 * (1.82)	-0.08 ** (2.47)
IMP	2.76 (0.92)	-	-	-
EXP	-4.04 (1.54)	0.85 *** (19.12)	-	0.11 (0.65)
IMPEXP	0.94 (0.17)	-	-	-
RER	-2.09 *** (12.11)	0.49 *** (12.61)	-0.07 (1.29)	-
GDP	1.40 *** (11.92)	-0.33 *** (12.07)	0.04 (0.97)	-
GOV	0.01 (0.06)	-	-	-0.38 ** (2.53)
DEBT	-0.14 * (1.90)	-	-	0.13 (1.58)
INFL	-0.03 (0.63)	-	-	-
WIR	-0.10 (1.28)	-	-	-
WGDP	0.30 *** (2.64)	-	0.10 *** (2.73)	0.01 (0.09)
$FDI_{(t-1)}$	0.16 *** (2.79)	-	-	-
$IMP_{(t-1)}$	-	0.21 *** (5.59)	-	-
$EXP_{(t-1)}$	-	-	0.90 *** (19.25)	-
$GDP_{(t-1)}$	-	-	-	8.87 *** (20.28)
Adjusted R^2	0.93	0.96	0.90	0.93
Number of observations	92	92	92	92

Note:
t-statistics appear in parentheses for each variable where:
* = significant at the 10% level
** = significant at the 5% level
*** = significant at the 1% level

APPENDIX 4D: REGRESSION RESULTS OF FDI FLOWS, EXPORTS, IMPORTS AND OUTPUT
SAMPLE: ALL COUNTRIES EXCLUDING TRINIDAD AND TOBAGO

Variables	FDI	IMPORTS (IMP)	EXPORTS (EXP)	GDP PER CAPITA (GDP)
Constant	-169.12 ***	-0.06	0.88 **	-8.91 ***
	(7.60)	(0.15)	(1.96)	(6.34)
FDI	-	0.03 *	-0.07 ***	-0.11 ***
		(1.66)	(3.34)	(3.68)
IMP	27.63 ***	-	-	-
	(7.97)			
EXP	14.26 ***	0.39 ***	-	-0.20
	(6.62)	(5.96)		(1.44)
IMPEXP	-41.38 ***	-	-	-
	(7.58)			
RER	-1.74 ***	0.01	-0.16 **	-
	(7.89)	(0.24)	(2.46)	
GDP	1.12 ***	-0.01	0.07	-
	(7.51)	(0.15)	(1.63)	
GOV	-0.81 **	-	-	-0.21 **
	(2.55)			(2.09)
DEBT	0.02	-	-	0.02
	(0.19)			(0.29)
INFL	-0.15 **	-	-	-
	(2.36)			
WIR	-0.27 **	-	-	-
	(2.09)			
WGDP	0.41 **	-	0.10 **	0.06
	(2.40)		(2.25)	(0.55)
$FDI_{(t-1)}$	0.22 **	-	-	-
	(3.08)			
$IMP_{(t-1)}$	-	0.61 ***	-	-
		(9.56)		
$EXP_{(t-1)}$	-	-	0.78 ***	-
			(12.63)	
$GDP_{(t-1)}$	-	-	-	8.82 ***
				(21.75)
Adjusted R^2	0.89	0.85	0.83	0.92
Number of observations	95	95	95	95

Note:
t-statistics appear in parentheses for each variable where:
* = significant at the 10% level
** = significant at the 5% level
*** = significant at the 1% level