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# Foreign Direct Investment Inflows and Their Impact on Barbados' Current Account: Implications for Policy

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### Introduction

For balance of payments purposes, foreign direct investment (FDI) is defined as the holding of 10 per cent or more of the voting stock of a foreign enterprise (see International Monetary Fund, 1993). It takes the form of equity capital, retained earnings and loans from a parent company. Direct investment is a unique form of capital inflow in that, unlike commercial lending, it comprises part of a package of technology and management, both of which can enhance the productivity of the capital transfer. Direct investment also shares in both the risks and the rewards associated with the project financed. It is these three factors – technology, management and capital – that commend FDI for financing in developing countries.

While FDI inflows have a direct and positive impact on Barbados' capital and financial account in the balance of payments, the effect of such transactions on the current account is uncertain. One would expect that foreign firms with a direct investment in Barbados would be entitled to earn an income on their investment. This income, known as investment income, however, worsens the current account balance. In addition, because of Barbados' high propensity to import, some proportion of the FDI inflows received by local firms is used to purchase goods and services from abroad. This also leads to a deterioration in the current account. Some consideration must

be given to the type of firm undertaking this investment. If FDI is undertaken by local firms that are engaged primarily in foreign exchange-earning activities (for example, tourism and export manufacturing), the current account outcome depends on whether the foreign inflows exceed the outflows. On the other hand, if the firms are those that primarily consume foreign exchange, then such transactions will only serve to worsen the current account balance.

This study analyses the long-run and short-run impacts of FDI on the current account for policy purposes. Section one examines selected studies on the effects of FDI transactions in both developed and developing countries. The following section briefly looks at trends in FDI inflows to Barbados over the past thirty years. In section three, the long-run and short-run influences of FDI inflows on Barbados' current account from 1970 until 1999 are estimated using co-integration regression techniques. These results guide the determination of the significance of FDI in Barbados. This is followed by a conclusion.

## 1. Selected Studies on the Effects of FDI Capital Inflows

The previous studies on FDI have produced some interesting findings. A World Bank (1985) study found that a country's development strategy, market philosophy and underlying attractiveness as an investment location are all important determinants of FDI inflows. The size and growth of the domestic market, suitability for export-oriented production, and the natural resource endowment are also factors that influence location of these flows. Despite offering substantial incentives to potential investors, countries in Africa and the Caribbean with small domestic markets are still unable to attract significant inflows of investment. On the other hand, countries in Southeast Asia, such as Malaysia and Singapore, were able to attract direct investment, on the basis of their export-oriented development policies, without significant incentives. The report

also pointed out that less developed countries interested in attracting FDI would have to review existing restrictions such as those on the degree of foreign participation or on entry into particular industries.

Codrington (1987) analysed the pattern of FDI inflows to Barbados between 1977 and 1985, noting that most of those flows went to public utilities, manufacturing and tourism activities. In the case of public utilities, most of the funding was provided by non-resident enterprises with a major controlling interest in the sale of telephone and electricity services. As for manufacturing, the Industrial Development Corporation was established in 1969 to attract FDI and a ten-year holiday was granted to manufacturers selling their total output outside of the Caribbean Community (CARICOM). Between 1977 and 1985, foreign ownership was most pronounced in the metals group where 83 per cent of the firms had at least 25 per cent ownership. In the case of tourism, the Hotel Aids Act of 1956, the earliest attempt to develop the tourist industry in Barbados, exempted building materials and equipment for hotels from customs duties and permitted a seven-year tax holiday for some establishments. The formation of the Board of Tourism two years later also provided further stimulus to the industry. By 1970, North American and United Kingdom (UK) interests controlled a large proportion of the available capacity. Fifteen years later, just over one half of the establishments had at least 25 per cent foreign ownership.

Fry (1996), who examined how FDI in Pacific Asia improved the current account, looked at the effects of foreign direct inflows to a group of six Pacific Basin economies and a control group of eleven other developing countries. Fry estimated the contemporaneous and lagged effects of FDI in the Pacific Basin on capital formation, national savings, imports, exports and economic growth in a five-equation macroeconomic model. Dynamic simulations indicated that although FDI increased domestic investment, the positive direct and indirect effects of FDI on national savings (through accelerated growth) actually led to an improvement in the current account in the long run. However, FDI did not expand domestic investment or

economic growth outside the Pacific Basin. When the sample countries of the control group attracted more FDI inflows, national savings, domestic investment and the rate of economic growth all declined.

Belgrave and Ward (1997) estimated the impact of FDI on the Barbadian economy using the data of 255 firms over the period 1985 to 1995, with specific reference to the manufacturing sector. They looked at the influence of foreign equity on the survival of manufacturing firms, utilising a binary-choice probit model. The results showed that the foreign equity variable did not explain firms' survival. Even when the sample was disaggregated by sector, the same result was obtained.

The effect of FDI on economic growth in a cross-country regression framework was tested by Borensztein, DeGregorio and Lee (1998), using data on foreign direct investment flows from industrial countries to sixty-nine developing countries over the last two decades. Their results suggested that FDI was an important vehicle for the transfer of technology, contributing relatively higher growth than domestic investment. However, the higher productivity of FDI was realised only when the host country had a minimum threshold of human capital stock.

FDI policies under shared factor markets were analysed by Glass and Saggi (1998) in a general equilibrium setting in several oligopolistic industries. It was discovered that by shifting labour demand across countries, FDI raised the wage in the host country and lowered the wage in the source country, thereby raising profits of the source-country firms at the expense of the host-country firms. Thus, a tension would arise between worker interests and firm interests in the two countries. The case of cross-ownership of firms was also addressed. The conclusion reached was that, in the presence of cross-ownership of firms, subsidies to inward FDI could raise host welfare. By encouraging the shifting of production into its economy, the host government raised domestic wages, while hurting domestic profits. However cross-ownership reduced the loss in profits, thereby allowing the wage to dominate.

An examination of FDI flows to the Eastern Caribbean was done by Williams and Williams (1998), using pooled data with a macroeconomic model that encompassed investment, savings, imports, exports and growth equations. FDI was found to exert a positive influence on investment, savings and imports. The estimated coefficient of FDI in the export equation was surprisingly negative, considering that most of the flows are channelled into tradable activity in the tourism industry. The foreign direct investment-growth nexus appeared to be through gross capital formation, particularly private investment.

Bajo-Rubio and Montero-Munoz (1999), utilising quarterly data, examined the relationship between FDI trade flows for the case of Spain during the period from 1977 to 1992, a period characterised by intense liberalisation of the Spanish economy. The authors estimated export and import equations, in which one of the explanatory variables was accumulated FDI. Their main result was the complement relationship found between FDI and trade. Increased Spanish investment abroad would lead to more exports, whereas an expansion in FDI in Spain would result in higher imports. The results support the view that increased capital movements, in the context of a programme of liberalisation, led to higher trade flows.

The effect of FDI on firm growth was investigated by Chen and Ku (2000), with specific emphasis on Taiwan manufacturers. They posited that FDI could be roughly divided into an expansionary and a defensive type. Whereas expansionary FDI sought to exploit the firm-specific advantage in the host country, defensive FDI attempted to secure cheap labour in the host country so as to reduce production costs. Both effects of these two types of FDI were examined on the survival and growth performance of investing firms. Both groups of FDI were shown to be beneficial to the survival of firms. Chen and Ku found that expansionary FDI had the additional benefit of contributing to sales growth in Taiwan, while defensive foreign investment was neutral. Both types of FDI were observed to be uncorrelated with job creation or job displacement in the said country.

The study by Blonigen (2001) sought evidence of complementarity or substitutability between FDI by Japan into the United States (US) and exports by Japan to that country. Blonigen discovered that production of Japanese automobiles by Japanese firms in the US increased Japanese exports of automobile car parts there. In this case, FDI by Japan into the US and Japan's exports were categorised as complements. However, the production of Japanese automobile parts by Japanese firms operating in the US, resulted in a contraction of Japanese exports of automobile parts to the US. In this case, FDI and exports were substitutes.

Zhang (2001) examined whether FDI promoted economic growth, based on evidence from East Asia and Latin America. His findings were that in Latin America, FDI and gross domestic product (GDP) in Argentina did not move together in the long run nor in the short run. A positive causality running from GDP to FDI was found for Brazil in the short run and for Colombia in the long run. FDI and Mexican GDP exhibited a positive long-run equilibrium relationship. In East Asia, the short-run causal link from GDP to FDI was observed for Korea, Malaysia, and Thailand. Although the causality from FDI to GDP did exist in Hong Kong and Taiwan in the short run, the causality was suggested to exist in Singapore in the long run.

The influence of FDI on domestic capital formation in Canada was addressed by Hezaki and Pauly (2001), using annual industry level data over the period 1983 to 1995, as well as panel data techniques. The results showed that inward FDI from the US, UK and the rest of the world boosted capital formation in Canada. However, while Canadian FDI to the US stimulated capital formation at home, there was no statistical effect from outward FDI in the UK case, whereas outward FDI in the rest of the world tended to reduce capital formation in Canada. However, as the authors pointed out, it could be a mistake to discourage FDI to specific parts of the world, since FDI, motivated by the transfer of low value-added production to low-wage or low-cost countries, should be encouraged. On the

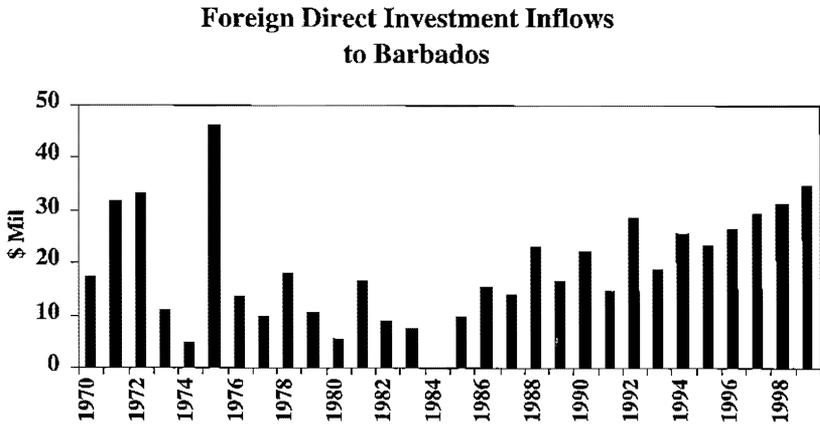
other hand, if FDI was driven out of Canada because of a poor competitive environment, policy measures should be taken to remedy the specific situation.

## 2. Trends in FDI Capital Inflows in Barbados

Between 1970 and 1976, FDI capital transactions accounted for the majority of long-term capital inflows to Barbados. During this seven-year period, long-term capital inflows rose by approximately \$210 million, of which direct investment constituted \$155 million (73.8 per cent). Most of these investment projects were undertaken by parent companies in the form of loans to their branches and subsidiaries and, to a lesser extent, from profits retained in Barbados.

Although FDI inflows lost their dominance to other investment capital inflows after 1976, their contribution to the development of Barbados remained important. Indeed, between 1977 and 1985, FDI inflows increased by about \$85 million (see Figure 2.1). According to Codrington (1987), just over three-quarters of FDI inflows were to manufacturing and oil companies, with most foreign firms in the manufacturing sector producing electronic components and clothing. Sixty per cent of firms that assembled electronic components were the recipients of branch investments and parent company loans, while those companies that produced textiles benefited from about one-third of re-invested earnings and received almost all market loans. By 1956, major foreign oil companies had already established retail outlets on the island, with one firm operating a refinery. However, the search for local oil was revived in the 1970s in an attempt to reduce imports. Codrington (1987) reported that between 1977 and 1985, these companies attracted foreign capital inflows in the form of long-term loans raised in the US.

Figure 2.1



Source: Central Bank of Barbados

In the remaining fourteen years, FDI increased by \$326.1 million. In the pre-1985 period, inflows were mainly affected through parent company loans. After 1985, the primary sources of FDI were undistributed earnings and investment in branches. Between 1986 and 1995, investment in branches was significantly higher than undistributed earnings, but in the years that followed, the roles were reversed. The two of these categories together accounted for a rise of \$274.3 million or 84.1 per cent of total FDI.

### 3. The Impact of FDI Inflows on Barbados' Current Account

The literature review identified several determinants of the current account balance, including the ratio of the budget surplus to nominal gross domestic product (BSGDP), the ratio of real foreign incomes to real local income ( $Y$ ), the prime lending rate of the United States (USPR), and the real exchange rate

(RER). Since the interest is in the influence of FDI inflows on the current account, FDI inflows are also included as an additional explanatory variable.

The sign on the FDI variable is likely to be indeterminate. A positive sign suggests that FDI resulted in foreign receipts that more than offset foreign exchange outflows for the purchase of imported goods and services and investment income to non-residents. A negative sign implies the opposite.

An increase in the budget surplus to GDP ratio should impact favourably on the current account, a view supported by Pastor (1989), who argued that this was reflective of the pressure on governments to adjust to changes in income. Craigwell and Samaroo (1997) also found that in the case of Trinidad and Tobago, a reduced budget surplus was followed by a deterioration in the current account balance and vice versa. The ratio of foreign incomes to real income of Barbados and the current account balance should move in the same direction. Khan, Malcolm and Knight (1983) advanced the view that the growth rate of industrial countries has a positive impact on current accounts of developing countries through their influence on exports. The variable used for the growth rate of industrial countries is real GDP (1990 = 100) of Barbados' main trading partners, US, UK and Canada. It is calculated by taking the real gross domestic product for each country and weighting it by their respective shares of tourist arrivals to Barbados before summing the annual totals. Because Barbados is a highly-open economy, any rise in real income is accompanied by expenditure on foreign goods and services, thereby impacting negatively on the current account. For Barbados, real GDP (1990 = 100) is used as a proxy for real income. RER (1990 = 100) is defined as the price of non-traded goods relative to the price of traded commodities. As the price of traded goods and services rises, assuming that the non-traded price remains constant, the real exchange rate declines, consequently local producers are encouraged to produce more for export and this can lead to additional foreign revenue, thereby improving the current account balance.

In small developing countries, service payments on external debt are financed largely from export earnings, and, as a result, may lead to a weakening of the current account. In order to capture this effect, the stance taken by Pastor (1989) and Craigwell and Samaroo (1997) is adopted and the US prime lending rate is used to proxy movements in the interest payments on outstanding external debt. An inverse relationship between the US prime lending rate and the current account is anticipated; an increase in the prime lending rate suggests higher external debt service payments.

Formally, the model of the current account (CAB) can be expressed as follows:

$$\text{CAB} = f(\text{FDI}, \text{BSGDP}, \text{Y}, \text{RER}, \text{USPR}) \quad (1)$$

+/-    +    +    -    -

where all of the variables have already been defined.

The data used are annual observations over the period 1970 to 1999, and were compiled from various issues of the *International Financial Statistics*, published by the International Monetary Fund, and the *Annual Statistical Digest* and *Balance of Payments*, both published by the Central Bank of Barbados. Equation (1) was estimated utilising co-integration techniques, details of which are given in Appendix (2.1) later. The econometric software package Eviews 3.1 performed the estimations.

### ***Results and Policy Implications***

The results show that every one percentage point increase in real foreign incomes relative to real domestic income would boost the current account surplus by \$0.63 million. Additionally, a one percentage point increase in the ratio of the budget surplus to GDP in Barbados resulted in a \$1.19 million rise in the current account surplus. On the contrary, per unit increases in the real exchange rate and the US prime rate, respectively, worsen the current account by \$0.17 million and

\$0.38 million. However, the variable having the greatest impact on the current account in the long run is FDI inflows. A \$1 million rise in FDI inflows to Barbados will lead to a \$3.56 million deterioration in the current account balance. This suggests that any gains derived from FDI inflows in the form of foreign receipts from goods and services and current transfers are likely to be eroded by purchases of goods and services from the rest of the world and, even more importantly, by investment income payments to non-residents.

Five variables help to explain the current account balance in the short run, namely, the current account balance lagged one period, FDI capital inflows in the previous period, the current as well as lagged budget surplus to GDP ratio, the ratio of real foreign income to real income of Barbados (lagged one period), and the US prime rate. The short-run impact of the budget surplus to GDP is far stronger on the current account than in the long run. Over a two-year period, a \$1 million improvement in the budget balance is estimated to boost the current account by \$1.53 million. This compares to \$1.19 over the long term. The short-run effect of the ratio of real foreign income to real income of Barbados is twice as strong as in the long run, while the US prime rate impact on the current account in the short term (-0.86) far surpasses the long-run influence (-0.38). It should be noted that once again, there is an inverse relationship between FDI inflows and the current account, but the effect of the former on the latter in the short term is way below that in the long run. The data suggest that in the short term, a \$1 million expansion in FDI capital inflows will decrease the current account balance by \$0.69 million, compared to \$3.56 million in the long run. The error correction coefficient of 0.76 indicates a rapid speed of adjustment from the short run to the new long-run relationship.

What do the results tell us about FDI capital inflows into Barbados? In order to address this question, one must be mindful of the current account relationship, namely

$$\text{CAB} = \text{S} - \text{I}$$

where  $S$  is savings and  $I$  represents investment. This relationship suggests that the current account will deteriorate with a decline in savings or an increase in investment. A current account deficit brought about by FDI is not necessarily undesirable since if some of this investment is injected into the foreign exchange-earning activities, then the foreign receipts from these activities should help to boost savings and partially reduce the quantum of the deficit. However, a current account deficit that occurs as a result of a decline in savings (or a rise in consumption) needs to be monitored since it has the potential to undermine the country's foreign reserves. The results of Equations (1A) and (1B) in the Appendix imply that any gains derived from foreign exchange-earning activity will be eroded by foreign outflows. Therefore, it follows that, based on the results obtained, it is necessary to examine the way forward.

FDI has always been important to Barbados and will continue to be so, since, for example, it can generate employment opportunities for residents of Barbados. The results show that it will lead to a drain on the foreign reserves of Barbados, both in the short and long run, and thus these findings cannot be overlooked. However, one should try to ensure that FDI is undertaken to a greater extent by firms which are foreign exchange earners rather than those companies that mainly consume foreign exchange. Barbados would be looking to the tourism sector to continue to play a leading role in this regard. It is also hoped that the manufacturing sector will be able to overcome its difficulties of regional and international competition over the medium term and attract FDI, as had been the case many years ago. Efforts should continue to target international business companies, especially since Barbados has been removed from the "black list" of countries categorised by the Organisation for Economic Cooperation and Development as contributing to harmful tax practices. There are also many other local organisations in Barbados which provide services to the rest of the world, and these should be encouraged to attract FDI to Barbados.

The results indicate a positive relationship between the budget surplus and the current account balance in the long and short runs. This can be interpreted to mean that if Government is desirous of improving its current account balance, then it needs to pursue prudent fiscal policy. Finally, the findings of this study reinforce the need for gradual liberalisation of exchange controls in Barbados as opposed to full liberalisation. As long as Barbados continues to attract FDI and this impacts negatively on the current account (which determines the country's capacity to earn foreign exchange), then it is necessary that the investment income outflows arising from such investments be closely monitored by the Central Bank so that the foreign exchange reserves of the country will not be undermined and the existing exchange rate threatened by such movements.

## Conclusion

This paper examined the impact of FDI on Barbados' current account from 1970 to 1999, with the use of co-integration regression analysis. The results show that FDI inflows lead to a deterioration in the current account balance, both in the long run and short run. This implies that the possible gains derived from this type of investment will be eroded by purchases of goods and services from abroad and investment income payments to non-residents. However, despite this development, FDI inflows into Barbados should still be encouraged, particularly in the foreign exchange-earning sectors<sup>1</sup>. The tourism sector has to play an important role in this regard, while it is hoped that over the medium term, the manufacturing sector will also attract FDI, as has been the case in the pre-1980s. In addition, FDI by some of the local companies that provide services abroad is also desirable, as FDI undertaken by these firms can assist in reversing the impact on the current account, especially in the long run. Fiscal policy is also critical if FDI is to be further

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<sup>1</sup> This study has not quantified the impact of FDI on skills development, business acumen and business infrastructure.

encouraged. This is illustrated by the positive effect of the budget surplus on the current account, both in the long and short terms.

Finally, the issue of exchange control regulations is also important in this exercise. Many countries have adopted a policy of full liberalisation of their current and capital accounts, but Barbados has opted for a gradual approach to this policy to date. Barbados has always encouraged FDI, but since this study shows that these investment inflows can lead to current account outflows, thereby exerting pressure on the foreign reserves, both in the short and long runs. Therefore, payments to entities abroad, especially investment income payments, will need careful scrutiny by the Central Bank of Barbados, in order to ensure that the foreign reserves (which are the lifeblood of the economy) are not undermined, hence threatening the country's long history of exchange rate stability.

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### Appendix 2.1

The number of co-integration relationships is determined by the Johansen (1988) procedure and only one co-integration relationship was found. Thereafter, the Engle-Granger (EG) two-step method was applied. First, the coefficients from the (long-run) co-integration regression are estimated, and then the lagged residuals are put in a Vector Autoregression (VAR) of the changes of the explanatory and dependent variables. It is preferred to the Johansen (1988) maximum likelihood method since it is more powerful in small samples (see Inder, 1993).

The order of integration for each series was determined by the use of the Augmented Dickey-Fuller (ADF) test. This is a test of the null hypothesis of non-stationarity or a unit root [integrated of order  $d$ ,  $I(d)$  where  $d \geq 1$ ] against the alternative hypothesis of stationarity [or integration of order zero,  $I(0)$ ]. The ADF tests of the differences of each variable indicate that all of the variables are integrated of order 1,  $I(1)$ . The long-run results are shown in Equation (1A) below:

$$\begin{aligned} \text{CAB} = & 26.57 - 3.56\text{FDI} + 0.63\text{Y} + 1.19\text{BSGDP} \\ & - 0.17 \text{RER} - 0.38 \text{USPR} \end{aligned} \quad (1A)$$

$$R^2 = 0.77 \text{ Adj. } R^2 = 0.68 \text{ D.W.} = 1.90 \text{ ADF} = -6.60 (-1.95)$$

On account of the small sample size (30 observations), the bias in the EG estimator of the long-run relationship could be significant. Therefore, the standard errors and  $t$ -values of the estimated regression coefficients are not reported since these statistics are not valid (see Banerjee, Dolado, Hendry and Smith, 1986).

The results show that in the long-run equation, the explanatory variables are co-integrated since the ADF test rejects the null hypothesis of stationarity of the residuals at the 5 per cent level of significance. There was no evidence of first order serial correlation, as indicated by the Durbin Watson (D.W)

statistic. All of those variables whose signs were anticipated in Equation (1) turned out to be correct. The sign on the FDI variable was negative.

The error correction model nests both the long-run behaviour and short-run dynamics. This model can be formulated if the variables are co-integrated (for further reading, see Engle and Granger, 1987). An application of the Hendry General-to-Specific Methodology will be used in this instance. It begins with a model that is over parameterised and with the use of a step-wise process, eliminates insignificant variables until a parsimonious representation of the model is obtained. In this study, before reaching the final solution, variables for both current and lagged periods were considered. The initial model was restricted to only two lags on account of the small sample size. The results are shown hereafter in Equation (1B) where the values under the respective coefficients represent "t" statistics.

$$\begin{aligned} \Delta CAB = & 1.02 + 0.270 \Delta CAB_{-1} - 0.69 \Delta FDI_{-1} + 0.99 \Delta BSGDP \\ & (2.20) \quad (2.28) \quad \quad \quad (-2.01) \quad \quad \quad (5.11) \\ & + 0.54 \Delta BSGDP_{-1} + 1.30 \Delta Y_{-1} - 0.86 \Delta USPR - 0.76 U_{t-1} \\ & (2.84) \quad \quad \quad (3.17) \quad \quad (-3.59) \quad \quad (-6.09) \quad \quad (1B) \end{aligned}$$

$$\begin{aligned} R^2 = 0.82 \quad \text{Adj } R^2 = 0.76 \quad \text{D.W.} = 1.74 \quad \text{B-G (prob} = 0.51) \\ \text{ADF} = -2.32 \quad (-1.96) \quad \text{PP} = -4.50 \quad (-1.95) \\ \text{NORM (prob} = 0.92) \quad \text{ARCH} = (\text{prob} = 0.80) \quad \text{CHOW} = 1.51. \end{aligned}$$

$U_{t-1}$  is the error correction term lagged one period, while all other variables have been described before.  $\Delta$  is the first difference operator, B-G is the Breusch-Godfrey Lagrange Multiplier test for serial correlation, NORM is the Jarque-Bera test for normality based on a test of kurtosis and skewedness of the residuals. ARCH is the Engle's  $k^{\text{th}}$  order autogressive conditional heteroscedasticity test statistic, while CHOW is the CHOW breakpoint test for stability of the model.

The results show that the model is adequately specified and the residuals do not violate the classical assumptions of

normality, homoscedasticity and serial independence. Moreover, the CHOW breakpoint test indicates that the parameters of the model are stable. The  $R^2$  and adjusted  $R^2$  values imply a reasonably good fit. The error correction term is negative and highly significant, confirming the long-run co-integrating results.